Ohio | Public Utilities Commission

Application to Commit Energy Efficiency/Peak Demand Reduction Programs (Mercantile Customers Only)

Case No.: 12-3167-EL-EEC

Mercantile Customer: **Amylin Ohio, LLC**

Electric Utility: **Duke Energy**

Program Title or Description: **Chiller Tune-ups**

Rule 4901:1-39-05(F), Ohio Administrative Code (O.A.C.), permits a mercantile customer to file, either individually or jointly with an electric utility, an application to commit the customer's existing demand reduction, demand response, and energy efficiency programs for integration with the electric utility's programs. The following application form is to be used by mercantile customers, either individually or jointly with their electric utility, to apply for commitment of such programs in accordance with the Commission's pilot program established in Case No. 10-834-EL-POR

Completed applications requesting the cash rebate reasonable arrangement option (Option 1) in lieu of an exemption from the electric utility's energy efficiency and demand reduction (EEDR) rider will be automatically approved on the sixty-first calendar day after filing, unless the Commission, or an attorney examiner, suspends or denies the application prior to that time. Completed applications requesting the exemption from the EEDR rider (Option 2) will also qualify for the 60-day automatic approval so long as the exemption period does not exceed 24 months. Rider exemptions for periods of more than 24 months will be reviewed by the Commission Staff and are only approved up the issuance of a Commission order.

Complete a separate application for each customer program. Projects undertaken by a customer as a single program at a single location or at various locations within the same service territory should be submitted together as a single program filing, when possible. Check all boxes that are applicable to your program. For each box checked, be sure to complete all subparts of the question, and provide all requested additional information. Submittal of incomplete applications may result in a suspension of the automatic approval process or denial of the application.

Any confidential or trade secret information may be submitted to Staff on disc or via email at ee-pdr@puc.state.oh.us.

Section 1: Mercantile Customer Information

Name: **Amylin Ohio, LLC**

Principal address: **9360 Towne Centre Drive San Diego, California 92121-3057**

Address of facility for which this energy efficiency program applies:

8814 Trade Port Drive Westchester, Ohio 45071

Name and telephone number for responses to questions:

Grady Reid Jr, 513-287-1038

Electricity use by the customer (check the box(es) that apply):

- ✓ **The customer uses more than seven hundred thousand kilowatt hours per year at the above facility**. (**Refer to Appendix A**.)

Section 2: Application Information

A) The customer is filing this application (choose which applies):

- □ Individually, without electric utility participation.
- ✓ **Jointly with the electric utility.**

B) The electric utility is: **Duke Energy**

C) The customer is offering to commit (check any that apply):

- □ Energy savings from the customer's energy efficiency program. (Complete Sections 3, 5, 6, and 7.)
- □ Capacity savings from the customer's demand response/demand reduction program. (Complete Sections 4, 5, 6, and 7.)
- ✓ **Both the energy savings and the capacity savings from the customer's energy efficiency program. (Complete all sections of the Application.)**

Section 3: Energy Efficiency Programs

A) The customer's energy efficiency program involves (check those that apply):

□ Early replacement of fully functioning equipment with new equipment. (Provide the date on which the customer replaced fully functioning equipment, and the date on which the customer would have replaced such equipment if it had not been replaced early. Please include a brief explanation for how the customer determined this future replacement date (or, if not known, please explain why this is not known)).

□ Installation of new equipment to replace equipment that needed to be replaced The customer installed new equipment on the following date(s):

□ Installation of new equipment for new construction or facility expansion. The customer installed new equipment on the following date(s): _____.

✓ **Behavioral or operational improvement.**

B) Energy savings achieved/to be achieved by the energy efficiency program:

1) If you checked the box indicating that the project involves the early replacement of fully functioning equipment replaced with new equipment, then calculate the annual savings [(kWh used by the original equipment) – (kWh used by new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: _____kWh

2) If you checked the box indicating that the customer installed new equipment to replace equipment that needed to be replaced, then calculate the annual savings [(kWh used by less efficient new equipment) – (kWh used by the higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: _____kWh

Please describe any less efficient new equipment that was rejected in favor of the more efficient new equipment.

3) If you checked the box indicating that the project involves equipment for new construction or facility expansion, then calculate the annual savings [(kWh used by less efficient new equipment) – (kWh used by higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: ____kWh

Please describe the less efficient new equipment that was rejected in favor of the more efficient new equipment.

4) If you checked the box indicating that the project involves behavioral or operational improvements, provide a description of how the annual savings were determined. **Chiller tune-ups - preventative maintenance performed resulting in energy savings.**

Section 4: Demand Reduction/Demand Response Programs

A) The customer's program involves (check the one that applies):

- ✓ **Coincident peak-demand savings from the customer's energy efficiency program.**
- □ Actual peak-demand reduction. (Attach a description and documentation of the peak-demand reduction.)
- □ Potential peak-demand reduction (check the one that applies):
  - □ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a tariff of a regional transmission organization (RTO) approved by the Federal Energy Regulatory Commission.
  - □ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a program that is equivalent to an RTO program, which has been approved by the Public Utilities Commission of Ohio.

B) On what date did the customer initiate its demand reduction program?

August 2010, May 2011, March 2012 and June 2012

C) What is the peak demand reduction achieved or capable of being achieved (show calculations through which this was determined):

293.2 KW (See Attachment 1 - Appendix 2)

Section 5: Request for Cash Rebate Reasonable Arrangement (Option 1) or Exemption from Rider (Option 2)

Under this section, check the box that applies and fill in all blanks relating to that choice.

Note: If Option 2 is selected, the application will not qualify for the 60-day automatic approval. All applications, however, will be considered on a timely basis by the Commission.

A) The customer is applying for:

✓ **Option 1: A cash rebate reasonable arrangement.**

OR

□ Option 2: An exemption from the energy efficiency cost recovery mechanism implemented by the electric utility.

OR

□ Commitment payment

B) The value of the option that the customer is seeking is:

Option 1: A cash rebate reasonable arrangement, which is the lesser of (show both amounts):

✓ A cash rebate of **$29,320.00 (See Attachment 1 - Appendix 3).**

Option 2: An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider.

□ An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for ____ months (not to exceed 24 months). (Attach calculations showing how this time period was determined.)

OR

□ A commitment payment valued at no more than $_____. (Attach documentation and calculations showing how this payment amount was determined.)

OR

□ Ongoing exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for an initial period of 24 months because this program is part of the customer's ongoing efficiency program. (Attach documentation that establishes the ongoing nature of the program.) In order to continue the exemption beyond the initial 24 month period, the customer will need to provide a future application establishing additional energy savings and the continuance of the organization's energy efficiency program.)

Section 6: Cost Effectiveness

The program is cost effective because it has a benefit/cost ratio greater than 1 using the (choose which applies):

□ Total Resource Cost (TRC) Test. The calculated TRC value is: _____ (Continue to Subsection 1, then skip Subsection 2)

✓ Utility Cost Test (UCT). The calculated UCT value is **2.21 (See Attachment 1 - Appendix 4)**

Subsection 1: TRC Test Used (please fill in all blanks).

The TRC value of the program is calculated by dividing the value of our avoided supply costs (generation capacity, energy, and any transmission or distribution) by the sum of our program overhead and installation costs and any incremental measure costs paid by either the customer or the electric utility.

The electric utility's avoided supply costs were _____.

Our program costs were _____.

The incremental measure costs were _____.

Subsection 2: UCT Used (please fill in all blanks).

We calculated the UCT value of our program by dividing the value of our avoided supply costs (capacity and energy) by the costs to our electric utility (including administrative costs and incentives paid or rider exemption costs) to obtain our commitment.

Our avoided supply costs were **$102,620 (See Attachment 1 - Appendix 5).**

The utility's program costs were **$17,885(See Attachment 1 - Appendix 6).**

The utility's incentive costs/rebate costs were **$29,320 (See Attachment 1 - Appendix 3)**.

Section 7: Additional Information

Please attach the following supporting documentation to this application:

Narrative description of the program including, but not limited to, make, model, and year of any installed and replaced equipment.

A copy of the formal declaration or agreement that commits the program or measure to the electric utility, including:

1) any confidentiality requirements associated with the agreement;
2) a description of any consequences of noncompliance with the terms of the commitment;
3) a description of coordination requirements between the customer and the electric utility with regard to peak demand reduction;
4) permission by the customer to the electric utility and Commission staff and consultants to measure and verify energy savings and/or peak-demand reductions resulting from your program; and,
5) a commitment by the customer to provide an annual report on your energy savings and electric utility peak-demand reductions achieved.

Refer to Offer Letter following this application

A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results. Additionally, identify and explain all deviations from any program measurement and verification guidelines that may be published by the Commission.

DUKE ENERGY
Mercantile Self Direct Program
139 East Fourth Street
Cincinnati, OH 45202
513 629 5572 fax

November 7, 2012

Ms. Theresa Kroener
Amylin Ohio LLC
9360 Towne Centre Drive – Accounts Payable
San Diego, California 92121-3057

Subject: Your Application for a Duke Energy Mercantile Self-Direct Rebate

Dear Ms. Kroener:

Thank you for your Duke Energy Mercantile Self Direct rebate application. As noted in the Energy Conservation Measure (ECM) chart on page two, a total rebate of $29,320.00 has been proposed for your chiller tune-up projects completed in the 2010 - 2012 calendar years. **All Self Direct Rebates are contingent upon approval by the Public Utilities Commission of Ohio (PUCO).**

At your earliest convenience, please indicate if you accept this rebate by

- providing your signature on page two
- completing the PUCO-required affidavit on page three.

Please return the documents to my attention via fax at 513-629-5572 or e-mail to SelfDirect@Duke-Energy.com. Upon receipt, Duke Energy will submit the necessary documentation to PUCO. Following PUCO's approval, Duke Energy will remit payment.

At Duke Energy, we value your business and look forward to working with you on this and future energy efficiency projects. We hope you will consider our Smart $aver® incentives, when applicable. Please contact me if you have any questions.

Sincerely,

Grady Reid, Jr
Product Manager
Mercantile Self Direct Rebates

cc: Bob Bandenburg, Duke Energy
Rob Jung, WECC
Randy Weekly, Johnson Controls

Please indicate your response to this rebate offer within 30 days of receipt.

☒ Rebate is accepted. ☐ Rebate is declined.

By accepting this rebate, Amylin Ohio LLC affirms its intention to commit and integrate the energy efficiency projects listed on the following pages into Duke Energy's peak demand reduction, demand response and/or energy efficiency programs.

Additionally, Amylin Ohio LLC also agrees to serve as joint applicant in any future filings necessary to secure approval of this arrangement as required by PUCO and to comply with any information and reporting requirements imposed by rule or as part of that approval.

Finally, Amylin Ohio LLC affirms that all application information submitted to Duke Energy pursuant to this rebate offer is true and accurate. Information in question would include, but not be limited to, project scope, equipment specifications, equipment operational details, project costs, project completion dates, and the quantity of energy conservation measures installed.

If rebate is accepted, will you use the monies to fund future energy efficiency and/or demand reduction projects?

☐ YES ☒ NO

If rebate is declined, please indicate reason (optional):

Customer Signature	Robert MacKay	04 Dec 2012
	Printed Name	Date

Proposed Rebate Amounts

Measure ID	Energy Conservation Measure (ECM)	Proposed Rebate Amount
ECM-1	Water Chilled Tune-Up – Year 2010 (Qty – 1)	$9860.00
ECM-2	Water Chilled Tune-Up – Year 2011 (Qty – 1)	$9600.00
ECM-3	Water Chilled Tune-Up – Year 2012 (Qty – 1)	$9600.00
ECM-4	Water Chilled Tune-Up – Year 2012 (Qty – 1)	$260.00
Total		$29320.00

Ohio | Public Utilities Commission

Application to Commit Energy Efficiency/Peak Demand Reduction Programs (Mercantile Customers Only)

Case No.: ____-____-EL-EEC

State of Ohio :

Robert MacKay, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

   Amylin Ohio LLC

   [insert customer or EDU company name and any applicable name(s) doing business as]

2. I have personally examined all the information contained in the foregoing application, including any exhibits and attachments. Based upon my examination and inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete.

3. I am aware of fines and penalties which may be imposed under Ohio Revised Code Sections 2921.11, 2921.31, 4903.02, 4903.03, and 4903.99 for submitting false information.

R MacKay General Manager.
Signature of Affiant & Title

Sworn and subscribed before me this 4th day of December, 2012 Month/Year

Cassandra G. Willett
Signature of official administering oath

Cassandra G. Willett
Sr. Assistant, Plant Operations
Print Name and Title

My commission expires on August 14, 2016

NOTARY PUBLIC STATE OF OHIO

CASSANDRA G. WILLETT
Notary Public, State of Ohio
My Commission Expires Aug. 14, 2016

Attachment 1 – Amylin Ohio LLC

Appendix 1 – Electric History

04702214 04		
AMYLIN OHIO LLC		
8814 TRADE PORT DR		
HAMILTON, OH 45011		
Date	Days	Actual KWH
10/17/2012	58	2,394,790
9/18/2012	64	3,152,190
8/17/2012	58	3,052,630
7/19/2012	30	3,346,080
6/19/2012	32	3,113,520
5/18/2012	29	2,541,820
4/19/2012	30	2,461,350
3/20/2012	29	2,426,410
2/20/2012	31	2,452,220
2/1/2012	64	2,484,600
Total		**24,941,010**

Appendix 2 – Annual kWh losses and annual KW losses

Measure	**Annual kWh Gross with losses**	**Upload Amount**	**TOTAL Annual kWh losses**	**KW Per Measure**	**Total KW Savings**
Water Cooled Chiller Tune Up	64.46	14660	944,984	0.02	293.2

Appendix 3 – Cash Rebate

Measure	**Amount**
Water Cooled Chiller Tune Up	$29,320

Appendix 4 – Utility Cost Test

Measure	**UCT**
Water Cooled Chiller Tune Up	2.21

Appendix 5 – Avoided Supply Costs

Measure	T&D	Production	Capacity	Quantity	Total Avoided Costs
Water Cooled Chiller Tune Up	$1.00	$4.00	$2.00	14660	$102,620

Appendix 6 – Utility Program Costs

Measure	Qty	Admin Costs	Total Costs
Water Cooled Chiller Tune Up	14660	$1.22	$17,885

Year 2010

Ohio Mercantile Self Direct Program

Application Guide & Cover Sheet

Questions? Call 1-866-380-9580 or visit www.duke-energy.com.

Email this form along with completed Mercantile Self Direct Prescriptive or Custom applications, proof of payment, energy savings calculations and spec sheets to SelfDirect@Duke-Energy.com. You may also fax to 1-513-629-5572.

Mercantile customers, defined as using at least 700,000 kWh annually are eligible for the Mercantile Self Direct program. Please indicate mercantile qualification:

- ☒ a single Duke Energy Ohio account
- ☐ multiple accounts in Ohio (energy usage with other utilities may be counted toward the total)

Please list Duke Energy account numbers below (attach listing of multiple accounts and/or billing history for other utilities as required):

Account Number	Annual Usage	Account Number	Annual Usage
0470-2214-04-7	30,000,000 kwh		

Self Direct rebates are available for completed Custom projects that have not previously received a Duke Energy Smart $aver® Custom Incentive. Self Direct incentives are applicable to Prescriptive measures that were installed more than 90 days prior to submission to Duke Energy and have not previously received a Duke Energy Prescriptive rebate.

Self Direct Program requirements dictate that certain projects that may be Prescriptive in nature under the Smart $aver program must be evaluated using the Custom process. Use the table on page two as a guide to determine which Self Direct program fits your project(s). Apply for Self Direct projects using the appropriate application forms in conjunction with this cover sheet. Where Mercantile Self Direct Prescriptive applications are listed, please refer to the measure list on that application. If your measure is not listed, you may be eligible for a Self Direct Custom rebate. Self Direct Custom applications, like Smart $aver Custom applications, should include detailed analysis of pre-project and post-project energy usage and project costs. Please indicate which type of rebate applications are included in the table provided on page two.

Please check each box to indicate completion of the following program requirements:

☒ All sections of appropriate application(s) are completed	☒ Proof of payment.*	☒ Manufacturer's Spec sheets	☐ Energy model/calculations and detailed inputs for Custom applications

* If a single payment record is intended to demonstrate the costs of both Prescriptive & Custom projects, please include an additional document with an estimated breakout of costs for each Prescriptive and Custom energy conservation measure.

Application Type	Replaced equipment at end of lifetime or because equipment failed**	Replaced fully operational equipment to improve efficiency***	New Construction
Lighting	MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐	MSD Prescriptive Lighting ☐	MSD Prescriptive Lighting ☐
		MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐	MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐
Heating & Cooling	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Heating & Cooling ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Window Films, Programmable Thermostats, & Guest Room Energy Management Systems	MSD Custom Part 1 ☐ MSD Custom General and/or EMS Worksheet(s) ☐	MSD Prescriptive Heating & Cooling ☐	MSD Custom Part 1 ☐ MSD Custom General and/or EMS Worksheet(s) ☐
Chillers & Thermal Storage	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Chillers & Thermal Storage ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Chiller Tune-ups	MSD Prescriptive Chiller Tune-ups ☐	MSD Prescriptive Chiller Tune-ups ☐	MSD Prescriptive Chiller Tune-ups ☐
Motors & Pumps	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Motors, Pumps & Drives ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
VFDs	Not Applicable	MSD Prescriptive Motors, Pumps & Drives ☐	MSD Custom Part 1 ☐ MSD Custom VFD Worksheet ☐
		MSD Custom Part 1 ☐ MSD Custom VFD Worksheet ☐	
Food Service	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Food Service ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Air Compressors	MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐	MSD Prescriptive Process ☐
			MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐
Process	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Process ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
		MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	
Energy Management Systems	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐
Behavioral* & No/Low Cost**	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐		

** Under the Self Direct program, failed equipment and equipment at the end of its useful life are evaluated differently than early replacement of fully functioning equipment. **All equipment replacements due to failure or old age will be evaluated via the Custom program.**

*** Please ensure that you include the age of the replaced equipment for measures classified as "Early Replacement" in your application as well as the estimated date that you would have otherwise replaced the existing equipment if you had not chosen a more energy efficient option.

**** Behavioral energy efficiency and demand reduction projects must be both measurable and verifiable. Provide justification with your application.

MERCANTILE SELF DIRECT Ohio Chiller Tune-up Service Application

Questions? Call 1-866-380-9580 or visit www.duke-energy.com.
Email the complete, signed application with all required documents to SelfDirect@duke-energy.com or fax to 513-629-5572.

Is this application: ☒ **NEW** (original) or ☐ **REVISED** (changes made to original application)

Building Type – Required (check one)		
☐ Data Centers	☐ Full Service Restaurant	☐ Office
☐ Education/K-12	☐ Healthcare	☐ Public Assembly
☐ Education Other	☒ Industrial	☐ Public Order/Safety
☐ Elder Care/Nursing Home	☐ Lodging	☐ Religious Worship/Church
☐ Food Sales/Grocery	☐ Retail (Small Box)	☐ Service
☐ Fast Food Restaurant	☐ Retail (Big Box)	☐ Warehouse
☐ Other:		
How did you hear about the program? (check one)		
☒ Duke Energy Representative	☐ Web Site	☐ Radio
☐ Contractor / Vendor	☐ Other _____	

Please check each box to indicate completion of the following program requirements:

☒ All sections of application	☒ Invoice with make, model number, quantity and equipment manufacturer	☒ Tax ID number for payee	☐ Customer/vendor agree to Terms and Conditions

Customer Information					
Customer/Business	**Amylin Ohio LLC**	Contact		**Theresa Kroener**	
Phone	**513-645-9950**	**Account Number**		**0470-2214-04-7**	
Street Address (Where incentive should be mailed)		**Accounts Payable / 9360 Towne Centre Dr**			
City	**San Diego**	State	**Ca**	Zip Code	**92121-3057**
Installation Street Address	**8814 Trade Port Drive**				
City	**West Chester**	State	**Oh**	Zip Code	**45071**
E-mail Address	**theresa.kroener@amylin.com**				

Failure to provide the account number associated with the location where the installation took place will result in rejection of the application.

Vendor Information					
Vendor	**Johnson Controls**	Contact		**Randy Weekly**	
Phone	**(866)236-1941**	Fax		**513-489-7516**	
Street Address	**7863 Palace Dr**				
City	**Cincinnati**	State	**Ohio**	Zip Code	**45249**
E-mail Address	**randy.p.weekely@JCI.com**				

If Duke Energy has questions about this application, who should we contact? ☒ **Customer** ☐ **Vendor**

Payment Information		
Who should receive incentive payment?	☒ Customer	☐ Vendor (Customer must sign below)
I hereby authorize payment of incentive directly to the vendor:	Customer Signature (written signature)	
	Date	
Provide Tax ID Number for Payee	Customer Tax ID #	**76-0808919**
	Vendor Tax ID #	**N/A**

Terms and Conditions			
I have read and hereby agree to the Terms & Conditions and Program Requirements.			
Customer Signature		Vendor Signature	
Date	**05Oct12**	Date	
Title	**Sr. Facilities Engineer**	Title	

Incentives are subject to change and may be discontinued at the sole discretion of Duke Energy. Equipment must be installed and operable to be eligible for incentives. As Federal Energy Policy Law changes, equipment efficiency requirements are subject to change.

Air Cooled and Water Cooled Chiller Tune-ups						
Manufacturer and Model #	# of Units	Tons Per unit*	Total Project Cost	Current Service Date	Previous Service Date	Total Incentive
York YKKKKLH9-CYFS	6	800	See below.	8/6 - 16/2010	10/2009	$9,600.00
York YCWS0240SB46	1	130		8/17/10	9/8/2009	$260.00
*Provide manufacturer's spec sheet documenting the size of the unit						

To Calculate your tune-up incentive*:	
A. Add up equipment capacity of all units serviced (in tons) and multiply by $2/ton =	$9,860.00
B. Cost of service = $20,712.00 x 50% of total service cost =	$10,356.00
Total Incentive (lesser amount of row A or row B)=	$9,860.00
*Incentives cannot exceed 50% of total service invoice (**external** labor and equipment).	

Service Requirements:

1. **This incentive is available only once per unit in a 12 month period.**
2. An individual chiller is considered one unit.
3. Copy of paid invoice must be included with this application
4. Self serviced (internal) labor should not be included as part of the total service cost. Only external labor will be considered as part of the total service invoice.
5. Cooling service must include the following normal maintenance items **(please check if completed):**

☐ Air cooled condenser coil cleaning	☒ Compressor amp draw	☒ Low Pressure controls
☒ System Pressure check and adjust	☒ Supply motor amp draw	☒ High Pressure controls
☒ Filter inspect or replace	☐ Condenser fan(s) amp draw	☒ Crankcase heater operation
☐ Belt inspect or replace	☒ Liquid line temperature	☒ Water cooled chiller condenser tube cleaning
☐ Contactors condition	☒ Suction pressure & temperature	☐ Water cooled chiller evaporator tube cleaning
☐ Evaporator condition	☒ Oil level & pressure	

Incentive Eligibility

- Incentives are only available to customers on Duke Energy Ohio non-residential rate.
- Duke Energy Customers who purchase electric generation from an alternative supplier are eligible to participate.
- Incentive will not be paid until eligible equipment has been installed, is available to operate, and verification has been completed by Duke Energy staff as noted in the Term & Conditions stated below.
- Duke Energy reserves the right to revise incentive levels and/or qualifying efficiency levels at anytime.
- Customer may assign the incentive to the vendor who installed/supplied the equipment. The customer's signature is required in the appropriate places on this form to assign the incentive to the vendor. Customer agrees that such an action constitutes an irrevocable assignment of the incentive. This assigned incentive must reduce the purchase price paid for the equipment by an equivalent amount.
- Any equipment which, either separately or as part of a project, has or will receive an incentive from any other Duke Energy program
- In no case will Duke Energy pay an incentive above the actual cost of the service.
- Incentive recipient assumes all responsibilities for any tax consequences resulting from Duke Energy incentive payment.
- To qualify for Duke Energy incentives, applicants who provide their social security number as their federal tax identification number for tax purposes must sign and return the "Customer consent to release personal information" form ("Consent Form") along with the application. Incentive applications are processed by a 3rd party vendor. The 3rd party vendor is responsible for mailing the 1099 form at the end of the calendar year for tax filing. Duke Energy and the 3rd party vendor have signed a confidentiality agreement to protect your personal information. If your social security number is your federal tax ID number and you elect not to sign the Consent Form, please do not send Duke Energy the application, as you will not be qualified to participate in the incentive program.

Terms and Conditions

I certify that this premise is served by Duke Energy (or an affiliate of Duke Energy), that the information provided herein is accurate and complete, and that I have purchased and installed the high efficiency equipment (indicated herein) for the business facility listed herein and not for resale. Attached is an itemized invoice for the indicated installed equipment. In understand that the proposed incentive payment from Duke Energy is subject to change based on verification and Duke Energy approval. I agree to Duke Energy verification of both the sales transaction and equipment installation which may include a site inspection from a Duke Energy representative or Duke Energy agent. I understand that I am not allowed to receive more than one incentive from Duke Energy on any piece of equipment. I also understand that my participation in the program may be taxable and that my company is solely responsible for paying all such taxes. I hereby agree to indemnify, hold harmless and release Duke Energy and it's affiliates from any actions or claims in regards to the installation, operation and disposal of equipment (and related materials) covered herein including liability from an incidental or consequential damages. Duke Energy does not endorse any particular manufacturer, product or system design within these programs; does not expressly or implicitly warrant the performance of installed equipment (Contact your contractor for details regarding equipment warranties), and is not liable for any damage caused by the installation of the equipment or for any damage cause by the malfunction of the installed equipment.

Incentive Application Instructions

IMPORTANT NOTICE
Delays in processing incentive payments will occur if required documentation is not included with completed application(s).

1. Contact Duke Energy toll free at 866-380-9580 to confirm customer eligibility. Applications are available for download at www.duke-energy.com.

2. Review program and equipment requirements on the incentive application. (Page7)

3. Purchase and install eligible energy-efficient equipment.

4. Complete and submit application for equipment that was installed after 1/1/2008.

5. **The following items must be included to verify projects. If they are not included, it will delay payment of incentive.**

   A. Itemized invoice for all equipment installed to include:
      a. Equipment cost
      b. Quantity per equipment type installed
      c. Model # for each equipment type
      d. Manufacturer's data sheet for each equipment model #.

   B. Make sure the account number provided on the cover page (customer information section) is associated with the location where the equipment was installed. If the account # does not match the address where the equipment was installed, the application will be rejected as ineligible.

   C. Provide required tax ID# for payee.

   D. Customer must sign and date the application after reviewing the Terms and Conditions. If customer wishes to **assign payment of the incentive directly to the vendor**, the customer should circle the appropriate payee in the Payment Information section of the application and sign their name to authorize payment.

6. Duke Energy may require site verification of projects that have been self-installed, prior to payment of incentive.

8. Email the complete, signed application with all required documents to SelfDirect@duke-energy.com or fax to 513-629-5572.

8. A percentage of equipment installations will be site verified for quality assurance purposes. Once selected, a Duke Energy representative will contact the customer to arrange for the inspection. All incentive payments related to the project will be withheld until site verification is complete. There is no charge to the customer for these inspections.

Mercantile Self Direct Incentive Program
Requirements for Vendor Participation

Program Overview

- Duke Energy offers it's eligible non-residential customers the opportunity to increase profitability through energy cost savings and contribute to a cleaner environment by participating in our Mercantile Self Direct Incentive Program.

- Under the Duke Energy Mercantile Self Direct Incentive Program, Vendor is defined as any third party who:

  - Promotes the sale and installation of the high efficiency equipment for the customer. The Vendor will ensure that the eligible equipment is installed and operating before submitting the application or assisting the customer in completing the application.

  - Is responsible for the product sale only and is not required to ensure installation of the eligible equipment.

- All license requirements, if any, are solely the Vendor's responsibility. Participating Vendors include equipment contractors, equipment Vendors, equipment manufacturers and distributors, energy service companies, etc. The typical Vendor role is to contact/solicit eligible customers building new or retrofitting existing facilities and encourage the installation of the energy-efficient equipment offered in Duke Energy's program.

- Incentives are paid directly to customers unless the customer assigns the incentive to the Vendor. The assigned incentive must reduce the purchase price paid for the equipment by an equivalent amount. Incentives are taxable to the entity who receives the rebate check. Rebates greater than $600 will be reported to the IRS unless documentation of tax exempt status is provided.

- Vendors can sign up to be on Duke Energy's Web site as a participating Vendor and be added to Duke Energy's e-mail distribution by emailing the Vendor Participation Agreement (VPA) to SelfDirect@duke-energy.com or faxing to **513-629-5572.**

Guidelines for Vendor Activities

- Vendors shall sign and return the attached VPA to Duke Energy prior to soliciting customer participation or when submitting an application. Rebate payments will not be released to a Vendor unless a signed VPA is on file.

- Vendors shall not misrepresent the nature of their role in the program. In particular, Vendors shall not state or imply to customers, or any persons, that the Vendor is employed by or working on Duke Energy's behalf.

- Vendors may not represent to customers that Duke Energy endorses their specific products or services. Duke Energy does not endorse specific products, services, or companies – only energy-efficient technologies.

- Vendors may advise customers of their option to have Duke Energy make their rebate check(s) payable to the Vendor if the customer's rebate amount is being deducted from the total sale price in advance. The customer must complete and sign the Payment Release Authorization section of the Mercantile Self Direct Incentive Program Application.

- Vendors may use the words "Duke Energy's Mercantile Self Direct Incentive Program" in promotional materials or advertisements. Vendors may use the name Duke Energy in a text format to describe the Mercantile Self Direct Incentive Program, but are not permitted to use Duke Energy's logos.

- For Vendors who properly install the qualifying equipment, the equipment shall be installed and operating prior to an application being submitted. A percentage of each Vendor's installations will be subject to inspection by Duke Energy for verifying that the equipment is installed and operating. Vendors demonstrating high failure rates (based on a statistically significant sample) will have 100% of subsequent jobs inspected or may have their participation in the Mercantile Self Direct Incentive Program revoked by Duke Energy in it's sole discretion.

- Vendors shall provide customers with applicable equipment warranty information for all measures installed. Vendors shall provide the required documentation for customers to apply for the rebate (invoices with model numbers and quantities, specification sheets for installed equipment, etc.) and assist customers in filling out the application.

- Vendors shall comply with all applicable local, state, and federal laws and codes when performing installation and related functions.

- Duke Energy reserves the right to revoke a Vendor's participation in Mercantile Self Direct Incentive Program if, in Duke Energy's sole judgment, the Vendor fails to comply with the program's guidelines and requirements.

- Mercantile Self Direct Incentive Program offerings may be modified or terminated without prior notice. Check Duke Energy's Web site for current program status.

For more information, call **1-866.380.9580** or visit **www.duke-energy.com.**

Mercantile Self Direct Rebate Program

Technology	Responsible for sales and **not** installs*	Responsible for sales **and** Installation*	Technology	Responsible for sales and **not** installs*	Responsible for sales **and** Installation*
Lighting	☐	☐	Thermal Storage	☐	☐
Heating Ventilation & Cooling	☐	☐	Pumps/Motors/VFD's	☐	☐
Food Service	☐	☐	Chillers	☐	☐
Water Heating	☐	☐	Refrigeration	☐	☐
Process Equipment (air compressors, injection molding, etc.)	☐	☐	Window Film	☐	☐

* Check all that apply

Vendors who wish to be listed as a Mercantile Self Direct Incentive Program participating Vendor shall complete this form. A signed copy of this form must be on file at Duke Energy in order for the Vendor to receive incentive payments. Fax form to **513-629-5572** or email to SelfDirect@duke-energy.com.

I have read and understand the Mercantile Self Direct Incentive Program Requirements for Vendor Participation, and I agree to comply with all requirements set forth therein. By signing this agreement, I agree to provide my customers with information and documentation that is true and accurate to the best of my knowledge. I hereby represent and warrant that the Tax ID and Vendor Tax Status provided below are true and accurate. I agree that any confidential information concerning my customer, including but not limited to Duke Energy service account information, will be used for the sole purpose of facilitating the customer's participation in the Mercantile Self Direct Incentive Program. Further, I understand that I am responsible for making sure everyone working for me understands the requirements prior to soliciting customer participation.

Vendor Federal Tax ID Number	

To qualify for Duke Energy incentives, applicants who provide their social security number as their federal tax identification number for tax purposes must sign and return the "Customer consent to release personal information" form ("Consent Form") along with the application. Incentive applications are processed by a third-party vendor. The third-party vendor is responsible for mailing the 1099 form at the end of the calendar year for tax filing. Duke Energy and the third-party vendor have signed confidentiality agreement to protect your personal information. If your social security number is your federal tax ID number and you elect not to sign the Consent Form, please do not send Duke Energy the application, As you will not be qualified to participate in the incentive program.

Vendor Tax Status	☐ Corporation	☐ Individual/Sole Proprietor	☐ Partnership	☐ Other

Contact me via	☐ Phone	☐ E-Mail	☐ Mail	

Company Name	
Mailing Address	
City, State, Zip	
Phone/Fax	
Primary E-mail Address	
Secondary E-mail Address	
Vendor Signature	
Title	
Print Name	
Date	

For more information, call 1-866-380-9580 or visit www.duke-energy.com.

Year 2011

Ohio Mercantile Self Direct Program

Application Guide & Cover Sheet

Questions? Call 1-866-380-9580 or visit www.duke-energy.com.

Email this form along with completed Mercantile Self Direct Prescriptive or Custom applications, proof of payment, energy savings calculations and spec sheets to SelfDirect@Duke-Energy.com. You may also fax to 1-513-629-5572.

Mercantile customers, defined as using at least 700,000 kWh annually are eligible for the Mercantile Self Direct program. Please indicate mercantile qualification:

- ☒ a single Duke Energy Ohio account
- ☐ multiple accounts in Ohio (energy usage with other utilities may be counted toward the total)

Please list Duke Energy account numbers below (attach listing of multiple accounts and/or billing history for other utilities as required):

Account Number	Annual Usage	Account Number	Annual Usage
0470-2214-04-7	30,000,000 kwh		

Self Direct rebates are available for completed Custom projects that have not previously received a Duke Energy Smart $aver® Custom Incentive. Self Direct incentives are applicable to Prescriptive measures that were installed more than 90 days prior to submission to Duke Energy and have not previously received a Duke Energy Prescriptive rebate.

Self Direct Program requirements dictate that certain projects that may be Prescriptive in nature under the Smart $aver program must be evaluated using the Custom process. Use the table on page two as a guide to determine which Self Direct program fits your project(s). Apply for Self Direct projects using the appropriate application forms in conjunction with this cover sheet. Where Mercantile Self Direct Prescriptive applications are listed, please refer to the measure list on that application. If your measure is not listed, you may be eligible for a Self Direct Custom rebate. Self Direct Custom applications, like Smart $aver Custom applications, should include detailed analysis of pre-project and post-project energy usage and project costs. Please indicate which type of rebate applications are included in the table provided on page two.

Please check each box to indicate completion of the following program requirements:

☒ All sections of appropriate application(s) are completed	☒ Proof of payment.*	☒ Manufacturer's Spec sheets	☐ Energy model/calculations and detailed inputs for Custom applications

* If a single payment record is intended to demonstrate the costs of both Prescriptive & Custom projects, please include an additional document with an estimated breakout of costs for each Prescriptive and Custom energy conservation measure.

Application Type	Replaced equipment at end of lifetime or because equipment failed**	Replaced fully operational equipment to improve efficiency***	New Construction
Lighting	MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐	MSD Prescriptive Lighting ☐	MSD Prescriptive Lighting ☐
		MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐	MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐
Heating & Cooling	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Heating & Cooling ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Window Films, Programmable Thermostats, & Guest Room Energy Management Systems	MSD Custom Part 1 ☐ MSD Custom General and/or EMS Worksheet(s) ☐	MSD Prescriptive Heating & Cooling ☐	MSD Custom Part 1 ☐ MSD Custom General and/or EMS Worksheet(s) ☐
Chillers & Thermal Storage	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Chillers & Thermal Storage ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Chiller Tune-ups	MSD Prescriptive Chiller Tune-ups ☐	MSD Prescriptive Chiller Tune-ups ☐	MSD Prescriptive Chiller Tune-ups ☐
Motors & Pumps	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Motors, Pumps & Drives ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
VFDs	Not Applicable	MSD Prescriptive Motors, Pumps & Drives ☐	MSD Custom Part 1 ☐ MSD Custom VFD Worksheet ☐
		MSD Custom Part 1 ☐ MSD Custom VFD Worksheet ☐	
Food Service	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Food Service ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Air Compressors	MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐	MSD Prescriptive Process ☐
			MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐
Process	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Process ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
		MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	
Energy Management Systems	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐
Behavioral* & No/Low Cost**	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐		

** Under the Self Direct program, failed equipment and equipment at the end of its useful life are evaluated differently than early replacement of fully functioning equipment. **All equipment replacements due to failure or old age will be evaluated via the Custom program.**

*** Please ensure that you include the age of the replaced equipment for measures classified as "Early Replacement" in your application as well as the estimated date that you would have otherwise replaced the existing equipment if you had not chosen a more energy efficient option.

**** Behavioral energy efficiency and demand reduction projects must be both measurable and verifiable. Provide justification with your application.

MERCANTILE SELF DIRECT Ohio Chiller Tune-up Service Application

Questions? Call 1-866-380-9580 or visit www.duke-energy.com.
Email the complete, signed application with all required documents to SelfDirect@duke-energy.com or fax to 513-629-5572.

Is this application: ☒ **NEW** (original) or ☐ **REVISED** (changes made to original application)

Building Type – Required (check one)		
☐ Data Centers	☐ Full Service Restaurant	☐ Office
☐ Education/K-12	☐ Healthcare	☐ Public Assembly
☐ Education Other	☒ Industrial	☐ Public Order/Safety
☐ Elder Care/Nursing Home	☐ Lodging	☐ Religious Worship/Church
☐ Food Sales/Grocery	☐ Retail (Small Box)	☐ Service
☐ Fast Food Restaurant	☐ Retail (Big Box)	☐ Warehouse
☐ Other:		
How did you hear about the program? (check one)		
☒ Duke Energy Representative	☐ Web Site	☐ Radio
☐ Contractor / Vendor	☐ Other _____	

Please check each box to indicate completion of the following program requirements:

☒ All sections of application	☒ Invoice with make, model number, quantity and equipment manufacturer	☒ Tax ID number for payee	☐ Customer/vendor agree to Terms and Conditions

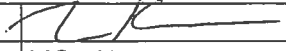
Customer Information					
Customer/Business	**Amylin Ohio LLC**	Contact		**Theresa Kroener**	
Phone	**513-645-9950**	**Account Number**		**0470-2214-04-7**	
Street Address (Where incentive should be mailed)		**Accounts Payable / 9360 Towne Centre Dr**			
City	**San Diego**	State	**Ca**	Zip Code	**92121-3057**
Installation Street Address	**8814 Trade Port Drive**				
City	**West Chester**	State	**Oh**	Zip Code	**45071**
E-mail Address	**theresa.kroener@amylin.com**				

Failure to provide the account number associated with the location where the installation took place will result in rejection of the application.

Vendor Information					
Vendor	**Johnson Controls**	Contact		**Randy Weekly**	
Phone	**(866)236-1941**	Fax		**513-489-7516**	
Street Address	**7863 Palace Dr**				
City	**Cincinnati**	State	**Ohio**	Zip Code	**45249**
E-mail Address	**randy.p.weekely@JCI.com**				

If Duke Energy has questions about this application, who should we contact? ☒ **Customer** ☐ **Vendor**

Payment Information		
Who should receive incentive payment?	☒ Customer	☐ Vendor (Customer must sign below)
I hereby authorize payment of incentive directly to the vendor:	Customer Signature (written signature)	
	Date	
Provide Tax ID Number for Payee	Customer Tax ID #	**76-0808919**
	Vendor Tax ID #	**N/A**

Terms and Conditions			
I have read and hereby agree to the Terms & Conditions and Program Requirements.			
Customer Signature		Vendor Signature	
Date	**04Oct12**	Date	
Title	**Sr. Facilities Engineer**	Title	

Incentives are subject to change and may be discontinued at the sole discretion of Duke Energy. Equipment must be installed and operable to be eligible for incentives. As Federal Energy Policy Law changes, equipment efficiency requirements are subject to change.

Air Cooled and Water Cooled Chiller Tune-ups						
Manufacturer and Model #	# of Units	Tons Per unit*	Total Project Cost	Current Service Date	Previous Service Date	Total Incentive
York YKKKKLH9-CYFS	6	800		5/3-10/2011	8/6-16/2010	$9,600.00
*Provide manufacturer's spec sheet documenting the size of the unit						

To Calculate your tune-up incentive*:	
A. Add up equipment capacity of all units serviced (in tons) and multiply by $2/ton =	$9,600.00
B. Cost of service = $19,376.00 x 50% of total service cost =	$9,688.00
Total Incentive (lesser amount of row A or row B)=	$9,600.00
*Incentives cannot exceed 50% of total service invoice (**external** labor and equipment).	

Service Requirements:

1. **This incentive is available only once per unit in a 12 month period.**
2. An individual chiller is considered one unit.
3. Copy of paid invoice must be included with this application
4. Self serviced (internal) labor should not be included as part of the total service cost. Only external labor will be considered as part of the total service invoice.
5. Cooling service must include the following normal maintenance items **(please check if completed):**

☐ Air cooled condenser coil cleaning	☒ Compressor amp draw	☒ Low Pressure controls
☒ System Pressure check and adjust	☒ Supply motor amp draw	☒ High Pressure controls
☒ Filter inspect or replace	☐ Condenser fan(s) amp draw	☒ Crankcase heater operation
☐ Belt inspect or replace	☒ Liquid line temperature	☒ Water cooled chiller condenser tube cleaning
☐ Contactors condition	☒ Suction pressure & temperature	☐ Water cooled chiller evaporator tube cleaning
☐ Evaporator condition	☒ Oil level & pressure	

Incentive Eligibility

- Incentives are only available to customers on Duke Energy Ohio non-residential rate.
- Duke Energy Customers who purchase electric generation from an alternative supplier are eligible to participate.
- Incentive will not be paid until eligible equipment has been installed, is available to operate, and verification has been completed by Duke Energy staff as noted in the Term & Conditions stated below.
- Duke Energy reserves the right to revise incentive levels and/or qualifying efficiency levels at anytime.
- Customer may assign the incentive to the vendor who installed/supplied the equipment. The customer's signature is required in the appropriate places on this form to assign the incentive to the vendor. Customer agrees that such an action constitutes an irrevocable assignment of the incentive. This assigned incentive must reduce the purchase price paid for the equipment by an equivalent amount.
- Any equipment which, either separately or as part of a project, has or will receive an incentive from any other Duke Energy program
- In no case will Duke Energy pay an incentive above the actual cost of the service.
- Incentive recipient assumes all responsibilities for any tax consequences resulting from Duke Energy incentive payment.
- To qualify for Duke Energy incentives, applicants who provide their social security number as their federal tax identification number for tax purposes must sign and return the "Customer consent to release personal information" form ("Consent Form") along with the application. Incentive applications are processed by a 3rd party vendor. The 3rd party vendor is responsible for mailing the 1099 form at the end of the calendar year for tax filing. Duke Energy and the 3rd party vendor have signed a confidentiality agreement to protect your personal information. If your social security number is your federal tax ID number and you elect not to sign the Consent Form, please do not send Duke Energy the application, as you will not be qualified to participate in the incentive program.

Terms and Conditions

I certify that this premise is served by Duke Energy (or an affiliate of Duke Energy), that the information provided herein is accurate and complete, and that I have purchased and installed the high efficiency equipment (indicated herein) for the business facility listed herein and not for resale. Attached is an itemized invoice for the indicated installed equipment. In understand that the proposed incentive payment from Duke Energy is subject to change based on verification and Duke Energy approval. I agree to Duke Energy verification of both the sales transaction and equipment installation which may include a site inspection from a Duke Energy representative or Duke Energy agent. I understand that I am not allowed to receive more than one incentive from Duke Energy on any piece of equipment. I also understand that my participation in the program may be taxable and that my company is solely responsible for paying all such taxes. I hereby agree to indemnify, hold harmless and release Duke Energy and it's affiliates from any actions or claims in regards to the installation, operation and disposal of equipment (and related materials) covered herein including liability from an incidental or consequential damages. Duke Energy does not endorse any particular manufacturer, product or system design within these programs; does not expressly or implicitly warrant the performance of installed equipment (Contact your contractor for details regarding equipment warranties), and is not liable for any damage caused by the installation of the equipment or for any damage cause by the malfunction of the installed equipment.

Incentive Application Instructions

IMPORTANT NOTICE
Delays in processing incentive payments will occur if required documentation is not included with completed application(s).

1. Contact Duke Energy toll free at 866-380-9580 to confirm customer eligibility. Applications are available for download at www.duke-energy.com.

2. Review program and equipment requirements on the incentive application. (Page7)

3. Purchase and install eligible energy-efficient equipment.

4. Complete and submit application for equipment that was installed after 1/1/2008.

5. **The following items must be included to verify projects. If they are not included, it will delay payment of incentive.**

   A. Itemized invoice for all equipment installed to include:
      a. Equipment cost
      b. Quantity per equipment type installed
      c. Model # for each equipment type
      d. Manufacturer's data sheet for each equipment model #.

   B. Make sure the account number provided on the cover page (customer information section) is associated with the location where the equipment was installed. If the account # does not match the address where the equipment was installed, the application will be rejected as ineligible.

   C. Provide required tax ID# for payee.

   D. Customer must sign and date the application after reviewing the Terms and Conditions. If customer wishes to **assign payment of the incentive directly to the vendor**, the customer should circle the appropriate payee in the Payment Information section of the application and sign their name to authorize payment.

6. Duke Energy may require site verification of projects that have been self-installed, prior to payment of incentive.

8. Email the complete, signed application with all required documents to SelfDirect@duke-energy.com or fax to 513-629-5572.

8. A percentage of equipment installations will be site verified for quality assurance purposes. Once selected, a Duke Energy representative will contact the customer to arrange for the inspection. All incentive payments related to the project will be withheld until site verification is complete. There is no charge to the customer for these inspections.

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Program Overview

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  - Promotes the sale and installation of the high efficiency equipment for the customer. The Vendor will ensure that the eligible equipment is installed and operating before submitting the application or assisting the customer in completing the application.
  - Is responsible for the product sale only and is not required to ensure installation of the eligible equipment.
- All license requirements, if any, are solely the Vendor's responsibility. Participating Vendors include equipment contractors, equipment Vendors, equipment manufacturers and distributors, energy service companies, etc. The typical Vendor role is to contact/solicit eligible customers building new or retrofitting existing facilities and encourage the installation of the energy-efficient equipment offered in Duke Energy's program.
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- Vendors may not represent to customers that Duke Energy endorses their specific products or services. Duke Energy does not endorse specific products, services, or companies – only energy-efficient technologies.
- Vendors may advise customers of their option to have Duke Energy make their rebate check(s) payable to the Vendor if the customer's rebate amount is being deducted from the total sale price in advance. The customer must complete and sign the Payment Release Authorization section of the Mercantile Self Direct Incentive Program Application.
- Vendors may use the words "Duke Energy's Mercantile Self Direct Incentive Program" in promotional materials or advertisements. Vendors may use the name Duke Energy in a text format to describe the Mercantile Self Direct Incentive Program, but are not permitted to use Duke Energy's logos.
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- Vendors shall provide customers with applicable equipment warranty information for all measures installed. Vendors shall provide the required documentation for customers to apply for the rebate (invoices with model numbers and quantities, specification sheets for installed equipment, etc.) and assist customers in filling out the application.
- Vendors shall comply with all applicable local, state, and federal laws and codes when performing installation and related functions.
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- Mercantile Self Direct Incentive Program offerings may be modified or terminated without prior notice. Check Duke Energy's Web site for current program status.

For more information, call **1-866.380.9580** or visit **www.duke-energy.com.**

Mercantile Self Direct Rebate Program

Technology	Responsible for sales and **not** installs*	Responsible for sales **and** Installation*	Technology	Responsible for sales and **not** installs*	Responsible for sales **and** Installation*
Lighting	☐	☐	Thermal Storage	☐	☐
Heating Ventilation & Cooling	☐	☐	Pumps/Motors/VFD's	☐	☐
Food Service	☐	☐	Chillers	☐	☐
Water Heating	☐	☐	Refrigeration	☐	☐
Process Equipment (air compressors, injection molding, etc.)	☐	☐	Window Film	☐	☐

* Check all that apply

Vendors who wish to be listed as a Mercantile Self Direct Incentive Program participating Vendor shall complete this form. A signed copy of this form must be on file at Duke Energy in order for the Vendor to receive incentive payments. Fax form to **513-629-5572** or email to SelfDirect@duke-energy.com.

I have read and understand the Mercantile Self Direct Incentive Program Requirements for Vendor Participation, and I agree to comply with all requirements set forth therein. By signing this agreement, I agree to provide my customers with information and documentation that is true and accurate to the best of my knowledge. I hereby represent and warrant that the Tax ID and Vendor Tax Status provided below are true and accurate. I agree that any confidential information concerning my customer, including but not limited to Duke Energy service account information, will be used for the sole purpose of facilitating the customer's participation in the Mercantile Self Direct Incentive Program. Further, I understand that I am responsible for making sure everyone working for me understands the requirements prior to soliciting customer participation.

Vendor Federal Tax ID Number	

To qualify for Duke Energy incentives, applicants who provide their social security number as their federal tax identification number for tax purposes must sign and return the "Customer consent to release personal information" form ("Consent Form") along with the application. Incentive applications are processed by a third-party vendor. The third-party vendor is responsible for mailing the 1099 form at the end of the calendar year for tax filing. Duke Energy and the third-party vendor have signed confidentiality agreement to protect your personal information. If your social security number is your federal tax ID number and you elect not to sign the Consent Form, please do not send Duke Energy the application, As you will not be qualified to participate in the incentive program.

Vendor Tax Status	☐ Corporation	☐ Individual/Sole Proprietor	☐ Partnership	☐ Other

Contact me via	☐ Phone	☐ E-Mail	☐ Mail	

Company Name	
Mailing Address	
City, State, Zip	
Phone/Fax	
Primary E-mail Address	
Secondary E-mail Address	
Vendor Signature	
Title	
Print Name	
Date	

For more information, call 1-866-380-9580 or visit www.duke-energy.com.

Year 2012

Ohio Mercantile Self Direct Program

Application Guide & Cover Sheet

Questions? Call 1-866-380-9580 or visit www.duke-energy.com.

Email this form along with completed Mercantile Self Direct Prescriptive or Custom applications, proof of payment, energy savings calculations and spec sheets to SelfDirect@Duke-Energy.com. You may also fax to 1-513-629-5572.

Mercantile customers, defined as using at least 700,000 kWh annually are eligible for the Mercantile Self Direct program. Please indicate mercantile qualification:

- ☒ a single Duke Energy Ohio account
- ☐ multiple accounts in Ohio (energy usage with other utilities may be counted toward the total)

Please list Duke Energy account numbers below (attach listing of multiple accounts and/or billing history for other utilities as required):

Account Number	Annual Usage	Account Number	Annual Usage
0470-2214-04-7	30,000,000 kwh		

Self Direct rebates are available for completed Custom projects that have not previously received a Duke Energy Smart $aver® Custom Incentive. Self Direct incentives are applicable to Prescriptive measures that were installed more than 90 days prior to submission to Duke Energy and have not previously received a Duke Energy Prescriptive rebate.

Self Direct Program requirements dictate that certain projects that may be Prescriptive in nature under the Smart $aver program must be evaluated using the Custom process. Use the table on page two as a guide to determine which Self Direct program fits your project(s). Apply for Self Direct projects using the appropriate application forms in conjunction with this cover sheet. Where Mercantile Self Direct Prescriptive applications are listed, please refer to the measure list on that application. If your measure is not listed, you may be eligible for a Self Direct Custom rebate. Self Direct Custom applications, like Smart $aver Custom applications, should include detailed analysis of pre-project and post-project energy usage and project costs. Please indicate which type of rebate applications are included in the table provided on page two.

Please check each box to indicate completion of the following program requirements:

☒ All sections of appropriate application(s) are completed	☒ Proof of payment.*	☒ Manufacturer's Spec sheets	☐ Energy model/calculations and detailed inputs for Custom applications

* If a single payment record is intended to demonstrate the costs of both Prescriptive & Custom projects, please include an additional document with an estimated breakout of costs for each Prescriptive and Custom energy conservation measure.

Application Type	Replaced equipment at end of lifetime or because equipment failed**	Replaced fully operational equipment to improve efficiency***	New Construction
Lighting	MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐	MSD Prescriptive Lighting ☐	MSD Prescriptive Lighting ☐
		MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐	MSD Custom Part 1 ☐ Custom Lighting Worksheet ☐
Heating & Cooling	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Heating & Cooling ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Window Films, Programmable Thermostats, & Guest Room Energy Management Systems	MSD Custom Part 1 ☐ MSD Custom General and/or EMS Worksheet(s) ☐	MSD Prescriptive Heating & Cooling ☐	MSD Custom Part 1 ☐ MSD Custom General and/or EMS Worksheet(s) ☐
Chillers & Thermal Storage	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Chillers & Thermal Storage ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Chiller Tune-ups	MSD Prescriptive Chiller Tune-ups ☐	MSD Prescriptive Chiller Tune-ups ☐	MSD Prescriptive Chiller Tune-ups ☐
Motors & Pumps	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Motors, Pumps & Drives ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
VFDs	Not Applicable	MSD Prescriptive Motors, Pumps & Drives ☐	MSD Custom Part 1 ☐ MSD Custom VFD Worksheet ☐
		MSD Custom Part 1 ☐ MSD Custom VFD Worksheet ☐	
Food Service	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Food Service ☐
			MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
Air Compressors	MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐	MSD Prescriptive Process ☐
			MSD Custom Part 1 ☐ MSD Custom Compressed Air Worksheet ☐
Process	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	MSD Prescriptive Process ☐	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐
		MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐	
Energy Management Systems	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐	MSD Custom Part 1 ☐ MSD Custom EMS Worksheet ☐
Behavioral* & No/Low Cost**	MSD Custom Part 1 ☐ MSD Custom General Worksheet ☐		

** Under the Self Direct program, failed equipment and equipment at the end of its useful life are evaluated differently than early replacement of fully functioning equipment. **All equipment replacements due to failure or old age will be evaluated via the Custom program.**

*** Please ensure that you include the age of the replaced equipment for measures classified as "Early Replacement" in your application as well as the estimated date that you would have otherwise replaced the existing equipment if you had not chosen a more energy efficient option.

**** Behavioral energy efficiency and demand reduction projects must be both measurable and verifiable. Provide justification with your application.

MERCANTILE SELF DIRECT Ohio Chiller Tune-up Service Application

Questions? Call 1-866-380-9580 or visit www.duke-energy.com.
Email the complete, signed application with all required documents to SelfDirect@duke-energy.com or fax to 513-629-5572.

Is this application: ☒ **NEW** (original) or ☐ **REVISED** (changes made to original application)

Building Type – Required (check one)		
☐ Data Centers	☐ Full Service Restaurant	☐ Office
☐ Education/K-12	☐ Healthcare	☐ Public Assembly
☐ Education Other	☒ Industrial	☐ Public Order/Safety
☐ Elder Care/Nursing Home	☐ Lodging	☐ Religious Worship/Church
☐ Food Sales/Grocery	☐ Retail (Small Box)	☐ Service
☐ Fast Food Restaurant	☐ Retail (Big Box)	☐ Warehouse
☐ Other:		
How did you hear about the program? (check one)		
☒ Duke Energy Representative	☐ Web Site	☐ Radio
☐ Contractor / Vendor	☐ Other _____	

Please check each box to indicate completion of the following program requirements:

☒ All sections of application	☒ Invoice with make, model number, quantity and equipment manufacturer	☒ Tax ID number for payee	☐ Customer/vendor agree to Terms and Conditions

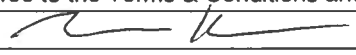
Customer Information					
Customer/Business	**Amylin Ohio LLC**	Contact		**Theresa Kroener**	
Phone	**513-645-9950**	**Account Number**		**0470-2214-04-7**	
Street Address (Where incentive should be mailed)		**Accounts Payable / 9360 Towne Centre Dr**			
City	**San Diego**	State	**Ca**	Zip Code	**92121-3057**
Installation Street Address	**8814 Trade Port Drive**				
City	**West Chester**	State	**Oh**	Zip Code	**45071**
E-mail Address	**theresa.kroener@amylin.com**				

Failure to provide the account number associated with the location where the installation took place will result in rejection of the application.

Vendor Information					
Vendor	**Johnson Controls**	Contact		**Randy Weekly**	
Phone	**(866)236-1941**	Fax		**513-489-7516**	
Street Address	**7863 Palace Dr**				
City	**Cincinnati**	State	**Ohio**	Zip Code	**45249**
E-mail Address	**randy.p.weekely@JCI.com**				

If Duke Energy has questions about this application, who should we contact? ☒ **Customer** ☐ **Vendor**

Payment Information		
Who should receive incentive payment?	☒ Customer	☐ Vendor (Customer must sign below)
I hereby authorize payment of incentive directly to the vendor:	Customer Signature (written signature)	
	Date	
Provide Tax ID Number for Payee	Customer Tax ID #	**76-0808919**
	Vendor Tax ID #	**N/A**

Terms and Conditions			
I have read and hereby agree to the Terms & Conditions and Program Requirements.			
Customer Signature		Vendor Signature	
Date	**04Oct12**	Date	
Title	**Sr. Facilities Engineer**	Title	

Incentives are subject to change and may be discontinued at the sole discretion of Duke Energy. Equipment must be installed and operable to be eligible for incentives. As Federal Energy Policy Law changes, equipment efficiency requirements are subject to change.

Air Cooled and Water Cooled Chiller Tune-ups						
Manufacturer and Model #	# of Units	Tons Per unit*	Total Project Cost	Current Service Date	Previous Service Date	Total Incentive
York YKKKKLH9-CYFS	6	800		3/12-21/2012	5/3 - 10/2011	$9,600.00
York YCWS0240SB46	1	130		6/15/12	8/17/2010	$260.00
*Provide manufacturer's spec sheet documenting the size of the unit						

To Calculate your tune-up incentive*:	
A. Add up equipment capacity of all units serviced (in tons) and multiply by $2/ton =	$9,860.00
B. Cost of service = $19,957.00 x 50% of total service cost =	$9,978.50
Total Incentive (lesser amount of row A or row B)=	$9860
*Incentives cannot exceed 50% of total service invoice (**external** labor and equipment).	

Service Requirements:

1. **This incentive is available only once per unit in a 12 month period.**
2. An individual chiller is considered one unit.
3. Copy of paid invoice must be included with this application
4. Self serviced (internal) labor should not be included as part of the total service cost. Only external labor will be considered as part of the total service invoice.
5. Cooling service must include the following normal maintenance items **(please check if completed):**

☐ Air cooled condenser coil cleaning	☒ Compressor amp draw	☒ Low Pressure controls
☒ System Pressure check and adjust	☒ Supply motor amp draw	☒ High Pressure controls
☒ Filter inspect or replace	☐ Condenser fan(s) amp draw	☒ Crankcase heater operation
☐ Belt inspect or replace	☒ Liquid line temperature	☒ Water cooled chiller condenser tube cleaning
☐ Contactors condition	☒ Suction pressure & temperature	☐ Water cooled chiller evaporator tube cleaning
☐ Evaporator condition	☒ Oil level & pressure	

Incentive Eligibility

- Incentives are only available to customers on Duke Energy Ohio non-residential rate.
- Duke Energy Customers who purchase electric generation from an alternative supplier are eligible to participate.
- Incentive will not be paid until eligible equipment has been installed, is available to operate, and verification has been completed by Duke Energy staff as noted in the Term & Conditions stated below.
- Duke Energy reserves the right to revise incentive levels and/or qualifying efficiency levels at anytime.
- Customer may assign the incentive to the vendor who installed/supplied the equipment. The customer's signature is required in the appropriate places on this form to assign the incentive to the vendor. Customer agrees that such an action constitutes an irrevocable assignment of the incentive. This assigned incentive must reduce the purchase price paid for the equipment by an equivalent amount.
- Any equipment which, either separately or as part of a project, has or will receive an incentive from any other Duke Energy program
- In no case will Duke Energy pay an incentive above the actual cost of the service.
- Incentive recipient assumes all responsibilities for any tax consequences resulting from Duke Energy incentive payment.
- To qualify for Duke Energy incentives, applicants who provide their social security number as their federal tax identification number for tax purposes must sign and return the "Customer consent to release personal information" form ("Consent Form") along with the application. Incentive applications are processed by a 3rd party vendor. The 3rd party vendor is responsible for mailing the 1099 form at the end of the calendar year for tax filing. Duke Energy and the 3rd party vendor have signed a confidentiality agreement to protect your personal information. If your social security number is your federal tax ID number and you elect not to sign the Consent Form, please do not send Duke Energy the application, as you will not be qualified to participate in the incentive program.

Terms and Conditions

I certify that this premise is served by Duke Energy (or an affiliate of Duke Energy), that the information provided herein is accurate and complete, and that I have purchased and installed the high efficiency equipment (indicated herein) for the business facility listed herein and not for resale. Attached is an itemized invoice for the indicated installed equipment. In understand that the proposed incentive payment from Duke Energy is subject to change based on verification and Duke Energy approval. I agree to Duke Energy verification of both the sales transaction and equipment installation which may include a site inspection from a Duke Energy representative or Duke Energy agent. I understand that I am not allowed to receive more than one incentive from Duke Energy on any piece of equipment. I also understand that my participation in the program may be taxable and that my company is solely responsible for paying all such taxes. I hereby agree to indemnify, hold harmless and release Duke Energy and it's affiliates from any actions or claims in regards to the installation, operation and disposal of equipment (and related materials) covered herein including liability from an incidental or consequential damages. Duke Energy does not endorse any particular manufacturer, product or system design within these programs; does not expressly or implicitly warrant the performance of installed equipment (Contact your contractor for details regarding equipment warranties), and is not liable for any damage caused by the installation of the equipment or for any damage cause by the malfunction of the installed equipment.

Incentive Application Instructions

IMPORTANT NOTICE
Delays in processing incentive payments will occur if required documentation is not included with completed application(s).

1. Contact Duke Energy toll free at 866-380-9580 to confirm customer eligibility. Applications are available for download at www.duke-energy.com.
2. Review program and equipment requirements on the incentive application. (Page7)
3. Purchase and install eligible energy-efficient equipment.
4. Complete and submit application for equipment that was installed after 1/1/2008.
5. **The following items must be included to verify projects. If they are not included, it will delay payment of incentive.**

   A. Itemized invoice for all equipment installed to include:
      a. Equipment cost
      b. Quantity per equipment type installed
      c. Model # for each equipment type
      d. Manufacturer's data sheet for each equipment model #.

   B. Make sure the account number provided on the cover page (customer information section) is associated with the location where the equipment was installed. If the account # does not match the address where the equipment was installed, the application will be rejected as ineligible.

   C. Provide required tax ID# for payee.

   D. Customer must sign and date the application after reviewing the Terms and Conditions. If customer wishes to **assign payment of the incentive directly to the vendor**, the customer should circle the appropriate payee in the Payment Information section of the application and sign their name to authorize payment.

6. Duke Energy may require site verification of projects that have been self-installed, prior to payment of incentive.

8. Email the complete, signed application with all required documents to SelfDirect@duke-energy.com or fax to 513-629-5572.

8. A percentage of equipment installations will be site verified for quality assurance purposes. Once selected, a Duke Energy representative will contact the customer to arrange for the inspection. All incentive payments related to the project will be withheld until site verification is complete. There is no charge to the customer for these inspections.

Mercantile Self Direct Incentive Program
Requirements for Vendor Participation

Program Overview

- Duke Energy offers it's eligible non-residential customers the opportunity to increase profitability through energy cost savings and contribute to a cleaner environment by participating in our Mercantile Self Direct Incentive Program.
- Under the Duke Energy Mercantile Self Direct Incentive Program, Vendor is defined as any third party who:
  - Promotes the sale and installation of the high efficiency equipment for the customer. The Vendor will ensure that the eligible equipment is installed and operating before submitting the application or assisting the customer in completing the application.
  - Is responsible for the product sale only and is not required to ensure installation of the eligible equipment.
- All license requirements, if any, are solely the Vendor's responsibility. Participating Vendors include equipment contractors, equipment Vendors, equipment manufacturers and distributors, energy service companies, etc. The typical Vendor role is to contact/solicit eligible customers building new or retrofitting existing facilities and encourage the installation of the energy-efficient equipment offered in Duke Energy's program.
- Incentives are paid directly to customers unless the customer assigns the incentive to the Vendor. The assigned incentive must reduce the purchase price paid for the equipment by an equivalent amount. Incentives are taxable to the entity who receives the rebate check. Rebates greater than $600 will be reported to the IRS unless documentation of tax exempt status is provided.
- Vendors can sign up to be on Duke Energy's Web site as a participating Vendor and be added to Duke Energy's e-mail distribution by emailing the Vendor Participation Agreement (VPA) to SelfDirect@duke-energy.com or faxing to **513-629-5572.**

Guidelines for Vendor Activities

- Vendors shall sign and return the attached VPA to Duke Energy prior to soliciting customer participation or when submitting an application. Rebate payments will not be released to a Vendor unless a signed VPA is on file.
- Vendors shall not misrepresent the nature of their role in the program. In particular, Vendors shall not state or imply to customers, or any persons, that the Vendor is employed by or working on Duke Energy's behalf.
- Vendors may not represent to customers that Duke Energy endorses their specific products or services. Duke Energy does not endorse specific products, services, or companies – only energy-efficient technologies.
- Vendors may advise customers of their option to have Duke Energy make their rebate check(s) payable to the Vendor if the customer's rebate amount is being deducted from the total sale price in advance. The customer must complete and sign the Payment Release Authorization section of the Mercantile Self Direct Incentive Program Application.
- Vendors may use the words "Duke Energy's Mercantile Self Direct Incentive Program" in promotional materials or advertisements. Vendors may use the name Duke Energy in a text format to describe the Mercantile Self Direct Incentive Program, but are not permitted to use Duke Energy's logos.
- For Vendors who properly install the qualifying equipment, the equipment shall be installed and operating prior to an application being submitted. A percentage of each Vendor's installations will be subject to inspection by Duke Energy for verifying that the equipment is installed and operating. Vendors demonstrating high failure rates (based on a statistically significant sample) will have 100% of subsequent jobs inspected or may have their participation in the Mercantile Self Direct Incentive Program revoked by Duke Energy in it's sole discretion.
- Vendors shall provide customers with applicable equipment warranty information for all measures installed. Vendors shall provide the required documentation for customers to apply for the rebate (invoices with model numbers and quantities, specification sheets for installed equipment, etc.) and assist customers in filling out the application.
- Vendors shall comply with all applicable local, state, and federal laws and codes when performing installation and related functions.
- Duke Energy reserves the right to revoke a Vendor's participation in Mercantile Self Direct Incentive Program if, in Duke Energy's sole judgment, the Vendor fails to comply with the program's guidelines and requirements.
- Mercantile Self Direct Incentive Program offerings may be modified or terminated without prior notice. Check Duke Energy's Web site for current program status.

For more information, call **1-866.380.9580** or visit **www.duke-energy.com.**

Mercantile Self Direct Rebate Program

Technology	Responsible for sales and **not** installs*	Responsible for sales **and** Installation*	Technology	Responsible for sales and **not** installs*	Responsible for sales **and** Installation*
Lighting	☐	☐	Thermal Storage	☐	☐
Heating Ventilation & Cooling	☐	☐	Pumps/Motors/VFD's	☐	☐
Food Service	☐	☐	Chillers	☐	☐
Water Heating	☐	☐	Refrigeration	☐	☐
Process Equipment (air compressors, injection molding, etc.)	☐	☐	Window Film	☐	☐

* Check all that apply

Vendors who wish to be listed as a Mercantile Self Direct Incentive Program participating Vendor shall complete this form. A signed copy of this form must be on file at Duke Energy in order for the Vendor to receive incentive payments. Fax form to **513-629-5572** or email to SelfDirect@duke-energy.com.

I have read and understand the Mercantile Self Direct Incentive Program Requirements for Vendor Participation, and I agree to comply with all requirements set forth therein. By signing this agreement, I agree to provide my customers with information and documentation that is true and accurate to the best of my knowledge. I hereby represent and warrant that the Tax ID and Vendor Tax Status provided below are true and accurate. I agree that any confidential information concerning my customer, including but not limited to Duke Energy service account information, will be used for the sole purpose of facilitating the customer's participation in the Mercantile Self Direct Incentive Program. Further, I understand that I am responsible for making sure everyone working for me understands the requirements prior to soliciting customer participation.

Vendor Federal Tax ID Number	

To qualify for Duke Energy incentives, applicants who provide their social security number as their federal tax identification number for tax purposes must sign and return the "Customer consent to release personal information" form ("Consent Form") along with the application. Incentive applications are processed by a third-party vendor. The third-party vendor is responsible for mailing the 1099 form at the end of the calendar year for tax filing. Duke Energy and the third-party vendor have signed confidentiality agreement to protect your personal information. If your social security number is your federal tax ID number and you elect not to sign the Consent Form, please do not send Duke Energy the application, As you will not be qualified to participate in the incentive program.

Vendor Tax Status	☐ Corporation	☐ Individual/Sole Proprietor	☐ Partnership	☐ Other

Contact me via	☐ Phone	☐ E-Mail	☐ Mail	

Company Name	
Mailing Address	
City, State, Zip	
Phone/Fax	
Primary E-mail Address	
Secondary E-mail Address	
Vendor Signature	
Title	
Print Name	
Date	

For more information, call 1-866-380-9580 or visit www.duke-energy.com.

Johnson Controls

YORK PRODUCTS/SERVICES

Direct Inquiries To:
JOHNSON CONTROLS, INC
CINCINNATI SERVICE
7863 PALACE DRIVE
CINCINNATI OH 45249
866 236-1941

Controls Group
FEDERAL ID # 39-0380010

Bill To Address

ACCOUNTS PAYABLE
AMYLIN OHIO LLC
9360 TOWNE CENTRE DRIVE
SAN DIEGO CA 92121

INVOICE

No. **00064591162**
Date: 02-FEB-2010
Terms: Due On Receipt
Please indicate invoice number with payment.

Work Site:	Remit Checks To:	Remit Via ACH Wire Transfers To:
Amylin Chiller PSA 8814 Trade Port Drive HAMILTON OH 45011 USA	Johnson Controls PO Box 905240 Charlotte NC 28290-5240	JPMorgan Chase Bank 1 Bank One Plaza Chicago, IL 60670 ABA #071-000013 Depositor Acct #55-14347 Type of Account: Checking

Customer Number	Project	Purchase Order and Authorization	Project Manager
364 1370419 01	03647194	Dave Walter PO NUMBER:617213 Dave Walter 13-JAN-2010	MILLER,DONALD E

Line	Description	Amount
1	For Period from 01-FEB-2010 to 31-JAN-2011	20,712.00

Please reference our invoice number and amount with your payment and send only to the address on this invoice.

Invoice Comments:
Scheduled Service On (6) YK York Chillers and (1) YWCS Chiller

BRANCH: 0364 ATTENTION TO: Don Miller

Sub Total	**20,712.00**
Taxes	**.00**
Net Amount Due	**20,712.00**
Currency	**USD**

PDF COPY

Johnson Controls

Johnson Controls, Inc.
Building Efficiency
Federal ID 39-0380010

ORIGINAL INVOICE

Invoice #:	**1-3023967257**	**Invoice Date:**	**05/27/2011**
PO #/Auth:	618820	**Your Agreement:**	AMYLIN CHILLER PSA 2011
Customer Acct:	1370419	**Agreement Number:**	1-2156625387
Customer WO#:		**Service Request:**	
		Branch:	Cincinnati Service - 0364

Bill To:
AMYLIN
8814 TRADE PORT DR
HAMILTON OH 45011

Service Site:
AMYLIN
8814 TRADE PORT DR
HAMILTON OH
45011-8661

Planned Service Agreement Services Performed: For Period from 03-Feb-2011 to 02-Feb-2012

Sub Total		**$19,376.00**
Taxes		**$0.00**
Total Amount Due	**USD**	**$19,376.00**

Direct Billing Inquiries: (866) 236-1941

Terms: If any invoice is not paid in full upon receipt, the Customer hereby agrees to pay interest at a rate of 1.5% per month (18% annually) upon the unpaid portion of the invoice. If action or suit is brought by Johnson Controls, Inc. to collect any amount due or owing under this bill, Customer agrees to pay all costs of collection including attorney's fees.

We hereby certify that these goods are produced in compliance with all applicable requirements of sections 6, 7 and 12 of the Fair Labor Standards Act of 1938, as amended, and of regulations and orders of the Administrator of the Wage and Hour Division issued under section 14 thereof.

Please reference our Invoice Number and amount with your payment and send ONLY to the address on this invoice.

Payment Terms: Net Cash-Due Upon Receipt
Direct Billing Inquiries
To Service Department: (866) 236-1941

To Remit Via Credit Card:
Call the phone number listed above.

INVOICE #: **1-3023967257**

AMOUNT DUE: **$19,376.00**

Remit Payment To:
JOHNSON CONTROLS
PO BOX 905240
CHARLOTTE, NC, 28290-5240

To Remit Via ACH Wire Transfers:
JP Morgan Chase
One Chase Manhattan Plaza
New York, NY 10005
Credit to: Johnson Controls Inc.
ABA# 071-000013 Depositor Acct #55-14347
Type of Account: Checking

Johnson Controls

Johnson Controls, Inc.
Building Efficiency
Federal ID 39-0380010

ORIGINAL INVOICE

Invoice #:	**1-4646509420**	**Invoice Date:**	**02/02/2012**
PO #/Auth:	Signed Agreement	**Your Agreement:**	Amylin Chiller PSA 2012
Customer Acct:	1370419	**Agreement Number:**	1-4469071225
Customer WO#:	0110860	**Service Request:**	
		Branch:	Cincinnati Service - 0364

Bill To:
AMYLIN
8814 TRADE PORT DR
HAMILTON OH 45011

Service Site:
AMYLIN
8814 TRADE PORT DR
HAMILTON OH
45011-8661

Planned Service Agreement Services Performed: For Period from 01-Feb-2012 to 31-Jan-2013

Sub Total		**$19,957.00**
Taxes		**$0.00**
Total Amount Due	**USD**	**$19,957.00**

Direct Billing Inquiries: (866) 236-1941

Terms: If any invoice is not paid in full upon receipt, the Customer hereby agrees to pay interest at a rate of 1.5% per month (18% annually) upon the unpaid portion of the invoice. If action or suit is brought by Johnson Controls, Inc. to collect any amount due or owing under this bill, Customer agrees to pay all costs of collection including attorney's fees.

We hereby certify that these goods are produced in compliance with all applicable requirements of sections 6, 7 and 12 of the Fair Labor Standards Act of 1938, as amended, and of regulations and orders of the Administrator of the Wage and Hour Division issued under section 14 thereof.

Please reference our Invoice Number and amount with your payment and send ONLY to the address on this invoice.

Payment Terms: Net Cash-Due Upon Receipt
Direct Billing Inquiries
To Service Department: (866) 236-1941

To Remit Via Credit Card:
Call the phone number listed above.

INVOICE #: **1-4646509420**

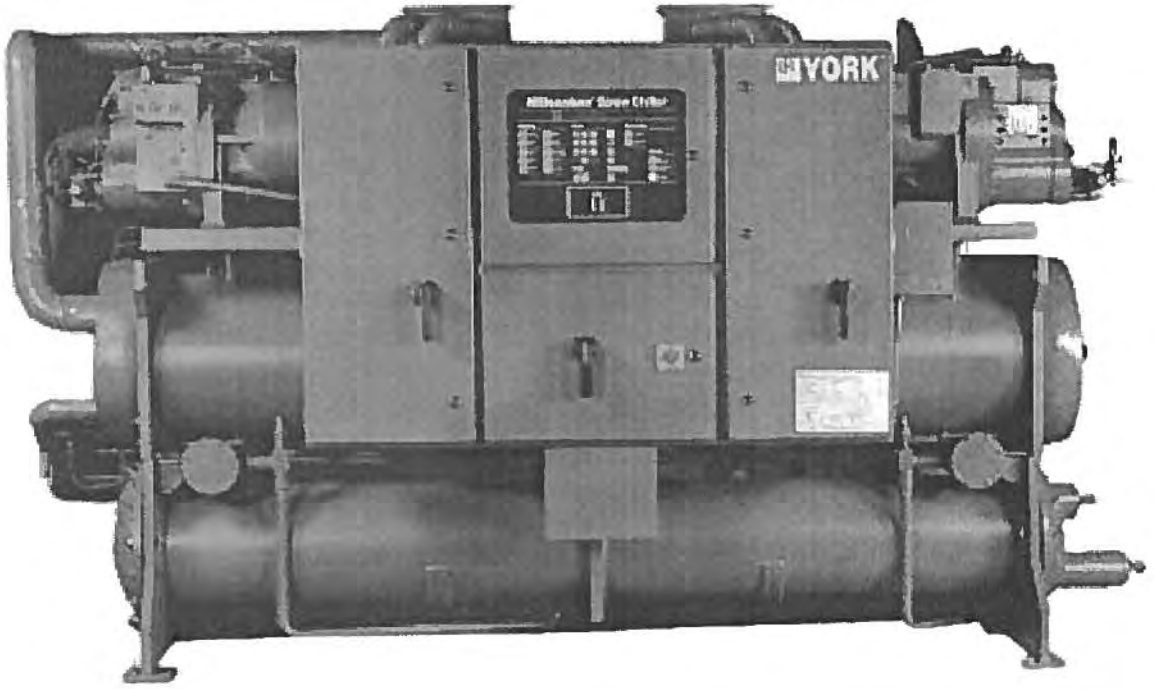
AMOUNT DUE: **$19,957.00**

Remit Payment To:
JOHNSON CONTROLS
PO BOX 905240
CHARLOTTE, NC, 28290-5240

To Remit Via ACH Wire Transfers:
JP Morgan Chase
One Chase Manhattan Plaza
New York, NY 10005
Credit to: Johnson Controls Inc.
ABA# 071-000013 Depositor Acct #55-14347
Type of Account: Checking

CH-1111

YCWS
WATER COOLED LIQUID CHILLER



HFC-407C

89 TONS THROUGH 209 TONS
313 kW THROUGH 735 kW
60Hz
STYLE A

WATER COOLED GLYCOL CHILLER PROCESS DATA SHEET

Client: Amylin Ohio LLC		Project No.: 442027
Project Name: Amylin Manufacturing Facility		Location: Hamilton, OH
Item Tag No.		CH-1111
Item Name		PROCESS GLYCOL CHILLER
	SITE DATA	
1	Location	Indoors first floor, Utilities Room
2	Quantity	One (1) (Note 2)
3	Manufacturer/Model No.	YORK / YCWS0240SC46
4	Design Duty	130 tons @ 20° F (- 6.7° C) outlet
5	Chilled Fluid	35% Propylene Glycol (by weight)
6	Capacity Modulation	100-10% min range, 100-0% w/ HGB
7	Chilled Fluid Inlet Temperature	30° F (-1.1° C)
8	Chilled Fluid Outlet Temperature	20° F (- 6.7° C)
9	Chilled Fluid Flow Rate	370 gpm (1400 lpm), (Note 3)
10	Chilled Fluid Density	65.3 lb/ft^3 @ 20°F and 65.1 lb/ft^3 @ + 30°F
11	Chilled Fluid Heat Capacity	0.883 Btu/lb °F @ 20°F and 0.887 Btu/lb °F @ +30°F
12	Chilled Fluid Viscosity	14.2 cP @ 20°F and 10.3 cP @ + 30°F
13	Chilled Fluid Thermal Conductivity	0.229 Btu/hr ft^2 °F @20°F and 0.233 Btu/hr ft^2 °F @ +30°F
14	Chilled Fluid Freeze Point	2.4° F (- 16.4° C)
15	Coolant	Chilled Water (Note 6)
16	Coolant Supply Temperature	38°F (+5.6°C)
17	Coolant Return Temperature	48°F (+11.1°C)
18	Maximum Coolant Temperature Change	10°F (5.6°C)
19	Total Coolant Flow Rate, GPM	330
20	Operation	Continuous
21	Chilled Fluid Inlet Connection	Victaulic 150# RF 8"
22	Chilled Fluid Outlet Connection	Victaulic 150# RF 8"
23	Coolant Fluid Inlet Connection	Victaulic 150# RF 6"
24	Coolant Fluid Outlet Connection	Victaulic 150# RF 6"
25	Electrical Area Class	non-hazardous; washdown
26	Skid Size	186"L x 47"W x 80"H
27	Estimated weight (lbs): Empty	12,006 lbs
28	Estimated weight (lbs): Full	13,500 lbs
29		
30	COMPRESSOR	
31	Quantity	Two (2) (Note 2)
32	Type	Dual Screw Type
33	Capacity, each	130 tons @ 20° F (- 6.7° C) outlet
34	Manufacturer	York
35	Model	Internal to Package
36	Materials of construction (casing/rotor/impeller or screw)	* (Note 4)
37	Casing design pressure	*
38	Bearing type	B-10 rating/100,000 hours
39	Seal type / manufacturer	Oil pressurized mechanical / *
40	Compressor motor quantity	One (1) each (Note 2)
41		
42	REFRIGERANT	
43	Refrigerant (Name)	R-407C Note 9 HFC Type 0 ODP
44	Refrigerant charge (lbs)	240 lbs
45	Suction Press.	*
46	Discharge Pressure	*
47	Slide Valve / Vane (capacity control)	100-10% min range, 100-0% w/ HGB
48	Hot gas bypass included (yes/no)	Not Available
49	Rated Tonnage of proposed model (actual)	240 ton "nominal" ~ 130 tons @ design
50	Rupture disk (Yes/No)	Yes
51	Purge unit (Yes/No)	No - High Pressure Refridgerant
52		
53	ELECTRICAL	
54	Motor type / Enclosure	Semi-Hermetic
55	Rotation	counter-clockwise
56	Compressor BHP	143 BHP

WATER COOLED GLYCOL CHILLER PROCESS DATA SHEET		
Client: Amylin Ohio LLC		Project No.: 442027
Project Name: Amylin Manufacturing Facility		Location: Hamilton, OH
Item Tag No.		CH-1111
Item Name		PROCESS GLYCOL CHILLER
57	kW per ton (25% - 50% - 75% - 100%)	0.78 kW/Ton
58	Compressor motor H.P. (nameplate)	150 HP
59	Compressor speed (rpm)	3600 RPM
60	Electrical requirements (Main motor)	480 V/3/60 Hz
61	Class / Maximum Surface Temperature	N/A
62	Service factor	N/A
63	Electrical Requirements (Oil Pump)	N/A
64	Oil pump H.P.	N/A
65	Oil Heater kW rating	0.35 kW each
66	NEMA Design	N/A
67	Insulation Class	* F, with Class B temp rise
68	Full Load Amps:	256 Amps
69	Motor Efficiency	90-92%
70		
71	EVAPORATOR	
72	Quantity	One (1) (Note 2)
73	Type	* Shell & Tube
74	Outlet temp. accuracy (within +/- 0.5 F)	Yes
75	Chilled Fluid Side Fouling Factor	0.00025
76	Chilled Fluid Pressure Drop Allowed (psi)	10 psi (0.6895 bar)
77	Pressure Drop Calculated (psi)	15.1 ft
78	Number of passes	1-Pass DX Type
79	Construction Spec.	ASME Sect.VIII and TEMA
80	Chilled Fluid Operating Pressure	* 20 - 30 psig
81	Chilled Fluid Design Pressure/Temperature	20F LCMBT
82	Refrigerant Operating Pressure	*
83	Refrigerant Design Pressure/Temperature	*
84		
85	ACCUMULATOR	
86	Quantity	*
87	Type	*
88		
89	OIL RECOVERY POT	
90	Quantity	*
91		
92	WATER COOLED CONDENSER (Note 6)	
93	Quantity	One (1) (Note 2)
94	Type	Shell and Tube (Note 5)
95	Water Flow Rate	*
96	Refrigerant Inlet Temperature	*
97	Refrigerant Outlet Temperature	*
98	Waterside Fouling Factor	0.00025
99	Number Passes	2 pass
100	Dimensions	188"L x 48"W x 79-1/8"H
101	Construction Spec.	ASME Sect.VIII
102	Refrigerant Side (Shell) Operating Pressure	*
103	Refrigerant (Shell) Side Design Pressure/Temperature	150 / *
104	Interconnecting Refrigerant Piping & Wiring	
105	Materials of Construction (tube/shell)	* CS / CS (Note 4)
106	Waterside (Tube) Operating Pressure	* 20 - 30 psig
107	Waterside (Tube) Design Pressure/Temperature	300 / * (Note 7)
108	Waterside Allowable Pressure Drop (psi)	*15 psi (Note 8)
109	Waterside Pressure Drop (psi)	7.5 ft.
110		
111	RECEIVER / ECONOMIZER	not required / provided
112	Quantity	One (1) (Note 2)
113	Type	* Horizontal
114	Size	*

WATER COOLED GLYCOL CHILLER PROCESS DATA SHEET		
Client: Amylin Ohio LLC		Project No.: 442027
Project Name: Amylin Manufacturing Facility		Location: Hamilton, OH
Item Tag No.		CH-1111
Item Name		PROCESS GLYCOL CHILLER
115	Weight	*
116	Design Pressure/Temperature	* (Note 7)
117		
118	LUBRICATION SYSTEM	
119	Cooler	
120	Quantity	One (1) (Note 2)
121	Type	Direct Expansion
122	Cooler Design Pressure (shell / tube)	150 / 300
123	Cooling Water Flow Rate	*
124	Cooling Water Inlet Connection	victaulic 150# RF
125	Cooling Water Outlet Connection	victaulic 150# RF
126	Cooling Water Inlet Temp / Outlet Temp	42°F (+5.6°C)/52°F (+11.1°C)
127	Oil Inlet Temp / Outlet Temp	* / *
128	Pressure Drop (psi)	15.1 ft
129	Water Side Fouling Factor	0.0001
130	Tubes (size / material)	copper / * (carbon steel or equivalent)
131		
132	Lube oil pump	
133	Quantity	no oil pumps
134	Type	Rotary
135		
136	Oil filter	
137	Quantity	2
138	Oil Filter Rating	?
139		
140	Oil Separator	
141	Quantity	2
142	Lube oil charge (total for one lubrication system), gallons	*
143	Slght glasses for oil level / flow	Yes (level) / No (flow)
144		
145	Oil heater, kW	*
146		
147	MISCELLANEOUS	
148	Insulation type / thickness	3/4" armaflex
149	Vibration Isolation (type)	seismic spring
150	Paint (type / thickness)	* Manufacturer's Standard
151	Estimated Noise Level (< 85 dBa)	<85 dBa
152	UL listing	Yes
153		
154	CONTROLS (Indicate included (Y/N)	
155	Control Panel enclosure material / coating	* / * (Note 10)
156	Human Machine Interface	See I&C Section
157	Communication Ports	Redundant Ehernet I/P See I&C Section
158	Low fluid flow switch	Yes
159	SCADA output	Yes
160	First Out Annunciator	Yes
161	Remote output of fluid outlet temperature	Yes
162	Remote input of fluid reservoir temperature	Yes
163	Remote shutdown input	Yes
164	Remote setpoint input	Yes
165	Remote alarm output (common trouble)	Yes
166	Programmable, timed motor start/stop	Yes
167	Additional Signalling Reqirements	See I & C Section
168		
169	Display: (Indicate included Y/N)	
170	Suction P & T	Yes/Yes
171	Discharge P & T	Yes/Yes
172	Oil P & T	Yes/Yes

WATER COOLED GLYCOL CHILLER PROCESS DATA SHEET

Client: Amylin Ohio LLC		Project No.: 442027
Project Name: Amylin Manufacturing Facility		Location: Hamilton, OH
Item Tag No.		CH-1111
Item Name		PROCESS GLYCOL CHILLER
173	Oil Filter delta P	Yes
174	Slide Valve / Vane Position	Yes
175	Pump on/off	Yes
176	% Full Load Amps	Yes
177	Evaporator Inlet / Outlet Temperature	Yes / Yes
178	Condenser Inlet/ Outlet Temperature	Yes / Yes
179	Three phase motor current	Yes
180	Three phase motor voltage	Yes
181	Motor winding temperature	Switches/Shutdown Interlock
182	Bearing temperature	N.A.
183	Operating hours / starts	Yes/Yes
184	Saturated refrigerant P & T	Yes / Yes
185	Additional Signalling Reqirements	See I & C Section
186		
187	Alarm & Shutdown Setpoints: (Indicate Included Y/N)	
188	Low Suction Pressure alarm & Cut-out	Yes
189	High Discharge Pressure alarm & Cut-out	Yes
190	High oil filter differential pressure alarm	Yes
191	High discharge temperature alarm & Cut-out	Yes
192	Low discharge temperature stop load & force unload	Yes
193	Low oil pressure alarm & Cut-out	Yes
194	High oil temperature alarm & Cut-out	Yes
195	Low oil temperature alarm & Cut-off	Yes
196	Low oil level alarm	Yes
197	High cooling water temperature	N.A.
198	High cooling water flow & Cut-off	N.A.
199	Low oil temperature/shutdown	Yes/Yes
200	High amps unload/shutdown	Yes/Yes
201	Additional Signalling Reqirements	See I & C Section
202		
203	Miscellaneous	
204	Start-Up Assistance	Required (Note 11), See I & C Section
205	Start-Up Equipment and Services	* See I & C Section

Notes:	1	Vendor to confirm or fill in information in all blocks marked with asterisk.
	2	Process Chiller is planned to be a water-cooled skid system with dual screw-type compressors for redundancy.
	3	Flow rate through the chiller will be held constant.
	4	Materials of construction shall be suitable for system design conditions.
	5	Single common skid design chiller-condenser unit is preferred.
	6	Coolant is 35% (vol) Propylene Glycol.
	7	Design temperature shall be at least 50° F higher than operating temperature. Design pressure shall be at least 20% higher than operating pressure
	8	Pressure drop includes control valve (if required).
	9	Refrigerant shall be non-ozone depleting.
	10	NEMA 3R minimum electrical enclosure requirement.
	11	Reference Specification (SPE-442027-17545) Section 3.6
	12	Rotation shall be as viewed facing motor output shaft

Product Scope

The following items are included:

- York to provide one (1) Model YCWS0240SC46 Water Cooled Packaged Water/Glycol Chiller sized for approximately 130 Tons at scheduled design conditions (Please see attached "Performance Rating" for Technical Data)
- 2 Dual-Screw Compressors per machine w/ 2 Independent Refrigeration Circuits
- Full Operating Charge of HFC, Zero Ozone Depleting, Refrigerant R-407C and Oil
- Smooth Unloading Capability with Slide Valve Control down to 10% of Full Capacity
- Single point main power connection with non-fused disconnect, individual circuit breakers and independent control panel power supply
- Microprocessor Control Panel (Factory Mounted and Wired)
- Wye-Delta Reduced Inrush Starters for each compressor/motor
- Differential Pressure Flow Switches (Ship Loose, Installed by others)
- Suction and Liquid Line Shutoff Valves (As Specified)
- Replaceable Core Filter Driers (per specification)
- Condenser capable of holding entire refrigerant charge (per specification)
- 1" Deflection Seismic Spring Isolators (Ship loose, field installed by others)
- ¾" Insulation on Evaporator Barrel
- 1 Year Parts & Labor Warranty on entire unit
- On-site Startup and Training by York Factory Trained Service Technician(s)

Clarifications/Exclusions from Specification:

- All external power wiring, controls interfaces, and Piping shall be by others
- Any Factory Performance Tests for Chillers (Chillers are both "Run Tested" and "Leak Tested" prior to leaving the factory, but are not Performance Tested)
- Any Field or Owner Site Testing of Chiller (This is not typical of this type of "packaged" chiller unit)
- Any Extended Warranties for Compressors or entire machine (Can be quoted upon request if desired)

IF THESE NEED TO BE WIRED BY PURCHASER, PROVIDE A SEPARATE WIRING DIAGRAM SHOWING ALL FIELD WIRING BY THE PURCHASER AND INDICATING WIRING REQUIREMENTS AS PER THE SPECIFICATION.

WATER COOLED SCREW LIQUID CHILLER
YORK YCWS 60 HZ GUIDE SPECIFICATIONS

PART 2 — PRODUCTS

2.01 GENERAL

A. General: Install and commission, as shown on the schedules and plans, factory assembled, charged, and tested water-cooled screw compressor chiller. Chiller shall be designed, selected, and constructed using a refrigerant with Flammability rating of "1", as defined by ANSI/ASHRAE STANDARD-34 Number Designation and Safety Classification of Refrigerants. Chiller shall includea complete system with two independent refrigerant circuits, semihermetic twin screw compressors, direct expansion type evaporator, water-cooled condenser, refrigerant, lubrication system, interconnecting wiring, safety and operating controls including capacity controller, control center, motor starting components, and special features as specified herein or required for safe, automatic operation.

2.02 COMPRESSORS AND MOTORS

A. Compressors: Shall be semi-hermetic, rotary twin-screw type, including: internal discharge mufflers, 350W body cartridge heater, design working pressure of 450psig (31bar), vibration isolation mounting pads, and precision machined cast iron housing.

B. Motors: Shall be refrigerant suction, gas cooled, high efficiency accessible hermetic compressor motor, with APT2000 type magnet wire and redundant overload protection using both thermistor and current overload protection.

C. Lubrication: Shall provide suction gas screen and serviceable, 0.5 micron full flow oil filter within the compressor housing.

D. Capacity Control: Compressors shall include: automatic spring return of capacity control valve to minimum load position to ensure compressor starting at minimum load position and internal discharge check to prevent rotor backspin upon shutdown. Capacity control valve shall be continuous function, microprocessor controlled, and 3-way proportional. Shall provide regulated output pressure independent of valve input pressure for a stable, smooth, and precise match of compressor capacity to cooling loads down to 10% of chiller capacity.

2.03 REFRIGERANT CIRCUIT

Two independent refrigerant circuits will be furnished on each unit. All piping will be copper with brazed joints. The liquid line will include: a shutoff valve with charging port; sight glass with moisture indicator; thermal expansion valve; solenoid valve; and high-absorption removable-core filter drier. The entire suction line and the liquid line between the expansion valve and the cooler will be insulated with flexible, closed-cell, foam insulation.

2.04 HEAT EXCHANGERS

A. Evaporator:

1. Shall be dual-circuit, direct-expansion type, with refrigerant in the tubes and chilled liquid flowing through the baffled shell. The design working pressure of the shell (liquid) side will be 150 PSIG (10.3 bar), and 300 PSIG (26.7 bar) for the tube (refrigerant) side.
2. Shall be constructed and tested in accordance with the applicable sections of the ASME Pressure Vessel Code, Section VIII, Division (1). The water-side will be exempt per paragraph U-1, (c)(6).
3. Water baffles shall be constructed of galvanized steel to resist corrosion. The removable heads will allow access to the internally enhanced, seamless, copper tubes. Vent and drain connections will be included.
4. Shall be covered with 3/4" (19.1 mm) flexible, closed-cell, foam insulation (K = 0.25).

B. Condenser:

Constructed, tested, and stamped in accordance with applicable sections of ASME pressure vessel code for minimum refrigerant side design working pressure appropriate for refrigerant used.
Shall be cleanable thru-tube type with steel shell, copper tubes, removable water heads, and includes integral subcooling.

The shell shall be constructed and tested in accordance with section VII, division 1 of the ASME pressure-vessel code. The water side will be exempt per paragraph U-1, (c).
Shall be equipped with relief valves and will hold the full refrigerant charge for pumpdown.

2.05 POWER AND ELECTRICAL REQUIREMENTS

A. All controls and motor starting equipment necessary for unit operation shall be factory wired and function tested. The panel enclosures shall be designed to NEMA 1 (IP32) and manufactured from powder-painted galvanized steel.

B. A single main power connection shall be divided into two separate connections for each individual circuit. A single 120V power connection shall be supplied to power unit control panel.

C. Each power panel shall contain:
Compressor starting contactors, control circuit serving compressor capacity control, compressor contactor coils, and compressor motor overloads. The compressor motor overloads contain current transformers which sense each phase, as an input to the microprocessor, to protect the compressor motors from damage due to: low input current, high input current, unbalanced current, single phasing, phase reversal, and compressor locked rotor.

E. The control section shall contain:
On/Off rocker switch, microcomputer keypad and display, microprocessor board, I/O expansion board, relay boards, and 24V fused power supply board.

2.06 CONTROLS

A. General:
Shall include fuzzy logic control to provide tighter, more stable chilled water temperature control.
The standard controls shall include: brine chilling or thermal storage, automatic pumpdown, run signal contacts, demand load limit from external building automation system input, remote reset liquid temperature reset input, unit alarm contacts, chilled liquid pump control, automatic reset after power failure, automatic system optimization to match operating conditions, software stored in nonvolatile memory (EPROM) to eliminate chiller failure due to AC power failure.

B. Display and Keypad:
1. Provide minimum 40 character liquid crystal display that has LED backlighting for outdoor viewing. Color-coded, 35 button, sealed keypad with sections for Display, Entry, Setpoints, Clock, Print, Program, and Unit On/Off Switch.

C. Programmable Setpoints (within Manufacturer limits): leaving chilled liquid temperature, chilled liquid range, and remote reset temperature range. Programmed setpoints shall be retained in a battery backed RTC with a memory of five years.

D. Display Data: Chiller liquid return and leaving temperatures, compressor operating hours and starts, lead compressor identification, clock and schedule, compressor run status, run permissive status, no cooling load condition, suction and discharge, oil pressures and temperatures per system, percent full load compressor motor current per phase and average per phase, compressor capacity control valve input steps, cutout status and setpoints, unloading limit setpoints, liquid pull-down rate sensitivity, out of range message, up to 6 fault shut down conditions, and status of: evaporator heater, load and unload timers, chilled water pump.

E. Print: Operating data or system fault shutdown history for last six faults. Printouts through an RS-232 port via a separate printer (by others).

2.07 ACCESSORIES and OPTIONS

A. Power Supply Connections:
Single Point Power Connection: (Factory Mounted) Configured for field connection of a single electrical circuit to a Non-Fused Disconnect Switch with lockable external handle (in compliance with Article 440 of N.E.C., to

isolate unit power supply for service). Factory wiring is provided from the Non-Fused Disconnect Switch to Factory supplied individual system Circuit Breakers in each of the two compressor motor control centers. For power wiring USE copper conductors only. DO NOT USE aluminum conductors.

B. Differential Pressure Switch:
20.7 bar maximum working pressure, SPDT 5 amp 125/250 VAC switch. Range 0 – 2.8 bar, deadband: 0.003 – 0.005 bar, with 1/4" NPTF Pressure Connections. (Field Mounted)

C. Vibration Isolation (Field Mounted): SEISMIC PER PRODUCT SCOPE PAGE
1. 1 Inch Deflection Spring Isolators: Level adjustable, spring and cage type isolators for mounting under the unit base rails. 1" nominal deflection may vary slightly by application. (Field mounted)

D. Service Isolation Valves (suction): Provide suction service shut-off valve for each compressor. (Factory Mounted)

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Water Cooled Screw Chiller Performance Specification

Unit Tag	Qty	Model No.	Capacity (Tons)	Volts/Ph/Hz	Refrigerant
CH-1111	1	YCWS0240SB46	137.1	460/3/60	R407C
Pin No: YCWS0240SB46ZAADBXXXXXXLXXXX44SXXXXXXXXXXDAXXXXXXXXX8XX1BXXXXX					

Evaporator Data		Condenser Data		Performance Data at 100% Capacity	
EWT (°F)	29.6	EWT (°F)	55.0	EER	15.4
LWT (°F)	20.0	LWT (°F)	67.2		
Flow Rate (gpm)	370	Flow Rate (gpm)	~~370.0~~ 330	Rigging Wt. (lbs.)	12006.0
Pressure Drop (ft.)	15.1	Pressure Drop (ft.)	5.4	Operating Wt. (lbs.)	13500.0
Fluid	P.G. 35%	Fluid	Water		
Fouling Factor	0.00010	Fouling Factor	0.00025		

Electrical Data				
Circuit	1	2	3	4
Compressor RLA	128.0	128.0		
Compressor Start Current (LRA)	280.0	280.0		

Single Point				
Min. Circuit Ampacity	288.0			
Min. Non-Fused Disconnect (Amps)	400.0			
Min. Circuit Breaker (Amps)	350.0			
Max. Circuit Breaker (Amps)	400.0			
Wire Range (Lug Size)	250-500			
Grounding Wire Lug Size	#4-3/0			

Total Amps	256.0	Inrush (PW) Amps	280.0	Starter Type	WYE Delta
Compressor kW	172.9			Total kW	172.9

Notes: RATED AND CERTIFIED IN ACCORDANCE WITH ARI STANDARD 550/590.

YCWS0240SB46			Sound Pressure Data					
63	125	250	500	1K	2K	4K	8K	LPA
77	75	76	78	79	73	64	61	83

Per ARI Standard 575 – Measured 1.5 meters from the floor and 1 meter from the perimeter of the unit.

Project Name: AMYLIN - PROCESS CHILLER	Sold To: Parsons, Inc.	
Location: HAMILTON, OH	Customer Purchase Order No.:	
Engineer: Parsons, Inc.	York Contract No.: 06103072	
Contractor: Parsons, Inc.	Date:	Revision Date:

YORK
A JOHNSON CONTROLS COMPANY
WATER COOLED SCREW CHILLER RATING

DXCHILLF
Jun 1, 2006
REV. v5_20.yau
Issue date: 04/06

EXCLUSIVELY FOR: ANTHONY TOMASI

JOB NAME: SQ 06-001763-004

MODEL YCWS0240SB VOLTAGE 460-3-60 REFRIGERANT R407C

TONS 137.1 KW = 106.9 UNIT EER 15.4

EVAPORATOR-TYPE LIQUID: 35% BY WEIGHT PROPYLENE GLYCOL

GPM 370.0 FOULING FACTOR .00010 HR*FT^2*F/BTU

TEMP ENTERING 29.6 F, LEAVING 20.0 F, PRESSURE DROP 15.1 FT

TUBES: COPPER

EVAPORATOR TEMP SYSTEM 1 15.8 F
SYSTEM 2 15.8 F

CONDENSER-TYPE LIQUID: WATER

GPM 330.0 FOULING FACTOR .00025 HR*FT^2*F/BTU
TEMP ENTERING 55.0 F LEAVING 67.2 F PRESSURE DROP 5.4 FT

TUBES: COPPER

CONDENSER TEMP SYSTEM 1 73.2 F
SYSTEM 2 73.3 F

PART LOAD RATING

% FULL LOAD TONS	TONS	COMPR KW	---CONDENSER--- CEWT F	CLWT F	UNIT EER
100.0	137.1	106.9	55.0	67.2	15.4
90.0	123.4	98.8	55.0	66.0	15.0
80.0	109.6	91.3	55.0	64.9	14.4
70.0	95.9	84.5	55.0	63.7	13.6
60.0	82.2	78.8	55.0	62.6	12.5
50.0	68.5	72.5	55.0	61.5	11.3
40.0	54.8	59.5	55.0	60.2	11.1
30.0	41.1	43.4	55.0	58.9	11.4
20.0	27.4	27.1	55.0	57.6	12.1
10.0	13.7	12.0	55.0	56.2	13.7

NPLV: 12.6 EER

RATINGS OUTSIDE THE SCOPE OF ARI STANDARD 550/590.

YORK INTERNATIONAL CORPORATION

SUBMITTAL FOR:

Amlyn Pharmaceuticals
RFP 442027-3044
Water Cooled Centrifugal Chillers
Tag: CH-1131 & CH-1132

June 26, 2006

SUBMITTAL REVIEW STAMP

☐ Reviewed and Accepted ☐ Revise and Resubmit
☒ Accepted as Noted ☐ Rejected
☐ Submit Specific Item
☐ For Record Only

The Receivers of this Submittal are instructed to review the "Vendor Print Transmittal" form (with which this Submittal was forwarded) for definitions and instructions for "Reviewed and Accepted", "Accepted as Noted", "Revise and Resubmit" and "Rejected".

The Receivers are also instructed to review the "Note to Document Receivers" contained on the "Vendor Print Transmittal" form for use of definitions.

PARSONS
Date 7-5-06 By
442027 PO-3044-1A

(1) Add MARINE Type water box on Cooler
- Revise Shop drawing as shown.
(2) See note on Page (3) of (7).
(3) See note on wiring diagram
(4) See individual notes.

Engineer:

Parsons
150 Federal Street
Boston, MA 02210

From:

RECEIVED
JUL 07 2006
BY:.....

York International Corp.
320 Norwood Park South
Norwood, MA 02062
Tel: (781) 769-7955
Fax: (781) 769-7956

Product Scope

The following items are included:

- York to provide two (2) Model YKKKKLH9-CYFS Water Cooled Packaged Water/Glycol Chillers sized for 800 Tons each at scheduled design conditions (Please see attached "York Performance Specification" and appropriately labeled Performance "Ratings" for all Technical Data). Also see Parsons Technical Data Sheets for further details.
- Units shall be configured for HFC Refrigerant R-134a with Zero Ozone Depletion Potential and No Phase Out Date
- 0.028" thick enhanced copper tubes in Evaporator and Condenser (per specification)
- Optiview Graphical Microprocessor Control Panel
- Motor shall be Open-Drive Design, operable on 460/3/60 Power
- Unit equipped with Variable Speed Driv (Factory Mounted & Wired on unit)
- Isolation Valves (between Evaporator and Condenser barrels)
- Standard/Compact Water Boxes on Evaporator
- Marine Water Boxes on Condenser (As specified)
- Raised Face Flanges shall be provided for inlet and outlet water connections of both barrels (per specification)
- Flow Sensors for Evaporator and Condenser flows (Factory Installed in nozzles)
- Dual Re-seatable Refrigerant Relief Valves for Condenser and Evaporator shells
- Spring Vibration Isolators with Seismic Restraints (Ship Loose for Field Installation by others)
- Insulation includes factory installed ¾" armaflex insulation on evaporator barrel and suction elbow. (field insulation of marine water boxes not included)
- Hot Gas Bypass shall be provided (Factory Installed) to allow operation down to 10% of full rated capacity of 800 tons.
- Stainless Steel nameplate (per specification)
- Control Panel shall be capable of receiving and/or outputting hardwired signals for Remote Start/Stop, Alarm, Leaving Chilled Water setpoint, and Current Limit Setpoint.
- Microgateway Translator (1 per chiller) to provide 2-way communication directly to front-end to allow monitoring of all points specified on page 17 of Chiller Specification. Startup of Microgateway is included by York, but installation is by others)
- Unit startup and simultaneous operator training by York Factory Trained Service Technician(s)
- One Year Parts & Labor Warranty on entire unit (excluding refrigerant)

Clarifications/Exclusions from Specification:

- Any Factory Performance Tests for Chillers (Chillers are both "Run Tested" and "Leak Tested" prior to leaving the factory, but are not Performance Tested). See below ADD cost and ADD Lead-time for Performance Testing
- Any Field or Site Testing of Chiller

- Any Extended Warranties for Compressors or entire machine (Can be quoted upon request if desired)
- Any Maintenance / Service contracts or any periodic inspections of gears or metering devices. Formal maintenance contract(s) can be quoted to Parsons and/or Amylin upon request.
- Any Breakdown Shipment (Chillers will ship in One Piece per enclosed Unit Drawing)
- Any Rigging, Carting, or Storing of Equipment
- Any Installation or Piping
- All external power wiring, controls interfaces, and Piping shall be by others
- Any insulation for water boxes

YORK®
A JOHNSON CONTROLS COMPANY

YK MAXE CHILLER
Amylin - HVAC Chillers

GENERAL

Furnish YORK MaxE Centrifugal Liquid Chilling-Unit(s) as indicated on the drawings.

Each unit shall produce a capacity of 800 tons, cooling 2000 gpm of PROPYLENE GLYCOL - 35.0 from 48.31 to 38.00 °F when supplied with 2400 gpm of condenser water at 85.00°F. Power input shall not exceed 552 KW with an NPLV of 0.471. The cooler shall be selected for 0.00010 fouling factor and a maximum liquid pressure drop of 21.7 ft. Water side shall be designed for 150 psig working pressure. The condenser shall be selected for 0.00025 fouling factor and maximum liquid pressure drop of 21.0 ft. Water side shall be designed for 150 psig working pressure. Power shall be supplied to the compressor motor at 460 volts – 3 phase - 60 Hertz and controls at 115 volts – 1-phase - 60 Hertz. The chiller shall use R-134A.

Each unit will be completely factory-packaged including evaporator, unit mounted starter, condenser, sub-cooler, compressor, open motor, lubrication system, Optiview control center. and all interconnecting unit piping and wiring. The chiller will be painted prior to shipment.

Performance will be certified in accordance with ARI Standard 550/590. Only chillers that are listed in the ARI Certification Program for Centrifugal and Rotary Screw Water Chillers are acceptable.

The initial charge of refrigerant and oil will be supplied, shipped in containers and cylinders for field installation or factory charged in the chiller.

COMPRESSOR

The compressor will be a single-stage centrifugal type powered by an open-drive electric motor. The housing will be fully accessible with vertical circular joints, with the complete operating assembly removable from the compressor and scroll housing. Compressor castings will be designed for 235 psig working pressure and hydrostatically pressure tested at 355 psig for R-134A units. The rotor assembly will consist of a heat-treated alloy steel drive shaft and impeller shaft with a cast aluminum, fully shrouded impeller. The impeller will be designed for balanced thrust, dynamically balanced and overspeed tested for smooth, vibration-free operation. Insert-type journal and thrust bearings will be fabricated of aluminum alloy, precision bored and axially grooved.

Internal single helical gears with crowned teeth will be designed so that more than one tooth is in contact at all times to provide even load distribution and quiet operation. Each gear will be individually mounted in its own journal and thrust bearings to isolate it from impeller and motor forces. Shaft seal shall be provided in double bellows, double-seal, cartridge type. A gravity-fed oil reservoir will be built into the top of the compressor to provide lubrication during coastdown in the event of a power failure.

Capacity control will be achieved by use of prerotation vanes to provide fully modulating control from maximum to minimum load. The unit will be capable of operating with lower temperature cooling tower water during part-load operation in accordance with ARI Standard 550/590. Prerotation vane position will be automatically controlled by an external electric actuator to maintain constant leaving chilled water temperature.

LUBRICATION SYSTEM

Lubrication oil shall be force-fed to all compressor bearings, gears, and rotating surfaces by an external variable speed oil pump. The oil pump shall vary oil flow to the compressor based on operating and stand-by conditions, ensuring adequate lubrication at all times. The oil pump shall operate prior to start-up, during compressor operation and during coastdown. Compressor shall have an auxiliary reservoir to provide lubrication during coastdown in the event of a power failure.

An oil reservoir, separate from the compressor, shall contain the submersible 2 HP oil pump and a 3000 watt oil heater, thermostatically controlled to remove refrigerant from the oil. The oil reservoir shall be designed and stamped in accordance with ASME or applicable pressure vessel code.

Oil shall be filtered by an externally mounted ½ micron replaceable cartridge oil filter equipped with service valves. Oil cooling shall be done via a refrigerant cooled oil cooler, with all piping factory installed. Oil side of the oil cooler shall be

provided with service valves. An automatic oil return system to recover any oil that may migrate to the evaporator shall be provided. Oil piping shall be completely factory installed and tested.

MOTOR DRIVELINE

The compressor motor will be an open drip-proof, squirrel cage, induction type operating at 3570 RPM.

The open motor shall be provided with a D-flange, bolted to a cast iron adapter mounted on the compressor to allow the motor to be rigidly coupled to the compressor to provide factory alignment of motor and compressor shafts.

Motor drive shaft will be directly connected to the compressor shaft with a flexible disc coupling. Coupling will have all metal construction with no wearing parts to assure long life, and no lubrication requirements to provide low maintenance.

For units utilizing remote electro-mechanical starters, a large steel terminal box with gasketed front access cover will be provided for field connected conduit. Overload/overcurrent transformers will be furnished with all units.

EVAPORATOR

Evaporator will be of the shell-and-tube, flooded type designed for 180 psig working pressure on the refrigerant side. Shell will be fabricated from rolled carbon steel plate with fusion welded seams; have carbon steel tube sheets, drilled and reamed to accommodate the tubes and intermediate tube supports. The refrigerant side will be designed, tested and stamped in accordance with ASME Boiler and Pressure Vessel Code, Section VIII- Division 1. Tubes shall be high-efficiency, internally and externally enhanced type having plain copper lands at all intermediate tube supports to provide maximum tube wall thickness at the support area. Each tube will be roller expanded into the tube sheets providing a leak-proof seal, and be individually replaceable. Water velocity through the tubes will not exceed 12 fps. Two liquid level sight glasses will be located on the side of the shell to aid in determining proper refrigerant charge. Aluminum mesh eliminators will be located above the tube bundle to prevent liquid refrigerant carryover to the compressor. The evaporator will have a refrigerant relief device sized to meet the requirements of ASHRAE 15 Safety Code for Mechanical Refrigeration.

Evaporator to be furnished with standard/compact water boxes. Water boxes will be removable to permit tube cleaning and replacement. Stubout water connections having flanged connection will be provided. Vent and drain connections with plugs will be provided on each water box.

CONDENSER

Condenser will be of the shell-and-tube type, designed for 235 psig working pressure on the refrigerant side. Shell will be fabricated from rolled carbon steel plate with fusion welded seams; have carbon steel tube sheets, drilled and reamed to accommodate the tubes; and intermediate tube supports spaced no more than four feet apart. The refrigerant side will be designed, tested and stamped in accordance with ASME Boiler and Pressure Vessel Code, Section VIII- Division 1. Tubes shall be high-efficiency, internally and externally enhanced type having plain copper lands at all intermediate tube supports to provide maximum tube wall thickness at the support area. Each tube will be roller expanded into the tube sheets providing a leak-proof seal, and be individually replaceable. Water velocity through the tubes will not exceed 12 fps.

Condenser to be furnished with marine water boxes as specified. Water boxes and cover plates will be removable to permit tube cleaning and replacement. Stubout water connections having flanged connection will be provided. Vent and drain connections with plugs will be provided on each water box.

REFRIGERANT FLOW CONTROL

Refrigerant flow to the evaporator will be controlled by a variable orifice for improving unloading capabilities.

GRAPHIC CONTROL CENTER

General: The chiller shall be controlled by a stand-alone microprocessor based control center. The chiller control panel shall provide control of chiller operation and monitoring of chiller sensors, actuators, relays and switches.

Control panel: The control panel shall include a 10.4 in. diagonal color liquid crystal display (LCD) surrounded by "soft " keys which are redefined based on the screen displayed at that time. This shall be mounted in the middle of a keypad interface and installed in a locked enclosure. The screen shall detail all operations and parameters, using a graphical representation of the chiller and its major components. Panel verbiage shall be available in other languages as an option with English always available. Data shall be displayed in either English or Metric units. Smart Freeze Point Protection shall run the chiller at 36.00 °F leaving chilled water temperature, and not have nuisance trips on low water temperature. The sophisticated program and sensor shall monitor the chiller water temperature to prevent freeze up. The panel shall display countdown timer messages so the operator knows when functions are starting and stopping. Every programmable point shall have a pop-up screen with the allowable ranges, so that the chiller can not be programmed to operate outside of its design limits.

The chiller control panel shall also provide:

1. System operating information including:
    a. return and leaving chilled water temperature
    b. return and leaving condenser water temperature
    c. evaporator and condenser saturation temperature
    d. differential oil pressure
    e. percent motor current
    f. evaporator and condenser saturation temperature
    g. compressor discharge temperature
    h. oil reservoir temperature
    i. compressor thrust bearing positioning and oil temperature
    j. operating hours
    k. number of compressor starts

pressure

2. Digital programming of setpoints through the universal keypad including:
    a. leaving chilled water temperature
    b. percent current limit
    c. pull-down demand limiting
    d. six-week schedule for starting and stopping the chiller, pumps and tower
    e. remote reset temperature range

3. Status messages indicating:
    a. system ready to start
    b. system running
    c. system coastdown
    d. system safety shutdown-manual restart
    e. system cycling shutdown-auto restart
    f. system prelube
    g. start inhibit

4. The text displayed within the system status and system details field shall be displayed as a color coded message to indicate severity: red for safety fault, orange for cycling faults, yellow for warnings, and green for normal messages.

5. Safety shutdowns enunciated through the display and the status bar, and consist of system status, system details, day, time, cause of shutdown, and type of restart required. Safety shutdowns with a fixed speed drive shall include:
    a. evaporator – low pressure
    b. evaporator – transducer or leaving liquid probe
    c. evaporator – transducer or temperature sensor
    d. condenser – high pressure contacts open
    e. condenser – high pressure
    f. condenser – pressure transducer out of range

g. auxiliary safety – contacts closed
h. discharge – high temperature
i. discharge – low temperature
j. oil – high temperature
k. oil – low differential pressure
l. oil – high differential pressure
m. oil – sump pressure transducer out of range
n. oil – differential pressure calibration
o. oil – variable speed pump – pressure setpoint not achieved
p. control panel – power failure
q. motor or starter – current imbalance
r. thrust bearing – proximity probe clearance
s. thrust bearing - proximity probe out – of – range
t. thrust bearing – high oil temperature
u. thrust bearing – oil temperature sensor
v. watchdog – software reboot

5.1 Safety shutdowns with a VSD Shall include:
a. VSD shutdown – requesting fault data
b. VSD – stop contacts open
c. VSD – 105% motor current overload
d. VSD – high phase A, B,C inverter heatsink temp.
e. VSD – high converter heatsink temperature

6. Cycling shutdowns enunciated through the display and the status bar, and consists of system status, system details, day, time, cause of shutdown, and type of restart required. Cycling shutdowns with a fixed speed drive shall include:
a. multiunit cycling – contacts open
b. system cycling - contacts open
c. oil – low temperature differential
d. oil – low temperature
e. control panel - power failure
f. leaving chilled liquid - low temperature
g. leaving chilled liquid - flow switch open
h. motor controller – contacts open
i. motor controller – loss of current
j. power fault
k. control panel - schedule
l. starter – low supply line voltage
m. starter – high supply line voltage
n. proximity probe – low supply voltage
o. oil - variable speed pump - drive contacts open

6.1 Cycling shutdowns with a VSD shall include:
a. VSD shutdown – requesting fault data
b. VSD – stop contacts open
c. VSD initialization failed
d. VSD - high phase A,B,C instantaneous current
e. VSD – phase A,B,C gate driver
f. VSD – single phase input power
g. VSD – high DC bus voltage
h. VSD – pre charge DC bus voltage imbalance

i. VSD – high internal ambient temperature
j. VSD – invalid current scale selection
k. VSD – low phase A, B, C inverter heatsink temp.
l. VSD – low converter heatsink temperature
m. VSD – pre-charge - low DC bus voltage
n. VSD – logic board processor
o. VSD – run signal
p. VSD – serial communications

7. Security access to prevent unauthorized change of setpoints, to allow local or remote control of the chiller, and to allow manual operation of the prerotation vanes and oil pump. Access shall be through ID and password recognition, which is defined by three different levels of user competence: view, operator, and service.

8. Trending data with the ability to customize points of once every second to once every hour. The panel shall trend up to 6 different parameters from a list of over 140, without the need of an external monitoring system.

9. The operating program stored in non-volatile memory (EPROM) to eliminate reprogramming the chiller due to AC power failure or battery discharge. Programmed setpoints shall be retained in lithium battery-backed RTC memory for a minimum of 11 years with power removed from the system.

10. A fused connection through a transformer in the compressor motor starter to provide individual over-current protected power for all controls.

11. A numbered terminal strip for all required field interlock wiring.

12. An RS-232 port to output all system operating data, shutdown / cycling message, and a record of the last 10 cycling or safety shutdowns to a field-supplied printer. Data logs to a printer at a set programmable interval. This data can be preprogrammed to print from 1minute to 1day.

13. The capability to interface with a building automation system to provide:
    a. remote chiller start and stop
    b. remote leaving chiller liquid temperature adjust
    c. remote current limit setpoint adjust
    d. remote ready to start contacts
    e. safety shutdown contacts
    f. cycling shutdown contacts
    g. run contacts

STARTUP AND OPERATOR TRAINING
The services of a factory trained, field service representative will be provided to supervise the final leak testing, charging and the initial startup and conduct concurrent operator instruction.

FACTORY INSULATION
Factory-applied, anti-sweat insulation will be attached to the cooler shell, flow chamber, tube sheets, suction connection, and (as necessary) to the auxiliary tubing. The insulation will be a flexible, closed-cell plastic type, 3/4 inch thick, applied with vapor-proof cement. The insulation will normally prevent sweating in environments with relative humidities up to 75% and dry bulb temperatures ranging from 50 to 90 °F. Insulation on water box is by others.

EXTERNAL ENERGY EFFICIENT HOT GAS BY-PASS SYSTEM

The hot gas by-pass system will be supplied for operation down to 10% of design load. The hot gas bypass system shall be completely factory piped and wired. It will consist of a hot gas valve, external electric (115V – 1 Ph –60/50 Hz) operator and linkage, and a solid state sensing control. This control will measure entering and leaving chilled water temperature to indicate load and measure refrigerant condensing temperature to indicate head. These signals shall be compared to a reference point (adjustable) to activate the hot gas valve. Hot gas will be actuated only when necessary and in only the amount required for stable and efficient chiller operation.

SPRING ISOLATION MOUNTING

The unit will be provided with four level-adjusting, spring-type vibration isolators with non-skid pads. Pads will be field mounted on the steel brackets located on the tube sheets. Isolators will be designed for nominal one-inch deflection.

SHIPMENT FORM #1

The unit shall be completely assembled, with all main, auxiliary, and control piping installed, controls wired, leak tests completed, air run tests completed, and refrigerant and oil charge in place. Other miscellaneous materials shall be packed separately.

COMPRESSOR MOTOR STARTER

A variable speed drive will be factory installed on the chiller. It will vary the compressor motor speed by controlling the frequency and voltage of the electrical power to the motor. The adaptive capacity control logic shall automatically adjust motor speed and compressor pre-rotation vane position independently for maximum part-load efficiency by analyzing information fed to it by sensors located throughout the chiller.

Drive will be PWM type utilizing IGBT's with a power factor of 0.95 or better at all loads and speeds.

The variable speed drive will be unit mounted in a NEMA 1 enclosure with all power and control wiring between the drive and chiller factory installed, including power to the chiller oil pump. Field power wiring shall be a single point connection and electrical lugs for incoming power wiring will be provided. The entire chiller package will be UL listed.

The following features will be provided:

Door interlocked circuit breaker capable of being padlocked.
UL listed ground fault protection.
Over voltage and under voltage protection.
3-phase sensing motor over current protection.
Single phase protection.
Insensitive to phase rotation.
Over temperature protection.
Digital readout at the chiller unit control panel of output frequency, output voltage, 3-phase output current, input Kilowatts and Kilowatt-hours, self-diagnostic service parameters.

KW Meter - The unit's input power consumption will be measured and displayed digitally via the unit's control panel. The KW meter accuracy is typically +/- 3% of reading. KW meter scale is 0 - 788 KW .

KWh Meter – The unit's cumulative input power consumption is measured and displayed digitally via the unit's control panel. The KWh meter is resetable and it's accuracy is typically +/- 3% of reading. KWh meter scale is 0 – 999,999 kWh.

Ammeter – Simultaneous three-phase true RMS digital readout via the unit control panel. Three current transformers provide isolated sensing. The ammeter accuracy is typically +/- 3% of readming. Ammeter scale is 0 - 545 A RMS .

Voltmeter – Simultaneous three-phase true RMS digital readout via the unit control panel. The voltmeter accuracy is typically +/- 3% of reading. Voltmeter scale is 0 – 670 VAC.

Elapsed Time Meter – Digital readout of the unit's elapsed running time (0 – 876,600 hours, resetable) is displayed via the unit control panel.

YORK
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YK MAXE CHILLER
PERFORMANCE SPECIFICATION

Unit Tag	Qty	Model No.	Capacity (tons)	Power	Refrigerant
CH-1131 & CH-1132	2	YKKKKLH9-CYFS	800	460/3/60	R-134A

Unit Data	Evaporator	Condenser
EWT (°F):	48.31	85.00
LWT (°F):	38.00	94.53
Flow Rate (gpm):	2000	2400
Pressure Drop (ft):	21.7	21.0
Fluid Type (%):	PROPYLENE GLYCOL - 35.0	WATER
Circuit No. of Passes:	2	2
Fouling Factor (ft² °F hr / Btu):	0.00010	0.0002
Tube No. / Description:	272 - 0.028" Enhanced Copper	261 - 0.028" CSL Enhanced Copper
Design Working Pressure (psig):	150	150
Entering Water Nozzle @ Location:	C	12
Leaving Water Nozzle @ Location:	B	13
Water Box Weight, ea (lbs)(2):	524*	976*
Cover Plate Weight , ea (lbs):	N/A	526
Return Head Weight (lbs):	280	177
Water Weight (lbs):	1985	2590

Performance Data		Electrical Data		Other	
Job KW:	566	Job FLA:	796	Operating Wt. (lbs):	36899
Motor KW:	552	Motor FLA:	784	Per Isolator (lbs):	9225
KW/Ton:	0.707	LRA:	5280	Refrigerant Wt. (lbs):	2300
NPLV (1):	0.471	Inrush Amps:	796	Oil Charge (gal):	20
Shaft HP:	704	Min Circuit Ampacity (Amps):	995	Motor Wt. (lbs):	3105
		Max Fuse/Breaker:	1600	Compressor Wt. (lbs):	3500
				Starter Wt. (lbs):	1408
				Shipping Wt. (lbs):	32324
		Type Starter: Variable Speed Drive			

Notes:

(1) Chiller NPLV value calculated to ARI Standard 550/590 equation.
(2) Not including cover plate on marine water boxes.
* with applicable water flanges

Project Name: Amylin - HVAC Chillers	Sold To:	
Location:	Customer Purchase Order No.:	
Engineer:	York Contract No.:	
Contractor:	Date:	Revision Date:

CH-1133

SCOPE

JOHNSON CONTROLS

YORK
A JOHNSON CONTROLS COMPANY

SCOPE

York Model YK Water Cooled Centrifugal Chiller
Qty (1) Tags: CH-1133 (Building 1)

The following items are included:

- York to provide one (1) Model YKKQKRH9-CYGS (800 tons) Water Cooled Packaged Water/Glycol Chiller sized for scheduled design conditions. NOTE that this machine differs slightly from the machines previously furnished at the Amylin site, due to ongoing product improvements. However, compressor/motor remains same, dimensions & weights are equal or smaller, and performance is slightly improved.
- Unit shall be configured for HFC Refrigerant R-134a with Zero Ozone Depletion Potential and No Phase Out Date
- 0.028" thick enhanced copper tubes in Evaporator and Condenser
- Optiview Graphical Microprocessor Control Panel
- Motor shall be Open-Drive Design, operable on 460/3/60 Power
- Unit equipped with Factory Mounted & Wired Variable Speed Drive – Unit configured for Single Point 460/3/60 Power (including control panel)
- Isolation Valves (between Evaporator and Condenser barrels)
- Marine Water Boxes on Condenser (As specified)
- Marine Water Boxes on Evaporator (Purchased as ADD on previous phases)
- Raised Face Flanges shall be provided (factory welded on water connections) for inlet and outlet of both barrels (companion flanges NOT included)
- Flow Sensors for Evaporator and Condenser flows (Factory Installed)
- Dual Re-seatable Refrigerant Relief Valves for Condenser and Evaporators
- Factory insulation (includes factory installed ¾" Armaflex insulation on Evaporator Barrel, suction elbow, and other cold surfaces. NOTE: Insulation for Marine Water Boxes is NOT included and must be done in the field by others)
- Hot Gas Bypass down to 10% Load - Hot Gas Bypass shall be provided (Factory Installed) to allow operation down to 10% of full rated capacity – This was purchased on all machines on Stage 1 and Stage 2 of project.
- Spring Vibration Isolators (Ship Loose for Field Installation by others)
- VSD will be field modified to be cooled by chilled water loop instead of condenser water
- Stainless Steel nameplate (per specification)
- Copy of ASME U-1 Report
- Control Panel shall be capable of receiving and/or outputting hardwired signals for Remote Start/Stop, Alarm, Leaving Chilled Water set point, and Current Limit Setpoint.
- ModBus Microgateway Translator to provide 2-way communication directly to front-end to allow monitoring of all points specified on page 18 of Chiller

320 Norwood Park South, Norwood, Massachusetts 02062-5079
Sales (781) 769-7955 • Service (781)769-7950 • Fax (781) 769-7956

Specification. Startup of Microgateway is included by York, but installation is by others)

- Unit startup and simultaneous operator training by York Factory Trained Service Technician(s)
- One Year Parts & Labor Warranty on entire unit (excluding refrigerant)

Clarifications/Exclusions from Specification:

- Any Refrigerant Monitor (it is assumed that the existing refrigerant monitor(s) have ample capacity to handle this additional machine.
- Any Epoxy Coated End Sheets or Water Boxes on Condenser (this is mentioned on Technical Data Sheet, but was not provided on any of the previous YK chillers sold to this site).
- Any Factory Performance Tests for Chillers (Chillers are both "Run Tested" and "Leak Tested" prior to leaving the factory, but are not Performance Tested).
- Any Field or Site Testing of Chillers
- Any separate power connection for Control Panel (Battery backup included)
- Any Extended Warranties for Compressors or entire machines
- Any Maintenance / Service contracts or any periodic inspections of gears or metering devices. Formal maintenance contract(s) can be quoted to Parsons and/or Amylin upon request.
- Any Breakdown Shipment (Chillers will ship in One Piece per Unit Drawing)
- Any special epoxy paint. Standard paint is Caribean blue, durable alkyd-modified, vinyl enamel, machinery paint
- Any NEMA 12 control panel or VFD enclosure (NEMA 1 included as standard)
- Any Refrigerant Receivers (Refrigerant charge can be stored in the condenser)
- Any Rigging, Carting, or Storing of Equipment
- All external power wiring, electrical devices, and harmonic attenuation shall be by others

EQUIPMENT LEAD-TIME:

Current lead-time for this chiller as detailed above is currently **14-15 weeks from date of clean "release" for production to factory until shipment ex-factory**. Please allow 1 additional week for shipment to Ohio.

SPECIFICATIONS

GENERAL

Furnish YORK MaxE Centrifugal Liquid Chilling-Unit as indicated on the drawings.

Each unit shall produce a capacity of 800 tons, cooling 2000 gpm of PROPYLENE GLYCOL – 35% from 48.31 to 38.00 °F when supplied with 2400 gpm of condenser water at 85.00°F. Power input shall not exceed 542 KW with an NPLV of 0.466. The cooler shall be selected for 0.00010 fouling factor and a maximum liquid pressure drop of 22.0 ft. Water side shall be designed for 150 psig working pressure. The condenser shall be selected for 0.00025 fouling factor and maximum liquid pressure drop of 21.0 ft. Water side shall be designed for 150 psig working pressure. Power shall be supplied to the compressor motor at 460 volts – 3 phase - 60 Hertz and controls at 115 volts – 1-phase - 60 Hertz. The chiller shall use R-134A.

Each unit will be completely factory-packaged including evaporator, unit mounted variable speed drive, condenser, sub-cooler, compressor, open motor, lubrication system, Optiview control center. and all interconnecting unit piping and wiring. The chiller will be painted prior to shipment.

Performance will be certified in accordance with ARI Standard 550/590. Only chillers that are listed in the ARI Certification Program for Centrifugal and Rotary Screw Water Chillers are acceptable.

The initial charge of refrigerant and oil will be supplied, factory charged in the chiller.

COMPRESSOR

The compressor will be a single-stage centrifugal type powered by an open-drive electric motor. The housing will be fully accessible with vertical circular joints, with the complete operating assembly removable from the compressor and scroll housing. Compressor castings will be designed for 235 psig working pressure and hydrostatically pressure tested at 355 psig for R-134A units. The rotor assembly will consist of a heat-treated alloy steel drive shaft and impeller shaft with a cast aluminum, fully shrouded impeller. The impeller will be designed for balanced thrust, dynamically balanced and overspeed tested for smooth, vibration-free operation. Insert-type journal and thrust bearings will be fabricated of aluminum alloy, precision bored and axially grooved.

Internal single helical gears with crowned teeth will be designed so that more than one tooth is in contact at all times to provide even load distribution and quiet operation. Each gear will be individually mounted in its own journal and thrust bearings to isolate it from impeller and motor forces. Shaft seal shall be provided in double bellows, double-seal, cartridge type. A gravity-fed oil reservoir will be built into the top of the compressor to provide lubrication during coastdown in the event of a power failure.

Capacity control will be achieved by use of prerotation vanes to provide fully modulating control from maximum to minimum load. The unit will be capable of operating with lower temperature cooling tower water during part-load operation in accordance with ARI Standard 550/590. Prerotation vane position will be automatically controlled by an external electric actuator to maintain constant leaving chilled water temperature.

LUBRICATION SYSTEM

Lubrication oil shall be force-fed to all compressor bearings, gears, and rotating surfaces by an external variable speed oil pump. The oil pump shall vary oil flow to the compressor based on operating and stand-by conditions, ensuring adequate lubrication at all times. The oil pump shall operate prior to start-up, during compressor operation and during coastdown. Compressor shall have an auxiliary reservoir to provide lubrication during coastdown in the event of a power failure.

An oil reservoir, separate from the compressor, shall contain the submersible 2 HP oil pump and a 3000 watt oil heater, thermostatically controlled to remove refrigerant from the oil. The oil reservoir shall be designed and stamped in accordance with ASME or applicable pressure vessel code. A non-code reservoir is not acceptable.

Oil shall be filtered by an externally mounted ½ micron replaceable cartridge oil filter equipped with service valves. Oil cooling shall be done via a refrigerant cooled oil cooler, with all piping factory installed. Oil side of the oil cooler shall be provided with service valves. An automatic oil return system to recover any oil that may have migrated to the evaporator shall be provided. Oil piping shall be completely factory installed and tested.

MOTOR DRIVELINE

The compressor motor will be an open drip-proof, squirrel cage, induction type operating at 3570 RPM.

The open motor shall be provided with a D-flange, bolted to a cast iron adapter mounted on the compressor to allow the motor to be rigidly coupled to the compressor to provide factory alignment of motor and compressor shafts.

Motor drive shaft will be directly connected to the compressor shaft with a flexible disc coupling. Coupling will have all metal construction with no wearing parts to assure long life, and no lubrication requirements to provide low maintenance.

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Water boxes and cover plates will be removable to permit tube cleaning and replacement. Stubout water connections having flanged connection will be provided. Vent and drain connections with plugs will be provided on each water box.

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water temperature. The sophisticated program and sensor shall monitor the chiller water temperature to prevent freeze up. When needed Hot Gas Bypass is available as an option. The panel shall display countdown timer messages so the operator knows when functions are starting and stopping. Every programmable point shall have a pop-up screen with the allowable ranges, so that the chiller can not be programmed to operate outside of its design limits.

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    d. six-week schedule for starting and stopping the chiller, pumps and tower
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    f. system prelube
    g. start inhibit

4. The text displayed within the system status and system details field shall be displayed as a color coded message to indicate severity: red for safety fault, orange for cycling faults, yellow for warnings, and green for normal messages.

5. Safety shutdowns enunciated through the display and the status bar, and consist of system status, system details, day, time, cause of shutdown, and type of restart required. Safety shutdowns with a fixed speed drive shall include:
    a. evaporator – low pressure
    b. evaporator – transducer or leaving liquid probe
    c. evaporator – transducer or temperature sensor
    d. condenser – high pressure contacts open
    e. condenser – high pressure
    f. condenser – pressure transducer out of range
    g. auxiliary safety – contacts closed
    h. discharge – high temperature
    i. discharge – low temperature
    j. oil – high temperature
    k. oil – low differential pressure

l. oil – high differential pressure
m. oil – sump pressure transducer out of range
n. oil – differential pressure calibration
o. oil – variable speed pump – pressure setpoint not achieved
p. control panel – power failure
q. motor or starter – current imbalance
r. thrust bearing – proximity probe clearance
s. thrust bearing - proximity probe out – of – range
t. thrust bearing – high oil temperature
u. thrust bearing – oil temperature sensor
v. watchdog – software reboot

5.1 Safety shutdowns with a VSD Shall include:
a. VSD shutdown – requesting fault data
b. VSD – stop contacts open
c. VSD – 105% motor current overload
d. VSD – high phase A, B,C inverter heatsink temp.
e. VSD – high converter heatsink temperature

6. Cycling shutdowns enunciated through the display and the status bar, and consists of system status, system details, day, time, cause of shutdown, and type of restart required. Cycling shutdowns with a fixed speed drive shall include:
a. multiunit cycling – contacts open
b. system cycling - contacts open
c. oil – low temperature differential
d. oil – low temperature
e. control panel - power failure
f. leaving chilled liquid - low temperature
g. leaving chilled liquid - flow switch open
h. motor controller – contacts open
i. motor controller – loss of current
j. power fault
k. control panel - schedule
l. starter – low supply line voltage
m. starter – high supply line voltage
n. proximity probe – low supply voltage
o. oil - variable speed pump - drive contacts open

6.1 Cycling shutdowns with a VSD shall include:
a. VSD shutdown – requesting fault data
b. VSD – stop contacts open
c. VSD initialization failed
d. VSD - high phase A,B,C instantaneous current
e. VSD – phase A,B,C gate driver
f. VSD – single phase input power
g. VSD – high DC bus voltage
h. VSD – pre charge DC bus voltage imbalance
i. VSD – high internal ambient temperature
j. VSD – invalid current scale selection
k. VSD – low phase A, B, C inverter heatsink temp.
l. VSD – low converter heatsink temperature
m. VSD – pre-charge - low DC bus voltage

n. VSD – logic board processor
o. VSD – run signal
p. VSD – serial communications

7. Security access to prevent unauthorized change of setpoints, to allow local or remote control of the chiller, and to allow manual operation of the prerotation vanes and oil pump. Access shall be through ID and password recognition, which is defined by three different levels of user competence: view, operator, and service.

8. Trending data with the ability to customize points of once every second to once every hour. The panel shall trend up to 6 different parameters from a list of over 140, without the need of an external monitoring system.

9. The operating program stored in non-volatile memory (EPROM) to eliminate reprogramming the chiller due to AC power failure or battery discharge. Programmed setpoints shall be retained in lithium battery-backed RTC memory for a minimum of 11 years with power removed from the system.

10. A fused connection through a transformer in the compressor motor starter to provide individual over-current protected power for all controls.

11. A numbered terminal strip for all required field interlock wiring.

12. An RS-232 port to output all system operating data, shutdown / cycling message, and a record of the last 10 cycling or safety shutdowns to a field-supplied printer. Data logs to a printer at a set programmable interval. This data can be preprogrammed to print from 1minute to 1day.

13. The capability to interface with a building automation system to provide:
    a. remote chiller start and stop
    b. remote leaving chiller liquid temperature adjust
    c. remote current limit setpoint adjust
    d. remote ready to start contacts
    e. safety shutdown contacts
    f. cycling shutdown contacts
    g. run contacts

STARTUP AND OPERATOR TRAINING
The services of a factory trained, field service representative will be provided to supervise the final leak testing, charging and the initial startup and conduct concurrent operator instruction.

FACTORY INSULATION
Factory-applied, anti-sweat insulation will be attached to the cooler shell, flow chamber, tube sheets, suction connection, and (as necessary) to the auxiliary tubing. The insulation will be a flexible, closed-cell plastic type, 3/4 inch thick, applied with vapor-proof cement. The insulation will normally prevent sweating in environments with relative humidities up to 75% and dry bulb temperatures ranging from 50 to 90 °F.

EXTERNAL ENERGY EFFICIENT HOT GAS BY-PASS SYSTEM
The hot gas by-pass system will be supplied for operation down to 10% of design load. The hot gas bypass system shall be completely factory piped and wired. It will consist of a hot gas valve, external electric (115V – 1 Ph –60/50 Hz) operator and linkage, and a solid state sensing control. This control will measure entering and leaving chilled water temperature to indicate load and measure refrigerant condensing temperature to indicate head. These signals

shall be compared to a reference point (adjustable) to activate the hot gas valve. Hot gas will be actuated only when necessary and in only the amount required for stable and efficient chiller operation.

SPRING ISOLATION MOUNTING

The unit will be provided with four level-adjusting, spring-type vibration isolators with non-skid pads. Pads will be field mounted on the steel brackets located on the tube sheets. Isolators will be designed for nominal one-inch deflection.

SHIPMENT FORM #1

The unit shall be completely assembled, with all main, auxiliary, and control piping installed, controls wired, leak tests completed, air run tests completed, and refrigerant and oil charge in place. Other miscellaneous materials shall be packed separately.

COMPRESSOR MOTOR STARTER

A variable speed drive will be factory installed on the chiller. It will vary the compressor motor speed by controlling the frequency and voltage of the electrical power to the motor. The adaptive capacity control logic shall automatically adjust motor speed and compressor pre-rotation vane position independently for maximum part-load efficiency by analyzing information fed to it by sensors located throughout the chiller.

Drive will be PWM type utilizing IGBT's with a power factor of 0.95 or better at all loads and speeds.

The variable speed drive will be unit mounted in a NEMA 1 enclosure with all power and control wiring between the drive and chiller factory installed, including power to the chiller oil pump. Field power wiring shall be a single point connection and electrical lugs for incoming power wiring will be provided. The entire chiller package will be UL listed.

The following features will be provided:

Door interlocked circuit breaker capable of being padlocked.
UL listed ground fault protection.
Over voltage and under voltage protection.
3-phase sensing motor over current protection.
Single phase protection.
Insensitive to phase rotation.
Over temperature protection.
Digital readout at the chiller unit control panel of output frequency, output voltage, 3-phase output current, input Kilowatts and Kilowatt-hours, self-diagnostic service parameters. Separate meters for this information will not be acceptable.

KW Meter - The unit's input power consumption will be measured and displayed digitally via the unit's control panel. The KW meter accuracy is typically +/- 3% of reading. KW meter scale is 0 - 788 KW .

KWh Meter – The unit's cumulative input power consumption is measured and displayed digitally via the unit's control panel. The KWh meter is resetable and it's accuracy is typically +/- 3% of reading. KWh meter scale is 0 – 999,999 kWh.

Ammeter – Simultaneous three-phase true RMS digital readout via the unit control panel. Three current transformers provide isolated sensing. The ammeter accuracy is typically +/- 3% of readming. Ammeter scale is 0 - 545 A RMS .

Voltmeter – Simultaneous three-phase true RMS digital readout via the unit control panel. The voltmeter accuracy is typically +/- 3% of reading. Voltmeter scale is 0 – 670 VAC.

Elapsed Time Meter – Digital readout of the unit's elapsed running time (0 – 876,600 hours, resetable) is displayed via the unit control panel.

PERFORMANCE DATA, DRAWINGS, WIRING DIAGRAMS, MAINTENANCE REQUIREMENTS, AND WARRANTY INFORMATION

YORK
A JOHNSON CONTROLS COMPANY

YK MAXE CHILLER
PERFORMANCE SPECIFICATION

Unit Tag	Qty	Model No.	Capacity (tons)	Power	Refrigerant
YK-G	1	YKKQKRH9-CYGS	800	460/3/60	R-134A

Unit Data	Evaporator	Condenser
EWT (°F):	48.31	85.00
LWT (°F):	38.00	94.51
Flow Rate (gpm):	2000	2400
Pressure Drop (ft):	22.0	21.0
Fluid Type (%):	PROPYLENE GLYCOL - 35.0	WATER
Circuit No. of Passes:	2	2
Fouling Factor (ft² °F hr / Btu):	0.00010	0.00025
Tube No. / Description:	272 - 0.028" Enhanced Copper	261 - 0.028" CSL Enhanced Copper
Design Working Pressure (psig):	150	150
Entering Water Nozzle @ Location:	2	12
Leaving Water Nozzle @ Location:	3	13
Water Box Weight, ea (lbs)(2):	905*	522*
Cover Plate Weight , ea (lbs):	1080	500
Return Head Weight (lbs):	276	176
Water Weight (lbs):	2793	2226

Performance Data		Electrical Data		Other	
Job KW:	556	Job FLA:	782	Operating Wt. (lbs):	37852
Motor KW:	542	Motor FLA:	770	Per Isolator (lbs):	9463
KW/Ton:	0.695	LRA:	5280	Refrigerant Wt. (lbs):	2735
NPLV (1):	0.466	Inrush Amps:	782	Oil Charge (gal):	20
Gear Code:	RI	Min Circuit Ampacity (Amps):	978	Motor Wt. (lbs):	3105
OptiSound Cntrl:	Yes	Max Fuse/Breaker:	1600	Compressor Wt. (lbs):	3500
Shaft HP:	691			Starter Wt. (lbs):	1408
Isolation Valves:	YES			Shipping Wt. (lbs):	32833
Oil Cooler Type:	Standard				
Condenser Inlet:	Standard				
		Type Starter: Variable Speed Drive			

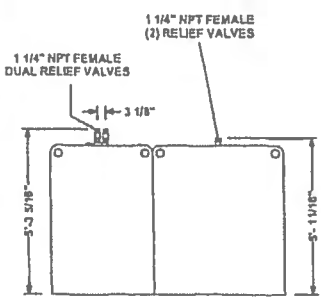
Notes:

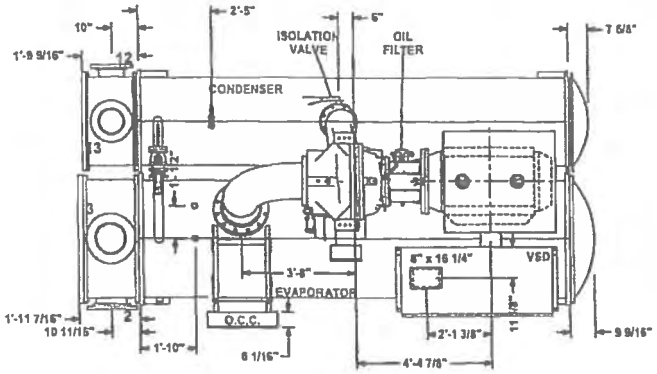
(1) Chiller NPLV value calculated to ARI Standard 550/590 equation.
(2) Not including cover plate on marine water boxes.
* with applicable water flanges

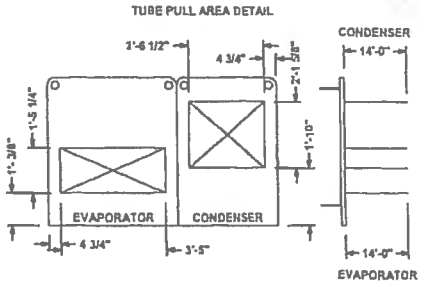
Project Name: Amylin - G2 Chiller	Sold To: Parsons, Inc.	
Location: Hamilton, OH	Customer Purchase Order No.: LOI 444249-3023	
Engineer:	York Contract No.: 09103452	
Contractor:	Date:	Revision Date:

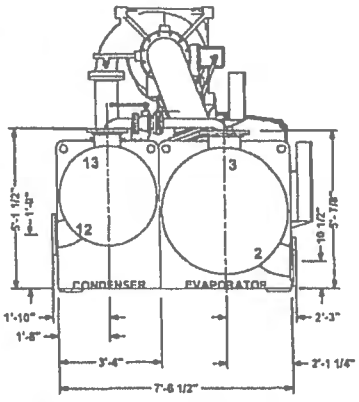
NOZZLE LEGEND

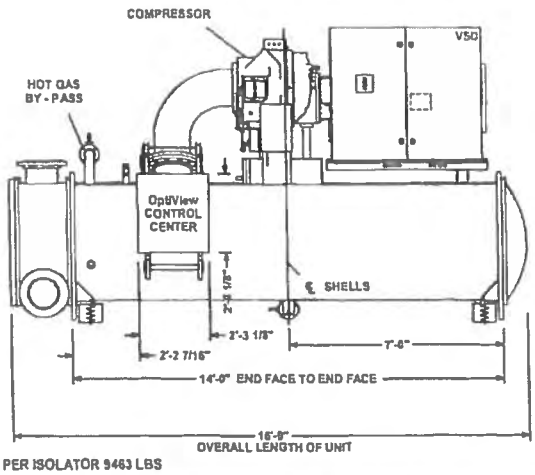
EVAPORATOR INLET "2" 2 PASS 12 DIA. (150 Psig DWP)
EVAPORATOR OUTLET "3" 2 PASS 12 DIA. (150 Psig DWP)
CONDENSER INLET "12" 2 PASS 10 DIA. (150 Psig DWP)
CONDENSER OUTLET "13" 2 PASS 10 DIA. (150 Psig DWP)

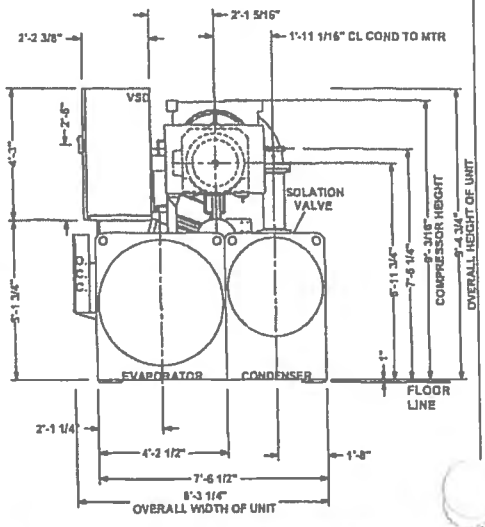












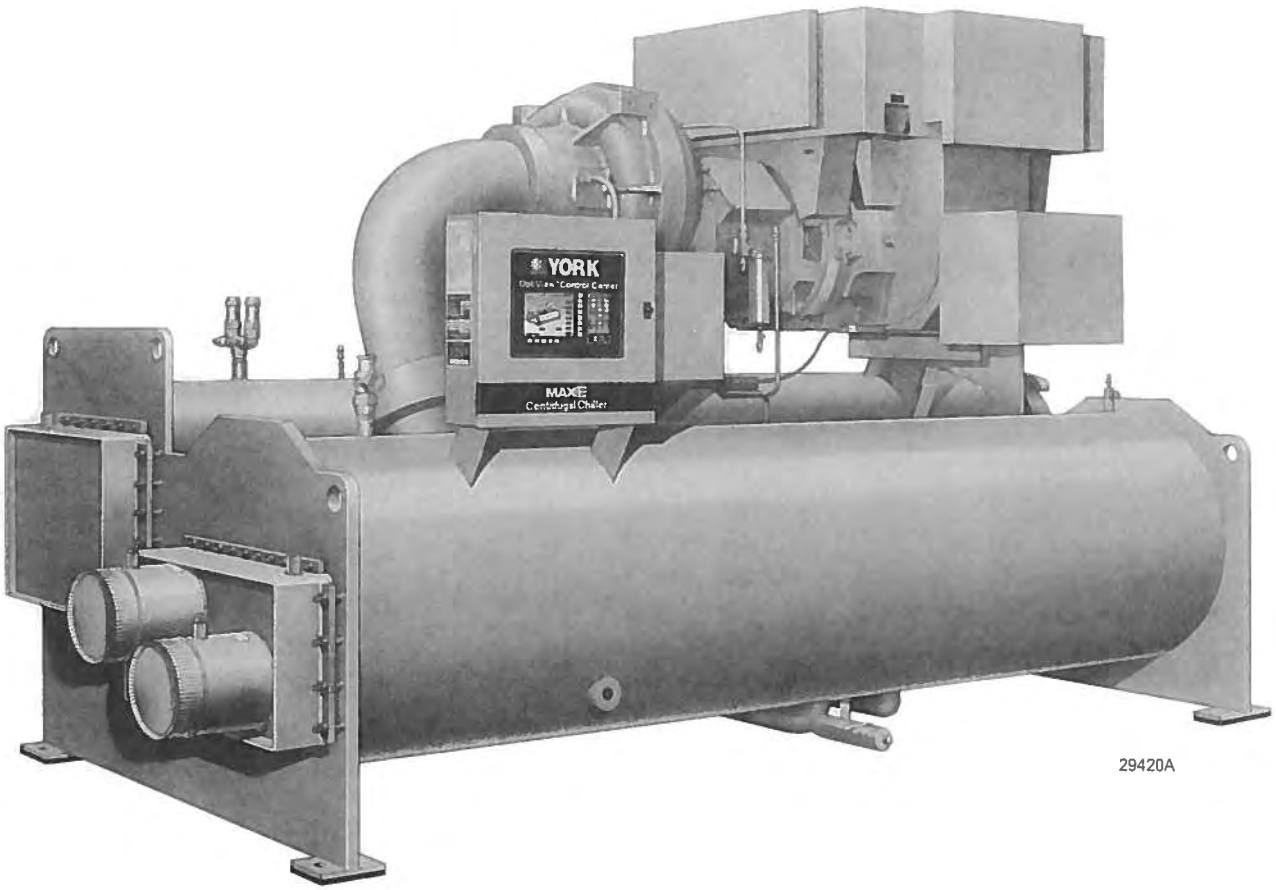
SHIPPING WT.: 32833 LBS, OPERATING WT. 37852 LBS, LOAD PER ISOLATOR 9463 LBS

PRODUCT DRAWING MaxE Centrifugal Liquid Chiller MODEL YK KQ KR H9 - CY G NOT FOR CONSTRUCTION	Project Name : Amylin - G2 Chiller Location : Hamilton, OH Engineer : Contractor : For : N/A	Sold To : Parsons, Inc. Cust Purch Order# : LOI 444249-3023 York Contract# : 09103452 UNIT TAG: YK-G	Date : Jan 22, 2009 Rev. Date : 3:47 PM Form: 160.75-EG1 Dwg. Lov. : 1006 Dwg. Scale : NTS	YORK A JOHNSON CONTROLS COMPANY

YORK®	OPTIVIEW™ CONTROL CENTER MAXE™ CENTRIFUGAL LIQUID CHILLERS	
OPERATION MANUAL	Supersedes: 160.54-O1 (704)	Form 160.54-O1 (405)

MODEL YK (THROUGH STYLE F)
R-134a COOLING ONLY

WITH OPTIVIEW™ CONTROL CENTER
FOR ELECTRO-MECHANICAL STARTER,
SOLID STATE STARTER
& VARIABLE SPEED DRIVE



29420A

YORK INTERNATIONAL
CORPORATION

SUBMITTAL FOR:

Amlyn Pharmaceuticals
RFP 442878-3044
Water Cooled Centrifugal Chillers
Tag: CH-~~2011~~ 1134, CH-3031 & CH-3032
May 21, 2007

Engineer:

Parsons
150 Federal Street
Boston, MA 02210

From:

York International Corp.
320 Norwood Park South
Norwood, MA 02062
Tel: (781) 769-7955
Fax: (781) 769-7956

Product Scope

The following items are included:

- York to provide three (3) Model YKKKKLH9-CYFS (800 tons each) Water Cooled Packaged Water/Glycol Chillers sized for scheduled design conditions (Please see attached "York Performance Specifications" and appropriately labeled Performance "Ratings" for all Technical Data). Model numbers and Performance to be exactly the same as the chillers provided in Phase 1 of this project
- Units shall be configured for HFC Refrigerant R-134a with Zero Ozone Depletion Potential and No Phase Out Date
- 0.028" thick enhanced copper tubes in Evaporator and Condenser
- Optiview Graphical Microprocessor Control Panel
- Motor shall be Open-Drive Design, operable on 460/3/60 Power
- Units equipped with Variable Speed Drives Factory Mounted & Wired on unit – Unit configured for Single Point 460/3/60 Power (including control panel)
- Isolation Valves (between Evaporator and Condenser barrels)
- Marine Water Boxes on Condenser
- Marine Water Boxes on Evaporator
- Raised Face Flanges shall be provided for inlet and outlet water connections of both barrels (ship loose for field installation by others)
- Flow Sensors for Evaporator and Condenser flows (Factory Installed)
- Dual Re-seatable Refrigerant Relief Valves for Condenser and Evaporators
- Factory insulation (includes factory installed ¾" armaflex insulation on
- Evaporator Barrel, suction elbow, and other cold surfaces. NOTE: Insulation for Water Boxes is NOT included and must be done in the field by others)
- Hot Gas Bypass down to 10% Load - Hot Gas Bypass shall be provided (Factory Installed) to allow operation down to 10% of full rated capacity –
- Spring Vibration Isolators (Ship Loose for Field Installation by others)
- Stainless Steel nameplate (per specification)
- Control Panel shall be capable of receiving and/or outputting hardwired signals for Remote Start/Stop, Alarm, Leaving Chilled Water setpoint, and Current Limit Setpoint.
- ModBus Microgateway Translator (1 per chiller) to provide 2-way communication directly to front-end to allow monitoring of all points specified on page 17 of Chiller Specification. Startup of Microgateway is included by York, but installation is by others)
- Unit startup and simultaneous operator training by York Factory Trained Service Technician(s)
- One Year Parts & Labor Warranty on entire unit (excluding refrigerant)

Clarifications/Exclusions from Specification:

- Any Factory Performance Tests for Chillers (Chillers are both "Run Tested" and "Leak Tested" prior to leaving the factory, but are not Performance Tested).
- Any Field or Site Testing of Chillers
- Any separate power connection for Control Panel (Battery backup included)
- Any Extended Warranties for Compressors or entire machines (Can be quoted upon request if desired)
- Any Breakdown Shipment (Chillers will ship in One Piece per enclosed Unit Drawing)
- Any special epoxy paint. Standard paint is Caribbean blue, durable alkyd-modified, vinyl enamel, machinery paint
- Any NEMA 12 control panel enclosures (NEMA 1 included as standard)
- Any Rigging, Carting, or Storing of Equipment
- Any Installation or Piping
- All external power wiring, electrical devices, and harmonic attenuation shall be by others

GENERAL

Furnish YORK MaxE Centrifugal Liquid Chilling-Unit(s) as indicated on the drawings.

Each unit shall produce a capacity of 800 tons, cooling 2000 gpm of PROPYLENE GLYCOL - 35.0 from 48.31 to 38.00 °F when supplied with 2400 gpm of condenser water at 85.00°F. Power input shall not exceed 552 KW with an NPLV of 0.471. The cooler shall be selected for 0.00010 fouling factor and a maximum liquid pressure drop of 21.7 ft. Water side shall be designed for 150 psig working pressure. The condenser shall be selected for 0.00025 fouling factor and maximum liquid pressure drop of 21.0 ft. Water side shall be designed for 150 psig working pressure. Power shall be supplied to the compressor motor at 460 volts – 3 phase - 60 Hertz and controls at 115 volts – 1-phase - 60 Hertz. The chiller shall use R-134A.

Each unit will be completely factory-packaged including evaporator, unit mounted starter, condenser, sub-cooler, compressor, open motor, lubrication system, Optiview control center. and all interconnecting unit piping and wiring. The chiller will be painted prior to shipment.

Performance will be certified in accordance with ARI Standard 550/590. Only chillers that are listed in the ARI Certification Program for Centrifugal and Rotary Screw Water Chillers are acceptable.

The initial charge of refrigerant and oil will be supplied, shipped in containers and cylinders for field installation or factory charged in the chiller.

COMPRESSOR

The compressor will be a single-stage centrifugal type powered by an open-drive electric motor. The housing will be fully accessible with vertical circular joints, with the complete operating assembly removable from the compressor and scroll housing. Compressor castings will be designed for 235 psig working pressure and hydrostatically pressure tested at 355 psig for R-134A units. The rotor assembly will consist of a heat-treated alloy steel drive shaft and impeller shaft with a cast aluminum, fully shrouded impeller. The impeller will be designed for balanced thrust, dynamically balanced an overspeed tested for smooth, vibration-free operation. Insert-type journal and thrust bearings will be fabricated c aluminum alloy, precision bored and axially grooved.

Internal single helical gears with crowned teeth will be designed so that more than one tooth is in contact at all times to provide even load distribution and quiet operation. Each gear will be individually mounted in its own journal and thrust bearings to isolate it from impeller and motor forces. Shaft seal shall be provided in double bellows, double-seal, cartridge type. A gravity-fed oil reservoir will be built into the top of the compressor to provide lubrication during coastdown in the event of a power failure.

Capacity control will be achieved by use of prerotation vanes to provide fully modulating control from maximum to minimum load. The unit will be capable of operating with lower temperature cooling tower water during part-load operation in accordance with ARI Standard 550/590. Prerotation vane position will be automatically controlled by an external electric actuator to maintain constant leaving chilled water temperature.

LUBRICATION SYSTEM

Lubrication oil shall be force-fed to all compressor bearings, gears, and rotating surfaces by an external variable speed oil pump. The oil pump shall vary oil flow to the compressor based on operating and stand-by conditions, ensuring adequate lubrication at all times. The oil pump shall operate prior to start-up, during compressor operation and during coastdown. Compressor shall have an auxiliary reservoir to provide lubrication during coastdown in the event of a power failure.

An oil reservoir, separate from the compressor, shall contain the submersible 2 HP oil pump and a 3000 watt oil heater, thermostatically controlled to remove refrigerant from the oil. The oil reservoir shall be designed and stamped in accordance with ASME or applicable pressure vessel code.

Oil shall be filtered by an externally mounted ½ micron replaceable cartridge oil filter equipped with service valves. Oil cooling shall be done via a refrigerant cooled oil cooler, with all piping factory installed. Oil side of the oil cooler shall be

provided with service valves. An automatic oil return system to recover any oil that may migrate to the evaporator shall be provided. Oil piping shall be completely factory installed and tested.

MOTOR DRIVELINE

The compressor motor will be an open drip-proof, squirrel cage, induction type operating at 3570 RPM.

The open motor shall be provided with a D-flange, bolted to a cast iron adapter mounted on the compressor to allow the motor to be rigidly coupled to the compressor to provide factory alignment of motor and compressor shafts.

Motor drive shaft will be directly connected to the compressor shaft with a flexible disc coupling. Coupling will have all metal construction with no wearing parts to assure long life, and no lubrication requirements to provide low maintenance.

For units utilizing remote electro-mechanical starters, a large steel terminal box with gasketed front access cover will be provided for field connected conduit. Overload/overcurrent transformers will be furnished with all units.

EVAPORATOR

Evaporator will be of the shell-and-tube, flooded type designed for 180 psig working pressure on the refrigerant side. Shell will be fabricated from rolled carbon steel plate with fusion welded seams; have carbon steel tube sheets, drilled and reamed to accommodate the tubes and intermediate tube supports. The refrigerant side will be designed, tested and stamped in accordance with ASME Boiler and Pressure Vessel Code, Section VIII- Division 1. Tubes shall be high-efficiency, internally and externally enhanced type having plain copper lands at all intermediate tube supports to provide maximum tube wall thickness at the support area. Each tube will be roller expanded into the tube sheets providing a leak-proof seal, and be individually replaceable. Water velocity through the tubes will not exceed 12 fps. Two liquid level sight glasses will be located on the side of the shell to aid in determining proper refrigerant charge. Aluminum mesh eliminators will be located above the tube bundle to prevent liquid refrigerant carryover to the compressor. The evaporator will have a refrigerant relief device sized to meet the requirements of ASHRAE 15 Safety Code for Mechanical Refrigeration.

Evaporator to be furnished with standard/compact water boxes. Water boxes will be removable to permit tube cleaning and replacement. Stubout water connections having flanged connection will be provided. Vent and drain connections with plugs will be provided on each water box.

CONDENSER

Condenser will be of the shell-and-tube type, designed for 235 psig working pressure on the refrigerant side. Shell will be fabricated from rolled carbon steel plate with fusion welded seams; have carbon steel tube sheets, drilled and reamed to accommodate the tubes; and intermediate tube supports spaced no more than four feet apart. The refrigerant side will be designed, tested and stamped in accordance with ASME Boiler and Pressure Vessel Code, Section VIII- Division 1. Tubes shall be high-efficiency, internally and externally enhanced type having plain copper lands at all intermediate tube supports to provide maximum tube wall thickness at the support area. Each tube will be roller expanded into the tube sheets providing a leak-proof seal, and be individually replaceable. Water velocity through the tubes will not exceed 12 fps.

Condenser to be furnished with marine water boxes as specified. Water boxes and cover plates will be removable to permit tube cleaning and replacement. Stubout water connections having flanged connection will be provided. Vent and drain connections with plugs will be provided on each water box.

REFRIGERANT FLOW CONTROL

Refrigerant flow to the evaporator will be controlled by a variable orifice for improving unloading capabilities.

GRAPHIC CONTROL CENTER

General: The chiller shall be controlled by a stand-alone microprocessor based control center. The chiller control panel shall provide control of chiller operation and monitoring of chiller sensors, actuators, relays and switches.

Control panel: The control panel shall include a 10.4 in. diagonal color liquid crystal display (LCD) surrounded by "soft " keys which are redefined based on the screen displayed at that time. This shall be mounted in the middle of a keypad interface and installed in a locked enclosure. The screen shall detail all operations and parameters, using a graphical representation of the chiller and its major components. Panel verbiage shall be available in other languages as an option with English always available. Data shall be displayed in either English or Metric units. Smart Freeze Point Protection shall run the chiller at 36.00 °F leaving chilled water temperature, and not have nuisance trips on low water temperature. The sophisticated program and sensor shall monitor the chiller water temperature to prevent freeze up. The panel shall display countdown timer messages so the operator knows when functions are starting and stopping. Every programmable point shall have a pop-up screen with the allowable ranges, so that the chiller can not be programmed to operate outside of its design limits.

The chiller control panel shall also provide:

1. System operating information including:
    a. return and leaving chilled water temperature
    b. return and leaving condenser water temperature
    c. evaporator and condenser saturation temperature
    d. differential oil pressure
    e. percent motor current
    f. evaporator and condenser saturation temperature
    g. compressor discharge temperature
    h. oil reservoir temperature
    i. compressor thrust bearing positioning and oil temperature
    j. operating hours
    k. number of compressor starts

2. Digital programming of setpoints through the universal keypad including:
    a. leaving chilled water temperature
    b. percent current limit
    c. pull-down demand limiting
    d. six-week schedule for starting and stopping the chiller, pumps and tower
    e. remote reset temperature range

3. Status messages indicating:
    a. system ready to start
    b. system running
    c. system coastdown
    d. system safety shutdown-manual restart
    e. system cycling shutdown-auto restart
    f. system prelube
    g. start inhibit

4. The text displayed within the system status and system details field shall be displayed as a color coded message to indicate severity: red for safety fault, orange for cycling faults, yellow for warnings, and green for normal messages.

5. Safety shutdowns enunciated through the display and the status bar, and consist of system status, system details, day, time, cause of shutdown, and type of restart required. Safety shutdowns with a fixed speed drive shall include:
    a. evaporator – low pressure
    b. evaporator – transducer or leaving liquid probe
    c. evaporator – transducer or temperature sensor
    d. condenser – high pressure contacts open
    e. condenser – high pressure
    f. condenser – pressure transducer out of range

g. auxiliary safety – contacts closed
h. discharge – high temperature
i. discharge – low temperature
j. oil – high temperature
k. oil – low differential pressure
l. oil – high differential pressure
m. oil – sump pressure transducer out of range
n. oil – differential pressure calibration
o. oil – variable speed pump – pressure setpoint not achieved
p. control panel – power failure
q. motor or starter – current imbalance
r. thrust bearing – proximity probe clearance
s. thrust bearing - proximity probe out – of – range
t. thrust bearing – high oil temperature
u. thrust bearing – oil temperature sensor
v. watchdog – software reboot

5.1 Safety shutdowns with a VSD Shall include:
a. VSD shutdown – requesting fault data
b. VSD – stop contacts open
c. VSD – 105% motor current overload
d. VSD – high phase A, B,C inverter heatsink temp.
e. VSD – high converter heatsink temperature

6. Cycling shutdowns enunciated through the display and the status bar, and consists of system status, system details, day, time, cause of shutdown, and type of restart required. Cycling shutdowns with a fixed speed drive shall include:
a. multiunit cycling – contacts open
b. system cycling - contacts open
c. oil – low temperature differential
d. oil – low temperature
e. control panel - power failure
f. leaving chilled liquid - low temperature
g. leaving chilled liquid - flow switch open
h. motor controller – contacts open
i. motor controller – loss of current
j. power fault
k. control panel - schedule
l. starter – low supply line voltage
m. starter – high supply line voltage
n. proximity probe – low supply voltage
o. oil - variable speed pump - drive contacts open

6.1 Cycling shutdowns with a VSD shall include:
a. VSD shutdown – requesting fault data
b. VSD – stop contacts open
c. VSD initialization failed
d. VSD - high phase A,B,C instantaneous current
e. VSD – phase A,B,C gate driver
f. VSD – single phase input power
g. VSD – high DC bus voltage
h. VSD – pre charge DC bus voltage imbalance

i. VSD – high internal ambient temperature
j. VSD – invalid current scale selection
k. VSD – low phase A, B, C inverter heatsink temp.
l. VSD – low converter heatsink temperature
m. VSD – pre-charge - low DC bus voltage
n. VSD – logic board processor
o. VSD – run signal
p. VSD – serial communications

7. Security access to prevent unauthorized change of setpoints, to allow local or remote control of the chiller, and to allow manual operation of the prerotation vanes and oil pump. Access shall be through ID and password recognition, which is defined by three different levels of user competence: view, operator, and service.

8. Trending data with the ability to customize points of once every second to once every hour. The panel shall trend up to 6 different parameters from a list of over 140, without the need of an external monitoring system.

9. The operating program stored in non-volatile memory (EPROM) to eliminate reprogramming the chiller due to AC power failure or battery discharge. Programmed setpoints shall be retained in lithium battery-backed RTC memory for a minimum of 11 years with power removed from the system.

10. A fused connection through a transformer in the compressor motor starter to provide individual over-current protected power for all controls.

11. A numbered terminal strip for all required field interlock wiring.

12. An RS-232 port to output all system operating data, shutdown / cycling message, and a record of the last 10 cycling or safety shutdowns to a field-supplied printer. Data logs to a printer at a set programmable interval. This data can be preprogrammed to print from 1minute to 1day.

13. The capability to interface with a building automation system to provide:
    a. remote chiller start and stop
    b. remote leaving chiller liquid temperature adjust
    c. remote current limit setpoint adjust
    d. remote ready to start contacts
    e. safety shutdown contacts
    f. cycling shutdown contacts
    g. run contacts

STARTUP AND OPERATOR TRAINING
The services of a factory trained, field service representative will be provided to supervise the final leak testing, charging and the initial startup and conduct concurrent operator instruction.

FACTORY INSULATION
Factory-applied, anti-sweat insulation will be attached to the cooler shell, flow chamber, tube sheets, suction connection, and (as necessary) to the auxiliary tubing. The insulation will be a flexible, closed-cell plastic type, 3/4 inch thick, applied with vapor-proof cement. The insulation will normally prevent sweating in environments with relative humidities up to 75% and dry bulb temperatures ranging from 50 to 90 °F. Insulation on water box is by others.

External Energy Efficient Hot Gas By-pass System

The hot gas by-pass system will be supplied for operation down to 10% of design load. The hot gas bypass system shall be completely factory piped and wired. It will consist of a hot gas valve, external electric (115V – 1 Ph –60/50 Hz) operator and linkage, and a solid state sensing control. This control will measure entering and leaving chilled water temperature to indicate load and measure refrigerant condensing temperature to indicate head. These signals shall be compared to a reference point (adjustable) to activate the hot gas valve. Hot gas will be actuated only when necessary and in only the amount required for stable and efficient chiller operation.

Spring Isolation Mounting

The unit will be provided with four level-adjusting, spring-type vibration isolators with non-skid pads. Pads will be field mounted on the steel brackets located on the tube sheets. Isolators will be designed for nominal one-inch deflection.

Shipment Form #1

The unit shall be completely assembled, with all main, auxiliary, and control piping installed, controls wired, leak tests completed, air run tests completed, and refrigerant and oil charge in place. Other miscellaneous materials shall be packed separately.

Compressor Motor Starter

A variable speed drive will be factory installed on the chiller. It will vary the compressor motor speed by controlling the frequency and voltage of the electrical power to the motor. The adaptive capacity control logic shall automatically adjust motor speed and compressor pre-rotation vane position independently for maximum part-load efficiency by analyzing information fed to it by sensors located throughout the chiller.

Drive will be PWM type utilizing IGBT's with a power factor of 0.95 or better at all loads and speeds.

The variable speed drive will be unit mounted in a NEMA 1 enclosure with all power and control wiring between the drive and chiller factory installed, including power to the chiller oil pump. Field power wiring shall be a single point connection and electrical lugs for incoming power wiring will be provided. The entire chiller package will be UL listed.

The following features will be provided:

Door interlocked circuit breaker capable of being padlocked.
UL listed ground fault protection.
Over voltage and under voltage protection.
3-phase sensing motor over current protection.
Single phase protection.
Insensitive to phase rotation.
Over temperature protection.
Digital readout at the chiller unit control panel of output frequency, output voltage, 3-phase output current, input Kilowatts and Kilowatt-hours, self-diagnostic service parameters.

KW Meter - The unit's input power consumption will be measured and displayed digitally via the unit's control panel. The KW meter accuracy is typically +/- 3% of reading. KW meter scale is 0 - 788 KW .

KWh Meter – The unit's cumulative input power consumption is measured and displayed digitally via the unit's control panel. The KWh meter is resetable and it's accuracy is typically +/- 3% of reading. KWh meter scale is 0 – 999,999 kWh.

Ammeter – Simultaneous three-phase true RMS digital readout via the unit control panel. Three current transformers provide isolated sensing. The ammeter accuracy is typically +/- 3% of readming. Ammeter scale is 0 - 545 A RMS .

Voltmeter – Simultaneous three-phase true RMS digital readout via the unit control panel. The voltmeter accuracy is typically +/- 3% of reading. Voltmeter scale is 0 – 670 VAC.

Elapsed Time Meter – Digital readout of the unit's elapsed running time (0 – 876,600 hours, resetable) is displayed via the unit control panel.

YORK
A JOHNSON CONTROLS COMPANY

CH-1134

YK MAXE CHILLER
PERFORMANCE SPECIFICATION

Unit Tag	Qty	Model No.	Capacity (tons)	Power	Refrigerant
~~CH-2811~~	1	YKKKKLH9-CYFS	800	460/3/60	R-134A

Unit Data	Evaporator	Condenser
EWT (°F):	48.31	85.00
LWT (°F):	38.00	94.53
Flow Rate (gpm):	2000	2400
Pressure Drop (ft):	21.7	21.0
Fluid Type (%):	PROPYLENE GLYCOL - 35.0	WATER
Circuit No. of Passes:	2	2
Fouling Factor (ft² °F hr / Btu):	0.00010	0.00025
Tube No. / Description:	272 - 0.028" Enhanced Copper	261 - 0.028" CSL Enhanced Copper
Design Working Pressure (psig):	150	150
Entering Water Nozzle @ Location:	2	12
Leaving Water Nozzle @ Location:	3	13
Water Box Weight, ea (lbs)(2):	1253*	976*
Cover Plate Weight , ea (lbs):	1114	526
Return Head Weight (lbs):	280	177
Water Weight (lbs):	3331	2590

Performance Data		Electrical Data		Other	
Job KW:	566	Job FLA:	796	Operating Wt. (lbs):	40088
Motor KW:	552	Motor FLA:	784	Per Isolator (lbs):	10022
KW/Ton:	0.707	LRA:	5280	Refrigerant Wt. (lbs):	2300
NPLV (1):	0.471	Inrush Amps:	796	Oil Charge (gal):	20
Gear Code:	RJ	Min Circuit Ampacity (Amps):	995	Motor Wt. (lbs):	3105
Shaft HP:	704	Max Fuse/Breaker:	1600	Compressor Wt. (lbs):	3500
				Starter Wt. (lbs):	1408
				Shipping Wt. (lbs):	34167
		Type Starter: Variable Speed Drive			

Notes:

(1) Chiller NPLV value calculated to ARI Standard 550/590 equation.
(2) Not including cover plate on marine water boxes.
* with applicable water flanges

Project Name: Amylin - Phase II	Sold To:	
Location:	Customer Purchase Order No.:	
Engineer:	York Contract No.:	
Contractor:	Date:	Revision Date:

YORK
A JOHNSON CONTROLS COMPANY

YK MAXE CHILLER
PERFORMANCE SPECIFICATION

Unit Tag	Qty	Model No.	Capacity (tons)	Power	Refrigerant
CH-3031	1	YKKKKLH9-CYFS	800	460/3/60	R-134A

Unit Data	Evaporator	Condenser
EWT (°F):	48.31	85.00
LWT (°F):	38.00	94.53
Flow Rate (gpm):	2000	2400
Pressure Drop (ft):	21.7	21.0
Fluid Type (%):	PROPYLENE GLYCOL - 35.0	WATER
Circuit No. of Passes:	2	2
Fouling Factor (ft² °F hr / Btu):	0.00010	0.00025
Tube No. / Description:	272 - 0.028" Enhanced Copper	261 - 0.028" CSL Enhanced Copper
Design Working Pressure (psig):	150	150
Entering Water Nozzle @ Location:	2	12
Leaving Water Nozzle @ Location:	3	13
Water Box Weight, ea (lbs)(2):	1253*	976*
Cover Plate Weight , ea (lbs):	1114	526
Return Head Weight (lbs):	280	177
Water Weight (lbs):	3331	2590

Performance Data		Electrical Data		Other	
Job KW:	566	Job FLA:	796	Operating Wt. (lbs):	40088
Motor KW:	552	Motor FLA:	784	Per Isolator (lbs):	10022
KW/Ton:	0.707	LRA:	5280	Refrigerant Wt. (lbs):	2300
NPLV (1):	0.471	Inrush Amps:	796	Oil Charge (gal):	20
Gear Code:	RJ	Min Circuit Ampacity (Amps):	995	Motor Wt. (lbs):	3105
Shaft HP:	704	Max Fuse/Breaker:	1600	Compressor Wt. (lbs):	3500
				Starter Wt. (lbs):	1408
				Shipping Wt. (lbs):	34167
		Type Starter: Variable Speed Drive			

Notes:

(1) Chiller NPLV value calculated to ARI Standard 550/590 equation.
(2) Not including cover plate on marine water boxes.
* with applicable water flanges

Project Name: Amylin - Phase II	Sold To:	
Location:	Customer Purchase Order No.:	
Engineer:	York Contract No.:	
Contractor:	Date:	Revision Date:

YORK
A JOHNSON CONTROLS COMPANY

YK MAXE CHILLER
PERFORMANCE SPECIFICATION

Unit Tag	Qty	Model No.	Capacity (tons)	Power	Refrigerant
CH-3032	1	YKKKKLH9-CYFS	800	460/3/60	R-134A

Unit Data	Evaporator	Condenser
EWT (°F):	48.31	85.00
LWT (°F):	38.00	94.53
Flow Rate (gpm):	2000	2400
Pressure Drop (ft):	21.7	21.0
Fluid Type (%):	PROPYLENE GLYCOL - 35.0	WATER
Circuit No. of Passes:	2	2
Fouling Factor (ft² °F hr / Btu):	0.00010	0.00025
Tube No. / Description:	272 - 0.028" Enhanced Copper	261 - 0.028" CSL Enhanced Copper
Design Working Pressure (psig):	150	150
Entering Water Nozzle @ Location:	2	12
Leaving Water Nozzle @ Location:	3	13
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Cover Plate Weight , ea (lbs):	1114	526
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