2020 BUSINESS OFFERINGS

PROCESS SYSTEMS

WISCONSIN

focus on energy®

Partnering with Wisconsin utilities

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ABOUT FOCUS ON ENERGY®

Focus on Energy works with eligible Wisconsin residents and businesses to install cost-effective energy efficiency and renewable energy projects. Focus on Energy information, resources and financial incentives help to implement projects that otherwise would not get completed, or to complete projects sooner than scheduled. Its efforts help Wisconsin residents and businesses manage rising energy costs, promote in-state economic development, protect our environment and control the state's growing demand for electricity and natural gas.

For more information, call 800.762.7077 or visit focusonenergy.com

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HOW TO APPLY

NEED HELP? Call 800.762.7077

Focus on Energy makes saving energy and money easy for Wisconsin businesses. Use the information below to help guide your way to savings. For electronic copies of the forms, visit **focusonenergy.com/catalogs**.

STEP 1 BEFORE YOU APPLY:

Verify customer and product eligibility:

- Confirm your gas and/or electric utilities participate in Focus on Energy at focusonenergy.com/utilities.
- Read product requirements, both general and technology-specific, in your equipment's corresponding incentive catalog.
- Review the Participation Requirements page.
- Review the Terms and Conditions at focusonenergy.com/terms.
- View the qualified product lists at focusonenergy.com/business/qpls.
- Applications exceeding $10,000 can request preapproval. Applications not preapproved **may not receive payment** if program funds have been exhausted.

Qualifying products must be installed by December 31, 2020.

STEP 2 WHAT YOU'LL NEED:

- Incentive Application & Equipment Incentive Catalog(s)
- Gas & Electric Utility Account Numbers
- Tax ID Number
- Invoice showing **proof of purchase(s)/installation MUST include:**
  - Trade Ally name, address and phone number
  - Itemized list of each product along with manufacturer name, model number, and quantity
  - Itemized purchase price of product/installation
  - Job Site Address

  Reminder: Incentives are capped at 100% of equipment cost unless otherwise noted. Like-for-like equipment replacement due to recall, warranty replacement, etc. is not eligible for an incentive.
- Manufacturer specifications (when required) – **MUST include:**
  - Full model number
  - Energy performance information
- Additional documentation (when required)

STEP 3 COMPLETE THIS APPLICATION:

- All fields on application are required. Incomplete application(s) cannot be processed.
- Complete SECTION 7 with all product information. Use the Incentive Product Information Sheet found at focusonenergy.com/catalogs if you need additional lines.
- Include installation date (date of the last product installed). If project is new construction, use the occupancy date. Project is considered complete when products are installed and operational.
- Complete the catalog-specific Supplemental Data Sheet for applicable measures. An asterisk (*) next to the code indicates when this is needed. Read the measure requirements in your catalog for directions.
- Include the reservation code(s) in SECTION 7 when applicable.
- **The utility ratepayer** must sign and date SECTION 8.
- Ensure supporting documents are attached, including itemized invoice(s).
- Make a copy of the application and supporting documents for your records.

STEP 4 SUBMIT YOUR APPLICATION:

Mail or email your application and all supporting documentation. **Applications must be submitted within 60 calendar days of completed project installation,** no later than January 31, 2021.

MAIL: Focus on Energy
725 W. Park Avenue
Chippewa Falls, WI 54729

E-MAIL: business@focusonenergy.com

PARTICIPATION REQUIREMENTS

NEED HELP? Call 800.762.7077

Use the eligibility requirements below to see if your business qualifies for program incentives. You can also visit **focusonenergy.com** to find savings opportunities specific to your business.

CUSTOMER ELIGIBILITY

All non-residential customers (agriculture, commercial, government, industrial, multifamily, and schools) located in a participating utility territory are eligible to receive Focus on Energy incentives. To see if your utility participates, go to focusonenergy.com/participating-utilities.

CUSTOM INCENTIVES

Does your project not fit in one of our prescriptive offers? Custom project incentives are calculated on a case-by-case basis for non-standard technologies and are based on estimated first-year energy savings. Whether you operate a large industrial facility, a chain store or franchise, an office, school or municipal building, a farm, or anything in between, we can show you how to be more energy efficient — and how to save on the cost of making improvements.

Before purchasing equipment or proceeding with upgrades, you must contact an Energy Advisor from Focus on Energy. Your Energy Advisor will help you determine if your project qualifies for a Focus on Energy custom incentive and will help you obtain necessary pre-approval.

To get started with your custom project, download and complete the Custom Incentive Guide at **focusonenergy.com/custom**.

NEW CONSTRUCTION

Qualifying projects are new, stand-alone commercial, industrial and multifamily residential facilities, additions to existing facilities, and major renovations due to a change in the use of space (e.g., a warehouse to office). Typical facility types include:

- School facilities (e.g., public and private k-12, technical colleges, colleges, universities)
- Commercial facilities (e.g., banks, hotels, offices, convenience stores/gas stations, manufacturing, breweries, restaurants)
- Healthcare facilities (e.g., nursing homes/skilled nursing, Community-Based Residential Facilities (CBRF), hospitals)
- Residential properties with four or more dwelling units under one roof (e.g., apartment/condominium buildings, student housing)

New Construction incentives available include Whole Building Design incentives and prescriptive incentives included in this catalog. Reach out to an Energy Advisor from Focus on Energy to help identify what is best for your project.

New Construction measures and incentives will appear in a **grey table**, while Existing Building measures and incentives will appear in a **blue table**. If a measure does not have a grey table, New Construction incentives are not offered for that measure.

INFORMATION AND REQUIREMENTS

Before you start your project, make sure you are familiar with participation requirements, program information and Terms and Conditions.

General Terms and Conditions

Review the Focus on Energy Terms and Conditions at focusonenergy.com/terms or call 800.762.7077 to request a copy.

Incentive Limits

Incentives are limited to $300,000 per project and $400,000 per customer per calendar year for all Focus on Energy incentives (prescriptive and custom).

Depending on your business tax classification, you may receive IRS form 1099 for incentives totaling over $600 in a calendar year.

Trade Ally Information

A Trade Ally represents the company who provided/installed the equipment for a project or performed the service for which a Customer is seeking an incentive. Trade Allies who have signed an agreement with Focus on Energy are allowed to enjoy certain program benefits, one of which is to receive direct payment of incentives at the Trade Ally's request. Incentives can only be paid directly to a registered Trade Ally who has a W-9 on file with Focus on Energy. For more information on becoming a registered Trade Ally, visit **focusonenergy.com/tradeally**.

The Federal Employer Identification Number (FEIN) and Business Classification of the Trade Ally is required IF you received your incentive as a credit on your invoice, whereby the incentive is paid directly to the Trade Ally. In this scenario, the credit must be clearly labeled as the Focus on Energy incentive and deducted from the amount due.

If your project was completed by more than one Trade Ally (example, equipment was purchased from one Trade Ally but installed by another Trade Ally) and the incentive is being paid to you the Customer, enter the information of the Trade Ally who installed your equipment in Section 4: Trade Ally Information. If the equipment was self-installed, enter the information of the Trade Ally from whom you purchased the equipment.

Assignment of Incentives to Other Payee

The Customer for the project site listed on the application may assign their right to participate and receive incentives to Other Payee. The Customer must sign Section 8 and identify the Other Payee in Section 5.

NOTES

INCENTIVE APPLICATION

FOR PROJECTS COMPLETED BY 12/31/2020

PLEASE COMPLETE ALL SECTIONS. INCOMPLETE APPLICATIONS CANNOT BE PROCESSED AND WILL DELAY PAYMENT OF INCENTIVES. APPLICATIONS MUST BE SUBMITTED WITHIN 60 DAYS OF COMPLETED PROJECT INSTALLATION, NO LATER THAN JANUARY 31, 2021. FOR ADDITIONAL COPIES OF THIS FORM, VISIT FOCUSONENERGY.COM/CATALOGS.

SECTION 1 ACCOUNT AND CUSTOMER INFORMATION

TAX IDENTIFICATION NUMBER (Check one.)

❍ FEIN **or** ❍ SSN _____
FEIN OR SOCIAL SECURITY NUMBER

BUSINESS CLASSIFICATION OF CUSTOMER

(Check one. Required for all businesses, including non-profits.)

❍ Sole Proprietorship ❍ Individual ❍ Single-Member LLC
❍ C Corporation ❍ S Corporation ❍ Partnership
❍ Limited Liability Corporation Classification C, S, P _____
(C = C corporation, S = S corporation, P = partnership)
❍ Other _____

OWNER NAME (REQUIRED IF SSN IS USED AS TAX IDENTIFICATION NUMBER)

COMPANY NAME

LEGAL ADDRESS (AS SHOWN ON COMPANY W-9)

CITY STATE ZIP

WHO DID YOU WORK WITH FROM FOCUS ON ENERGY ON THIS PROJECT? (CONTACT NAME)

How did you hear about us? (Check one.)

❍ Community Association/Agency ❍ Distributor/Supplier
❍ Focus Direct Mail/Postcard ❍ Focus Email ❍ Focus Event
❍ Focus Staff/Energy Advisor ❍ Focus Website ❍ Internet Search
❍ Manufacturer ❍ National Rebate Administrator ❍ Newspaper
❍ Past Participation ❍ Radio ❍ Social Media ❍ Trade Ally/Contractor
❍ Trade Show/Fair ❍ TV ❍ Utility Bill Insert/Direct Mail
❍ Utility Contact ❍ Utility Email ❍ Utilty Website
❍ Word of Mouth - Referral ❍ Other: _____

SECTION 2 JOB SITE INFORMATION

(Refer to your utility bills for account numbers below.)

JOB SITE BUSINESS NAME

ELECTRIC UTILITY AT JOB SITE ELECTRIC ACCOUNT #

GAS UTILITY AT JOB SITE GAS ACCOUNT #

❍ Job Site Address is same as Legal Address
❍ Job Site Address is different (complete below)

JOB SITE ADDRESS

CITY STATE ZIP

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SECTION 3 CUSTOMER CONTACT INFORMATION

JOB SITE CUSTOMER CONTACT NAME

PRIMARY PHONE # E-MAIL ADDRESS

❍ I opt in to receive program updates via text message.

Preferred method of contact:

❍ Call ❍ E-mail ❍ Text

If Focus on Energy has a question about this application, we should contact:

❍ Customer ❍ Trade Ally ❍ Other _____

SECTION 4 TRADE ALLY INFORMATION

TRADE ALLY CONTACT NAME

PRIMARY PHONE # E-MAIL ADDRESS

TRADE ALLY COMPANY NAME

ADDRESS

CITY STATE ZIP

SECTION 5 BUSINESS PAYMENT INFORMATION

Make incentive check payable to:

❍ Customer ❍ Trade Ally (complete items B and C)
❍ Other Payee (Complete items A, B and C)

Mail check to:

❍ Customer Address ❍ Job Site Address ❍ Trade Ally Address
❍ Other Payee or Alternate Address (complete below)

COMPANY NAME

ADDRESS

CITY STATE ZIP

ATTENTION TO (OPTIONAL)

A. For Other Payee, specify relationship to utility account holder (tihs is required if check payable to someone other than Customer or Trade Ally):

❍ Tenant ❍ Building Owner ❍ Other (specify) _____

B. If a Trade Ally or Other Payee is receiving the incentive payment, provide the Tax Identification Number. To receive payment, a Trade Ally must be registered. Payee is responsible for any associated tax consequences.

TAX IDENTIFICATION NUMBER (Check one.)

❍ FEIN **or** ❍ SSN _____
FEIN OR SOCIAL SECURITY NUMBER

C. BUSINESS CLASSIFICATION

(Check one. Required for all businesses, including non-profits.)

❍ Sole Proprietorship ❍ Individual ❍ Single-Member LLC
❍ C Corporation ❍ S Corporation ❍ Partnership
❍ Limited Liability Corporation Classification C, S, P _____
(C = C corporation, S = S corporation, P = partnership)
❍ Other _____

SECTION 6

BUSINESS PROPERTY TYPE

Select one only. If applying for both existing and new construction equipment incentives please complete two separate applications.

❍ Existing Building ❍ New Construction

Select one (1) property type that best describes your business:

- ❍ Agriculture Producer
  - ❍ Dairy - Traditional
  - ❍ Dairy - Robotic
  - ❍ Other: _____
  - → ❍ If Dairy, how many milking cows do you have (includes dry cows; excludes heifers not yet fresh)?: _____
- ❍ Education
- ❍ Financial Institution
- ❍ Government
- ❍ Grocery/Convenience Store
- ❍ Healthcare
- ❍ Hotels & Lodging
- ❍ Manufacturing (product): _____
- ❍ Multifamily
- ❍ Office
- ❍ Religious Worship
  - ❍ With K+ Daily Education
  - ❍ No K+ Daily Education
- ❍ Restaurant
- ❍ Retail
- ❍ Vehicles Sales/Service
- ❍ Water/Wastewater
- ❍ Other: _____

SECTION 7

INCENTIVE PRODUCT INFORMATION

Refer to:

- **Applicable incentive catalog at focusonenergy.com/catalogs** for incentive codes, incentive per unit and product eligibility requirements.
- **focusonenergy.com/business/qpls** for qualified products lists.
- **Invoice showing proof of purchase** for Manufacturer and Model Number.
- **Incentive Product Information Sheet at focusonenergy.com/catalogs** if additional lines are needed.

INCENTIVE CODE	MANUFACTURER NAME	MODEL #	UNIT MEASURE	# OF UNITS (A)	INCENTIVE PER UNIT (B)	REQUESTED INCENTIVE (A X B)
L3111 (example)	*STARK LIGHTING*	*LED5VZP*	*Fixture*	*10*	$ *18.00*	$ *180.00*
					$	$
					$	$
					$	$
					$	$
					$	$
					$	$
					$	$
					$	$

Manufacturer Specifications Attached (if applicable):	Yes ❍	**RESERVATION CODE(S)** (if applicable):		Subtotal from Incentive Product Information Sheet (if applicable)	$
Itemized Invoice(s) Attached:	Yes ❍	**INSTALLATION DATE:**	/ /	**INCENTIVE TOTAL***	$

SECTION 8

CUSTOMER SIGNATURE

I, the undersigned Customer or authorized representative of the Customer, agree the stated energy-efficiency measure(s) was (were) installed at the job site address listed above as part of the FOCUS ON ENERGY® Program. I have read and agreed to the provisions set forth herein and to the Terms and Conditions posted at focusonenergy.com/terms. I understand Focus on Energy may revise these Terms and Conditions at any time, and I will not be notified in the event changes are made. To the best of my knowledge, the statements made on this application are complete, true and correct, and I have submitted the appropriate supporting documentation to receive an incentive.

If Other Payee is indicated in Section 5, I, the Customer, attest I am the ratepayer (utility account holder) for the site(s) listed in Section 2, and I assign the right to participate in and receive incentives from the Focus on Energy Program to the Other Payee identified in Section 5.

Certification: The following certifications are required in order for this form to substitute for the Internal Revenue Service (IRS) form W-9. Under penalty of perjury, I certify that:

- The number shown on this form is the correct taxpayer identification number.
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the IRS that I am subject to backup withholding as a result of failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding.
- I am a U.S. person.

The IRS does not require my consent to any provision of this document other than the certifications required to avoid backup withholding.

SIGN HERE ←

CUSTOMER SIGNATURE NAME (PRINT) DATE

Submit applications to:

MAIL: Focus on Energy
725 W. Park Avenue
Chippewa Falls, WI 54729

E-MAIL: business@focusonenergy.com

*Incentive may be adjusted based on project caps. See measure requirements and Terms and Conditions for more information.

2020 PROCESS SYSTEMS INCENTIVE CATALOG SUPPLEMENTAL DATA SHEET

THIS FORM MUST BE ATTACHED TO COMPLETED INCENTIVE APPLICATION AND SUBMITTED TOGETHER. FOR PROJECTS INSTALLED BY 12/31/2020. NEED HELP? CALL 800.762.7077.

HOW TO FILL OUT THIS FORM

Please refer to:

- The **Process Systems Incentive Catalog** for measure requirements and information.
- Complete the table corresponding to the measure in the catalog.

Attach this form to a completed **Incentive Application** and submit together.

CUSTOMER INFORMATION

JOB SITE BUSINESS NAME

JOB SITE ADDRESS

TRADE ALLY NAME

A — COMPRESSED AIR LEAK SURVEY AND REPAIR - INCENTIVE CODE: PS4766, AG4767 — PAGE 14

ANNUAL HOURS OF OPERATION	SYSTEM OPERATING PRESSURE	TOTAL CONNECTED HP
(Example) 8400	*100*	*110*

B1 — VARIABLE SPEED DRIVE (VSD) AIR COMPRESSOR - INCENTIVE CODE: PS2196 — PAGE 15

FIRST SHIFT HRS/WK	FIRST SHIFT AVERAGE SCFM	SECOND SHIFT HRS/WK	SECOND SHIFT AVERAGE SCFM	THIRD SHIFT HRS/WK	THIRD SHIFT AVERAGE SCFM	WEEKEND HRS/SHIFT	WEEKEND AVERAGE SCFM	TOTAL HOURS	AIR COMPRESSOR OPERATING PSIG
(Example) 40	*700*	*40*	*625*	*40*	*500*	*16*	*500*	*136*	*100*

B2 — VARIABLE SPEED DRIVE (VSD) AIR COMPRESSOR - INCENTIVE CODE: PS2196 — PAGE 15

EQUIPMENT	USE BEFORE	USE AFTER	CONTROL TYPE	RATED SCFM	PSIG AT RATED PRESSURE	NOMINAL HP	IF TRIM COMPRESSOR, HRS OF OPERATION PER WEEK
Example	*__ Lead _X_ Trim __ Backup __ New Const __Existing Building w/o Air Compressor*	*_X_Removed __Emergency Back Up __Remain in Operation*	*__Load/no load _X_Inlet Modulation __Other _____*	*800*	*100*	*150*	*NA*
Existing Compressor 1	*__ Lead __ Trim __ Backup __ New Const __Existing Building w/o Air Compressor*	*__Removed __Emergency Back Up __Remain in Operation*	*__Load/no load __Inlet Modulation __Other _____*				
Existing Compressor 2	*__ Lead __ Trim __ Backup __ New Const __Existing Building w/o Air Compressor*	*__Removed __Emergency Back Up __Remain in Operation*	*__Load/no load __Inlet Modulation __Other: _____*				
Existing Compressor 3	*__ Lead __ Trim __ Backup __ New Const __Existing Building w/o Air Compressor*	*__Removed __Emergency Back Up __Remain in Operation*	*__Load/no load __Inlet Modulation __Other: _____*				
New VSD Compressor	*NA*	*NA*	*Variable Speed Drive*				

C — DEWPOINT DEMAND CONTROLS FOR DESICCANT DRYERS – INCENTIVE CODE PS4363 — PAGE 17

HOURS OF OPERATION	AIR COMPRESSOR TYPE	AIR COMPRESSOR CONTROL TYPE	DESICCANT DRYER TYPE
(Example) 4,200	*Single Stage Rotary Screw*	*Variable Speed Drive*	*Heated Dryer*

D — COMPRESSED AIR LOAD SHIFTING – INCENTIVE CODE PS2848 — PAGE 21

HOURS OF OPERATION	EXISTING AIR COMPRESSOR(S)					REPLACEMENT TECHNOLOGY		COMPLETION DATE (EST.)
	TOTAL HP	AIRFLOW (CFM) @ PRESSURE (PSI)	CONTROL METHOD	SHORT DESCRIPTION	AIRFLOW (CFM)	SHORT DESCRIPTION	HP	
(Example) 4,200	*100*	*450 CFM @ 100 psi*	*Load/No Load*	*Blow-off with open tubes*	*85 CFM*	*Air knife with blower*	*2 HP*	*6/15/2020*

E	BOILER COMBUSTION UPGRADES - INCENTIVE CODE: PS4760, PS4761, PS4762	PAGE 25
PRE-RETROFIT BOILER EFFICIENCY	ANNUAL HOURS OF OPERATION	BOILER LOAD FACTOR
(Example) 81.2%	*6000*	*85%*

F	VARIABLE TORQUE VFD, VSD VACUUM PUMP ≤30 HP - INCENTIVE CODE PS4361					PAGES 16 OR 28
	VARIABLE TORQUE VFD - INCENTIVE CODE: PS2726, PS2640, PS2641, PS2647, PS2648					
VFD#	VFD APPLICATION	CONTROLS BEFORE	EQUIPMENT OPERATING HOURS (2,000 HR/YR MIN)	HP CONTROLLED BY VFD	QTY	REQUESTED INCENTIVE* (QTY X HP X INCENTIVE)
Example	*Process Fan*	*Inlet Guide Vanes*	*6000*	*100*	*1*	*$3,500*

G	CONSTANT TORQUE VFD, VSD VACUUM PUMP, ≤30 HP, - INCENTIVE CODE PS4362											PAGES 16 OR 29
	CONSTANT TORQUE VFD - INCENTIVE CODE: PS3280											
				COMPLETE FOR MANUAL CONTROL								
VFD#	VFD APPLICATION	CONTROLS BEFORE	CONTROLS AFTER	ANNUAL HOURS AT 100%	ANNUAL HOURS AT 80%	ANNUAL HOURS AT 60%	ANNUAL HOURS AT 40%	ANNUAL HOURS AT 20%	EQUIPMENT OPERATING HOURS (2,000 HR/YR MIN)	HP CONTROLLED BY VFD	QTY	REQUESTED INCENTIVE* (QTY X HP X INCENTIVE)
Example	*Mixer*	*On/Off*	*Manual*	*1000*	*500*	*2000*	*2000*	*0*	*5500*	*25*	*1*	*$750*

H	DATA CENTER AND TELECOM AIR SIDE ECONOMIZER - INCENTIVE CODE: PS4776					PAGE 33
ECONOMIZER SHUTOFF TEMPERATURE (°F)	SUPPLY AIR TEMPERATURE (°F)	COOLING SYSTEM AHRI EFFICIENCY (EER)	CHILLED WATER SUPPLY TEMPERATURE (IF COOLING SYSTEM IS CHILLER) (°F)	CHILLER COMPRESSOR TYPE (IF APPLICABLE)	COOLING TOWER FAN QTY. & HP (IF APPLICABLE)	COOLING TOWER WATER PUMP HP (IF APPLICABLE)
(Example) 65°F	*60°F*	*12 EER*	*44°F*	*Scroll*	*3 @ 20 HP*	*7°F*

I	ENERGY-EFFICIENT DRYCOOLER FOR DATA CENTER AND TELECOM - INCENTIVE CODE: PS2305			PAGE 33
CRAC UNIT COOLING EFFICIENCY	CRAC UNIT FAN QTY & HP	DRYCOOLER GLYCOL PUMP QTY & HP	DRYCOOLER FAN QTY & HP	
(Example) 1.25 kW/ton	*1 @ 10 HP*	*1 @ 2 HP*	*4 @ 1 HP*	

J	DATA CENTER AND TELECOM EFFICIENT UPS AND RECTIFIER - INCENTIVE CODE: PS4777, PS4778			PAGE 34
IT EQUIPMENT LOAD (kW)	OLD UPS / RECTIFIER EFFICIENCY (%)	NEW UPS / RECTIFIER EFFICIENCY (%)	TYPE OF COOLING SYSTEM	COOLING EFFICIENCY AND UNITS
(Example) 52 kW	*82%*	*94%*	*DX CRAC Units*	*1.1 kW/ton*

K	RADIANT HEATER BANDS - INCENTIVE CODE: PS2490				PAGE 38
ANNUAL HOURS OF OPERATION	VOLTAGE (IF AVAILABLE)	AVERAGE AMPS BEFORE (IF AVAILABLE)	AVERAGE AMPS AFTER (IF AVAILABLE)	INSTALLED KW OF EXISTING HEATER BANDS	REQUESTED INCENTIVE*
(Example) 4000	*460*	*56.5*	*48.0*	*45*	*$2,700*

*Focus on Energy may adjust total incentive based on project caps. Please see measure requirements and Terms and Conditions for more information.

L	PRESSURE SCREEN ROTOR - INCENTIVE CODE: PS2496				PAGE 39
HOURS OF OPERATION	VOLTAGE (IF AVAILABLE)	AVERAGE AMPS BEFORE (IF AVAILABLE)	AVERAGE AMPS AFTER (IF AVAILABLE)	HP INSTALLED	REQUESTED INCENTIVE*
(Example) 6000	*480*	*150*	*100*	*150*	*$6,000*

M	REPULPER ROTOR AND EXTRACTION PLATE - INCENTIVE CODE: PS2538, PS2315					PAGE 39
MEASURE	HOURS OF OPERATION	VOLTAGE (IF AVAILABLE)	AVERAGE AMPS BEFORE (IF AVAILABLE)	AVERAGE AMPS AFTER (IF AVAILABLE)	HP INSTALLED	REQUESTED INCENTIVE*
Repulper Rotor	*(Example) 8000*	*2300*	*110*	*90*	*500*	*$15,000*
Extraction Plate						
Repulper Rotor						
Extraction Plate						

N	SPLINE ROTOR UPGRADE - INCENTIVE CODE: PS4764			PAGE 39
REFINER HP	% LOAD ON REFINER	AVERAGE CONNECTED REFINER HP	REFINER HOURS OF OPERATION	REQUESTED INCENTIVE*
(Example) 500	*85%*	*425*	*8400*	*$12,500*

O	HIGH EFFICIENCY SIDE ENTRY AGITATOR - INCENTIVE CODE: PS4763			PAGE 40
AGITATOR MOTOR HP	% MOTOR LOAD ON AGITATOR	AVERAGE CONNECTED HP	MOTOR HOURS OF OPERATION	REQUESTED INCENTIVE*
(Example) 100	*85%*	*85*	*8400*	*$3,000*

P	INDUSTRIAL HIGH FREQUENCY BATTERY CHARGERS - INCENTIVE CODE: PS4765		PAGE 41
HOW DRAINED ARE THE BATTERIES WHEN PLUGGED INTO CHARGERS?	NUMBER OF CHARGES PER WEEK PER CHARGER	HOURS PER YEAR EACH CHARGER IS IN MAINTENANCE MODE (WHEN A FULLY CHARGED BATTERY IS CONNECTED)	HOURS PER YEAR EACH CHARGER IS IN NO BATTERY MODE (WHEN NO BATTERY IS CONNECTED)
(Example) 80%	*7*	*365 hrs/yr*	*2,920 hrs/yr = 8 hrs/day * 365 days/yr)*

Q	PROCESS EXHAUST FILTRATION - INCENTIVE CODE: PS3244			PAGE 42
ANNUAL HOURS OF OPERATION	DAYS/WEEK OPERATION	HEATING SYSTEM EFFICIENCY	REDUCTION IN MAKE-UP CFM	REQUESTED INCENTIVE*
(Example) 6,000	*5*	*95%*	*30,000*	*$16,500*

*Focus on Energy may adjust total incentive based on project caps. Please see measure requirements and Terms and Conditions for more information.

For more information,
call 800.762.7077
or visit focusonenergy.com

COMPRESSED AIR AND VACUUM PUMPS

COMPRESSED AIR LEAK SURVEY AND REPAIR

General Requirements: A survey log must accompany the incentive application.

COMPRESSED AIR LEAK SURVEY AND REPAIR

Requirements:

- **Complete Table A of the "Process Systems Catalog Supplemental Data Sheet" for this measure.**
- Incentive is per HP of connected air compressors in the system, not per CFM of leak identified. In the total HP for the incentive, only include lead and trim air compressors that normally run during plant operation; do not include the HP for any dedicated backup air compressors.
- Customer must repair at least one leak for every five connected compressor HP. If less than one leak per every five HP is identified, then all leaks identified must be repaired. In the case where all identified leaks must be repaired, customer may provide written explanation for a leak that cannot be repaired and may still qualify for the incentive.
- Leaks must be repaired before application is submitted and Focus on Energy must receive the application within 120 days of leak survey completion date.
- Customers must leave leak tags in place for at least four months after application is submitted to allow Focus on Energy to verify leak repair if needed.
- Party receiving incentive is responsible for verifying required number of leaks repaired for incentive eligibility.
- This incentive is only available once per 12-month period, per customer site.
- A leak log in the form of a spreadsheet must be submitted with the completed incentive application. The following data must be recorded for each leak: tag number, location, description, leak dB reading, estimated cost of leak ($/year) and repaired (yes/no).
- **Incentive is eligible for up to 100% of survey and repair costs with a maximum incentive of $4,000 per year.**

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Leak Survey and Repair	PS4766*	$4	HP
Leak Survey and Repair - Agriculture	AG4767*	$15	HP
*** Supplemental Data Sheet needed**			

PRO TIP

Compressed air leaks can waste 20%-30% of the compressor's output. Leaks can also cause problems with the compressed air system such as excess compressor capacity, fluctuating system pressure and shortened equipment life.

AIR COMPRESSORS AND VACUUM PUMPS

General Requirements: Variable speed drive (VSD) air compressors and vacuum pumps are best suited for trim operation and in single compressor air systems that have varying load because they have efficient part-load performance.

VSD AIR COMPRESSORS

Requirements:

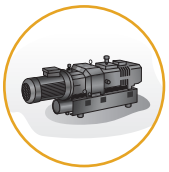
- **Complete Table B1 and B2 of the "Process Systems Catalog Supplemental Data Sheet" for this measure.**
  - List all existing compressors on the Supplemental Data Sheet, including compressors that will not be modified as part of the project.
  - Existing compressors being replaced by the VSD compressor should indicate "Removed" or "Emergency Back-Up" for "Use After."
  - Existing compressors needed to meet the per-shift airflow requirements that will continue being used should indicate "Remain in Operation" for "Use After."
- Submit manufacturer specification sheets and/or a CAGI sheet at anticipated operating pressure for items installed. If available, submission of specification sheets for the removed compressor will expedite processing of your application.
- Must be variable speed rotary vane compressor or variable speed screw compressor and operate a minimum of 2,000 hours annually to be eligible.
- Air compressors purchased or installed for backup or redundant systems do not qualify.
- This is for new VSD compressors only; adding a VSD to an existing compressor does not qualify. Replacing an old VSD compressor with a new VSD compressor does not qualify. Adding a VSD compressor to a system that already includes a VSD compressor does not qualify.
- Replaced equipment must be removed. If an old compressor replaced by a VSD compressor remains connected as emergency backup, by signing the application, the customer is attesting that the old compressor will be used only in case of emergency and will rarely (if ever) operate.
- Limited to one VSD compressor per compressed air system. Compressed air systems with large-load variations requiring multiple VSD trim compressors may contact Focus on Energy at 800.762.7077 to request a variance.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
VSD Compressor replacing Non-VSD Compressor	PS2196*	$40	HP
*** Supplemental Data Sheet needed**			

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
VSD Compressor instead of Non-VSD Compressor	N-PS2196*	$40	HP
*** Supplemental Data Sheet needed**			

PRO TIP

Allowing a VSD compressor to handle the trim loads not only allows that compressor to operate efficiently, it also allows the other compressors in the system to be base loaded and run as efficiently as possible.



VSD VACUUM PUMPS

Requirements:

- **Complete table F (for variable torque) or table G (for constant torque) of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure.**
  - For the VFD Application column, enter Vacuum Pump.
  - For the Controls Before VFD column, enter Inlet Control Valve, On/Off, or Other and then describe.
  - For Controls After (Constant Torque vacuum pumps only), enter Automatic or Manual.
- VSD vacuum pumps are limited to ≤ 30 HP. Custom incentives may be available for VSD vacuum pumps > 30 HP.
- Vacuum pumps must operate a minimum of 2,000 hours annually to be eligible.
- Variable torque vacuum pumps are non-positive displacement pumps, including centrifugal blowers and regenerative blowers.
- Constant torque vacuum pumps are positive displacement pumps, including reciprocating piston, diaphragm, rocking piston, rotary vane, liquid ring, rotary screw, and lobed rotor pumps.
- Submit manufacturer specification sheet showing the type of vacuum pump that was installed.
- Vacuum pumps purchased or installed for backup or redundant systems do not qualify.

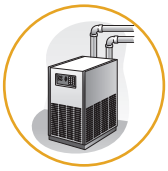
EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
VSD Vacuum Pump, ≤ 30 HP, Variable Torque	PS4361*	$40	HP
VSD Vacuum Pump, ≤ 30 HP, Constant Torque	PS4362*	$30	HP
*** Supplemental Data Sheet needed**			

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
VSD Vacuum Pump, ≤ 30 HP, Variable Torque	N-PS4361*	$40	HP
VSD Vacuum Pump, ≤ 30 HP, Constant Torque	N-PS4362*	$30	HP
*** Supplemental Data Sheet needed**			

PRO TIP

Dry air is important for your compressed air system to operate smoothly. However, drying air below the dew point required for the specific operation will cause the dryer to work harder, increasing your operating cost.

ACCESSORIES, ANCILLARY EQUIPMENT AND CONTROLS



CYCLING REFRIGERATED AIR DRYERS

Requirements:

- New dryers must be properly sized to meet the needs of the compressed air system.
- New dryers must be cycling or variable frequency drive (VFD)-controlled refrigerated dryers replacing non-cycling refrigerated dryers. The replacement of desiccant, deliquescent, heat-of-compression, membrane or other types of dryers are not eligible.
- Installation of controls to existing dryers does not qualify for an incentive.
- For new construction, cycling refrigerated dryers must be installed instead of non-cycling refrigerated dryers.
- Controls-based efficiency projects and/or the replacement of other dryer types may qualify for a custom incentive.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Cycling or VFD-Controlled Refrigerated Air Dryer	PS2264	$0.50	CFM

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Cycling or VFD-Controlled Refrigerated Air Dryer	N-PS2264	$0.50	CFM

DEWPOINT DEMAND CONTROLS FOR DESICCANT DRYERS

Requirements:

- **Complete table C of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure.**
  - For Hours of Operation, enter the total hours per year the vacuum pump operates.
  - For Air Compressor Type, enter single-acting reciprocating, double-acting reciprocating, single stage rotary screw, two-stage rotary screw, oil-free rotary screw, centrifugal, or other.
  - For Air Compressor Control Type, enter Variable Speed Drive, Load/Unload, Inlet Modulating Damper, or Variable Displacement.
  - For Desiccant Dryer Type, enter Heatless, Heated, or Blower Purge.
- Dryer controls are only for use on heatless, heated, or blower purge desiccant dryers.
- Dryer must have a dew point sensor at discharge to monitor demand.
- Dryer controls must control the regeneration process based on actual dewpoint instead of regenerating based on time alone.
- Incentive is per CFM of dryer capacity.
- Dryer controls are not eligible for backup/redundant desiccant dryers.
- Use the smaller CFM value between dryer and air compressor when applying for the incentive.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Dewpoint Demand Controls for Desiccant Dryers	PS4363*	$2	CFM
*** Supplemental Data Sheet needed**			

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Dewpoint Demand Controls for Desiccant Dryers	N-PS4363*	$2	CFM
*** Supplemental Data Sheet needed**			

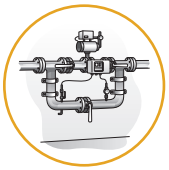
NO AIR-LOSS CONDENSATE DRAINS

Requirements:

- Must be used in systems with load/no-load, variable speed, variable displacement or centrifugal compressors.
- Load/no-load system must have adequate storage for drains to be eligible.
- Manual drains, lever-operated mechanical drains or solenoid drains are not eligible for incentives.
- The replacement drain must be "no air-loss," meaning it must continuously measure the presence of condensate, purge it only when necessary and only long enough to prevent the unintentional purging of compressed air.
- If no air-loss condensate drain is integral to another piece of equipment (i.e., is part of the air compressor, air dryer, mist eliminator, etc.), provide a manufacturer's specification sheet to confirm.
- Replacement of existing no air-loss condensate drains does not qualify.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
No Air-Loss Drain	PS2254	$80	Drain

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
No Air-Loss Drain	N-PS2254	$80	Drain



PRESSURE/FLOW CONTROLLERS

Requirements:

- Compressed air system HP must be ≥50 HP.
- Limit one controller per system.
- The pressure/flow controller must be installed on the main pressure header; does not replace drop-line regulators or filter-regulator lubricators.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Pressure/Flow Controller	PS2255	$8	HP

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Pressure/Flow Controller	N-PS2255	$8	HP

COMPRESSED AIR MIST ELIMINATORS

Requirements:

- Compressed air system HP must be ≥50 HP.
- The mist eliminator must have an initial pressure drop of 1 psig or less.
- For existing buildings, the mist eliminator air filter must replace a standard coalescing filter.
- For new construction, a mist eliminator air filter must be installed instead of a standard coalescing filter.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Mist Eliminator replacing a Coalescing Filter	PS2258	$4	HP

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Mist Eliminator instead of a Coalescing Filter	N-PS2258	$4	HP

AIR-ENTRAINING NOZZLES

Requirements:

- Nozzle must be engineered. Nozzle must be rated at or less than the SCFM rates shown in the table. SCFM ratings are at 80 psig.

Diameter, in inches	1/8	1/4	3/8	1/2
SCFM	10	17	18	18

- Compressed air system must operate a minimum of 2,000 hours annually.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Air-Entraining Nozzle	PS2259	$8	Nozzle

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Air-Entraining Nozzle	N-PS2259	$8	Nozzle

COMPRESSED AIR AND VACUUM SYSTEM HEAT RECOVERY

General Requirements: Applies to heat recovery for the offset of space heating provided by natural gas-fired heating equipment only. Systems that offset the use of propane, oil, electricity, etc., do not qualify. Heat recovery systems that offset natural gas-fired process heating equipment may qualify for a custom incentive.

COMPRESSED AIR AND VACUUM SYSTEM HEAT RECOVERY

Requirements:

- Heat recovery system must include automatic controls to switch from winter to summer operation. Systems with only manual damper controls are not eligible.
- Heat recovery systems installed for backup or redundant air compressors or vacuum pumps do not qualify.
- The project must result in an estimated net reduction of BTUs consumed in the facility to be eligible.
- This incentive is for the installation of a new heat recovery system where one did not exist previously. Replacing an existing heat recovery system or upgrading an existing heat recovery system from manual to automatic controls does not qualify.
- The static pressure in the area where the compressor or vacuum pump is enclosed must remain the same.
- If outside air is used in the system, antifreeze protection must be considered.
- **Incentive is limited to 50% of the project cost.**

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Compressed Air Heat Recovery	PS2257	$50	HP
Vacuum Pump Heat Recovery	PS3928	$50	HP

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Compressed Air Heat Recovery	N-PS2257	$50	HP
Vacuum Pump Heat Recovery	N-PS3928	$50	HP

PRO TIP

As much as 80%-93% of a compressor's electrical energy is converted into heat. Installing heat recovery can then put 50%-90% of that generated heat to good use. Installing automatic damper controls ensures that recovered heat is used to its fullest potential even during transition months when some days require heating and some require cooling. It also ensures that energy savings are not dependent on staff maintaining manual controls.

COMPRESSED AIR LOAD SHIFTING

COMPRESSED AIR LOAD SHIFTING

Requirements:

- **Complete Table D of the "Process Systems Catalog Supplemental Data Sheet" for this measure.**
  - For the "Total HP" enter the total HP of the existing air compressor(s) and the facility that serve the inappropriate compressed air use.
  - For the "Airflow (CFM) @ Pressure (PSI)," enter the rated CFM and pressure for the existing air compressor(s).
  - For the "Control Method," enter Load/No Load, Inlet Modulation, variable displacement, or VSD.
  - For "Inappropriate Use Airflow (CFM)," enter the CFM of the compressed air system that goes to the inappropriate use.
- Replace inappropriate use of compressed air (e.g., blow off, cooling, air motors, etc.) with a blower or electric motor.
- Compressed air load shifting incentive is for existing buildings only.
- Inappropriate use must have an annual runtime of at least 2,000 hours.
- Incentive will be calculated as follows: (Compressed Air HP for the inappropriate use - HP for the replacement technology) x Incentive Rate per HP from table below.

PLEASE NOTE →

- **Reservation code is required. Call 800.762.7077 before you start your project. Indicate reservation code on application. Applications received without a reservation code will not be eligible.**
  - Focus on Energy reserves the right to complete a pre-inspection prior to issuing a reservation code.
- **Incentive is limited to 50% of project cost.**

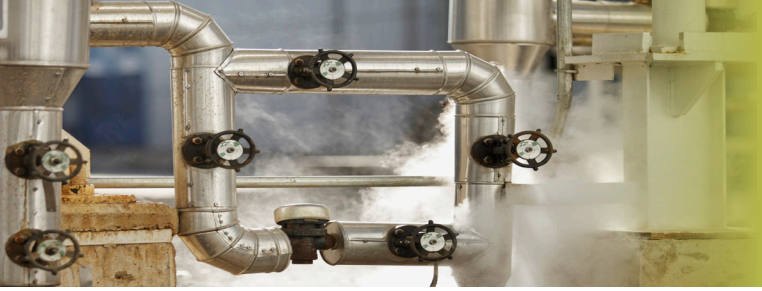
EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Install Blower or Electric Motor to Replace Inappropriate Use of Compressed Air	PS2848*	$200	Compressor HP Shifted
*** Supplemental Data Sheet needed**			

PRO TIP

Inappropriate uses potentially include: clean up, cooling, sparging, aspirating, padding, open-tube vortex coolers without thermostats, air motors, air pumps or vacuum generation.

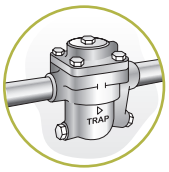
For more information,
call 800.762.7077
or visit focusonenergy.com

STEAM AND HOT WATER SYSTEMS



STEAM TRAP MAINTENANCE AND REPAIR

General Requirements: Only natural gas equipment is eligible for incentives. Steam fueled by electric, propane or oil is NOT eligible for incentives. Municipal steam systems (i.e., “city steam”) are not a qualifying utility and are not eligible.



STEAM TRAP MAINTENANCE AND REPAIR

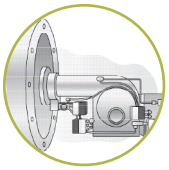
Requirements:

- Repair incentive is only available for the repair or replacement of traps that have malfunctioned and are leaking steam. Repair incentive is not available for traps that are failed closed or are plugged.
- For HVAC process steam traps, use the HVAC/Plumbing Incentive Catalog.
- Repairs do not need to be made at one time, but only one repair incentive per trap can be applied for in a year.
- Mass replacement of traps can be completed without condition assessment. Focus on Energy will assume that 20% of traps were leaking and pay a repair incentive for 20% of the total traps replaced and no survey incentive.
- Steam trap survey and repair work must be recorded in a log sheet and attached to the application in order to be eligible for the survey incentive. Vendor must create and fill in the log as work is completed. **Required fields (minimum):**
  - ID Tag Number
  - Location Description
  - Nominal Steam Pressure
  - Trap Type
  - Indicate Condition (check ONE):
  - Functioning Properly
  - Malfunctioning - Not Leaking Steam
  - Malfunctioning - Leaking Steam
  - Survey Date/Repair Date
  - Survey/Repair Technician Name
  - Orifice Size (if repaired or replaced)
  - Notes
- Surveys are optional. A customer may apply for the repair incentive only to repair or replace known failed steam traps. Survey incentives are available only once per year per steam system.
- To qualify for the survey incentive, customer must repair or replace one trap for every five traps surveyed. If less than one trap per every five traps surveyed is identified as failed, then all failed traps must be repaired or replaced. In the case where all identified failed traps must be repaired or replaced, customer can provide written explanation for a trap that cannot be repaired or replaced and may still qualify for a custom incentive.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Steam Trap Survey	PS4041	$4	Steam Trap
Steam Trap Repair, < 10 psig	PS3999	$25	Steam Trap
Steam Trap Repair, 10-49 psig	PS4000	$40	Steam Trap
Steam Trap Repair, 50-124 psig	PS4001	$60	Steam Trap
Steam Trap Repair, 125-225 psig	PS4002	$100	Steam Trap
Steam Trap Repair, >225 psig	PS4003	$160	Steam Trap

PROCESS BOILER COMBUSTION UPGRADES

General Requirements: Only natural gas equipment is eligible for incentives. Boilers fueled by electric, propane or oil are NOT eligible for incentives. Redundant or backup boilers do not qualify.



PROCESS BOILER COMBUSTION UPGRADES

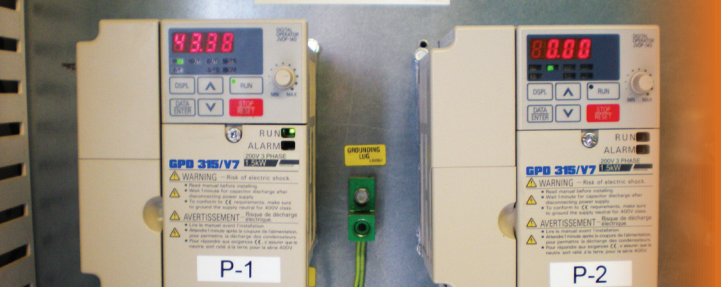
Requirements:

- **Complete Table E of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure.**
- Incentives are available for process boilers only where the boiler is used to provide a hot water or steam load to a process end use. For boilers that are used for HVAC space heating, use the boiler combustion upgrade measures in the HVAC/Plumbing Incentive Catalog.
- Boiler must be natural gas-fired, forced draft that operates a minimum of 2,000 hours per year.
- Installation of redundant or backup boiler combustion equipment does not qualify for an incentive.
- Boiler input must be entered in boiler horsepower (BHP). 1 BHP = 33.476 MBh.
- High turndown burner must be able to provide efficient combustion at a 10:1 turndown ratio.
- **Incentive is capped at 50% of project cost** not including any internal labor. Invoices must be attached and include the manufacturer name and model number of linkageless controls, O_2 trim and high turndown burner equipment.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Linkageless Controls	PS4761*	$10	BHP
O_2 Trim Controls	PS4762*	$5	BHP
High Turndown Burner	PS4760*	$10	BHP
*** Supplemental Data Sheet needed**			

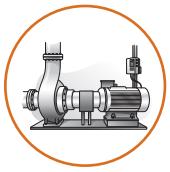
For more information,
call 800.762.7077
or visit focusonenergy.com

VARIABLE FREQUENCY DRIVES



VARIABLE FREQUENCY DRIVES (VFDs)

General Requirements: The system controlled must have significant load diversity that will result in savings through motor speed variation. Units installed only to allow soft starts are not eligible. Redundant or backup units do not qualify. Replacement of existing VFDs does not qualify.



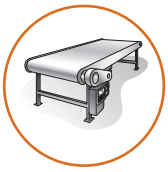
VARIABLE TORQUE VFDs

Requirements:

- **Complete Table F of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure.**
  - For the "VFD Application," enter Chilled Water Distribution Pump, Process Pump, Boiler Draft Fan, Cooling Tower Fan or Process Fan. If you are unsure of the application of your VFD, please contact Focus on Energy for assistance.
  - For the "Controls Before VFD," enter Outlet Control Valve, Bypass Valve, Discharge Damper, Inlet Guide Vanes, On/Off or Other and then describe.
- The system using the VFD must operate a minimum of 2,000 hours annually.
- The system using the VFD may not exceed 500 HP.
- VFD speed must be automatically controlled by differential pressure, flow, temperature or other variable signal.
- VFD must be installed on a centrifugal or axial flow pump or fan, i.e., a variable torque load. VFDs may not be beneficial in pump systems where static head makes up a large portion of the total system head. Be sure to understand these aspects of your system and discuss them with the equipment vendor in advance of applying VFD technology.
- Staged air volume systems (using a VFD to achieve two-speed fan control on a rooftop unit) are not eligible, but may qualify for a custom incentive.
- Refer to HVAC/Plumbing Incentive Catalog for HVAC pumps and fan. VFDs added to chillers and air compressors do not qualify for this incentive.
- For VSD vacuum pumps ≤ 30 HP, see Compressed Air and Vacuum section of this catalog. VSD vacuum pumps > 30 HP may qualify for a custom incentive.
- For dairy systems vacuum pumps, refer to the Agribusiness Incentive Catalog.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
VFD, Chilled Water Distribution Pump	PS2726*	$35	HP
VFD, Boiler Draft Fan	PS2640*	$35	HP
VFD, Cooling Tower Fan	PS2641*	$35	HP
VFD, Process Fan	PS2647*	$35	HP
VFD, Process Pump	PS2648*	$35	HP
* Supplemental Data Sheet needed			

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
VFD, Chilled Water Distribution Pump	N-PS2726*	$25	HP
VFD, Boiler Draft Fan	N-PS2640*	$25	HP
VFD, Cooling Tower Fan	N-PS2641*	$25	HP
VFD, Process Fan	N-PS2647*	$25	HP
VFD, Process Pump	N-PS2648*	$25	HP
* Supplemental Data Sheet needed			



CONSTANT TORQUE VFDs

Requirements:

- **Complete Table G of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure.**
- Only constant torque VFDs for existing building applications are eligible for incentives below. Use of constant torque VFDs for new construction may qualify for custom incentives.
- VFDs must be installed on constant torque equipment (e.g., conveyors, positive displacement pumps, extruders, mixers, crusher/shredders). VFDs installed on a centrifugal or axial flow pump or fan, i.e., a variable torque load should use the Variable Torque VFD offer on page 28. If neither offer is applicable, the project may qualify for a custom incentive.
- The system using the VFD must operate a minimum of 2,000 hours annually.
- The system using the VFD may not exceed 500 HP.
- VFD speed can be automatically controlled by differential pressure, flow, temperature or other variable signal, or be manually controlled.
- Air compressors are not eligible for this offer. Instead, use the Variable Speed Drive Air Compressors on page 15.
- For VSD vacuum pumps ≤ 30 HP, see Compressed Air and Vacuum section of this catalog. VSD vacuum pumps > 30 HP may qualify for a custom incentive.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Constant Torque VFD	PS3280*	$30	HP
*** Supplemental Data Sheet needed**			

PRO TIP

Constant torque loads are defined as the torque requirement being constant at all speeds. Equipment such as cranes, hoists, conveyors or mixers are constant torque. Constant torque power varies linearly with speed.

PRO TIP

The power requirement of the fan or pump varies as the third power of the speed ratio. Therefore small decreases in speed by using a VFD will result in large savings.

For more information,
call 800.762.7077
or visit focusonenergy.com

DATA CENTER AND TELECOM FACILITIES

DATA CENTER AND TELECOM COOLING EQUIPMENT

General Requirements: Cooling equipment must be installed in a data center, telecom facility, or similar space that has a 24/7 cooling load for computer, router, switch or similar IT equipment. For equipment larger than listed below, custom incentives may be available.

DATA CENTER AND TELECOM COOLING ≤ 5.4 TONS

Requirements:

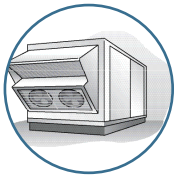
- Incentive is for the installation of high-efficiency split system air conditioning equipment ≤ 5.4 tons (65,000 BTU/h). Rated AHRI efficiency must meet or exceed minimum SEER ratings shown.
- AHRI verified cooling capacity and SEER will be used to calculate the incentive.
- Mini-split/ductless systems that meet these efficiencies and are listed in AHRI with matching indoor unit and outdoor unit configuration also qualify.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
15 SEER Split System, ≤ 5.4 tons, Data Center/Telecom	PS4768	$150	A/C Unit
16 SEER Split System, ≤ 5.4 tons, Data Center/Telecom	PS4769	$200	A/C Unit
17 SEER Split System, ≤ 5.4 tons, Data Center/Telecom	PS4770	$250	A/C Unit
18 SEER Split System, ≤ 5.4 tons, Data Center/Telecom	PS4771	$300	A/C Unit
15 SEER Single Package, ≤ 5.4 tons, Data Center/Telecom	PS4772	$150	A/C Unit
16 SEER Single Package, ≤ 5.4 tons, Data Center/Telecom	PS4773	$200	A/C Unit
17 SEER Single Package, ≤ 5.4 tons, Data Center/Telecom	PS4774	$250	A/C Unit
18 SEER Single Package, ≤ 5.4 tons, Data Center/Telecom	PS4775	$300	A/C Unit

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
15 SEER Split System, ≤ 5.4 tons, Data Center/Telecom	N-PS4768	$100	A/C Unit
16 SEER Split System, ≤ 5.4 tons, Data Center/Telecom	N-PS4769	$150	A/C Unit
17 SEER Split System, ≤ 5.4 tons, Data Center/Telecom	N-PS4770	$175	A/C Unit
18 SEER Split System, ≤ 5.4 tons, Data Center/Telecom	N-PS4771	$200	A/C Unit
15 SEER Single Package, ≤ 5.4 tons, Data Center/Telecom	N-PS4772	$75	A/C Unit
16 SEER Single Package, ≤ 5.4 tons, Data Center/Telecom	N-PS4773	$100	A/C Unit
17 SEER Single Package, ≤ 5.4 tons, Data Center/Telecom	N-PS4774	$125	A/C Unit
18 SEER Single Package, ≤ 5.4 tons, Data Center/Telecom	N-PS4775	$150	A/C Unit

DATA CENTER AND TELECOM FREE COOLING SYSTEMS

General Requirements: Free cooling system must be installed in a data center, telecom facility, or similar space that has a 24/7 cooling load for computer, router, switch or similar IT equipment. For other free cooling solutions, or for optimization of existing free cooling capability, custom incentives may be available.

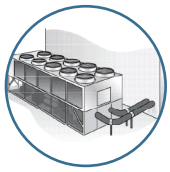


DATA CENTER AND TELECOM AIR SIDE ECONOMIZER

Requirements:

- **Complete Table H of the "Process Systems Catalog Supplemental Data Sheet" for this measure.**
  - The "Economizer Shutoff Temperature" is the temperature above which the economizer is disabled.
  - The "Supply Air Temperature" is the temperature of cool air leaving the air handler.
  - The "Cooling System EER" is the efficiency at AHRI conditions.
  - If the cooling system does not have a cooling tower, enter "N/A" in columns related to cooling towers.
- This incentive is for the installation of an air-side economizer to offset electric cooling in a data center, telecom facility, or similar facility that has a 24/7 cooling load that does not already have some air-side economizer functionality.
- Air-side economizer must be automatically controlled based on outside air temperature or enthalpy.
- Redundant and backup cooling equipment does not count towards the total tons of cooling.
- Process loads in manufacturing facilities are not eligible.
- Air side economizer limited to offsetting ≤ 100 tons of mechanical cooling. Custom incentives may be available for larger systems.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Air Side Economizer, Data Center/Telecom	PS4776*	$100	Ton
*** Supplemental Data Sheet needed**			



ENERGY-EFFICIENT DRYCOOLER FOR DATA CENTER AND TELECOM

Requirements:

- **Complete Table I of the "Process Systems Catalog Supplemental Data Sheet" for this measure.**
- Install a water-side economizer that is automatically controlled to enable economizer operation based on outside air temperature.
- Water-side economizer must be installed new and is not for replacement of an existing water-side economizer.
- Only for data centers and telecom facilities with direct expansion (DX) computer room air conditioning (CRAC) units. (Drycoolers for chilled water systems may be eligible for custom incentives.)
- Redundant CRAC units that are not in operation do not count toward the total capacity (i.e., the total capacity of redundant, non-operational CRAC units should not be included when calculating the total capacity).
- Provide documentation of total rated capacity of data center cooling system. Documentation should include an inventory of CRAC units with quantity, capacity, manufacturer and model number of each unit.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Energy-Efficient Drycooler, Data Center/Telecom	PS2305*	$80	Ton
*** Supplemental Data Sheet needed**			

UPS AND RECTIFIER UPGRADES

General Requirements: Uninterruptible Power Supply (UPS) or rectifier must be installed in a data center, telecom facility, or similar space that has computer, router, switch or similar IT equipment. UPS systems for individual desktop computers or critical manufacturing loads are not eligible.

UPS AND RECTIFIER UPGRADES

Requirements:

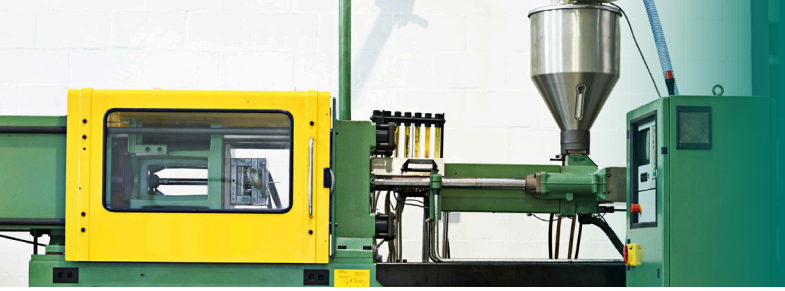
- **Complete Table J of the "Process Systems Catalog Supplemental Data Sheet" for this measure.**
  - The kW for the incentive is the kW of IT equipment load (i.e., output of the UPS or rectifier).
  - Efficiency for new UPS (should be based on tests done in accordance with Department of Energy 10 CFR 430).
  - For "cooling system," list the type of equipment used for cooling, such as: DX, air cooled chiller, water cooled chiller.
  - For "cooling system efficiency," account for any auxiliary equipment like pumps and cooling tower fans.
- Efficient UPS and rectifier systems must be ≥ 94% full load efficiency. Provide a spec sheet to confirm efficiency of the new UPS or rectifier.
- The UPS or rectifier system being replaced must be ≤ 90% efficient at current IT load. Provide a spec sheet, metered data, or screen shots of UPS or rectifier controls to confirm existing UPS or rectifier efficiency.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Efficient UPS	PS4777*	$20	kW
Efficient Rectifier	PS4778*	$20	kW
*** Supplemental Data Sheet Needed**			

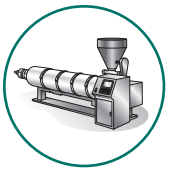
NOTES

For more information,
call 800.762.7077
or visit focusonenergy.com

PROCESS AND SPECIALTY EQUIPMENT



PLASTICS



RADIANT HEATER BANDS

Requirements:

- **Complete Table K of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure to provide metered data if available.**
- Must be used on plastics equipment including injection molding, profile and sheet extrusion and blow molding.
- For replacement of standard conduction band heaters on plastic forming machine barrels with radiant barrel heaters.
- Replacement of existing radiant heater bands with more efficient radiant heater bands may qualify for a custom incentive.
- **Incentive is limited to 50% of the project cost.**

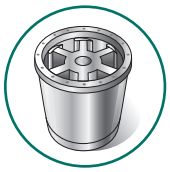
EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Radiant Heater Band	PS2490*	$60	kW of existing heater bands
*** Supplemental Data Sheet needed**			

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Radiant Heater Band	N-PS2490*	$60	kW of conduction band heaters (standard efficiency technology)
*** Supplemental Data Sheet needed**			

PRO TIP

Newly designed radiant heater bands for plastics equipment reduce energy use, improve temperature controls and are easy to install.

PULP AND PAPER



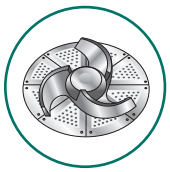
PRESSURE SCREEN ROTORS

Requirements:

- **Complete Table L of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure to provide metered data if available.**
- **Incentive is limited to 50% of the project cost.**

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Pressure Screen Rotor	PS2496*	$40	HP
*** Supplemental Data Sheet needed**			

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Pressure Screen Rotor	N-PS2496*	$40	HP
*** Supplemental Data Sheet needed**			



REPULPER ROTORS AND EXTRACTION PLATES

Requirements:

- **Complete Table M of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure and provide metered data if available.**
- Rotor must operate at least 4,000 hours annually.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Repulper Rotor	PS2538*	$30	HP
Extraction Plate	PS2315*	$10	HP
*** Supplemental Data Sheet needed**			

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Repulper Rotor	N-PS2538*	$30	HP
Extraction Plate	N-PS2315*	$10	HP
*** Supplemental Data Sheet needed**			

SPLINE ROTOR UPGRADE FOR REFINERS

Requirements:

- **Complete table N of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure.**
- Incentive is per refiner HP.
- Refiner must operate a minimum of 4,000 hours annually.
- **Incentive is limited to 50% of project cost.**

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Spline Rotor Upgrade	PS4764*	$25	HP
*** Supplemental Data Sheet needed**			

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Spline Rotor Upgrade	N-PS4764*	$25	HP
*** Supplemental Data Sheet needed**			

HIGH EFFICIENCY SIDE ENTRY AGITATOR

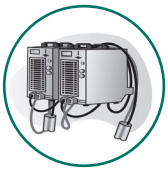
Requirements:

- **Complete table O of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure.**
- Incentive is per agitator motor HP.
- Side entry agitator must install new engineered impeller.
- Refiner must operate a minimum of 4,000 hours annually.
- **Incentive is limited to 50% of project cost.**

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
HE Side Entry Agitator	PS4763*	$30	HP
*** Supplemental Data Sheet needed**			

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
HE Side Entry Agitator	N-PS4763*	$30	HP
*** Supplemental Data Sheet needed**			

ENERGY-EFFICIENT BATTERY CHARGERS



ENERGY-EFFICIENT BATTERY CHARGERS

Requirements:

- **Complete Table P of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure.**
- The charger must meet the California Energy Commission's 2016 Appliance Efficiency Regulations for Large Battery Chargers. Approved products are listed online at cacertappliances.energy.ca.gov/Pages/ApplianceSearch.aspx.
- Incentive is per kW-hour (1,000 watt-hours) of battery charger capacity.
- Use battery capacity in kW-hour from the qualified products list, unless actual battery capacity (kW-hour or watt-hours) is significantly different. If significantly different, use the following formula to calculate kW-hour capacity for a given charger: one hour Ah rating x battery voltage x time to charge/1000 W/kW. If time to charge is unknown, use 8 hours.
- The charger must operate at least 1,000 hours per year.
- The charger must replace (or be installed instead of) a ferroresonant, silicon controlled rectifier (SCR) or hybrid ferroresonant/SCR battery charger.
- This measure is intended for battery chargers for mobile material handling equipment such as forklifts, pallet jacks and lifts that are used at a commercial or industrial facility. It is not intended for chargers designed for electric or hybrid / electric vehicles to be driven on public roads and highways.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Industrial High Frequency Battery Charger	PS4765*	$3	kW-hour of Charger Capacity
*** Supplemental Data Sheet needed**			

NEW CONSTRUCTION INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Industrial High Frequency Battery Charger	N-PS4765*	$3	kW-hour of Charger Capacity
*** Supplemental Data Sheet needed**			

PROCESS EXHAUST FILTRATION

General Requirements: Eligible process exhaust filtration projects must reduce or eliminate existing, heating-only make-up air for process exhaust. Make-up air must be natural gas-fired and served by an eligible natural gas utility. An eligible electric utility is not required for Process Exhaust Filtration measures.

PROCESS EXHAUST FILTRATION

Requirements:

- **Complete Table Q of the "Process Systems Incentive Catalog Supplemental Data Sheet" for this measure.**
- Make-up air systems that also provide cooling or projects that offset the need for additional make-up air (including new construction projects) may qualify for a custom incentive.
- System must operate at least 2,000 hours annually.
- Filtration must be applied to a manufacturing process. Commercial HVAC applications are not eligible.
- Filtration system must reduce or eliminate the need for process exhaust by filtering and recirculating the air and thereby reducing or eliminating make-up air demand and associated heating energy.

PLEASE NOTE →

- **Incentive is limited to 50% of project cost.**
- **Reservation code is required. Indicate reservation code on application. Applications received without a reservation code will not be eligible. Call 800.762.7077 to speak with a program representative before you start your project.**
  - Focus on Energy reserves the right to complete a pre-inspection prior to issuing a reservation code.

EXISTING BUILDING INCENTIVES			
Measure Description	**Code**	**Incentive**	**Unit**
Process Exhaust Filtration	PS3244*	$0.55	CFM Reduced
*** Supplemental Data Sheet needed**			

PRO TIP

Reducing exhaust by installing filtration can help reduce energy costs by reducing make-up air and exhaust requirement, on average $5/CFM annually. It can also help correct air balance in the building.

NOTES

SAMPLE INVOICE

NEED HELP? Call 800.762.7077

Focus on Energy requires a copy of your itemized invoice to process incentives. Use this example to help guide you through our invoice requirements. Only registered Trade Allies can receive incentive payments on behalf of their customers. If submitting a purchase order, submit an invoice as well. **Purchase orders alone are not sufficient documentation.**

INVOICE DATE AND NUMBER

Date: 1/1/2020
Invoice # 00001

TRADE ALLY NAME AND ADDRESS

XYZ HVAC CONTRACTOR
111 HVAC Expert Rd
Anytown, WI 53523
(555) 555-1212

To

CUSTOMER NAME AND ADDRESS

John Sample Corporation
123 Save Energy Way
Anytown, WI 53590

Ship To

John Sample Corporation
123 Save Energy Way
Anytown, WI 53590

INCLUDE JOB SITE INFORMATION (NAME & ADDRESS) IF DIFFERENT FROM ABOVE

QUANTITY SHIPPED	MANUFACTURER OR BRAND	MODEL #	DESCRIPTION	EXTENDED PRICE
1	ABC Brand	XYZ123000-17	3 Ton Rooftop Unit	$ 2,733.00
1	ABC Brand	X71DPP-60D135-0	Natural Gas Boiler – 150,000 BTU, 95% efficient	$4,685.00

SPECIFY THE QUANTITY FOR EACH

IDENTIFY MANUFACTURER AND MODEL NUMBERS

INCLUDE A DETAILED DESCRIPTION

INCLUDE ITEM COST

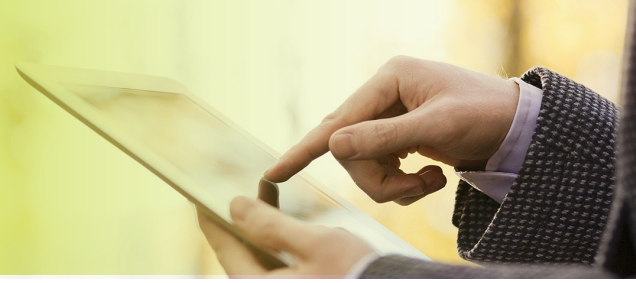
If you are a Focus on Energy registered Trade Ally receiving the incentive, you must show the credit to the customer on your invoice

Focus on Energy Incentive	- $ 500.00
Subtotal	$ 6,918.00
Sales Tax	$ 380.49
TOTAL AMOUNT DUE	$ 7,298.49

Thank you for your business!

GLOSSARY

NEED HELP? Call 800.762.7077



Acronyms, abbreviations and technical terms used throughout this catalog are defined below.

ACRONYMS AND ABBREVIATIONS

AHRI	Air Conditioning, Heating and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
BHP	Brake Horsepower
BTU	British Thermal Unit
BTU/HR	British Thermal Unit Per Hour
CAGI	Compressed Air and Gas Institute
CFM	Cubic Feet Per Minute
DOE	Department of Energy
EER	Energy Efficiency Ratio
HP	Horsepower
HVAC	Heating, Ventilation and Air Conditioning
IT	Information and Technology
kW	Kilowatts
kWh	Kilowatt-hours
MBh	1,000 Btuh
PSIA	Pounds Per Square Inch Absolute
PSIG	Pounds Per Square Inch Gauge
SCFM	Standard Cubic Feet Per Minute
VFD	Variable Frequency Drive
VSD	Variable Speed Drive

GLOSSARY TERMS

Air Compressor
A device that uses mechanical energy to compress gases, such as air, to a higher pressure.

Air- Entraining Nozzle
Both handheld and fixed air nozzles use compressed air to clean or dry things. In comparison, an air-entraining nozzle uses less compressed air to do the same work by grabbing or entraining surrounding atmospheric air, making it a more efficient option.

Air Motor
A device in which the pressure of confined air causes the rotation of a rotor or the movement of a piston.

Amp
Short for ampere and in plural is called amps.

Aspiration
The act of removing a fluid from a cavity.

Axial Fan
Fan that moves air in the general direction of the axis about which it rotates.

Blow Molding
A type of plastic extrusion where molten plastic is extruded through a die head to form a hollow tube and dropped into a mold. The tube of plastic is then inflated. The inflated plastic cools in the mold, and the mold is opened to reveal the plastic part.

Blower
A blower is a type of air compressor that delivers moderate pressure air.

British Thermal Units (BTUs)
A measurement of energy. The amount of heat required to raise the temperature of one pound of water 1 degree Fahrenheit at or near 39.2 degrees Fahrenheit at standard atmospheric pressure.

British Thermal Units Per Hour
The number of BTUs consumed or generated in a one-hour period.

Burner Efficiency
The percentage of heat input to the burner that is used for useful work.

Burner Heat Rate
The rate of heat at which a burner is specified to operate, typically measured in BTU/HR.

Centrifugal Air Compressor
A type of dynamic air compressor where a continuous flow of air has its velocity raised in an impeller rotating at a relatively high speed.

Centrifugal Fan or Pump
Fan or pump where the air or water enters the impeller axially and leaves it substantially in a radial direction.

Coalescing Filter
A compressed air filter that removes water and aerosols by collecting and joining particulates and removing them from the compressed air system. These can become saturated with liquid in operation thus making mist eliminators a better option.

Compressed Air and Gas Institute (CAGI) Data Sheet
A data sheet that provides a standardized format for manufacturers to provide basic information and performance of a compressor. See cagi.org/performance-verification/data-sheets.aspx for more information.

Compressed Air Operated Vortex Coolers
A device that has no moving parts but separates compressed air into cold and hot air streams and is often used for cooling cutting tools.

Compressed Air Storage
Storage of compressed air that can be used to meet demand fluctuation and limit on/off cycling of constant speed air compressors.

Constant Torque
Torque requirement is constant at all speeds. Equipment such as cranes, hoists, conveyors and mixers are constant torque. Constant torque power varies linearly with speed.

Cubic Feet Per Minute
This measurement indicates how many cubic feet of air pass by a stationary point in one minute. The higher the number, the more air is being forced through the ductwork by the system.

Cycling Refrigerated Air Dryer
A thermal mass such as glycol or metal that is used to cool and dry air. The thermal mass is temperature controlled by a thermostat so that the refrigerant compressor shuts off at reduced loads.

Damper
An element that is inserted into an air-distribution system or element of an air-distribution system permitting modification of the air resistance of the system and consequently changing the airflow rate or shutting off the airflow.

Deliquescent Air Dryer
Compressed air dryer that uses a material with a high affinity for water. The water is absorbed by the material. The material eventually needs to be replaced once the material is fully dissolved into liquid.

Desiccant Air Dryer
Compressed air dryer which uses material that adsorbs water. The water can be driven off the material by applying dry purge air, heat or both.

Dew Point
Temperature at which water vapor has reached the saturation point (100% relative humidity).

Drain
Various types of drain traps in a compressed air system used to remove condensate. They can be found at various places in the compressed air system such as intercoolers, aftercoolers, filters, dryers, receivers or at points of use.

Extrusion
A manufacturing process used mainly in plastics manufacturing. Molten plastic is forced out of a die of desired size.

Heat of Compression Air Dryer
Compressed air dryer that uses the heat generated during compression to dry the desiccant material.

High Efficiency Side Entry Agitator
An engineered and specifically built impeller to replace the standard marine type impeller for a side entry agitator that is commonly used in stock blending and mixing tanks.

Horsepower
A unit of power used for motors, approximately equal to 0.746 kW.

Injection Molding
A manufacturing process used mainly in plastics manufacturing. Molten plastic is injected into a mold to create a part.

Inlet Modulation
A method of control for rotary screw air compressors where an inlet damper is partially closed to provide capacity modulation at part-load operation.

Kilowatt-hours
A unit of measurement for electrical energy usage. One kilowatt hour equals 1,000 watts of energy used for one hour.

Kilowatts
A unit of electrical power equivalent to 1,000 watts.

Injection Molding Screw and Barrel
Part of the injection molding press. The barrel is where the plastic is heated and melted. The screw is used to force the plastic into the mold.

Load /No Load Air Compressor
Capacity control for reciprocating air compressors – when the upper pressure seating is reached, valve unloaders hold open the inlet valves so that air drawn into the cylinder is expelled through the open inlet valves with any compression or delivery taking place. During unloading times, the compressor is still drawing power. On/off control differs in that the compressor starts and stops based on preset pressures and the compressor does not use power when stopped.

Make-Up Air
Air used to replace exhausted air to maintain building pressure balance.

Manual Drains
An operator manually opens valves to discharge condensate from a compressed air system.

Membrane Air Dryer
Membrane pores allow water vapor to pass through the pores faster than the compressed air which draws water out of the compressed air stream.

Mist Eliminator
A type of coalescing filter with a lower pressure drop (~1 psig) across the filter than a standard coalescing filter.

Nominal HP
Nameplate power of a motor.

On/Off
Type of compressor control that starts and stops the compressors based on a pre-set pressure.

Pounds Per Square Inch Absolute
A measurement of pressure. The force exerted on a surface in a fluid or gas measured relative to the absolute zero pressure – the pressure that would occur at absolute vacuum.

Pounds Per Square Inch Gauge
A measurement of pressure. The force exerted on a surface in a fluid or gas measured by a gauge relative to the surrounding atmosphere.

Pressure Header
A set of main pipes that delivers air from the compressor room.

Pressure Screen Rotor
A dual element foil rotor that efficiently removes contaminants from recycled paper.

Pressure/Flow Controllers
A device that separates the supply and demand side of a compressed air system.

Radiant Heater Bands
A series of radiant heaters embedded in ceramic insulation that is wrapped around the barrel of injection molders and extruders. These allow for more efficient heating than normal barrel heating.

Radiant Tube Insert
A ceramic insert for radiant tubes used in heat-treating furnaces. The insert provides a higher rate of heat transfer in the burner tube by producing nonturbulent and high-convection flow which reduces energy consumption of the furnace.

Rated SCFM
The nameplate flow of the air compressor or blower.

Repulper Rotor and Extraction Plate
A mixing system for defibered dried pulp bales for use in paper making. Manufacturers have recently redesigned repulper rotors making them energy-efficient. The extraction plate allows for the fit of the new rotor to the existing system.

Rooftop Unit
An air handling unit designed for outdoor use and usually installed on roofs.

Rotary Vane Compressor
A type of positive displacement air compressor.

Screw Compressor
A type of air compressor that is a positive displacement type which means that a given quantity of air is trapped in a compression chamber and the space that is occupied is mechanically reduced.

Soft Start
A type of device used to reduce the in-rush current of a motor during start-up.

Sparging
To agitate (a liquid) by means of compressed air or gas entering through a pipe.

Spline Rotor Upgrade for Refiners
Refiners are upgraded with spline technology to allow the splined rotor to balance on a splined hub, which is mounted to a non-floating fixed shaft. This improves the rotor centering which in turn increases the refiner efficiency and performance.

Static Head
The difference in elevation in which a fluid is to be pumped, typically measured in feet.

Static Pressure
The pressure associated with lifting the fluid to the static head height.

Steam Trap
Steam traps are automatic valves used in every steam system to remove condensate, air and other noncondensable gases while preventing or minimizing the passing of steam. If condensate is allowed to collect, it reduces the flow capacity of steam lines and the thermal capacity of heat transfer equipment.

Total System Head
The static head of a pumping system plus the frictional head of the system, typically measured in feet.

Vacuum Pump
A mechanical device that removes gas from a volume to create a vacuum.

Variable Displacement
Capacity control for rotary air compressors that uses a valve that is built into the compressor casing to control output to match demand by varying the displacement of the rotors.

Variable Frequency Drive (VFD)
An electronic controller that adjusts the speed of an electric motor by modulating the power being delivered. VFDs provide continuous control, matching motor speed to the actual demands of the pump, fan or motor system. Motor speed fully modulates as the frequency of the alternating current is adjusted by the VFD.

Variable Speed Drive
Often used interchangeably with VFD. These drives are often used on smaller motors, direct current (DC) motors and multiple speed motors that do not need full modulation.

Variable Torque
Torque requirement changes at different speeds. Equipment such as centrifugal pumps and fans are variable torque.

Voltage
The difference in electric potential energy measured in volts.

CONVERSIONS

Term	Description	Conversion
BHP	Boiler Horsepower	1 BHP = 33,476 BTUh
kWh	Kilowatt-hours	1 kWh = 3,413 BTU
HP	Horsepower	1 HP = 0.746 kW
kW/ton	Kilowatt per ton of cooling	kW/ton = 12 / EER
kW/ton	Kilowatt per ton of cooling	kW/ton = 12 / (COP x 3.413)
COP	Coefficient of Performance	COP = EER / 3.413
COP	Coefficient of Performance	COP = 12 / (kW/ton x 3.413)
EER	Energy Efficiency Ratio	EER = 12 / kW/ton
EER	Energy Efficiency Ratio	EER = COP x 3.413
Ton	Unit of capacity for cooling equipment	1 Ton = 12,000 BTUh
MBh	1,000 BTUh	1 MBh = 1,000 BTUh
Therm	100,000 BTU	1 Therm = 100,000 BTU (or 100 CF or 0.1 MCF)
CF	Quantity of natural gas	1 CF = 1 cubic foot (= approximately 1,000 BTU)
CCF	Quantity of natural gas	1 CCF = 100 cubic feet

SOURCES Terms defined in the Glossary were referenced from the following sources:

Compressed Air Challenge Best Practices for Compressed Air Systems
DOE Office of Energy Efficiency
DOE Office of Energy Efficiency and Renewable Energy. Motor Systems Tip Sheet #13
DOE Office of Energy Efficiency and Renewable Energy. Steam Tip Sheet #2
DOE Office of Energy Efficiency and Renewable Energy. Compressed Air Tip Sheet #3
DOE Office of Energy Efficiency and Renewable Energy. Compressed Air Tip Sheet #9
DOE Office of Energy Efficiency and Renewable Energy. Compressed Air Tip Sheet #13
DOE Office of Energy Efficiency and Renewable Energy. Motor Systems Tip Sheet #13
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Energy.gov SpyroCor Radiant Tube Inserts
engineeringtoolbox.com
focusonenergy.com
Focus on Energy Energy Business Case Study Radiant heater bands cut energy use for plastics processors
Focus on Energy Energy-efficient repulper rotor Best Practices
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http://www.engineershandbook.com/MfgMethods/blowmolding.htm
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www.tappi.org
Wisconsin Focus on Energy Technical Reference Manual

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REDUCING ENERGY WASTE ACROSS WISCONSIN

FOCUS ON ENERGY®, Wisconsin utilities' statewide program for energy efficiency and renewable energy, helps eligible residents and businesses save energy and money while protecting the environment. Focus on Energy information, resources and financial incentives help to implement energy efficiency and renewable energy projects that otherwise would not be completed.

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