



# TJERNLUND

## Modulating Draft Systems

VSAD Series  
Auto-Draft®  
Inducers



CPC-3  
Controller



VSUB Universal  
Blowers



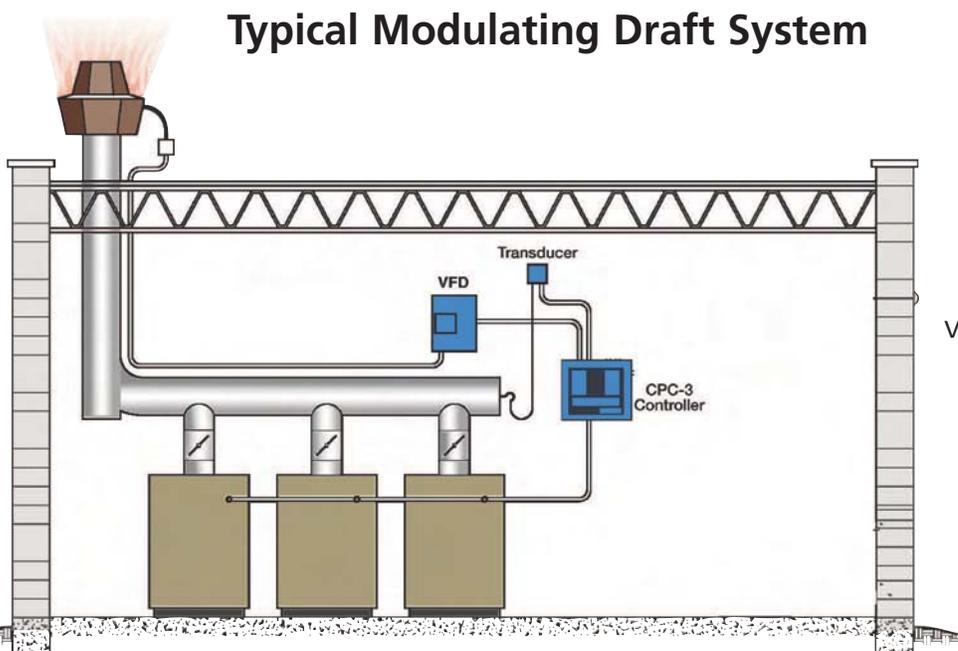
### Featuring the CPC-3 Controller and VSAD-Series Inducers or VSUB-Series Universal Blowers

**Problem:** Erratic draft is the most common cause of heater performance and operation problems.

Traditional chimneys cannot adjust to varying winds, temperatures, building pressures and burner firing rates. A chimney has even a tougher time providing stable draft when it is serving multiple heaters. Fan assisted and condensing heaters have specific draft requirements that are not as forgiving as atmospheric heaters.

**Solution:** Specify the CPC-3 Controller to automatically monitor and modulate the speed of either VSAD-Series Inducers or VSUB-Series Universal Blowers to maintain optimum draft. Patented CPC-3 controlled draft systems feature 100% modulation and also include the ability to independently modulate a separate combustion air blower and control a motorized combustion air louver. Vent heaters hundreds of feet in any direction.

### Typical Modulating Draft System



TD-Series  
Pressure Transducers



VFD-Series  
Variable Frequency Drives



Not Listed for use on condensing equipment in Canada.

VSAD/FSAD-Series Inducers U.S. Patent number 6,450,874. CPC-3 Controller Patents Pending and covered under one or more of the following U.S. Patent numbers 6,726,111.

# CPC-3 controlled vent systems save money

## Reduce installation costs

A CPC-3 Controlled System can more than pay for itself. Here's how:

### Without CPC-3 Controlled System:

Three boilers and two water heaters at a combined firing rate of 3,800 MBH. Original design specified 90 feet of 22" diameter AL29-4C positive pressure insulated stack.

Installed cost for stack..... \$41,000

### With CPC-3 Controlled

**System:** Revised design with VSAD-10 Auto-Draft Inducer allowed stack diameter to be reduced to 14".

Installed cost for stack and VSAD-10 Auto-Draft® Inducer.. \$30,000

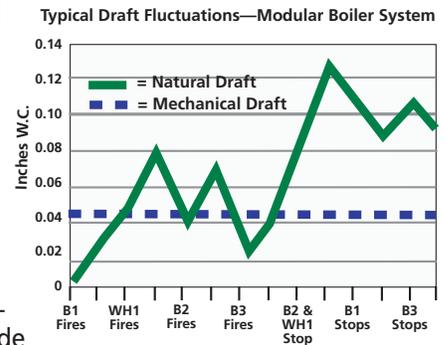
Also add benefits of optimum draft and efficiencies for the operating life of the boilers and water heaters.

**SAVE  
27%**

## Increase efficiency for energy savings

### Traditional Chimney

As different heaters sequence, the resulting changes in flue gas volume and stack temperature create wide swings in natural draft, reducing heater efficiencies.



### Modulating CPC-3 Controlled System

As different heaters sequence, the resulting changes in flue gas volume and temperature are automatically compensated for. The CPC-3 modulates the inducer or blower to independently maintain draft and/or combustion air set points. Heaters operate at peak efficiency every cycle, service calls are reduced, and heater life is extended.

# Total system control and operator friendly

## Programming Options

- Draft Pressure set point
- Combustion Air Pressure set point
- Pre and Post Purge
- Automatic or Manual operation
- Combustion air modes of operation include "Open" room pressure or ducted "Sealed" pressure for sealed combustion burners
- Auxiliary Device Interface for motorized louver or CO detector



## Features:

- Large lit display and easy to use soft touch keypad.
- Primary functions can be programmed via dedicated keys, eliminating scrolling through multiple screens.
- Four burner interlock terminal strips compatible with millivolt, 24 volt, 115 volt or 230 volt burner control circuits.
- Add up to 3 EXP-4E's for a total of 16 heaters.
- LED status indicators show which interlocked burners are calling for heat and when the CPC-3 safety circuit approves burner operation.
- Additional LED's indicate limit(s) status, VFD operation and fault status.
- Correct Inducer/Blower rotation is determined by display prompts and changed through DIP switches on the circuit board.
- System fault diagnosis readout and retrieval.
- Built-in alarm alerts building maintenance personnel if system faults. Alarm relay also allows interface with building management system.

# Patented VSAD-Series Auto-Draft® Inducers

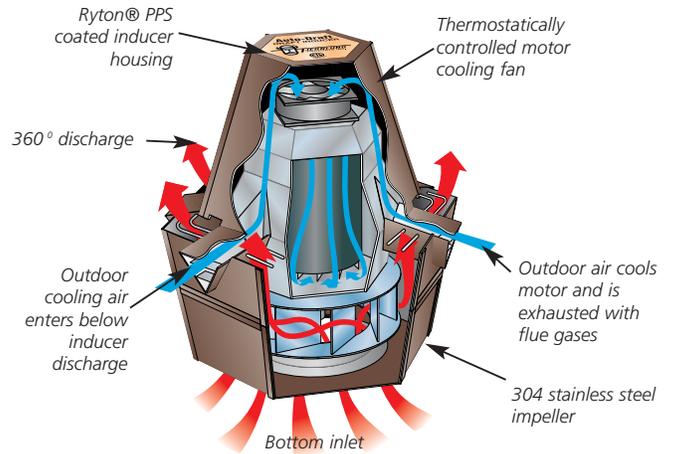
Auto-Draft Inducers mount directly on top of a vertical vent/chimney or directly on an outside wall for side wall vented applications. They are coated with Ryton® PPS for the ultimate in corrosion resistance.

- Critical for low/no speed operation is a patented motor cooling system that uses a thermostatically activated cooling fan that operates independent of the inducer motor. In traditional variable speed inducers, motor cooling decreases with a reduction in RPM.

- Auto-Draft Inducers also feature a hinged housing for easy blower wheel access. Opening the hinged housing automatically disables the inducer and all interlocked burners. The hinge pin is removable so that the mounting base can be separated from the motor/wheel assembly, dramatically simplifying installation and service.



- VSAD-Series available in 3 sizes up to 3000 CFM.
- Available in 230 VAC single or three phase, 460 VAC three phase.
- Fixed Speed FSAD-Series models available up to 2500 CFM.



Side Wall terminate for greater cost savings



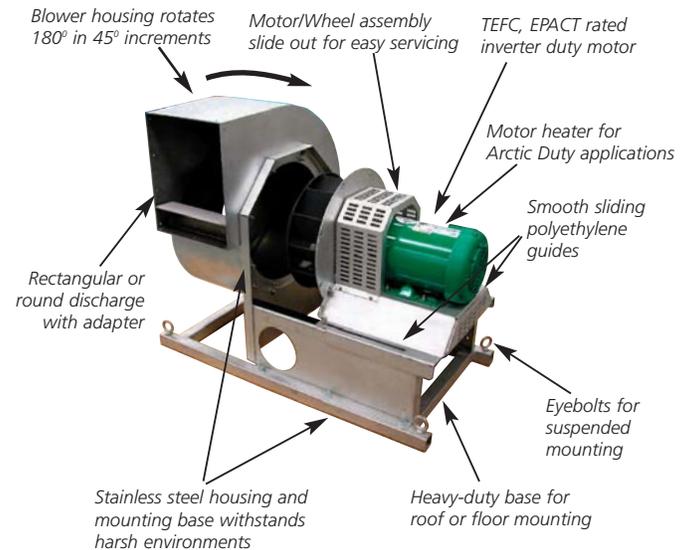
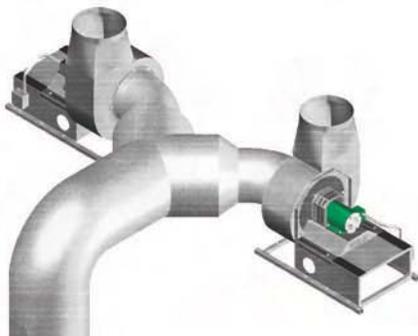
Combine Inducers for larger capacities

# Install VSUB-Series Universal Blowers indoors or outdoors

VSUB-Series Universal Blowers are the finest stock utility blowers available. They include many unique design and construction features that allow them to adapt to a variety of installations. Heavy-duty, stainless steel construction and efficient motors provide years of trouble free operation for the building owner. They are rated for temperatures up to 575° F and are designed for gas and oil fired equipment.

- Available in 4 sizes up to 6000 CFM.
- Available in 230 or 460 three phase.

**Combine VSUB-Series Universal Blowers for Expanded Capacities**



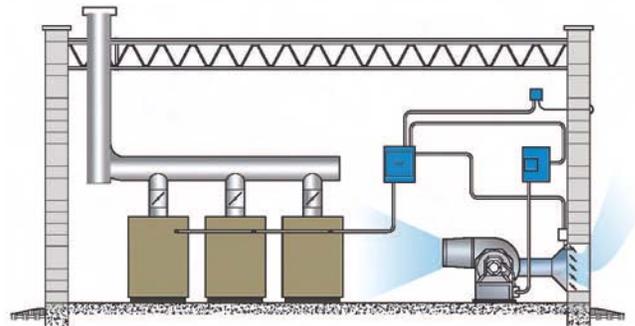
## Typical sequence of operation

- 1 Upon a call for heat from an interlocked burner the CPC-3 references the vent system draft and/or combustion air pressure as measured by the TD-Series Pressure Transducer and activates the Variable Frequency Drive.
- 2 The VFD quickly speeds up the inducer/blower until the vent system draft and/or combustion air set point is reached. When the set point is reached the CPC-3 completes the circuit to the interlocked burner allowing the normal firing sequence to resume.
- 3 Additional burner stages will create a momentary decrease in vent system pressures, causing the inducer/blower to speed up to maintain the set point. If sufficient natural draft and/or combustion air is present, the CPC-3 will deactivate the inducer/ blower until it is needed. The interlocked burners will be deactivated if the vent system draft set point cannot be maintained.

## Specify CPC-3 controlled combustion air systems

Traditional combustion air delivery methods don't complement new heater designs:

- Wind speed and direction can negatively affect the volume of combustion air supplied.
- In cold climates, uncontrolled air entering traditional louvers can lead to frozen pipes.
- Sealed combustion heaters are designed for dedicated combustion air ducts, not shared ductwork.
- Large louvers can be a security risk.



## Count on Tjernlund for outstanding technical support

Assistance is available by phone:  
800.255.4208, Email: [fanmail@tjfans.com](mailto:fanmail@tjfans.com)  
or on the Internet at [www.tjernlund.com](http://www.tjernlund.com)

A key part of our products is the support that we provide throughout the specification, submittal, installation and operating life.

Typical value added support that we offer includes:

- Application assistance
- Inducer/blower selection calculations for draft and combustion air
- Vent and duct diameter selection
- Control and Interlock wiring diagrams
- System commissioning
- System troubleshooting
- Consistently stocked product and parts

Represented by:



Our Sales Engineers are available M-F 7:30 to 4:30 PM CST.

Tjernlund is represented by over 50 sales offices for local assistance.



**TJERNLUND PRODUCTS, INC.**

1601 Ninth Street White Bear Lake, MN 55110-6794  
Phone: 651.426.2993 800.255.4208 Fax: 651.426.9547  
Visit our web site: [www.tjernlund.com](http://www.tjernlund.com)