

# VORTEX HEAT RECOVERY

ECONOMIZER AND HEAT EXCHANGER SYSTEMS FOR ANY BOILER TYPE



**ENERVEX<sup>®</sup>**   
VENTING DESIGN SOLUTIONS

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# VORTEX HEAT RECOVERY (VHX)

## VERSATILITY AND SAVINGS

The highly adaptable and efficient VHX flue gas economizer can reduce fuel requirements 10+% and pay for itself in less than two years. Its modular design allows you to connect individual circuits for use with single OR multiple boilers of atmospheric, fan-assisted, or forced-draft design. The VHX's fully packaged, lightweight, round configuration with integrated modulating bypass uses an efficient hybrid microchannel/plate heat exchanger that allows extremely high heat transfer capability and low flow resistance.

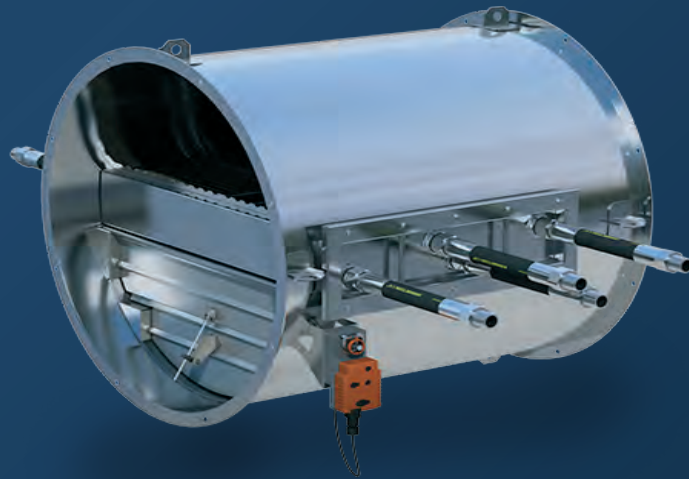
**ANY BOILER TYPE – VERTICAL OR HORIZONTAL;  
CONDENSING OR NON-CONDENSING**

**10+% ANNUAL FUEL SAVINGS & SPACE SAVINGS**

**PAYBACK IN LESS THAN TWO YEARS**

**316L STAINLESS STEEL HOUSING & HEAT EXCHANGER**

**REDUCED EMISSIONS**



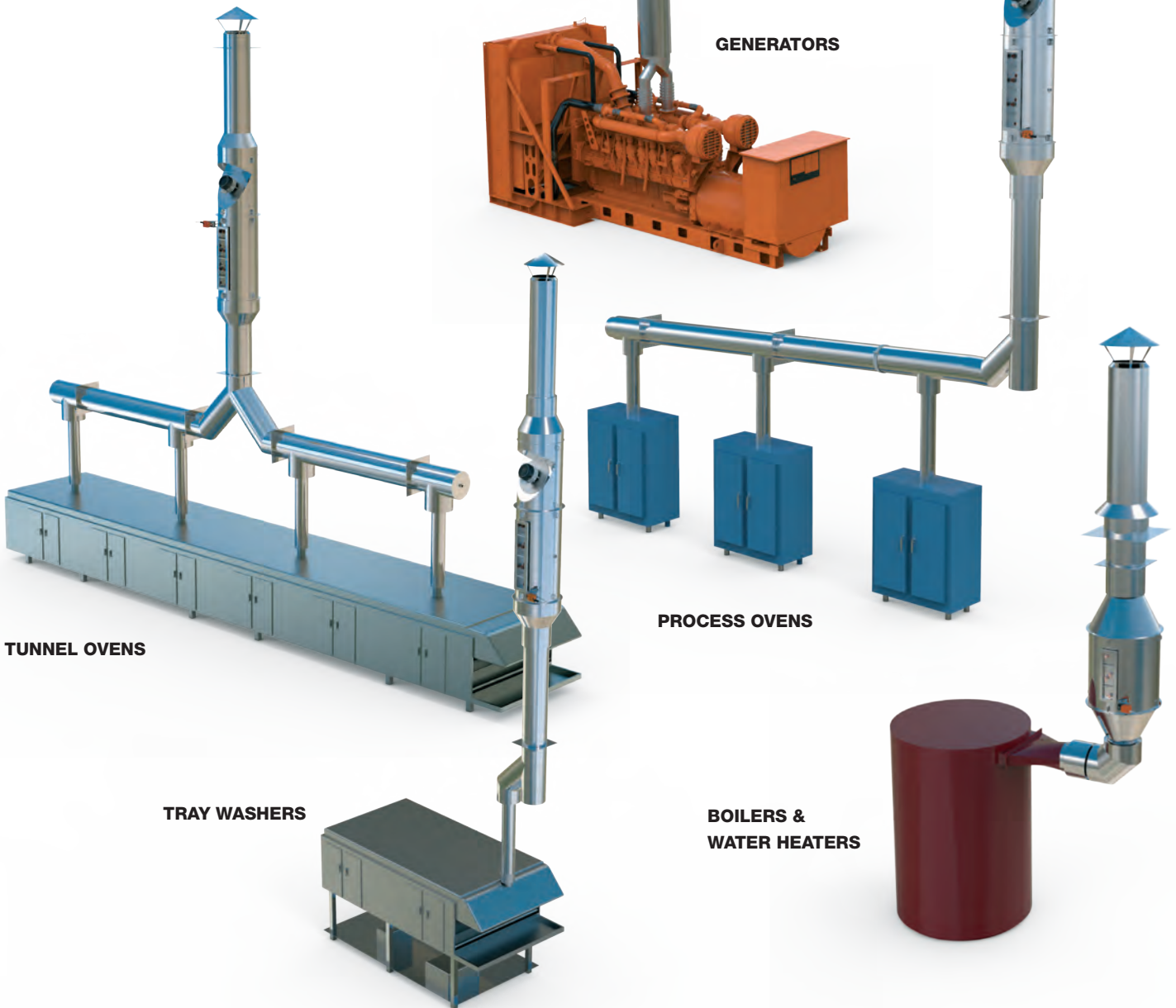
## PAYBACK

In a typical boiler system, 10% to 20% of energy input is lost in the form of heat escaping to the atmosphere. The VHX economizer captures waste heat from the stack, then returns it as pre-warmed water, or for storage economizers, to significantly reduce energy consumption, operating costs and carbon emissions.

# MANY APPLICATIONS

ENERVEX VHX economizers are suitable for condensing and non-condensing applications with no modification. Easy to install, service and clean, its compact, modular design can serve multiple appliances and bring a long list of benefits to commercial applications:

**REDUCE STACK TEMPERATURE, ACHIEVE OPTIMAL EXHAUST RATES, IMPROVE APPLIANCE EFFICIENCY & PERFORMANCE, CUT FUEL CONSUMPTION & EMISSIONS, ENSURE PROPER/CONSTANT DRAFT, SAVE SPACE.**



**GENERATORS**

**TUNNEL OVENS**

**PROCESS OVENS**

**TRAY WASHERS**

**BOILERS & WATER HEATERS**

# ECONOMIZER PRODUCTS

ENERVEX's line of fully integrated heat recovery exchangers and economizer products deliver improved efficiency and consistent performance, guaranteed.

We offer the VHX in single row, double row and stacked row options – along with products to easily monitor and control water and flue temperatures, fans, over-draft damper, and combustion air supply.

These products integrate seamlessly with our mechanical draft fans and chimney systems for ease of installation and flawless operation.

**FLEXIBLE, ONE-STOP DESIGN**

**EASY SYSTEM INTEGRATION**

**SINGLE-SUPPLIER RESPONSIBILITY & SUPPORT**

**IMPROVED EFFICIENCY & CONSISTENT PERFORMANCE, GUARANTEED**



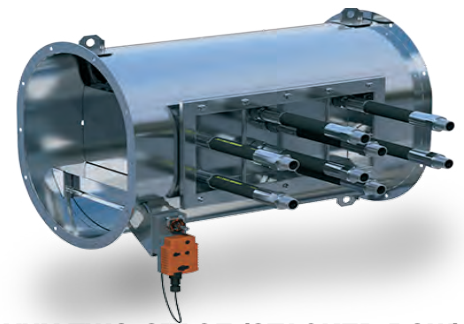
## VHX SINGLE ROW

A versatile and efficient single-row flue gas economizer for applications with tight space. Available for steam boiler systems up to 1300 HP (54,000 MBH) or for other applications with flow rates up to 6,125 SCFM. Housing and heat exchanger plats in 316L stainless steel.



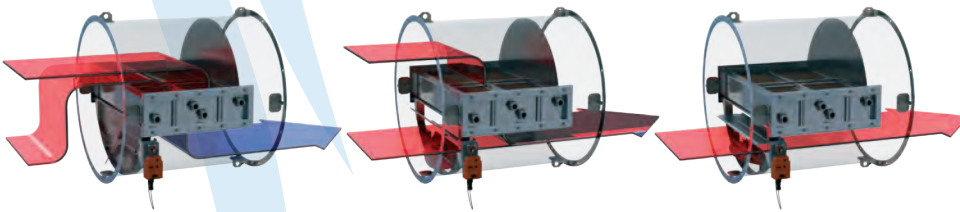
## VHX DOUBLE ROW

A highly versatile and efficient double-row economizer system with integrated bypass. Available for steam boiler systems up to 1300 HP (54,000 MBH) or for other applications with flow rates up to 10,250 SCFM. Housing and heat exchanger plats in 316L stainless steel.



## VHX TWO-STAGE (STACKED ROW)

Two-stage VHX flue gas economizer that can make almost any application condense for better heat recovery when you need to conserve extra energy. Available for steam boiler systems up to 1300 HP (54,000 MBH) or for other applications with flow rates up to 7,000 SCFM. Housing and heat exchanger plats in 316L stainless steel.



## MODULATING BYPASS

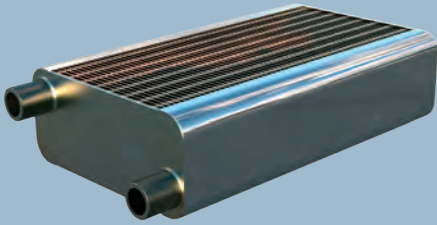
The modulating, multi-blade damper provides a bypass to prevent over-heating of the heat modules and eliminates nuisance shut downs. Can also be used to maintain a constant water temperature.



## HRC80 CONTROLLER

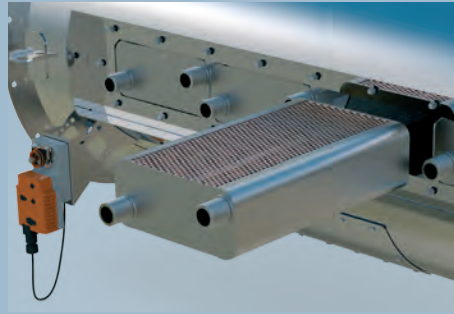
Economizer Controller that monitors inlet/outlet water and flue temperatures; maintains desired outlet water temperature while maximizing heat recovery and efficiency.

# ADVANCED FEATURES



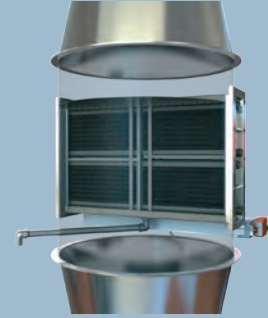
## HEATING MODULES

The light weight (25 lbs) heat modules (modular heat exchangers) are made of stainless steel 316L. It's a patent-pending hybrid design of a plate and micro-channel heat exchanger. It has a low flow-resistance and a very large plate contact surface are like a plate heat exchanger.



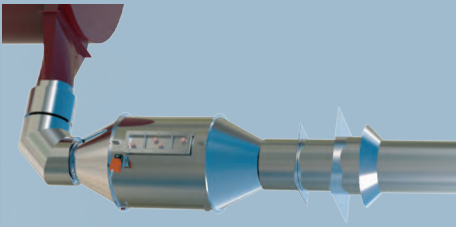
## INDIVIDUAL PULL-OUT

The heat modules are mounted in a pull-out tray system. This makes servicing and cleaning easy. You could even keep one or more spares.



## HORIZONTAL OR VERTICAL

The standard VHX can be installed in either a horizontal or vertical position, which makes it very versatile. Condensate drainage works in both positions.



## INLINE INSTALLATION

Easy to fit in. Take out a stack section or two and insert the VHX Economizer with increaser and reducer.



## STAINLESS STEEL CONSTRUCTION

The entire unit including the heat exchanger is made in stainless steel 316L. Corrosion resistance and yet more efficient than copper coils.

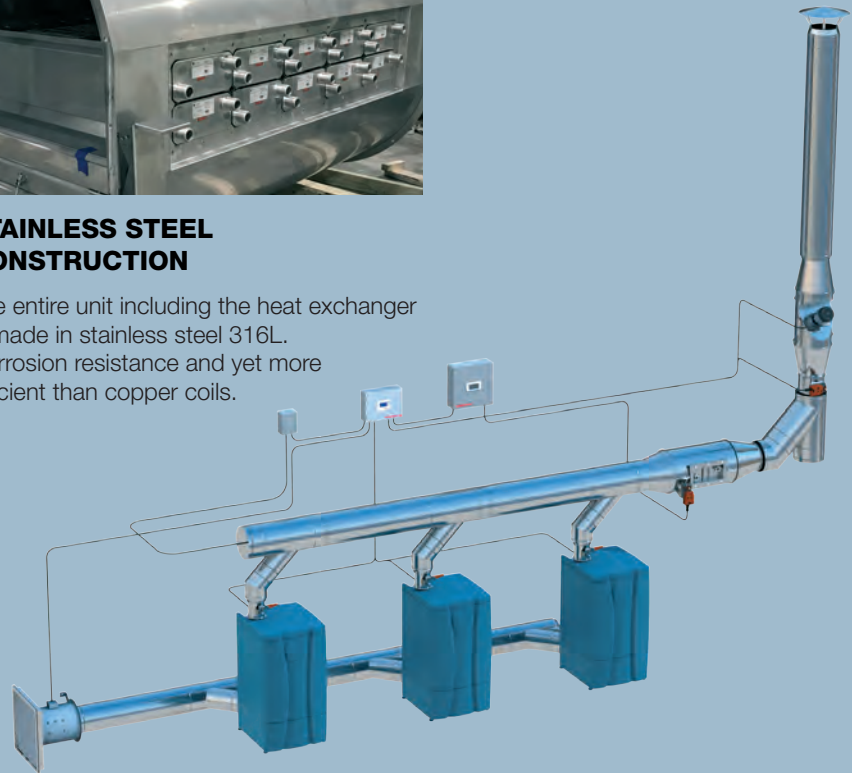
160 lbs  
WATER /  
30 Mill.  
Btu

## LIGHT WEIGHT AND COMPACT

The weight is substantially less than economizers with similar performance. And it holds little water – only 10 lbs per heat module. That's about 160 lbs for a unit that can handle an input of more than 30 Mill. Btu!

## ENHANCED PERFORMANCE

The performance of the VHX Economizer can be further advanced by integrating a mechanical draft system. It will increase the flow over the heat modules and make them even more efficient.



# PLUME ABATEMENT SYSTEM



The exhaust plume is creating ice build-up and potential deterioration on the wall. And is a nuisance to the residents.



After the Plume Abatement system is activated the plume has disappeared.

## **PLUME FROM AN APPLIANCE MAY AFFECT VISIBILITY AND SAFETY AS WELL AS PUBLIC PERCEPTION. PLUME ABATEMENT IS THE PROCESS OF REMOVING THIS VISIBLE PLUME.**

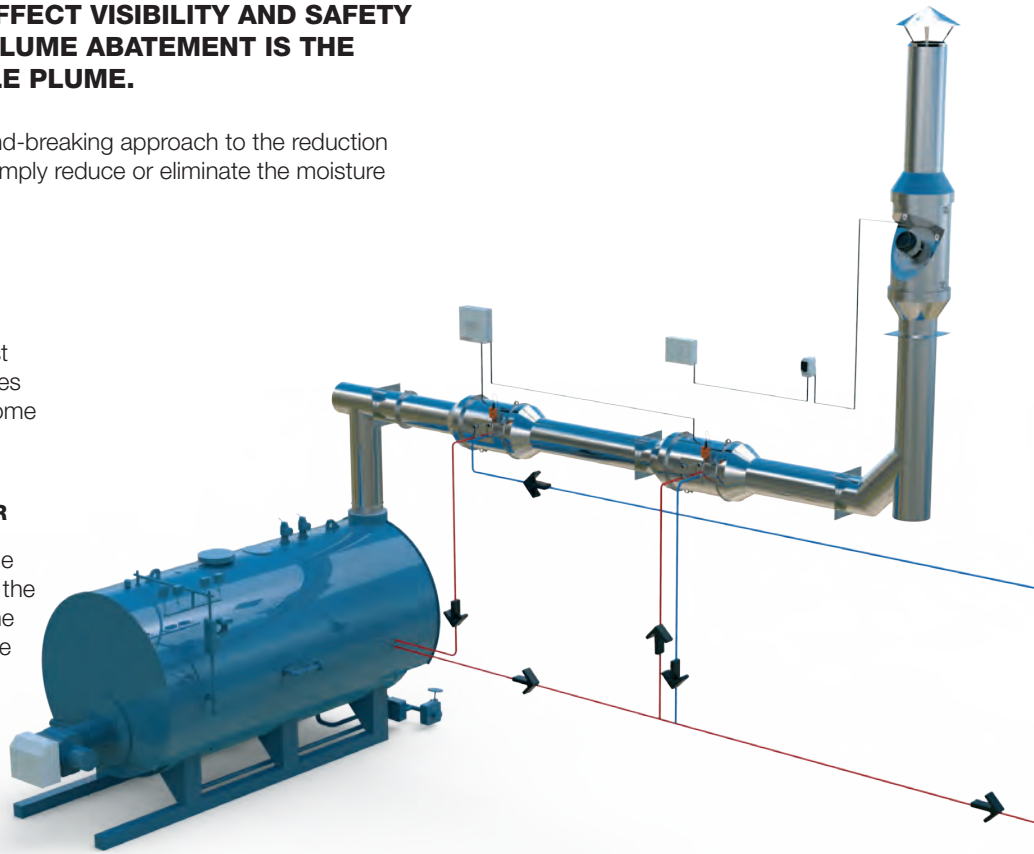
ENERVEX's Plume Abatement System is a ground-breaking approach to the reduction of plumes. Using leading-edge technology, we simply reduce or eliminate the moisture content in the exhaust.

### **VHX ECONOMIZER**

By using standard temperature water through a VHX heat exchanger, you can reduce the exhaust temperature and the moisture content. This moves the temperature where the plume begins to become visible down as much as 15-25°F.

### **VHX ECONOMIZER WITH HEATED DILUTION AIR**

The ideal solution is to use a combination with the VHX AND heated dilution air to reduce and "dry" the moisture. By mixing the "cold" exhaust leaving the VHX with the heated dilution air this can move the temperature where the plume begins to become visible down as much as 40-45°F. That means there could be no visible plume on the design day and even a negligible plume at single digit temperatures.



# EXPLORE OUR WORK

## NEWARK HOUSING AUTHORITY – NEWARK, NJ

**NEWARK HOUSING AUTHORITY IS A PUBLIC HOUSING DEVELOPMENT THAT HAD A COMPLEXITY OF OUTDATED CENTRALIZED BOILERS AND SIGNIFICANT ENERGY LOSS.**

### **The Project:**

Multiple leaks in the steam piping distribution system, a non-operational condensate recovery system, extensive underground distribution piping to remote buildings, and the inability to control central heating system caused a heat wave and extreme hot water temperatures.

### **ENERVEX Solution:**

The high-efficiency VHX Single Row Economizer allows re-use of exhaust water for domestic purposes and improves pressure control. The solution uses zone control valves, outdoor temperature sensors, and indoor rate thermostats. NHA is saving \$35,621 in annual energy costs and approximately 607,962 BTUs per hour with no upfront capital expense and immediate payback, while eliminating problems with overheating and indirectly lowering emissions.



## THE ALLENWAY CONDOS – TORONTO, ONTARIO

**THE ALLENWAY IS A 357-UNIT, APARTMENT-STYLE HIGH-RISE COMPLEX WITH 22 STORIES BUILT IN 1970.**

### **The Project:**

The age of the development – combined with Toronto's semi-continental climate, humid summers and chilly winters – created constant heating challenges. The customer needed a waste heat recovery solution that would maximize BTUs in its feedwater heating application, stabilize boiler efficiency, and ensure proper and constant draft.

### **ENERVEX Solution:**

The versatile and efficient VHX 1200-30 recovers waste heat back to the building's natural gas-powered DeDietrich steam boiler as pre-warmed water. The Allenway is saving nearly \$54,000 in annual fuel costs and 880,419 BTUs per hour, with the ability to serve multiple boilers of multiple design types with a single economizer.



## PARK ROTANA HOTEL - ABU DHABI, UAE

**PARK ROTANA IS A 4-STAR HOTEL IN ABU DHABI.**

### **The Project:**

The hotel had two steam boilers that produce steam for their laundry and domestic water heating. They also provided pool heating during the winter months. As part of an energy saving project, the company decided to install an economizer to capture the exhaust heat and pre-heat the water going into storage tanks and pool.

### **ENERVEX Solution:**

ENERVEX supplied a VHX 1200-30 Economizer system with an HRC 80 controller and an IPV B Power Venter with EBC 30 to control the draft. First year's savings reached \$15,000 and should provide a payback of less than 3 years.

# ENERVEX: THE INDUSTRY'S TRUE INNOVATOR

## INDUSTRY FIRSTS

ENERVEX is the most innovative supplier of mechanical draft systems in the world. While others are simply adding a façade to existing products, ENERVEX is creating original innovations that have a purpose. Since introducing the industry's first chimney fan in 1958, ENERVEX continues to bring industry-first innovation to the market:

- (1991)  
**MODULATING MECHANICAL DRAFT SYSTEMS**
- (1995)  
**MODULATING COMBUSTION AIR SUPPLY SYSTEMS**
- (2006)  
**TRUE INLINE MECHANICAL DRAFT FANS**
- (2011)  
**FAN-POWERED FLUE GAS ECONOMIZERS**
- (2013)  
**INLINE FLUE GAS ECONOMIZER WITH MODULAR HEAT EXCHANGER SYSTEMS**
- (2015)  
**ULTRA-ENERGY EFFICIENT, PERMANENT MAGNET MOTORS; STANDARD IN MOST FAN PRODUCTS**
- (2015)  
**SINGLE UNIVERSAL CHIMNEY SYSTEMS LISTED FOR VIRTUALLY ALL VENTING APPLICATIONS**
- (2015)  
**HIGH-TEMPERATURE, PRESSURE- AND LEAK-RESISTANT GRAPHITE GASKETS FOR SEALING FAN/CHIMNEY JOINTS**
- ONLY SUPPLIER WITH A 5-YEAR PERFORMANCE & LEAKAGE GUARANTEE**



## WHY ENERVEX

Every ENERVEX solution is built from the ground up with careful evaluation of the unique cost variables and long-term savings. Through superior manufacturing innovation and decades of experience, we're delivering highest-quality, listed and certified venting solutions that are:

- ECONOMICAL.** Up to 10% fuel savings & 90% lower energy consumption - plus space, materials & labor savings.
- PLUG-AND-PLAY.** One-stop design offers seamless installation, flexibility & confidence that everything will fit together.
- SUSTAINABLE.** Low-energy installations, better indoor air quality; active participant of green building initiatives around the globe.
- AESTHETICALLY PLEASING.** Smaller footprint & design flexibility; put air louvers/terminations where you want.
- SAFE & RELIABLE.** Tested, listed and certified materials means no code problems from boiler outlet to chimney termination.
- GUARANTEED.** One supplier to call for the entire system, backed by the industry's only 110% performance guarantee.

## LEARN MORE

Find out how ENERVEX's innovative mechanical draft systems can benefit your next project. Call us or visit [ENERVEX.COM](http://ENERVEX.COM) now.

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