Cannon Boiler Works
Welded Economizer Sales Tools

SALES & MARKETING INFORMATION

1. **Target Markets:**
   - Food / Beverage / Agriculture
   - Hospitals / Institutional (i.e. VA hospitals, large colleges, military installations)
   - Pharmaceutical
   - Steel / Chemical / Petrochemical
   - Non-boiler heat sources:
     - Turbines
     - Engines

2. **Example Target Companies:**

Industry Segment	Example Target Companies
Food / Beverage	• Kraft Foods • Frito-Lay • Yuengling Brewery • Dannon
Hospitals / Institutional	• Veterans Administration • Crain Naval Base • Bangor, Washington Sub Base • Iowa Weapons Depot
Pharmaceutical	• Baxter Pharmaceutical
Steel / Chemical / Petrochemical	• US Steel • Wheeling Pittsburgh • Allegheny Ludlum • Koppers • Sonneborn • Merisol Company • Air Products and Chemicals • Linde Corporation

3. **Potential Lead Sources:**

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Trade Shows	• AHR Expo - http://www.ahrexpo.com/ • Northwest Food Processors Association Expo - http://www.nwfpa.org/
Industry Publications	• ASHRAE Journal - http://www.ashrae.org/ • Process Heating - http://www.process-heating.com/ • HPAC Engineering - http://hpac.com/ • Food Engineering - http://www.foodengineeringmag.com/
Miscellaneous	• State boiler databases – *CBW will provide* • LEED Program - http://www.usgbc.org/ • DOE Save Energy Now LEADER Program - http://www1.eere.energy.gov/industry/; http://www.energy.gov/8328.htm • Database of State Incentives for Renewables & Efficiency - http://www.dsireusa.org/ • INDEED Program • SIC: 3443 • NAICS: 33241

4. Prospect Qualification Criteria:

- Natural gas, #2 oil, #6 oil, propane, methane (land fill), coal, wood / biomass burning boiler system
- 15,000 – 150,000 lb per hour of steam
- Over 2,500 operating hours per year
- Operating steam pressure greater than 15 psi
- Can flow boiler deaerated water or other heat transfer thermal fluids
- Flue gas pressures in a range of 0.25 inches WC to 6 inches WC

5. Typical Decision Maker:

- Plant Engineer and/or Facilities / Operating Manager

6. Others That May be Involved in the Decision Making Process:

- Energy Manager
- Environmental Manager
- Contracted 3rd party that performs energy audits
- Independent consulting engineer

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7. Typical Decision Making Process:

- The boiler room manager / facilities manager requests a quote through CBW representative, perhaps with ROI data
- Internal engineering staff (or contract engineers) review the proposal and write a capital request
- Financial and/or Executive approval / sign-off
- Purchasing department places the order

8. Typical Needs and Objectives of Prospects:

Function / Personnel	Needs / Objectives
Boiler room personnel	• Improve the efficiency of the boiler room • Reduce fuel consumption • Extend the life of boiler room equipment
Engineering	• Fuel savings • Reduce plant emissions • Improve the overall reliability of the boiler system • Determine if new systems will physically fit in the boiler room
CFO / Executives	• Fuel savings to reduce plant costs • Utilize energy tax credits • Emissions trading (Cap & Trade) • Corporate sustainability • Capitalize on market benefits related to “green initiatives”
Purchasing	• Fuel cost reduction • Return on investment • Options / incentives related to payment terms

9. Typical Delivery Time:

- 10 - 12 weeks after drawing approval

10. Key Features & Benefits:

Features	Parity with Key Competitors
Multiple installation configurations	Same
Standardized design	Same
Competitively priced	Same
Heavy duty construction	Same

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Benefits	Parity with Key Competitors
Solid tube sheet design with gas seals allowing for hot gases to stay away from cold return vents thus reducing corrosion potential & sensitive return areas tend to be the coldest	Better
CBW has a **strong track record** with over 30 years of successful installations with the first two economizer stages • Provides customers with peace of mind that the welded economizer will be designed as a high quality product for their specific application	Same
Units are customized to available space and meet cost & performance requirements • Ease of installation shortens start up time & reduces cost of start up	Same
Factory sales support	Same
87% fuel to steam efficiency which means the lowest fuel cost of boiler operation • Less gas is required to produce steam, thus saving the customer money	Same
Performance-based warranty • If the welded economizer doesn't live up to the performance promised under warranty, CBW will repair or replace the unit	Same
High return on investment	Same
Emissions reduction • The welded economizer will help customers reduce their emissions and possibly generate revenue under Cap and Trade legislation.	Same
"Green" impact • In addition to the environmental impact of lower emissions, welded economizer customers may also be able to take advantage of federal, state, or local tax credits	Same
High quality • The quality design of the welded economizer reduces downtime and maintenance costs.	Same

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11. Elevator Speech

Studies have shown that over a 20 year period, 96% of the cost of operating a boiler system comes from fuel costs. Also, in a typical boiler system, 10% to 20% of energy input is lost in the form of heat escaping to the atmosphere. The installation of a welded economizer helps to solve this problem. A welded economizer is a unit that captures heat from the stack, and then returns it to the boiler deaerated water system. To determine if a welded economizer is right for your facility, look at your annual boiler fuel bill and subtract 5% of the cost. If this is a significant number to you, then you should consider adding a welded economizer. The payback will have a direct impact on your bottom line. This is one of Cannon's many products that help companies reduce overall energy consumption.

12. Value Proposition:

- Value Proposition for Energy & Emissions Managers:

  Facility owners with steam boilers can significantly increase boiler system efficiency with Cannon Boiler Works' Welded Economizer product line. As such, you can realize the lowest possible fuel costs and emissions, gaining as much as a 5% annual fuel savings. This not only results in a stronger bottom line, but also helps your facility take smart steps toward sustainability.

- Value Proposition for Engineers

  The Cannon Boiler Works Welded Economizer System optimizes the process efficiency of boilers. By removing heat from the flue gas stream, you can reduce the amount of fuel needed and gain as much as 5% in annual fuel savings. At the same time, you reduce your emissions and increase the life of the boiler. The bottom line is that Cannon's Welded Economizer line will help you increase the service life of your boiler system while having a positive impact on plant profitability.

13. Key Heat Recovery Competitors:

Traditional welded economizers

Competitor	Strengths	Weaknesses
Kentube	• Deep pockets of Fintube Technologies & U.S. Steel • Designs and manufactures large variety of economizers, air	• Circular design reduces repair ability

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	heaters, & gas-to-liquid / gas-to-heat recovery equip. • ISO 9001:2000 • Opened new fabrication facility in 2008. The plant was constructed with three 70 ft by 400 ft manufacturing bays with expanded crane capacity ranging from 15 to 30 tons. • Fintube R&D facility • On-line RFQ capability	
	Value Proposition: High quality; Most effective, efficient heat recovery systems available.	
e-Tech	• Claims potential of <1 year payback • Promotes "Greengineering™". Heat recovery solutions that produce efficiencies of up to 95% of the fuel dollar, while reducing pollutants in exhaust. • Complete waste heat recovery systems save up to 15% or more on overall energy costs. • 30 years of experience & 1,000s of designs for many applications	• Out of date design for box and circular units • Difficult to inspect and repair • Limited information available on website
	Value Proposition: Trouble-free, cost-saving heat recovery solutions; Precisely engineered for specific application	
Applied Heat Recovery	• Proprietary design software to optimize performance & price • Offers pre-engineered economizers for quick delivery & easy installation	• Limited product offerings • Limited information available on website • Web software allows customer sizing mistakes
	Value Proposition: Exceptional service and support; Most cost effective solution; Innovation	

14. Welded Economizer Positioning Guidelines

- Energy efficiency and reduced boiler system operating cost
- High quality products that are easy to maintain and backed by CBW's experience, strong track record, and factory application assistance

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15. Welded Economizer Collateral Materials:

- Website
- Welded Economizer brochure
- Welded Economizer piping drawings
- PowerPoint presentation (*in development*)
- Webinar series and archive (*in development*)

16. Pricing Guidelines:

- Prices range from $10,000 - $150,000
- Call CBW for quote
- Typical installed cost is less than $150,000

17. Payment Terms:

	Order Value	**Payment Terms**
Existing Customers	Less than $25,000	Net 30 days
New Customers	Less than $25,000	Net 30 days (*with credit approval*)
Existing & New Customers	Over $25,000	With credit approval: • 10% upon customer-approved drawings • 40% upon major milestone (*determined jointly by CBW and customer*) • Remaining 50% upon shipment (*Net 30 days*)

FREQUENTLY ASKED QUESTIONS AND ANSWERS

1. Can the economizer be made shorter?

In all cases, the answer is YES, but there are compromises to doing so. We will work with you to minimize any performance compromises and make your installation as easy as possible.

On our traditional welded economizers again the answer is YES, as these units are infinitely variable to fit the available space and performance characteristics of the boiler/burner system.

2. Can CBW provide piping and installation assistance?

YES, we have some standard piping diagrams available for email to our customers. These are only suggestions, as every installation is slightly different in the existing equipment and available space. Also, our knowledgeable representatives, located nationwide, are experienced in making installation issues disappear.

In all cases, we wish to have water flowing through our economizer whenever the burner is on; therefore provisions have to be made for circulation through our heat exchanger and back to an existing tank when the boiler is not calling for water.

We can guide you through the three methods for doing this:

- Manual valve or set orifice plate
- Spring loaded pressure regulator
- Solenoid valve as slave from boiler feed valve.

3. What pressure should the safety valve be set at?

Our units are designed and Code stamped between 300 and 700 psig. We supply the valve matching the unit design pressure as a default. At a customer's request, we can set the valve lower (matching existing boiler) or higher (requires Code calculations at extra cost).

4. What are CBW's standard materials of construction?

Tubes: CBW's units come standard with SA178 Grade A boiler tubes.
Fins: CBW's units come standard with low carbon steel fins, with nickel brazed fin attachment to the tube.

Frame: CBW's standard frames are made of carbon steel angle iron.

Removable side panels: CBW's standard units include 3/16 inch carbon steel lining, three inches of insulation, and galaume corrugated exterior.

Transitions: Transitions are available at extra cost. Thicker carbon steel is available to support extra weight.

5. Do we have to insulate CBW's unit in the field?

The piping and transitions should be insulated by the installer. We do not offer additional insulation for the transitions because it may not survive during shipment.

6. What are the potential problems with austenitic stainless steel tubes, Type 304 and 316?

This grade is typically not used in welded economizers. Stress corrosion cracking of austenitic stainless steel eliminates its use in ASME Section I pressure vessels. Chloride levels in the water, or halogen compounds in the flue gas, can cause tube leaks in a very short time. Many studies can be found on-line on the subject (search: stainless steel SCC). We offer duplex stainless steel tubes to combat this problem.

7. What is duplex stainless steel used in CBW's tubes?

This grade is typically not used in welded economizers. ASME SA789 type 2205 duplex stainless steel is a homogeneous mixture of austenitic and ferritic stainless steel. It is acceptable for ASME Section VIII units and has better corrosion resistance than 300 series stainless steels in most boiler room applications. We have had great success with this grade of tubes in our units, as they normally last the life of the boiler system. Many studies can be found on the internet on this subject, (search: duplex stainless corrosion)

8. Does CBW's unit come with a bypass damper?

Our standard offer does not include a bypass damper, as we want to recover heat 100% of the time the boiler is operating. An integral bypass is available in cases where it is needed.

9. What is the difference between a regular economizer and a condensing economizer?

The difference is the temperature range in which the economizer is operated. Our units may look identical in outward appearance, but can be used in a condensing application if originally design to do so. A traditional economizer is operated in a hot environment, the tubes and the flue gases are over 200°F. A condensing economizer operates in a cool environment, where the tubes and flue gasses may be well under 200°F. A large savings increase occurs when the flue gas temperature is decreased to under 135°F, but this is only effective when burning natural gas.

10. Can Welded Economizers be used on hot water boilers?

Yes, although feed water heaters are sized differently on hot water vs. steam boilers. Normally due to their high water flow rate, economizers only flow a portion of the boiler flow rate. Still, efficiency gains in the range of 2 – 5% are possible.

11. What does CBW have available for small boilers under 100 HP?

The FB-4 unit is designed as a universal economizer for boilers under 100 HP. It is lightweight and easy to install.

12. What ASME code stamp applies?

Units are typically designed for Section 1 on direct fired pressure vessels. As and alternative, Section 8 is available provided the correct materials of construction are used.

POTENTIAL OBJECTIONS AND APPROPRIATE RESPONSES

1. **The customer wants to avoid condensing of the flue gas, regardless of the fuel being burned ...**

   CBW thermally designs its Economizers so that condensing is not harmful to the boiler system or economizer. Condensing is always avoided when heavy fuels are burned.

2. **I don't want to have to maintain another piece of equipment …**

   The life expectancy of a properly designed Welded Economizer far exceeds the life of a boiler.

3. **How will the Welded Economizer affect my upstream and/or downstream equipment? I don't want it to shut down the boiler system …**

   CBW properly designs its Welded Economizers for the boiler burner combination. As such, overall downtown and the potential for unscheduled outages are reduced. If maintenance is required, the economizer can be taken out of service and the boiler can continue to operate until the repairs can be made. It's important to note that CBW's Welded Economizer design can be repaired quicker than any competitor designs.

4. **At one time, I had an older economizer, but it didn't work …**

   Significant design considerations and consistency in operation allow economizers to last much longer than they did decades ago. Today, CBW has 100s of successful installations in the field.

5. **It won't fit under the roof or through the door of our boiler room …**

   CBW provides options for its Welded Economizers so that they can be installed outdoors. Our units can be installed vertically or horizontally, or floor mounted. The system can also be field assembled for installation at almost any site.

PRODUCT COMPARISON

Instructions: To determine appropriate equipment, select fuel type, then inlet water temperature.

Fuel Type	Traditional welded economizer	FWH economizer	Condensing economizer	Direct contact economizer
Liquid Propane				
212° – 300° F	X	X	X	X
150° – 212° F		X	X	X
32° – 150° F			X	X
Natural Gas				
212° – 300° F	X	X	X	X
150° – 212° F		X	X	X
32° – 150° F			X	X
#2 Oil (*diesel jet fuel / military grade fuel*)				
212° – 300° F	X	X	X	X
150° – 212° F		X	X	X
32° – 150° F				X
#6 Oil				
212° – 300° F	X	X	X	
150° – 212° F				
32° – 150° F				
Landfill Gas (*methane*)				
212° – 300° F	X	X	X	X
150° – 212° F		X	X	X
32° – 150° F				X
Coal				
212° – 300° F	X			
150° – 212° F				
32° – 150° F				
Wood				
212° – 300° F	X			
150° – 212° F				
32° – 150° F				

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INFORMATION REQUIRED FOR QUOTATION

Rep Company:	Rep Name:
Rep Phone:	Rep Fax:
Rep Email:	
Project Reference:	
End User Company: Contact Name: Address: Phone: Fax: Email: *NOTE: Include country and city codes international*	

Boiler Make:		Boiler Model:		
Boiler HP:		No. of Boilers:		
Maximum Allowable Gas Side Pressure Drop: _____inches water column				
Primary Fuel:		Fuel Cost:		
Secondary Fuel:		Fuel Cost:		
Operating Pressure:		% Sulfur in Fuel Oil:		
Boiler Firing Rate	100% Load	75% Load	50% Load	Low Load
Flue Gas Temp.				
Water Temp.				
Operating Hours per Year				

NOTE 1: All yellow highlighted areas must be completed.

For a detailed computer evaluation of your application, please email (sales@cannonboilerworks.com) or fax (724-335-6511) the above information to CBW.