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The power of total integration

Only Cleaver-Brooks can offer complete boiler systems, from fuel inlet to stack outlet, that are completely designed, engineered, manufactured and integrated by one company. Other boiler manufacturers rely on equipment from a variety of manufacturers, simply bolted on, jeopardizing compatibility and performance. If you’re looking for the best-quality boiler systems with the lowest emissions and highest efficiencies, you’re looking for Cleaver-Brooks.

A Long-Standing Tradition

The company was founded in 1929 by John C. Cleaver, manufacturing small, portable boilers. Cleaver and Raymond Brooks formed Cleaver-Brooks in 1931 and began producing the world’s first packaged boiler. Through a commitment to research and development and a sound acquisition strategy, today the company is the sole provider of integrated boiler room solutions and a leading manufacturer of boiler room equipment across all commercial, institutional and industrial markets.

Product Development

When you’re the industry leader, the only way to stay there is to continuously innovate and push the boundaries of what people think is possible. Many of our competitors claim to be innovative, but no one invests more energy and money in research and product development—and achieves greater results—than Cleaver-Brooks. At our dedicated product development center, we continue to develop breakthrough emissions and efficiency technologies for tomorrow’s boilers and burners.

Flexible Solutions

Whether it’s modular systems that divide load among boilers of similar size and type or hybrid systems that combine different types of Cleaver-Brooks boilers for additional flexibility and efficiency, there’s a Cleaver-Brooks solution that can be customized for your needs. Because we manufacture nearly every type of boiler and the integrated controls that make all components work together seamlessly, you can be sure the design is appropriate for your application.

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High efficiency. Low emissions.

Cleaver-Brooks recognizes there is a need for advanced technologies that enable a more energy-efficient and environmentally friendly generation of steam and hot water to meet today’s stricter regulations. We are one of only a few boiler manufacturers in the world that has a dedicated product development center. Our center is annually funded with the specific mission of developing efficient and sustainable products.

Turnkey conversions and comprehensive upgrade and retrofit capabilities from our world-class engineering staff make it easy to change fuel types, lower emissions, increase boiler efficiency or bring any age system back to the manufacturer’s original specifications. Cleaver-Brooks has the solution and dedicated aftermarket team to help you engineer and implement whatever advantage or benefit you may need.

By continuing to develop and encourage greener boiler room solutions, Cleaver-Brooks estimates over the next decade that we will help U.S. companies save billions in fuel and facility costs and prevent more than 100,000 tons of emissions and particulates from entering the environment.

The chart to the right outlines turnkey solutions that can be implemented on virtually any boiler, as an accessory when ordering a new boiler or as retrofit to improve the efficiency of an existing system.

### Lower-Emissions Solutions

- **Add Flue Gas Recirculation (FGR)**
  Can be added to boilers to reduce the formation of NOx emissions

- **Upgrade Controls**
  Advanced controls can be added to any existing boiler to hold emissions as low as possible every day

- **Burner Upgrade**
  Burners should be upgraded every 10–12 years to bring your combustion system up to the lowest-emissions technology available

- **Boiler Replacement**
  If your boiler is 15–20 years old, it often makes the most sense to replace your boiler system with the latest emissions technology available

### Energy-Efficient Solutions

- **Fuel Conversions**
  We can engineer a fuel conversion on your existing boiler system to switch to or between less expensive fuel options

- **Upgrade Controls**
  Advanced controls can be added to any existing boiler to keep emissions as low as possible every day

- **Burner Upgrade**
  Upgrades improve the efficiency and emissions performance of existing boilers, and installation for any new boiler needs to be done before the boiler is commissioned

- **Boiler Replacement**
  If your boiler is 15–20 years old, or oversized, a new, higher-efficiency or right-sized boiler system often makes the most financial sense

### Significant Impact

- Efficiency and sustainability are not only environmental priorities, but economical necessities for our customers.

### MSE Impact

- Helping businesses run better every day

Cleaver-Brooks sets the bar for industry-leading, energy-efficient, low-emissions products for your boiler room. Whether it’s a new boiler installation, from the smallest electric commercial boiler to the largest industrial boiler, or retrofitting your current facility, Cleaver-Brooks fully integrated systems, including boilers, burners, controls and auxiliary equipment, supply the most efficient solutions in the world. Only Cleaver-Brooks boiler systems have the power of total integration for your entire boiler room, built in from the ground up.
Maximize Efficiency and Minimize Costs with BOOST℠

With our proprietary Boiler Operation Optimization Savings Test (BOOST) report, you can determine the exact upgrades and accessories your existing boiler system needs to increase its efficiency to its absolute maximum and decrease emissions. By installing the correct burners, controls and heat recovery equipment, you can realize substantial savings immediately. And our customized financial report details the cost savings in real numbers, so you can prove it’s the right thing to do.
INDUSTRIAL WATERTUBE BOILERS

Cleaver-Brooks offers the industry’s widest range of natural circulation watertube steam generators. Every aspect of our system is designed for maximum efficiency, reliability and low emissions. Every furnace utilizes an innovative welded-membrane wall design backed by more than 80 years of experience. And Cleaver-Brooks is the only manufacturer with refractory-free boiler wall construction, including the burner throat.

STEAM-READY

CBND
10,000 to 225,000 lb/hr

You choose the size and options you need on the Cleaver-Brooks Nebraska D boiler, and we’ll have a solution that’s ready faster than ever. We do not interface with any other brand’s parts. Just like every Cleaver-Brooks system, steam-ready systems are integrated only with Cleaver-Brooks components. Available with emissions as low as 9 ppm NOx with combustion, 5 ppm NOx with Selective Catalytic Reduction (SCR), and 50 ppm CO, it’s a flexible and cost-effective way to get your boiler room online fast.

CUSTOM SERIES

10,000 to 1,000,000 lb/hr

The widest range of natural circulation watertube boiler designs for industrial, institutional, power and superheated process applications, available to less than 5 ppm NOx.

Modular-Style
200,000 to 1,000,000+ lb/hr
High capacity, custom engineered for minimum field labor.

D-Style
10,000 to 500,000 lb/hr
Shop-assembled with the complete boiler package.

A-Style
10,000 to 500,000 lb/hr
Large capacity in a small footprint.

O-Style
10,000 to 500,000 lb/hr
High power in a symmetrical, compact and portable design.
HEAT RECOVERY STEAM GENERATORS

With state-of-the-art, customized, packaged heat-recovery steam generators for gas-fired turbines from 1 to 45 MW, Cleaver-Brooks is a leading global provider of natural circulation packaged and modular HRSG products for gas turbine, process exhaust, incinerator exhaust and hot water generation. We have extensive experience customizing systems for your specific application. Our systems can increase efficiency for large-scale industrial applications such as thermal oxidizers, incinerators, FCCUs, thermal oil heaters, economizers and air heaters.

ELEVATED DRUM
200,000 to 500,000 lb/hr

Up to 250 T/H of steam in field-assembled modules, engineered to have the lowest installed cost. No refractory on waterwalls and burner throat means lower NOx emissions and reduced maintenance. It’s a complete, Cleaver-Brooks single-source solution for integrated boiler, burner and controls.

FORCED-CIRCULATION OIL SANDS STEAM GENERATOR
150,000 to 500,000 lb/hr

A steam generator with up to 250 T/H of steam, less than 2% blowdown with evaporator water and 99.5% steam purity. Tolerates substantial upsets in water quality, heat flux and flow. It features modern, water-cooled walls and optimized, heat-transfer surfaces, reducing its footprint and weight by 50%.

MAXFIRE®
10,000 to 300,000 lb/hr

A modular steam generator featuring an integrated boiler/burner/control package with an integrated NATCOM ultra-low-NOx duct burner. With capacities up to 453 T/H of steam, the MaxFire is a highly efficient steam solution capable of meeting single-digit NOx and CO emissions requirements.

SLANT-VC
10,000 to 150,000 lb/hr

A compact, natural circulation steam generator tailored to applications with gas-side inlet temperature less than 1,750°F. Single pressure design with integral steam drum and single pass design for lower gas-side pressure drop. Flexible installation results from multiple gas flow options to fit the plant layout. Accommodates CO/SCR to meet stack emissions and available to less than 2 ppm NOx.

Additional Products
MaxFlow Hot Water Generators, Modular Heat-Recovery Steam Generators
CBEX FIRETUBE BOILERS

For decades, engineers have been trying to build a better and more efficient boiler system, but it took Cleaver-Brooks to challenge the status quo and reimagine what is possible. Since Cleaver-Brooks is the only company that manufactures every component of the boiler system, we were able to design a completely new system from the ground up, incorporating our EX technology. It can only be described as a quantum leap in firetube design, with the highest operating efficiency and lowest possible NOx ever achieved.

DESIGN ADVANCEMENT ONE: Optimizing the tubes for better heat transfer

Computational Fluid Dynamics (CFD) modeling allows us to optimize the extended surfaces of the spiral heat transfer tube, where 30% to 40% of the boiler’s heat transfer takes place. This proprietary design increases heat transfer by 85% compared to a traditional bare tube.

DESIGN ADVANCEMENT TWO: Optimizing the geometry of the furnace for near-perfect combustion

With the tubes optimized, they could transfer more heat in less space. We then used this space to optimize the geometry of the furnace, where the remaining 60% to 70% of the boiler’s heat transfer occurs for low heat release rates and near-perfect combustion.

DESIGN ADVANCEMENT THREE: Integrating the burner and controls

Ultimately, the performance of a boiler is based on the ability of the burner, boiler and controls to work together. Controlling the CBEX is the Cleaver-Brooks Hawk, an integrated control system embodying precise boiler/burner management and safety with logic-based ancillary devices and functions. The Hawk keeps your boiler and burner consistently operating at peak efficiency with the lowest possible emissions, regardless of changes in environmental conditions.

THE BENEFITS OF EX TECHNOLOGY

EX technology provides for a revolutionary boiler system that features the lowest emissions, most robust combustion and best thermal efficiency across all operating ranges. Compared to existing models, the CBEX attains the highest fuel efficiency in lower firing ranges. It also emits fewer air pollutants than any firetube system on the market today.

Lowest Possible NOx: Sub-5 ppm without SCR†

The optimized furnace in the CBEX provides lower heat release and near-perfect combustion. This, combined with the Hawk integrated control system, reduces emissions to unprecedented levels. Prior to the development of the CBEX, sub-5 ppm NOx without Selective Catalytic Reduction had never been achieved.

Smaller Footprint and Weight

By optimizing the heat transfer of both the tubes and furnace, the CBEX requires less heating surface to achieve the same BTU output as traditional firetubes, while maintaining the highest possible efficiencies. As a result, the CBEX on average has a 15% smaller footprint and weighs 20% less than traditional boilers.

Extended Pressure Vessel Life

The temperature is more uniform in an optimized furnace and reduces the turnaround gas temperature. This lowers the stresses on the furnace and second-pass tube attachments, extending the life of the tube sheet and attachments. As a result, Cleaver-Brooks offers an industry-leading, 15-year pressure vessel limited warranty.

† Select models

Learn more about the revolutionary technology behind the CBEX at cleaverbrooks.com/cbex
CBEX ELITE
Delivering the best efficiency and emissions control in the world.

The CBEX Elite firetube boiler, featuring new EX technology, is a completely integrated boiler, burner, control and heat recovery system. Every core component has been designed and built by Cleaver-Brooks to work together, resulting in the most efficient and lowest-emission firetube system ever built.

**CBEX ELITE**
100-1,200 HP
Exclusive Cleaver-Brooks integral burner

**CBEX ELITE**
1,300-2,200 HP
The highest-capacity packaged firetube available

**CBEX PREMIUM**
Get EX advantages with a packaged burner.

The CBEX Premium also includes our revolutionary EX technology, along with a completely integrated boiler and burner system. Extraordinarily efficient and capable of meeting very low NOx requirements, the CBEX Premium provides a high-value solution with next-generation engineering. Add available heat recovery and controls for a completely integrated experience.

**CBEX PREMIUM**
100-1,200 HP
High-value packaged firetube solution

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Best operating efficiency of any firetube ever built

Completely integrated boiler, burner, controls and optional heat recovery system

Minimum excess air 3% O₂ across the operating range with 10:1 turndown*

Ultra-low NOₓ can meet 5 ppm without Selective Catalytic Reduction (SCR)*

15% reduction in footprint versus traditional firetubes

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**EX technology** in a high-value solution

**Completely integrated** boiler and burner system

**High-efficiency, next-generation firetube**

**Can meet 9 ppm NOₓ and low emissions requirements**

**Smaller footprint** than traditional firetubes

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*select models
CLEAVER-BROOKS CLASSIC FIRETUBE LINE

Of course, Cleaver-Brooks continues to manufacture traditional firetube boilers in a number of popular styles and sizes, including the CBLE, 4WI, CBR, ICB, CBL, 4WG and Ohio Special. These boilers, while not incorporating EX technology, are still held to the exacting standards we apply to all our products.

<table>
<thead>
<tr>
<th>Full Classic Line</th>
<th>CBLE</th>
<th>4WI</th>
<th>CBR</th>
<th>4WG</th>
<th>CBL</th>
<th>Ohio Special</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Classic dryback firetube with integral burner</td>
<td>Classic wetback firetube with integral burner</td>
<td>Compact footprint dryback firetube with integral burner</td>
<td>Classic wetback firetube with packaged burner</td>
<td>Large capacity wetback with packaged burner</td>
<td>Wetback and dryback models available with integral or packaged burner</td>
</tr>
<tr>
<td>125–800 HP</td>
<td>100–800 HP</td>
<td>125–800 HP</td>
<td>100–800 HP</td>
<td>900–1,800 HP</td>
<td>100–225 HP (wetback)</td>
<td></td>
</tr>
<tr>
<td>7 ppm – 60 ppm</td>
<td>7 ppm – 60 ppm</td>
<td>9 ppm – 60 ppm</td>
<td>9 ppm – uncontrolled</td>
<td>9 ppm – uncontrolled</td>
<td>280 HP (dryback)</td>
<td></td>
</tr>
</tbody>
</table>

FLEXIBLE WATERTUBE

The FLX Watertube is available to less than 9 ppm NOx. It features a non-welded tube attachment for easier tube replacement. The package includes a ProFire® burner for a completely integrated and engineered solution from a single source. Removable, sectioned side panel design permits full access to all tubes.

ELECTRIC AND ELECTRODE BOILERS

Cleaver-Brooks Electric and Electrode Boilers are designed for commercial processes to heavy-duty industrial uses. They serve as either a primary or supplementary source of both steam and hot water. The immersion-element electric boilers and high-voltage, jet-type electrode boilers are up to 99.9% efficient, quiet, flame-free, safe and emissions-free.
CLEARFIRE® HYDRONIC AND STEAM BOILERS
Cleaver-Brooks line of ClearFire boilers offers a completely integrated solution with heat exchanger, premix burner and energy management controls. The ClearFire line of boilers includes hydronic models available from 500 to 12,000 MBTU for both condensing and non-condensing systems, and 10 to 60 HP steam boilers to fit almost any application.

**DESIGN ADVANCEMENT ONE:**
**ALUFER® Firetubes**
Our patented ALUFER firetubes are constructed from an inner (fireside) aluminum alloy-finned surface, die-fitted within an outer duplex stainless steel (condensing) or steel (steam and near-condensing), providing exceptional heat exchange characteristics. The corrosion-resistant properties of the ALUFER firetube assure long life and reliability of the boiler.

- Heat conductivity is 10x greater than that of carbon steel.
- Internal finned surface enlarges heat exchange surface by 5x.
- Inner surface is divided into 10 flow channels for maximum turbulence and heat transfer.

**DESIGN ADVANCEMENT TWO:**
**Heat Exchanger**
Every aspect of the true counterflow firetube design is engineered to ensure the maximum efficiency and robust construction for reliability and longevity.

**DESIGN ADVANCEMENT THREE:**
**Modulating Premix Burner**
The Modulating Premix Burner and linkageless control automatically adjust the air/gas mixture for low emissions and optimum turndown. A symmetrical, 360° even-temperature heat output is achieved from the burner, providing clean combustion with ultra-low NOx emissions of less than 20 ppm as standard and capabilities to less than 9 ppm.

**DESIGN ADVANCEMENT FOUR:**
**Integrated Falcon Control**
The Cleaver-Brooks Falcon boiler/burner management control with integrated lead/lag optimizes the boiler room’s operational efficiency, while delivering precise temperature control to meet heating demands.

The core of the system is an intuitive operator interface, featuring integrated burner sequencing, trending, flame safety, modulation, diagnostics and lockout, ensuring your boiler system operates reliably and at peak efficiency. Falcon control enables communication to facility energy management systems.

**ClearFire-C**
500 to 3,300 MBTU
A down-fired, duplex stainless steel, fully condensing boiler, available in seven sizes. The ALUFER tubes with the most fireside heating surface available provide maximum heat transfer for superior performance in a compact package with up to 99% efficiency.

**ClearFire-LC**
4,000 to 12,000 MBTU
less than 9 ppm NOx
Along with the ALUFER® tubes, the ClearFire-LC combines our exclusive spiral tube design featured in our proven EX technology to deliver the highest-capacity condensing boiler available. Bringing these proven technologies into a large-capacity counter-flow arrangement, along with unmatched heating surface per BTU, allows you to use fewer boilers to meet an applications capacity.

**ClearFire-H and-V**
10 to 60 HP
The same top-of-class efficiency as the ClearFire hydronic models, but in a compact steam boiler package. Our patented ALUFER heat transfer technology and water-cooled design eliminate classic refractory. Engineered to perform in a wide array of applications.
BURNERS

With a range of burners for virtually any system, the Cleaver-Brooks burner is the benchmark of the industry. Ultra-low NOx, CO, VOC and PM emissions are easily obtainable with the correct burner match. Our commitment to engineering the finest, most durable components provides a robust burner built to exacting specifications and unmatched fit and finish. With an engineering audit, we can determine an appropriate burner retrofit to improve the efficiency and emissions of your current system.

NATCOM

Industrial Burners

10 to 600 MMBTU

The world’s highest-efficiency, lowest-emissions burner, available to less than 7 ppm NOx. Using Computational Fluid Dynamics (CFD) we custom-design burners for each furnace configuration, ensuring seamless integration and unprecedented performance. Single or multiple fuel applications available for Industrial Watertube, Firetube, and Packaged boilers.

Burner Accessories

Fuel Trains
Windboxes
Fans and Dampers
Burner Management Systems (BMS)
Combustion Control Systems (CCS)

ProFire®
Commercial and Industrial Burners

1.3 to 92.4 MMBTU

Cleaver-Brooks comprehensive line of burners ensures that we have a burner for any application, industry or need. ProFire burners are available in either low or ultra-low emissions, and are available to less than 9 ppm NOx.

MTH-Series

Designed for process heating applications; achieves low NOx without FGR.

E-Series

Cutting-edge technology that features uncontrolled, low-NOx, or ultra-low-NOx.

V-Series

Commercial boiler burners with uncontrolled or low-NOx.

XL-Series

Large-capacity burners with uncontrolled, low-NOx or ultra-low-NOx.

Custom Burners

for industrial, petrochemical and oil sands markets.

Specialty Burner Systems

for special process applications, including alternative fuel firing.

Utility Burners

for large, field-erected utility boilers.

Duct Burners

for cogeneration and combined cycle applications.

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CONTROLS

The brains of any integrated boiler system is the control, and without it, you simply aren’t getting the most efficient performance out of your boiler room. Cleaver-Brooks completely integrates controls into the boiler systems for the absolute highest efficiency, but virtually any system can benefit from the addition of a control. Retrofit your existing boiler system with the latest control technology to increase efficiency for reduced energy usage and the lowest achievable emissions.

HAWK CONTROLS

The Hawk is a state-of-the-art, integrated boiler room management system. It is designed to achieve the most efficient and economical performance from your boiler room. Also ideal for retrofit applications, it delivers reliability, safety and efficiency with a seamless, easy-to-use, human-to-machine interface.

- Parallel positioning
- O₂ trim
- Integrated variable speed drive (VSD) programming
- Linkageless connections
- Fully metered options
- Multiple communication protocols

HYDRONIC SYSTEM CONTROL

A PLC-based boiler sequencing and modulation control for hydronic heating applications. Works seamlessly with condensing and non-condensing boiler groups for hybrid applications using independent PID loop control to optimize boiler operation based on unique characteristics of each boiler group.

LEVELMASTER

Water level controls are critical to the safety of your system. The user-friendly interface allows for easy management of low-water cutoff and pump control, and helps make this control the safest available on the market today.

WATER SYSTEMS CONTROLS

Engineered to work seamlessly with other Cleaver-Brooks boiler system controls, our packaged water controls monitor and manage all your system’s water-related touch points, including pumps and levels.

HEAT RECOVERY

Make sure you’re not letting any excess energy go to waste with a heat recovery system for your boiler room. Available for steam or hot water applications, heat recovery captures waste heat and can redirect it to preheat boiler feedwater or other water needs, saving fuel costs.

STACK ECONOMIZER

Whether you choose the CRE Rectangular Economizer or the CCE Cylindrical Economizer, you can reduce fuel use and cost by recovering heat from flue gases that would otherwise be wasted. Utilize the heated flue gas to preheat boiler feed water, makeup water or any process flow. The large number of standard models provide dimensional combinations that work in applications with space constraints, while still achieving maximum heat recovery.

TWO-STAGE CONDENSING ECONOMIZER

Save energy dollars and reduce your environmental impact with a two-stage condensing economizer that can raise your fuel-to-steam efficiency up to 90%. The lower section recovers energy by preheating the boiler feedwater. The upper section preheats virtually any cool liquid stream (makeup water, process water, etc.). The upper coil, lower coil, modulating valves, control system and other system components are sized as a system to deliver the maximum possible cost savings.

Additional Products

- Blowdown Heat Recovery Systems
- Flash Tank Heat Exchangers
WATER SYSTEMS
Increase the safety, reliability and life of your system with deaerators, surge tanks, feedwater systems and water treatment that can integrate into any system, regardless of size or application.

BOILER FEED AND RECOVERY

DEAERATORS
Our pressurized, low-maintenance systems are designed to remove dissolved oxygen in boiler feedwater and eliminate carbon dioxide. Our deaerators have flexible designs in tray, column and spray tanks styles with vertical and horizontal configurations up to 1,050,000 lb/hr.

DUO TANKS
A deaerator and surge tank combined in several possible arrangements to provide a complete engineered and packaged system. Reduce dissolved oxygen content and carbon dioxide before they have a chance to corrode metal or condensate lines, and save significantly on chemicals and wasted BTUs. The surge tank is utilized to reduce water usage and water treatment costs by recycling condensate that has already been treated.

WATER TREATMENT
Prevent scale buildup on heat transfer surfaces, help maintain peak boiler efficiency and reduce the need for chemical treatment to control scale. With appropriate water treatment, you can dramatically increase the life of your boiler and maintain its peak efficiency.

Additional Products
Boiler Feed Systems, Surge Tanks, Water Softeners, Reverse Osmosis, Blowdown Separators, Chemical Feed Systems, Sample Coolers

EXHAUST SOLUTIONS
With a full line of chimneys, grease duct and gas venting products that fit our condensing boilers, packaged hot water boilers and steam boilers, Cleaver-Brooks has exhaust solutions for virtually every application. We engineer and produce our exhaust systems to exacting standards quickly and efficiently. Our response times to requests for quotes and plans for standard products are quick and our responses are clear and complete. Our highly automated fabrication leads the industry with its high standard of quality.

BOILER EXHAUST SYSTEMS
Vent flue gases from gas, liquid and oil-fired boilers with our CBI insulated breeching and stack system. Available from 6 inches to 48 inches, the CBI is ideal for industrial, institutional and commercial applications.

CHIMNEY LINERS
Our CBI and CBH single-wall chimney liner systems are available for use in masonry chimneys to vent Category I, II, III and IV gas- and oil-fired appliances.

SPECIAL GAS VENTS
Our CBH family of special gas vents is well suited for industrial, institutional, and commercial applications. This product is also designed for condensing boiler applications.

BOILER FEED AND RECOVERY

BOILER EXHAUST SYSTEMS

CHIMNEY LINERS

SPECIAL GAS VENTS

WATER TREATMENT

Additional Products
Boiler Feed Systems, Surge Tanks, Water Softeners, Reverse Osmosis, Blowdown Separators, Chemical Feed Systems, Sample Coolers

FREESTANDING STACKS
The best freestanding stacks in the industry, our CBS stacks feature the latest engineering and technology in combustion gas venting. Designed and manufactured to both American and Canadian standard requirements.

Additional Features
Factory welded
Carbon steel, COR-TEN® steel or stainless steel
High-temperature insulation
Multiple accessories available upon request
Industries

Industry-Leading Network

The Cleaver-Brooks Representatives Association (CBRA) is the first and only dedicated alliance of boiler room sales and service representatives in the industry. More than 1,500 CBRA representatives across the globe provide unparalleled, ongoing support — from commissioning your system, to providing genuine parts and turnkey after-sale solutions, to extensive product training and knowledge sharing.

Cleaver-Brooks is the only boiler manufacturer with worldwide representation. Visit cleaverbrooks.com to find your nearest representative.

DECADES OF EXPERIENCE

By Application

Building Heat
Process Steam
Industrial Process
Sterilization
Humidification
Waste Heat Recovery

By Market

Alternative Energy:
Ethanol
Biodiesel

Beverage

Chemical/
Pharmaceutical

Commercial and Office Units

Dairy

Education:
Universities
Primary
Secondary

Food Processing

Forest Products

Government

Healthcare/Hospital

Institutions

Laundry/Dry Cleaning

Manufacturing

Metal Plating

Petrochemical/Oil Sands

Power/Utility

Rubber/Fiber

Selecti e Catalytic Reduction (SCR)

SCR is a proven technology to further reduce NOx emissions on boilers and HRSG systems, achieving up to 95% reduction. Integration of a Cleaver-Brooks burner and SCR will provide operational flexibility, highest efficiency and lowest emissions for any boiler design. Cleaver-Brooks has the expertise and experience to meet your needs.

1 Controls
   A single integrated system that controls the boiler, burner and SCR. Control the entire system from one simple-to-use HMI.

2 Boiler
   With a complete, single-source Cleaver-Brooks boiler system, you can choose the right boiler to optimize the system that best meets your application. An SCR system can be paired with any new or existing firetube, industrial watertube or heat recovery steam generator.

3 Ammonia metering and dilution skid
   Three types of ammonia systems available:
   - Anhydrous Ammonia (NH₃)
   - Aqueous Ammonia (NH₃+H₂O)
   - Urea (NH₂)₂CO

4 Ammonia injection grid (AIG) and flow conditioning devices
   Boiler cutout transition redesigned for best distribution. The AIG is strategically located for proper ammonia injection into the flue gas stream.

5 Catalyst reactor
   Ammonia mixes with flue gas in the reactor, resulting in a uniform distribution at the inlet of the catalyst bed and thus optimizing its performance. For each application, the catalyst bed geometry is optimized. The highest-quality corrugated catalyst is used with vanadium, titanium or tungsten oxides as active agents.

6 Heat recovery
   A custom heat recovery system allows flue gas temperatures to be optimized, resulting in the most effective reduction of NOx emissions. Recovering the waste heat of the flue gas with an economizer increases the efficiency of the boiler.

7 Structure, platforms, ladders and piping
   Complete engineering of all ancillary walkways, structures, etc., is included in our comprehensive integration.

8 Exhaust systems
   An exhaust system designed specifically for your system, with both installation-ready and freestanding stacks available.

9 Selective Catalytic Reduction (SCR)
   SCR is a proven technology to further reduce NOx emissions on boilers and HRSG systems, achieving up to 95% reduction. Integration of a Cleaver-Brooks burner and SCR will provide operational flexibility, highest efficiency and lowest emissions for any boiler design. Cleaver-Brooks has the expertise and experience to meet your needs.

By Application

Building Heat
Process Steam
Industrial Process
Sterilization
Humidification
Waste Heat Recovery

By Market

Alternative Energy:
Ethanol
Biodiesel

Beverage

Chemical/
Pharmaceutical

Commercial and Office Units

Dairy

Education:
Universities
Primary
Secondary

Food Processing

Forest Products

Government

Healthcare/Hospital

Institutions

Laundry/Dry Cleaning

Manufacturing

Metal Plating

Petrochemical/Oil Sands

Power/Utility

Rubber/Fiber

Cleaver-Brooks is the only boiler manufacturer with worldwide representation. Visit cleaverbrooks.com to find your nearest representative.
CORPORATE AND MANUFACTURING LOCATIONS

Corporate Headquarters
221 Law Street
Thomasville, GA 31792
800-250-5883
229-226-3024

Sales Support
11950 West Lake Park Drive
Milwaukee, WI 53224
414-359-0600

Product Development
Cleaver-Brooks Boiler House
3232 W. Lancaster Avenue
Milwaukee, WI 53209

Parts Distribution Center
221 Law Street
Thomasville, GA 31792
229-226-3024

Products and Services
Genuine Replacement Parts
Specialty Parts
Spare Parts Lists
Upgrades and Retrofits

Engineered Boiler Systems
6940 Cornhusker Highway
Lincoln, NE 68507
402-434-2000

Products
Industrial Watertubes
Heat Recovery Steam Generators
Waste Heat Boilers

Packaged Boiler Systems
221 Law Street
Thomasville, GA 31792
229-226-3024

Products
Firetube Boilers
Electric and Electrode Boilers
Integrated Controls

Packaged Burner Systems
351 21st Street
Monroe, WI 53566
608-325-3141

Products
Commercial Burners
Industrial Burners

Exhaust Solutions
545 Fernand-Poitras
Terrebonne, Quebec
Canada J6Y 1Y5
450-625-6060

Products
Chimneys
Stacks
Venting

Company Affiliations
American Boiler Manufacturers Association
Council of Industrial Boiler Owners
Air-Conditioning, Heating, and Refrigeration Institute
Energy Solutions Center