



**WATERLOO
MANUFACTURING**
COMPLETE BOILER ROOM SOLUTIONS

Boiler News

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Criteria to Consider for Boiler Venting System Selection

We would like to take the opportunity to introduce Waterloo Manufacturing Company (East), Limited.

As most of you are aware John M. Schermerhorn Ltd. has represented Cleaver Brooks in Eastern Ontario and Gatineau for 51 years and the owners have made the decision to retire. Waterloo Manufacturing has been appointed as the new Authorized Cleaver Brooks Representative in Eastern Ontario. Waterloo Manufacturing was established in 1850 and has been a representative for Cleaver Brooks since 1947 in Southwest Ontario.

Over the past nine months we have been working through the transition of John M. Schermerhorn to Waterloo Manufacturing Company (East), Limited to make a seamless transition for you, our customer. We will continue to operate out of the same location, and incorporate the current staff. There will be some new names and faces, yet there will still be the familiar dependable staff and service that has served the territory for over 50 years.

On November 1, 2015 we commenced operations under our new organization providing Cleaver Brooks solutions, including new equipment 24/7 factory trained and fully licensed service technicians, pressure vessel welding, genuine Cleaver Brooks parts, service contracts, rental boilers fuel conversion and advanced control systems.

We will be operating under:
Waterloo Manufacturing Company (East), Limited
19 Grenfell Crescent
Ottawa (Nepean), Ontario K2G 0G3
Tel: 613-228-3597 Fax: 613-225-0116

We look forward to building a relationship and serving your boiler room needs for many years to come. If you have any questions or concerns, please feel free to contact Brian Taylor or John Kraemer at 1-800-265-8809

A properly engineered and installed venting system is required for safe, reliable boiler operation. Improper venting can lead to fuel inefficiency, downtime and increase maintenance costs. These drawbacks can be avoided by attaining and maintaining adequate and consistent draft.

There are several draft classifications for packaged boilers, including *atmospheric or natural draft*, similar to a fireplace; *forced draft* using a power burner; *balanced draft* using both a power burner and an induced draft fan; and the *induced draft fan*, employed when the resistance in the venting system exceeds the draft potential thereby requiring a fan to either suck and/or push the products of combustion into the atmosphere.

In addition, there are four venting categories classified by vent operating pressure and whether the boilers are condensing or non-condensing. Category I is negative pressure, non-condensing. Category II is negative pressure, condensing. Category III is positive pressure, non-condensing, and Category IV is positive pressure, condensing. Category classification determines which UL and NFPA requirements for venting must be followed.

Venting systems can be complex both in their design and layout. Here is a list of factors that should be evaluated when designing and selecting the correct boiler venting system to ensure proper and safe operation.

- **Mass flow.** The total amount of flue gas that forms in the exhaust or venting system. As this mass increases, the amount of friction also increases, which reduces draft.
- **Exhaust temperature.** As the mass temperature increases, its density lessens causing the flue gas to rise, increasing draft.
- **Horizontal run.** Similar to water flowing through a pipe or current running through a wire, resistance builds with increased linear length. This condition causes draft loss.
- **Vertical height.** Increases draft due to larger quantities of hot combustion gas versus ambient air, which is cooler and denser. One column replaces the other due to the temperature differential between them.
- **Fittings.** Transition pieces or elbows essentially add linear length to the breeching and therefore increases the resistance and reduce the draft.
- **Diameter.** If it is too small for the mass running through it, resistance increases, reducing the draft
- **Heat loss.** Insulating materials in the stack have an effect. The higher the temperature, the greater the density difference and the greater the draft. If the temperature difference lessens, the draft decreases.

TIP SHEET



- Improper venting can lead to fuel inefficiency, downtime and increased maintenance costs
- Venting categories are classified by vent operating pressure and condensing vs. non-condensing
- Air, mineral fiber and ceramic are the main stack insulating materials used today

- **Site elevation.** Affects the density of the air, impacting the diameter of materials used and the cost variable for the exhaust system. The higher the elevation above sea level, the greater the diameter required because of the volumetric increase.
- **Site temperature.** Cold average temperature results in more draft, and hot average temperature conditions reduce the draft in the system due to the narrowing of the temperature differential.

Insulating materials commonly used in prefabricated stack offerings adhere to code compliance and greatly reduce the heat loss from the stack. They can significantly affect the draft in the stack, which if not used can cause not only burner issues, but condensate issues as well. This can lead to corrosion of the stack materials and in some cases the boiler too.

The main insulating materials used today include: air, mineral fiber and ceramic. These substances are placed between the stack or breeching's double walls to produce the insulating effect. Operating conditions, type of fuel and the respective dew points of the resulting flue gas determine which non-corrosive stack/breeching materials are recommended for a particular application.

Cleaver Brooks exhaust solutions have a full line of boiler venting, breeching, chimney liners, grease duct products as well as free standing stacks.

For more information on any of the products above, contact us at:



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“A new look for Waterloo East”