

# TODAYS BOILER

TRENDS, TECHNOLOGIES & INNOVATIONS

## AVOIDING THE BIG FREEZE

As cold weather kicks in, consider heat tracing and other temporary boiler tips.

The Official Magazine of



Supplement to *Engineered Systems Magazine*. ES is a member of ABMA.

CHP Success  
PAGE 8

Considering Special Fuels  
PAGE 10

Firetube Boiler Design  
PAGE 16

## FREEZE DAMAGE PREVENTION: TEMPORARY BOILERS

Unplanned boiler outages are unpredictable, and temporary equipment can be required at any moment. A shutdown can happen in the midst of a hot summer day or in the middle of a blustery winter night when temperatures are below zero.

With the winter season right around the corner, it is a good time to remind boiler owners about proper preparations for rental equipment operating in freezing weather conditions. Although most rental equipment is designed for outdoor installation and includes features such as TEFC motors, NEMA 4 enclosures, and all seal-tite conduit, there are still a number of precautionary steps that can be taken to avoid boiler operational difficulties and/or equipment damage caused by freezing temperatures.

Nationwide Boiler offers mobile boiler rooms up to 1,000 hp, the largest mobile firetube unit in the market today. Mobile

boiler rooms feature a firetube boiler/burner package and auxiliary equipment installed inside an enclosed trailer. These rental units are already partially protected from freezing conditions. However, trailer-mounted and skid-mounted watertube and firetube boilers are typically exposed to the environment and require additional freeze protection. Unless the rental unit will be placed inside a building, you will need to build a temporary enclosure to protect the front and rear of the boiler area and utilize an external heat source. This will shield the boiler and piping from potential freeze damage.

### HEAT TRACING A PATH TO SUCCESS

Regardless of the type of rental boiler in use, heat tracing with insulation should be installed to protect exposed static water lines, as well as all main lines and piping components. This includes control sensing lines, water cut-offs, water column, and



them. In many rental boiler cases, steam tracing has been found to be the less expensive and preferred method for maintaining appropriate pipe line temperatures since the steam is readily available. Further savings can be achieved through this method by capturing the condensate produced in the tracers with steam traps and returning it to the boiler feedwater system. However, electric tracing can be more dependable if the steam source is not constant, is not from the rental unit which might cycle, or in worst

50/50 solution of water and glycol prior to re-connecting. The solution is a safe antifreeze mixture, which has a lower freezing point than that of water and will protect the lines for a longer period of time. When an extended boiler down time is expected, or if the rental equipment is in transit from a customer's jobsite, the boiler and static water lines should be drained completely.

**THE TIME IS NOW**

The importance of being prepared is unquantifiable. Through a proactive evaluation of freeze potential and by utilizing these freeze protection techniques, damage to the boiler, system piping, and devices can be avoided or mitigated to a large extent. This prior planning can help avoid costly repairs and downtime. Take advantage of the tips outlined above, but also use sound engineering judgment calls when there are concerns of possible freeze damage to the equipment. **TB**

level control blowdown. Depending on the length of the piping runs, the main and continuous blowdown should also be heat traced. Under freezing conditions, all of these lines should be heat traced whether the boiler is in operation or not.

case, the unit supplying the steam goes out of service.

In addition to heat tracing on static sensing lines when the boiler is in operation, the lines should be drained completely, disconnected, and filled with a

Heat tracing is used to maintain or raise the temperature of pipes or valves to prevent boiler water from freezing, expanding, and damaging the piping. The two most common types of heat tracing used are electric tracing and steam tracing. In electric trace heating, an electrical heating element runs the length of the pipe. Heat generated by the element then maintains the temperature of the pipe as well as the liquid inside the pipe. This type of heat tracing can be very cost-effective and energy-efficient, and is less maintenance intensive and easier to control than steam tracing. In addition, electricity is easier to move to a remote location if needed. However, with electric tracing you are unable to achieve the high temperatures that you can with steam tracing, and if not monitored carefully, electric cables can overheat and cause damage to the system.

Steam tracing heats the piping by circulating low-pressure steam around the pipes, generally through a stainless steel or copper tubing. Heating the pipes with the steam will also maintain the temperature and state of the liquid inside



**Get boiler tubes cleaner, faster!**



SAM-JR

SootVac®-JR

- **Small size, big punch.** Lightweight and powerful, SAM-JR pounds soot from tubes up to 2½" I.D.
- **Dial-In technology.** Set tube length once and punch away.
- **Ergonomic design.** Small size saves tired backs and shoulders.

**GOODWAY®**

**CALL 888 364-7752**  
[www.goodway.com/boilercleaning](http://www.goodway.com/boilercleaning)