



## 25 Year Non Pro-rated Thermal Shock Warranty

Rite Engineering & Manufacturing Corp. warrants its Boilers against pressure vessel cracks and broken welds caused by thermal stress cycling ("thermal shock") for a period of 25 years from date of manufacture. The Warranty - non pro-rated - is limited to the replacement or repair of the pressure vessel when such damage is determined by Rite Engineering or an authorized Rite Representative to have occurred during normal operation\*. The Warranty shall not cover damage due to freezing, dry firing, or excessive scale build-up. The Warranty is limited to damage to the boiler itself and expressly excludes all other consequential damage.

## 25 Year Non Pro-rated Tube Erosion Warranty

Rite Engineering & Manufacturing Corp. warrants its Boilers against waterside tube erosion for a period of 25 years from date of manufacture. Waterside tube erosion – defined as the result of scrubbing action caused by high velocity water flow through a limited number of boiler tubes such as copper finned – will not occur to Rite Boilers because of our greater number of tubes and low pressure drop heat exchanger construction. The Warranty shall not cover damage due to oxygen corrosion. The Warranty is limited to damage to the boiler itself and expressly excludes all other consequential damage.

## Additional Warranty Coverage

Rite Engineering & Manufacturing Corp. warrants its Boilers against defective parts and poor workmanship for a period of 18 months from date of shipment or 12 months from date of start-up - whichever occurs first. Controls, valves and instruments made by other manufacturers and installed on Rite Boilers are generally covered by the same warranty period. Misuse, neglect or exposure shall not be considered grounds for warranty claims. In no case shall Rite Engineering be held liable for any consequential damage including product loss, freight or replacement labor.

*\*Operating instructions specific to limiting thermal stress cycling may be found on the back of this warranty as well as in the instruction manual furnished to the purchaser.*



## Thermal Stress Cycling of Rite Boilers

Rite Engineering & Manufacturing Corp. wholly endorses energy conservation measures that lower fuel costs.

In fact, the Rite design is built around a pressure vessel whose waterside heat transfer surfaces are completely accessible and readily cleaned for optimum efficiency. There are however, laws of physics that limit *all* boilers in term of their operation, which can come in conflict with some Energy Management Systems (EMS) strategies.

The following operating recommendations for Rite Boilers should be part of any EMS strategy:

1. Leave the boiler and primary loop pump on during the heating season (or year 'round if a process boiler) while turning off all secondary loop pumps, air handlers, etc. Fuel consumption during "off hours" will be limited to boiler and primary loop piping radiant losses and these are generally small. A night temperature setback control may also be used to reduce system water temperature to 140°F – the minimum recommended return water temperature for Rite Boilers. Installing an automatic stack damper can further reduce fuel consumption while protecting the boiler from potentially freezing downdrafts through the stack.
2. Leave the boiler on and turn the primary loop pump off. Due to natural internal circulation, pumped water flow through a Rite Boiler is not required when firing. Important: When system heat is again required, the cool system water must be blended *slowly* back into the boiler so the boiler's water temperature doesn't fall below 140°F. This can be accomplished with a 3-way mixing valve arrangement or a boiler run-around pump (3/4 GPM per boiler horsepower) installed (field or factory) between (or near) the boiler's supply and return connections.

While initial or infrequent boiler start-ups are considered routine and will not harm the boiler – failure to follow the above strategies will cause *repeated* Thermal Stress cycling. Although Rite Engineering knows of no instance where this has led to pressure vessel cracks or broken welds in its boilers, tube loosening (the "slippage" of the rolled portion of the tube in the tubesheet) may occur when Rite Boilers are subjected to on-going cold start-ups.

Boiler owners and EMS software suppliers should take the following quote from the ABMA's "*Guideline for the Integration of Boilers and Automated Control Systems in Heating Applications*" into account: "Automatic programmed de-energizing of boilers should be very closely examined. It is also questionable as to the real energy savings to be realized in cooling a boiler or a system on a regular basis only to reheat it in a short time later".

This publication may be purchased from the American Boiler Manufacturers Association

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