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20929 Bridge Street, Southfield, MI 48033
4121 Brockton Drive SE, Grand Rapids, MI 49512
6200 Baron Drive, Bridgeport, MI 48722
6910 Treeline Drive, Suite A, Brecksville, OH 44141

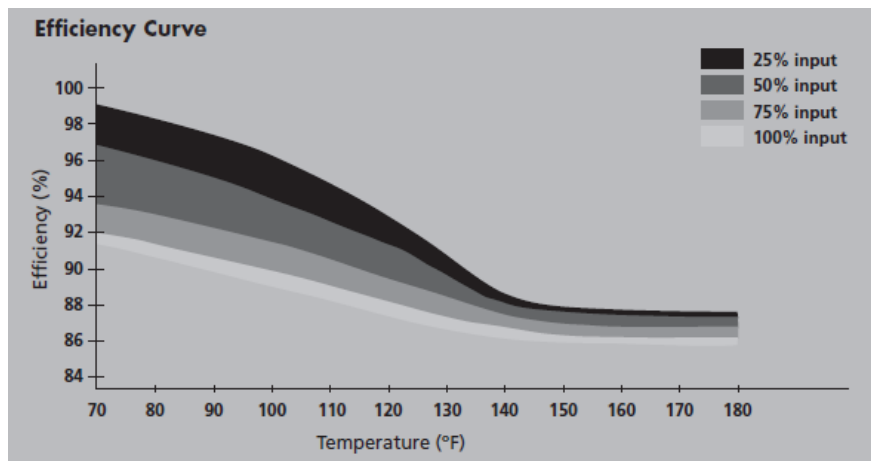
Phone: (800) 589-6120 - Fax: (248) 354-3710
www.deppmann.com

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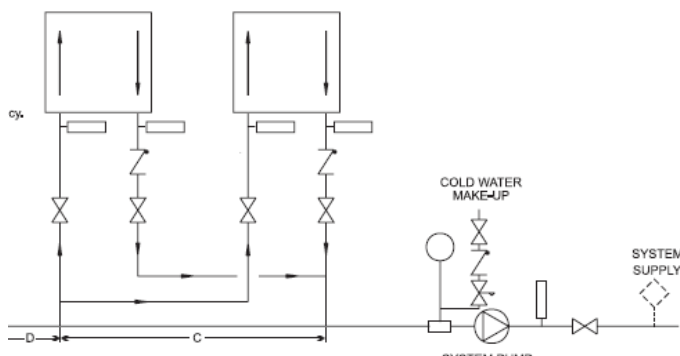
Selecting Laars NeoTherm Condensing Boilers

Over the last several weeks we outlined the use of primary secondary systems for hydronic heating systems. This article will address the selection of Laars NeoTherm condensing boilers.

The Laars boilers and water heaters are constant flow devices which mean a constant speed primary pump must be installed. The flow rate required allows temperature rises between 20°F and 35°F. Let's look at a selection example. Assume we have 1,450,000 BTUH with a 180°F to 150°F temperature range for a 30°F ΔT. We want to use the Laars NeoTherm boiler which combines condensing technology with modulating control. At 150°F and 100% firing rate the efficiency shown on the chart below will be about 86.5% and we require $1,450,000 / .865 = 1,677,000$ BTUH input. Two NTHB-850s will do the job nicely since $850,000 \times 2 = 1,700,000$ BTUH Output.



We have a 30°F ΔT so each boiler will require a primary pump of about 48.5 GPM. We arrive at this by taking the BTUH output of 1,450,000 BTUH divided by (500 X 25°F ΔT) for a flow rate of 97 GPM. The total system flow 97 GPM and each boiler in parallel will have ½ of the flow or about 48 GPM. The piping schematic will look like the following:



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LAARS
NEOTHERM
Commercial Modulating,
Condensing Boilers

NEOTHERM is a direct vent, sealed combustion, condensing boiler with 95+% AFUE that modulates with a 5 to 1 turndown.

The boiler features an ASME stainless steel heat exchanger, integral boiler pump (399 and 500 also available without pump) and low NOx emissions (10 ppm NOx), for a package that's easy to use, and is easy on our environment.



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This solution allows each boiler to see the cooler return water. As we reset the system in the spring and fall the return temperature drops and we start to condense and gain efficiency. In addition the control package will modulate the boilers because the efficiency goes up as we reduce the firing rate. The control will operate one boiler from 0 to 40% of load. After 40% our controller will stage on both boilers at 20% and operate them together from 40% to 100% of load. Clearly from the figure above if we have, for example, 100 degree water returning and we are 50% load, the efficiency of each boiler at 25% load is 96%. If we operated only one boiler the efficiency would be about 90%.

Selecting multiple boilers and operating them at part load provides the best efficiency with the Laars NeoTherm Boilers.

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