



## WHAT'S IN A DEGREE

### What does 5° F mean to you?

Consider...it takes 8.34 BTU to heat one gallon of water 1°F.

Natural gas has an effective combustion efficiency of 85.7%. This means that for each million BTU of gas purchased, 857 thousand BTUs are transferred to the boiler. Most boilers operate in the range of 70% effectiveness in transferring BTUs to steam energy. This results in around 600,000 BTUs of steam heat energy available from each million BTU of natural gas or 60% of the natural gas energy content.

If your process heats 330 gallons per minute of water (75 m<sup>3</sup>/hr) from 145°F to 190°F (63°C to 88°C); approximately 206,415 natural gas BTUs are consumed each minute. Extrapolated, this is over 12.3 million BTU per hour – approximately \$60 at \$5/MMBTU. And this assumes you have a perfect steam system after the boiler. We all know that leaks, valves, condensate traps, etc. are common energy wasters.

What happens after a few years when your heater begins to wear and becomes unable to maintain accurate temperature control? In order to achieve 190°F (88°C), it is typical to adjust the set point higher – to say, 195°F (91°C).

### Let's Do Some Math

Temperature rise: 50°F (195°F-145°F) (91°C - 63°C)

Required BTU per gallon: 418.7 btu/gal (8.34 lbs/gal x 50°F x 1.004 btu/lbs °F)

Gallons per minute: 330 gpm (75 m<sup>3</sup>/hr)

Required BTU per minute: 138,160 (376.8 btu/gal x 330 gpm) (75 m<sup>3</sup>/hr)

Required natural gas BTU per minute: 230,267 (138,160 btu/min/.6)

Natural gas used per hour at \$5.00/MMBTU: \$70

### Wasted Energy Expense

\$10/hour in additional cost = **\$240** per 24-hour day = **\$1,680**

per 7 day week = **\$85,714** per **51** week year

### What would it mean to you to have temperature control within 1°F?

It could mean thousands of dollars.

### Compare this to having your EZ Heater® refreshed with new internal components and tuned for accuracy:

Spare heaters: The largest and most advanced spare heater will likely cost less than \$20,000\*, saving you at least \$40,000 the first year.

\*Internals contain stem plug, diffuser, and combining tube replacement. All components may not need to be replaced at the same time.\*Actual quotes by request.

#### Need more information about Hydro-Thermal products?

Go to [www.hydro-thermal.com](http://www.hydro-thermal.com) or contact us at [info@hydro-thermal.com](mailto:info@hydro-thermal.com)

400 Pilot Court | Waukesha, WI 53188  
(262) 548-8900 | (800) 952-0121

HH-373 RevE/2020