



What's in a °Degree?

What does 5°F mean to you?

Consider...it takes 7.53 BTU to heat one gallon of 30% slurry or stock 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 750 gallons per minute of 30% slurry or stock from 185°F to 225°F; approximately 376,600 natural gas BTUs are consumed each minute. Extrapolated, this is over 22.6 million BTU per hour – approximately \$113 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 225°F, it is typical to adjust the set point higher – to say, 230°F.

Let's do some math...

Temperature rise:	45°F [230°F-185°F]
Required BTU per gallon:	338.9 btu/gal (9.427 lbs/gal x 45°F x .799 btu/lbs °F)
Gallons per minute:	750 gpm
Required BTU per minute:	254,210.8 (338.9 btu/gal x 750 gpm)
Required natural gas BTU per minute:	423,684.7 (254,210.8 btu/min/.6)
Natural gas used per hour at \$5.00/MMBTU:	\$127

Wasted Energy Expense (due to 5° increase in setpoint)

\$14/hour in additional cost	=	\$339per 24-hour day	=	\$2,371 per 7 day week	=	\$120,904 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 Hydroheater® refreshed with new internal components and tuned for accuracy:

Spare heaters: A similar sized heater will cost less than \$50,000, saving you at least \$71,000 the first year.

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