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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

**April 11<sup>th</sup> ~ Monday Morning Minutes:**

### **Where did the term "Boiler Horse Power" come from?**

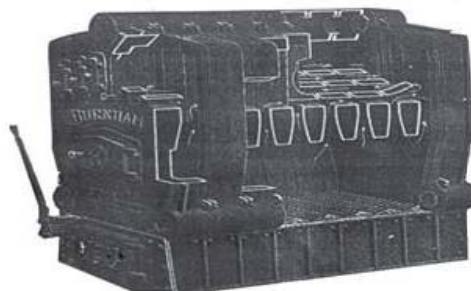
By Joe Smolinski

Maybe you are all clear where the term Boiler HP came from, but I wasn't, so I began my quest. I quickly found that one Mechanical HP = 33,000 ft-lb/min and one Boiler HP = 33,475 BTUH and the similarity of these two numbers, without units, got my interest.

It appears that James Watt needed a marketing piece to sell his steam engines and people of the time could relate to horses. Watt calculated how much work a horse would do turning a mill wheel, which he estimated at 33,000 ft-lb/min. This was a controversial number, some of his peers thought this too high a number, I guess all horses are not created equal, but Watt ultimately won out. That cleared up mechanical horsepower in my mind. But what about boiler horsepower?



Early Bryan Steam tractor on assembly line in Peru, Indiana



Early Burnham Boiler

Boiler Horse Power was first extensively used in Philadelphia around 1876, where steam engines were being tested. They calculated the average steam consumption per output mechanical horsepower. They established that 34.5 lb of water was evaporated in one hour to make one mechanical Hp in the steam engines, and Boiler Horsepower was defined by ASME in 1884 as "the thermal output required to evaporate 34.5#/hr of water from and at 212°F.

So now it makes sense to me how the term Boiler HP was derived. I guess saying "The amount of BTUs required to evaporate the water needed to make one mechanical horse power in a steam engine" is too much of a mouth full, so I will stick with 33,475 BTUH.



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