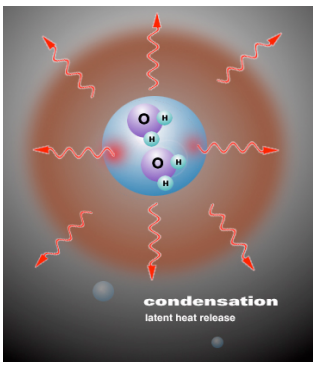
The Best Way ... # 12

… to transform fuel into heat - an HE boiler / furnace / water heater.

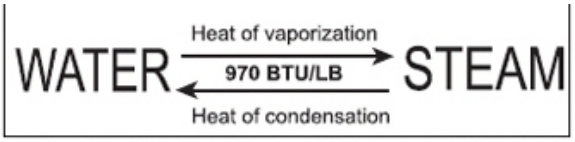
As natural gas (methane or CH_4) burns, hot carbon dioxide (CO_2), hot nitrogen (N_2) and steam (H_2O) are produced.

Most heat exchangers are designed to draft or breathe, much as a fireplace - hot flue gasses rising up the chimney draw in cool combustion gasses from below. Hot gasses are cooled somewhat as they transfer about 70% of their heat energy through steel heat exchangers to flowing air (furnace) or water (water heater, boiler) inside the tubes. Once past the exchanger, the still hot (300° F) gasses go up the chimney. All of the energy-rich steam generated during combustion is wasted.

However, if the flue gasses are cooled sufficiently within a boiler, steam condenses and gives up its latent heat to the process. Combustion steam gives up heat, condenses on stainless steel tubes and drains as warm water from the boiler. These are high-efficiency (HE) or condensing units.



Latent heat or "hidden" heat is stored in the water molecule until it is released during condensation. At that point, the heat is converted into sensible heat. Latent heat released during condensation is an important source of energy. As combustion steam is condensed on cooler-running heat exchangers within a condensing boiler, an additional 970 BTUs is gained for every pound of steam condensed.



Founding Member

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