Why a Condensing Heat-Exchanger?

- This 14.5lb green alder log has the stored solar energy equivalent of half a gallon of gasoline, but almost half its weight (7lb) is water.
- Additionally, 4lb more water is created during combustion from the hydrogen and oxygen in the wood plus oxygen from the air.
- It takes much heat to convert this 5.3 quarts of water to steam and heat it up to exhaust-gas temperature.
- If this 11lb of water *(pictured above)* is not condensed in an efficient condensing heat exchanger, 18 to 20% of the heat of combustion from this log is lost. This is in addition to the potential heat gain from further cooling the additional flue gases.

An efficient gravity-stratifying down-draft counter-flow condensing heat exchanger can capture 20 to 40% more heat from green fuels, yielding 95% net efficiency, with no penalty for wet fuels. In fact, water condenses on any particulates in the exhaust gas and cleans it even more.