

Any Boiler Can be a Condensing Boiler

(But do you want it to be?)

Flue gas contains nitrogen, oxygen, carbon dioxide, water vapor, small amounts of carbon monoxide and other constituents. Water vapor will not condense unless the gas mixture containing it contacts a surface that is below the dew point temperature. Dew on grass doesn't form unless the grass temperature is below the dew point and condensation (or dew if you like) doesn't happen in a boiler unless the heat transfer surfaces are below the dew point.

In a combustion boiler where natural gas combustion is used, the dew point of the water vapor in the flue gas is about 125 to 135 degrees; depending on the amount of excess air used. The water vapor does not have the intelligence to read or understand the thermodynamics of the condensing process so it doesn't care if the boiler is made of steel or copper or stainless steel. When the water vapor contacts a cold enough temperature, it condenses; regardless of what the boiler operator intends.

Steel boilers in particular rapidly corrode when dew occurs in them. To prevent that from occurring is a VERY simple matter...

Don't let water enter below 140°F ENTER the boiler!

