How to build a 90% efficient boiler system.

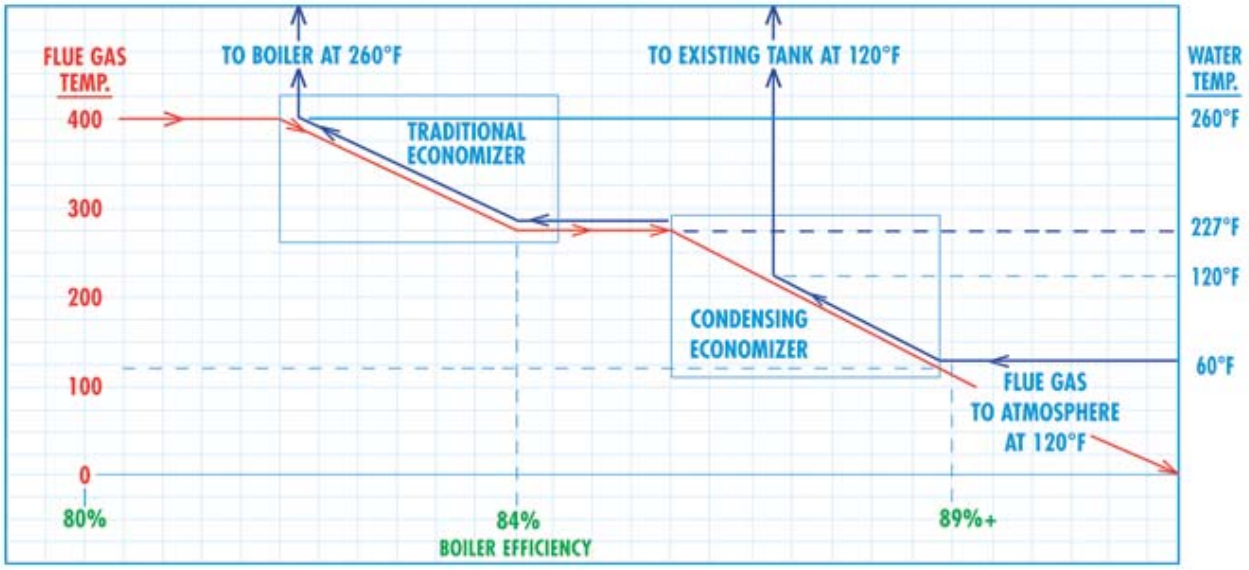
Cannon Boiler Works

Saving money is directly related to improving efficiency; doing the same work with less fuel.
Return on investment of this equipment can be under one year.
Much is being advertised these days concerning new equipment to boost industrial steam boiler efficiency to the 90% range, something that was unheard of a decade ago. But new equipment may not be needed to achieve this goal.

Cannon can offer retrofit upgrades to most existing firetube boilers to approach 90% efficiency at a greatly reduced cost, when compared to new a new boiler.

Achieving high efficiency begins with evaluating and documenting the efficiency of your current system. Unfortunately, many customers do not know their overall steam system efficiency. Many customers are surprised when they find out that their efficiency is in the 60-70% range. Saving money is directly related to improving efficiency, *doing the same work with less fuel.*

To improve efficiency we need to minimize the release of heat to the atmosphere, and return the waste heat for use in the customer's plant (see graph).



The equipment includes two economizers, a traditional economizer and a condensing economizer, and to do this we need two continuous water streams.

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As you can see, heat recovery is a simple concept, but applying this concept could SAVE HUNDREDS OF THOUSANDS OF DOLLARS PER YEAR, by a 10% gain in boiler efficiency.

Starting point: A properly maintained firetube boiler can produce 80% efficiency, and when operating at 100 psig steam pressure releases 400F flue gas into the atmosphere. With an upgraded burner control system the boiler will produce this efficiency even at low loads, (below 50% MCR).

Primary Economizer: A properly sized primary economizer will improve this efficiency by 2-4% (approaching 85% overall), and releases 300F flue gas into the atmosphere. This unit will flow water from a deaerator and heat it from 227F to 260F.

Condensing Economizer: A condensing economizer will improve this efficiency by 5-6% (approaching 90% overall), and releases 130F flue gas into the atmosphere. This unit will flow softened city water for boiler makeup (or other purposes) and heat it from 60F to 100F. A minimum of 25% makeup water is required, and higher makeup water flow rates = higher efficiency gains.

Cannon has been making traditional economizers, feedwater preheaters, and condensing economizers for 30 years. The concept is not new, but the industry experience we have allows us to design and manufacture equipment with both a long service life and easy of maintenance in these harsh condensing environments.

Please contact one of our representatives, or Cannon directly, for a study of what gains are possible with your equipment.

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