



PARKER BOILER CO.

MANUFACTURER OF QUALITY INDUSTRIAL BOILERS SINCE 1919
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Attn: Steven Davidson
San Joaquin Air Pollution Control District
34946 Flyover Ct.
Bakersfield, CA 93312
Tel: 661-392-5681
Email: steven.davidson@valleyair.org

Subject Ref: Thermal Fluid Best Performance Standard
Dear Steven,

We have become aware of your Best Performance Standard Rule Development for Thermal Fluid Heaters. We are a manufacturer of these Thermal Fluid Heaters and boilers. We do not manufacture many thermal fluid heaters and our largest unit is 6,250,000 BTUH input. We have only a small number located in the SJVAPCD & none under permit to my knowledge.

The following is your request:

“Please supply any input and data regarding thermal fluid heat transfer systems that:

1. Operated during the three year period from 2002-2004 (baseline), and
2. Other units that are currently operating at the lowest modern level of GHG emissions.

What is the lowest modern level GHG emissions? Please clarify. I know this would depend on operating temperature. As a hotter process fluid is required the stack heat loss is increased.

Information request for both categories include:

- a. Actual overall thermal efficiencies (heat output vs. heat input),
 - b. Actual amount of electrical input (kilowatts or kilowatt hours) required,
 - c. List of the equipment utilized with the thermal fluid heat transfer systems (i.e. constant hp. Electric motors, variable frequency drive motors, high efficiency motors, economizers of any kind, pre-heaters, etc),
 - d. Proposals for a method to quantify the emissions per unit of activity, either in lbs. of GHG produced per unit of heat output, or lbs. of GHG per unit of steam produced, or other method, and
 - e. Suggestions for defining the classes and categories of source, (i.e. size range, industry, etc.)”
- A. *We do not know of any thermal fluid heater system where thermal efficiency has been measured with a degree of accuracy required for a policy establishment. If data were to accurately be provided calibrated fuel meters and mass flow meters (calibrated) would be required.*

We normally rate our small thermal heaters at 80% efficiency (combustion) but derate the output as the medium temperature increases.

B. *Typical HP's of Parker Boiler fans for BTU's are as follows:*

- 2.0 MM – 1 HP
- 3.0 MM – 2 HP
- 4.0 MM – 5 HP
- 6.25 MM – 7 1/2 HP

C. (1) *The following is a rough estimate of heater pump HP:*

- 2.0 MM – 7 1/2 HP
- 3.0 MM – 7 1/2 HP
- 4.0 MM – 10 HP
- 6.25 MM – 20 HP

(2) Economizers are not practical on thermal fluid heaters as the return fluid temperature is very high. If a related water or heat load is always available as a heat sink then the possibility may exist to install an economizer to capture heat.

D. The emissions per unit of BTUH output delivered to the process should be extremely carefully measured for any policy or rule activity. For UL testing calibrated fuel meters, temperature gauges, and flow meters are required. The testing must be done and witnessed by an independent testing lab. The cost of this testing will be very high on a thermal fluid system. Keep in mind specific heat and specific gravity of the fluid can change significantly from the inlet to outlet of the heater. This type of accurate testing is the only acceptable data for this type policy. We are not aware of any site doing this.

E. Classes: Of course BTU input size and operating temperature would effect performance.

F. Additional Questions:

1. How many permitted thermal fluid heaters are in the district?
2. How many new thermal fluid heaters were permitted in 2010, 2009, and 2008?

Thank you for your consideration.

Yours truly,

Greg Danenhauer
Vice President – Engineering
State Of California Registered Professional Mechanical Engineer
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Member: ASHRAE

Member: ASPE

Past Member: California Boiler Inspectors Organization

Member: SCAQMD Rule 1146 Advisory Committee

1146.1 Advisory Committee

1146.2 Advisory Committee

1121 Advisory Committee

Contributor to Development of NFPA Standard 87 Recommended Practice for Fluid Heaters 2011 Edition

Certified: SCAQMD Portable Analyzer Operation

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