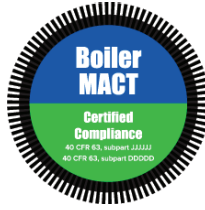


Tuning Your Boiler for EPA Boiler MACT Compliance



What is Boiler MACT?

Boiler MACT (Maximum Achievable Control Technology) is an EPA rule to limit hazardous air pollutants (HAP) from commercial and industrial boilers and process heaters. Originally published in 2011 as a mandate driven by the Clean Air Act, the rules are Area Source Boiler MACT 40 CFR 63, subpart JJJJJJ for smaller boilers (stores, hotels, apartments, small manufacturers, etc.) and Major Source Boiler MACT subpart DDDDD for large boilers (refineries, chemical and large manufacturing plants, large facilities).

Final compliance for the Major Source Boiler MACT is January 31, 2016 – which ends the three-year grace period from the date final rules were published.

Boiler MACT Requirements

The Boiler MACT standards require end users to report boiler emissions, a rule which has been adopted in most states (See Figure 1). The addition to the mandate requires end-users to “tune” new boilers when they first start up and then perform periodic tuning to measure boiler efficiency.

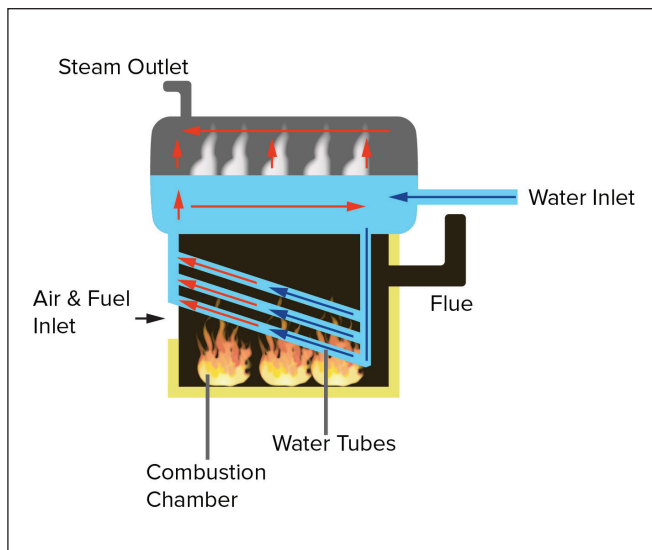


Figure 1: Typical Boiler Application

Boiler Tuning Applications for Boiler MACT Compliance

To efficiently tune a boiler, three key measurements must be taken: air and fuel inlet flow, feed water flow, and steam output (See Figure 1).



Figure 2: BoilerTrak™ 620S-BT Thermal Mass Flow Meter For Inlet Fuel Flow Measurement

- Optimized natural and propane measurement for 1, 2, 3, 4 inch sch. 40 pipe sizes
- Wide flow ranges from 0 to 42,000 scfh
- Easily install in the field or retrofit
- Certified for Boiler MACT
- Buy online — ships next day

1. Inlet Fuel Flow

Sierra's economical BoilerTrak® thermal mass flow meter, specifically designed to provide precise natural gas measurement for heaters and boilers, is an ideal product to help with monthly fuel reporting and boiler tuning to increase efficiency (see Figure 2).

For more complex gas mixtures being burned, use QuadraTherm® 640i/780i thermal mass flow meters.

2. Inlet Feed Water Flow

In boiler tuning, the feed water flow to the boiler is an important measurement, since you need to measure the efficiency at which the boiler turns this feed water into steam (See Figure 1).

Our InnovaMass® 240i vortex volumetric flow meters are an economical solution for water measurement applications in new boilers (See Figure 3), while the InnovaSonic® 205i ultrasonic flow meter can be retrofitted easily into existing boilers due to its clamp-on nature. The 210i portable ultrasonic flow meter is a good analysis tool as well for periodic boiler tuning where fixed measurement devices are not already installed.

3. Inlet Steam Output

To determine the efficiency of a boiler, accurate steam measurements are critical (See Figure 1). For measuring steam output, the InnovaMass iSeries vortex flow meter in insertion (See Figure 4) and inline versions are leading vortex flow meters for steam measurement.

With its ability to measure five process variables simultaneously, and correct for density changes in steam, the InnovaMass vortex flow meter can give an accurate assessment of the efficiency of the boiler to maximize steam productivity.

The Big Picture:

Since the intention of these Boiler MACT standards are driven by the EPA's mandate in the Clean Air Act to develop national emission standards, the hope would be that through Boiler MACT compliance, facilities tune their boilers to ensure the maximum boiler efficiency which in turn minimizes the source of air pollution.

Learn more at sierrainstruments.com/boilermact



Figure 3: InnovaMass 240i Vortex Flow Meter For Feed Water Flow And Outlet Steam Measurement

- Pipe sizes from 1.0 to 8.0 inches (DN25 to DN200)
- Compact, low cost alternative to Coriolis meter
- Ideal for volumetric liquid applications
- Mass and/or volumetric flow rate
- Multivariable for five (5) measurements in one compact device



Figure 4: InnovaMass 241i Vortex Flow Meter For Outlet Steam Measurement

- Insertion probe up to 72 inches (2M); optional hot tap
- Ideal for saturated or superheated steam, gas, and liquid
- Volumetric flow rate or mass flow
- Multivariable for five measurements in one device
- Buy online — ships next day