

Power Generator Saves \$40,000 Annually with Micro Motion® Viscometer

BENEFITS

- Reduced fuel oil heating costs
- Improved boiler efficiency
- Reduced boiler emissions
- Maintained boiler safety



The viscosity of the fuel oil can be used to control the fuel oil heater for maximum efficiency.

PROCESS

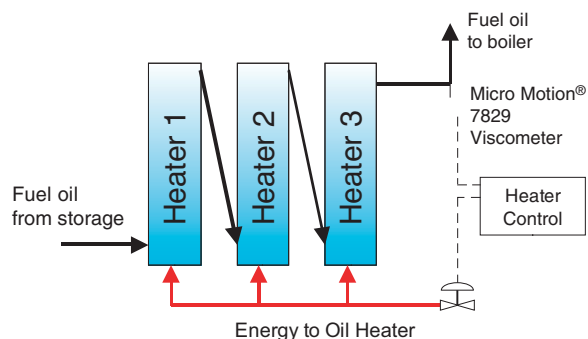
A power generating plant in the northeastern United States has a need to precisely control the fuel oil viscosity leading to its steam boilers. This control is necessary for plant safety, emissions control, and the efficiency of the steam boilers.

Each boiler and its associated burners are designed to operate most efficiently when burning a fuel droplet of a specific size. The viscosity of the fuel oil is the main component in defining droplet size. If the viscosity is too low, the fuel oil droplets are too small and the burner operates too hot. These increased temperatures raise the amount of NO_x that is created in the fire box – which must be “scrubbed” in the exhaust stack prior to release to the atmosphere. On the other hand, if the fuel viscosity is too high, the injected droplets will be too large, resulting in an incomplete burn that could compromise plant safety due to excessive fuel in the fire box.

CHALLENGE

Because typical fuel oils vary in composition and are usually stored outside, the plant had installed an in-line heater system in an attempt to maintain an optimum product viscosity. This approach was taken instead of using an in-line viscosity measurement due to the traditionally high cost and complexity of an in-line viscometer system. The drawback of this method was that the fuel oil viscosity was not precisely known, meaning that the plant was receiving potentially different grades of #6 fuel oil – each from a different vendor. The result of this was that the plant had to compensate for this variation in fuel

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quality by continuously operating the in-line heater system, even though it was wasteful of energy (in both steam and electricity) and potentially reduced the viscosity below its optimal burning point.

SOLUTION

A Micro Motion® fork viscometer can help customers to accurately control the fuel oil viscosity entering the fire box. By installing a Micro Motion viscometer downstream of the fuel oil heater, the viscosity measurement can be used to control the heating system and maintain the optimal viscosity for efficient burning. Because this measurement happens in real time, the correct viscosity can be maintained very efficiently such that changes in oil composition or temperature can be accommodated without affecting the final desired reading. In addition to reducing heating costs, controlling the viscosity in this way can reduce emissions, improve boiler efficiency, and maintain safer boiler conditions.

After installing a Micro Motion viscometer in their line, this plant was able to safely reduce the temperature of the fuel oil being injected into their burners – producing an anticipated savings of \$40,000 per year through reduced energy costs and increased operating efficiency.

