

# Power Station Eliminates Equipment Failures by Using Micro Motion Viscosity Meters

## RESULTS

- Reduced heating costs
- Cleaner burning HFO
- Improved burner operation due to optimal HFO viscosity
- Eliminated costly meter and burner failures



## APPLICATION

Heavy fuel oil (HFO) is delivered to a power station in Setubal, Portugal, where it is injected into burners. The viscosity of the HFO is regulated, and is typically about 20 cSt upon delivery, which is too viscous for burner injection. To lower the viscosity, the power station heats the HFO.

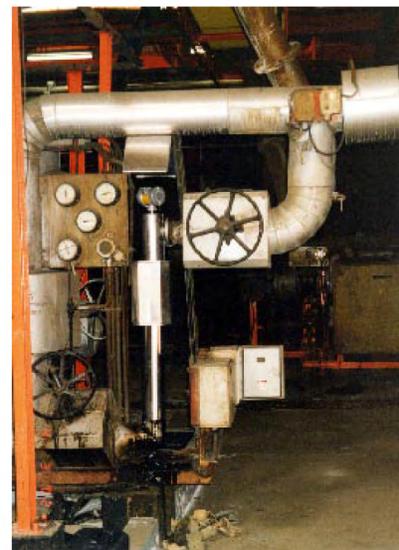
## CHALLENGE

Control over HFO viscosity is crucial to the performance of the burners. If the viscosity is too high, the fuel droplets are too large and the fuel does not burn quickly enough. This results in HFO adhering to the burner wall, combusting, and eventually causing an expensive burner failure. On the other hand, if the viscosity is too low, the fuel droplets are too small and burn too quickly. This uses fuel inefficiently and leads to higher-than-necessary operating costs.

Power stations often measure the HFO viscosity prior to burner injection, and adjust the temperature of the HFO to produce an ideal viscosity. Historically, this measurement was taken by reading the pressure at both ends of a capillary slipstream. Forcing the high-viscosity HFO through such a small tube required significant power. Additionally, HFO can contain high levels of asphaltenes, which adhere readily to the walls of such capillary tubes, clogging them quickly. These conditions led to frequent, costly meter failures.

The rate of meter failure had become so bad that the Setubal power station's distributed control system maintained a default setting of "failed" for its viscosity meters.

*The Fork Viscosity Meters provides real-time kinematic viscosity data while being immune to asphaltene build-up.*



For more information:  
[www.MicroMotion.com/power](http://www.MicroMotion.com/power)  
[www.MicroMotion.com](http://www.MicroMotion.com)



## SOLUTION

The Setubal power station replaced its older system with Micro Motion® Fork Viscosity Meters. The Fork Viscosity Meter is a vibrating fork meter that was designed specifically for the measurement of HFO. Its PFA-coated tines that are resistant to asphaltene buildup, and its ability to measure viscosity, density, and temperature in real time allows true kinematic viscosity analysis. Furthermore, the Fork Viscosity Meter offers Modbus digital communication, which means faster response times than analog meters.

The Fork Viscosity Meter immediately operated correctly, and has been insensitive to the HFO measurement problems associated with the previous measurement technology. The power station has not had a single Fork Viscosity Meter failure to date.

By moving to true, in-line, real-time kinematic viscosity measurement with MicroMotion Fork Viscosity Meters, the Setubal power station has achieved a wide range of benefits, including:

- Reduced heating costs
- Cleaner burning of HFO
- Optimal burner efficiency

