

## **Oil-fired Burners**

The oil-fired burner can be using a large range of fuels, from extra-light heating oil (red diesel) to heavy oils that require considerable preheating before combustion or flow are possible. Generally speaking, the lighter the oil, the cleaner the combustion. This is not just referring to smoke and carbon monoxide, but also to the other pollutants such as sulfur dioxide. Sulfur and nitrogen-bearing compounds are more prevalent in the heavier oils, meaning that both  $\text{SO}_2$  and  $\text{NO}_2$  will be higher. This will require a flue gas analyzer equipped with at least a sensor for sulfur dioxide and possibly for nitrogen dioxide as well. The problem of cross-sensitivity must always be borne in mind when these two gases are, or could be, present.

The level of condensate will generally be lower with the oil burner, reducing this load on the water trap of the flue gas analyzer, but the problem of solubility of the components is now present. Both of these gases are highly water-soluble and the water may have to be removed in some way to improve the accuracy of the measurements.

An oil burner may well suffer from smoke, leading to a build-up of soot on the heat exchanger plates. This will have an adverse effect on overall efficiency and should be monitored if in doubt. The simple soot test may be a requirement anyway, but is certainly not a waste of time.

Apart from this, if the fuel is clean and free from pollutants, there is no real reason why a correctly adjusted oil burner should be a source of pollution. A simple check with the flue gas analyzer will show the fact of the matter. The only real question is the choice of sensors and whether to fit some sort of drier to the flue gas analyzer to prevent flushing out of sulfur dioxide and nitrogen dioxide.