

## **Gas-fired burners**

Natural gas has been heavily promoted in many countries in the last decade or so for a number of reasons. Once the pipe system has been laid there is little or no logistical problem in ensuring a supply to the consumers. Since the process of actually laying the pipes is very cost-intensive, it was obviously a priority to get as many connections made as possible to reduce the pay-back time for the investment. Natural gas is promoted as being a clean fuel, producing little carbon dioxide and almost no other pollutants, but does the flue gas analyzer show the “green jacket” to be justified? Natural gas consists primarily of methane and hence has a high proportion of hydrogen atoms to carbon atoms. For this reason, the ratio of carbon dioxide to water will be lower than with other fuels and hence there will be less carbon dioxide produced per heating unit than with other materials. This causes a problem for the flue gas analyzer, since the sample will contain more condensate than is the case from other burners. This condensate must be removed from the flue gas analyzer system to prevent damage to the sensors. The high temperatures used to burn gas without producing significant carbon monoxide lead, regrettably, to an increase in production of  $\text{NO}_x$ . This has become the chief problem with this type of burner system. The flue gas analyser will typically return a carbon monoxide result of around 20 ppm coupled with a  $\text{NO}_x$  value of over 100 ppm.

The other pollutants will be very minimal in most cases, since the gas is generally washed before being piped to the consumer. It is not common to have to measure any other components except carbon monoxide and nitrogen oxides in these burners. A simple flue gas analyzer is sufficient. A soot test will not usually be required. The chief problem here for the flue gas analyzer is simply water. Keep the tests short and empty the water traps afterwards.