

Novatech Controls, 1632 Oxygen Analyser

The Oxygen Deficiency Scale

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The negative oxygen deficiency scale of the Novatech Controls 1632 oxygen analyser is a measure of the amount of oxygen that would be required to bring the combustion back to the perfect balance.

As a result of the burning of the fuel and air in the boiler there is a mixture of gasses. These gasses are mainly –

- Carbon dioxide
- Carbon monoxide
- Oxygen
- Water vapour
- Hydrogen

When a boiler is FUEL RICH there is a balance established between all of these gasses that is dependent on the temperature and the air / fuel ratio before the combustion.

In these conditions the free oxygen will be very small (less than 0.000,000,001 %). A zirconia sensor can measure down to less than 0.000,000,000,000,000,000,000,000,001 %.

If the oxygen, and the temperature of the oxygen sensor are measured, the percentage of oxygen required to bring the combustion back to the perfect balance can be calculated.

This can be very useful in the operation of a power station boiler because it gives the operator a way of recording both –

1. The oxygen level when the boiler is under normal AIR EXCESS conditions
2. How far and for how long the boiler was in FUEL RICH.

Both of these scales are transmitted on one 4-20 mA output channel.

The normal scale will be from –5% (oxygen deficiency) to 10% (air excess), but both ends of the scale can be set in the field.