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## Emissions Monitoring in the Nitric Acid Industries



# Nitric Acid Emissions Monitoring



## High Pressure Applications

The Procal 2000 emissions analyser measures Oxides of Nitrogen for process control purposes, typically upstream of the N<sub>2</sub>O abatement reactor where typical pressures can be as high as 10 barg. The analyser can be supplied in both in-situ and extractive configuration to suit customers' requirements.

### Typical Ranges:

SO <sub>2</sub>	0 - 1000ppm
NO	0 - 300ppm
NO <sub>2</sub>	0 - 1000ppm

## Stack Emissions including Ammonia

Procal 2000 has an integral auto-zero and calibration facility and, in order to meet the requirements of the Nitric Acid process, the system can be supplied with an auto-ranging capability to monitor plant upsets.

The instrument is compliant with international standards and complies with the stringent requirements of Environment Agencies.

### Typical Ranges:

SO <sub>2</sub>	0 - 1000ppm
NO	0 - 300ppm
NO <sub>2</sub>	0 - 1000ppm



## Stack Emissions including Hydrocarbons

Procal 2000 is heated to prevent condensate build-up at low sample temperatures. The heated probe option is especially suited to this application as it efficiently deals with variations in process temperature. It also keeps the probe hot, ensuring immediate availability when the plant is restarted after an outage.

### Typical Ranges:

CO <sub>2</sub>	0-20%
NO	0-1250mg/m3
NO <sub>2</sub>	0-1250mg/m3
N <sub>2</sub> O	0-1.5%

CO	0-1250mg/m3
NO <sub>x</sub>	0-2500mg/m3
CH <sub>4</sub>	0-6000mg/m3

## Hazardous Areas

For Hazardous Area locations associated with high Methane levels, Procal 2000 can be supplied with ATEX / IEC approvals including accessories suitable for installation in such areas. For example, steam-heated probes and bypasses ensure that the sample temperature is maintained above the acid dew point. These in-situ analysers are designed to provide high levels of reliability meeting Environmental Agency's requirements for monitoring Availability.

### Typical Ranges:

H <sub>2</sub> O	0 - 5%
NO	0 - 500ppm
NO <sub>2</sub>	0 - 250ppm
NH <sub>3</sub>	0 - 200ppm
CH <sub>4</sub>	0 - 200ppm

The Procal 1000 controller has a capability to control up to six analysers and includes data logging and reporting



## Parker Procal

Hydraulic Filter Division Europe  
Emission Monitoring Centre  
5 Maxwell Road Peterborough PE2 7HU  
United Kingdom  
Tel: +44 (0)1733 232495  
Fax: +44 (0)1733 235255  
Email: [procal@parker.com](mailto:procal@parker.com)  
Web: [www.procal.com](http://www.procal.com) [www.parker.com](http://www.parker.com)

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