

# **PROCAL**

## **MARITIME EMISSION Monitoring Analysers**

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European  
EN14181  
QAL 3  
Compliant

US EPA  
40 CFR  
Part 60&75  
Compliant



# Maritime Emission Monitoring

Use in conjunction with data sheet 7-4670 - (Pulsi 200 CEM System)

The Council Directive 1999/32/EC has been amended by 2005/33/EC to include Sulphur emissions from international shipping for all types of marine fuel. They state a requirement for measurement of SO<sub>2</sub> so that emissions from Exhaust Gas Cleaning Systems on a ship can be shown to be within acceptable limits.

Procal have a wealth of experience in the design and supply of systems to monitor emissions from diesel engines. The Pulsi 200 In-Situ infra red analyser, MCERTS approved for Large Combustion Plants and Waste Incinerators, is well proven for providing measurements at the levels required. The equipment is designed for the continuous emission monitoring of large diesel engines both fixed and onboard ship. The analysers have undergone extensive physical disturbance testing, including vibrations laid out in IEC 68-1/2 (BSEN 60068)

## Analyser

The analyser operates on the single beam dual wavelength infra-red principle where pulses of two specific wavelengths are sent through the sample cell of the stack mounted analyser. A total of 8 wavelengths are available, which allows up to six (6) gas phase concentrations to be measured simultaneously. (eg. NO, SO<sub>2</sub>, CO, CO<sub>2</sub>, H<sub>2</sub>O)

## Auto Verification Unit

The Analyser controls the AUTO VERIFICATION UNIT (AVU), on command from the ANALYSER CONTROL UNIT (ACU), the AVU will initiate a zero check on the system by filling the sample probe with zero gas, typically clean, dry instrument air. The ACU also initiates the span check filling the sample probe with certified span gas.

## Typical Maritime System

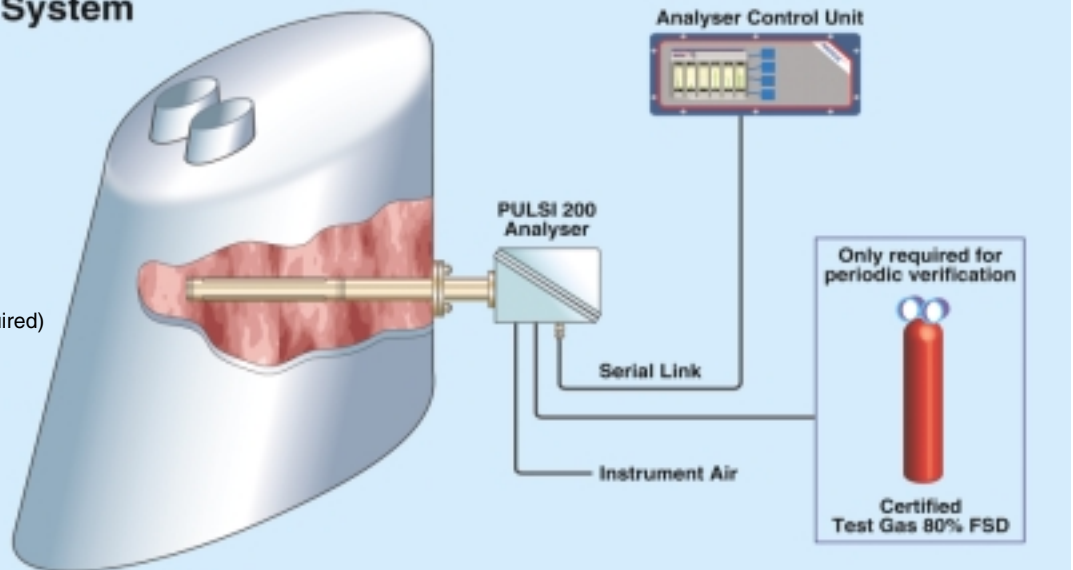
### Typical Ranges

SO<sub>2</sub> 0-1000ppm  
CO<sub>2</sub> 0-10%  
O<sub>2</sub> 0-21% (input required)

### Additional Ranges

NO 0-1500ppm  
CO 0-200ppm

\*Lower Ranges Available



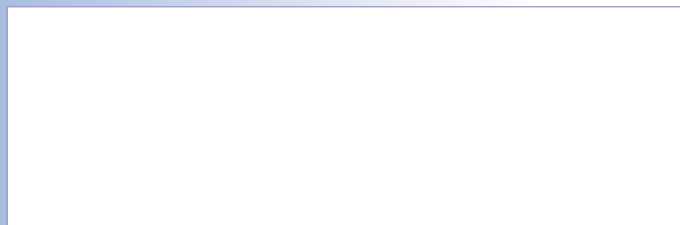
Optional GPS location stamp on data logged emission concentration.

This rugged system is ideal for long periods of unattended operation, it is recommended that annual checks are carried out on the analyser. The In-Situ cell incorporates sample Temperature and Pressure measurements enabling automatic compensation for fluctuations in these parameters. The system is designed for low maintenance and low cost of ownership, typical life of IR source and motor is four years. Procal offer both training and maintenance agreements including annual calibration certificates.

## Continuous Emissions Monitoring

CEM - EUROPE Large Combustion Plant Directive / Waste Incineration Directive and US EPA 40 CFR part 60 and 75 compliant.

The Pulsi 200 is a truly verifiable CEM system designed to meet the requirements of both customers and Environmental Authorities worldwide. The system enables rapid upgrades should the regulatory needs be revised at any time.



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