

## SCOPE OF WORK AND TECHNICAL EVALUATION

The following tasks will be done as part of the order:

### 1. Scope of Work

#### Scope of work/supply

Maintenance of the currently installed gas monitoring system in the Oil, Coal, Water and Microbiology Laboratories is required for a period of five years. The gas monitoring system includes the following hardware components:

- 2 x 3G Smartoo V4 GSM Modems
- 4 x 4 Smartoo Expansions units
- Control panel with alarms
- Electrical enclosure
- 24V DC power supply and battery pack
- Oxygen gas detectors
- Pressure sensors (0-250 bar)
- Flat screen monitor (wall-mounted)

The software used is the custom scripted Tru Talk V5 04 and the system can be monitored remotely via the Kronos Monitoring website.

The maintenance of the gas monitoring system must include:

- Inspections/checks as and when required
- Calibration as and when required
- Replacement as and when required

The currently installed gas monitoring system measures and monitors the oxygen levels in the laboratories and the pressure of multiple gases required to operate laboratory instruments.

The oxygen levels are monitored by measuring the active signal (4-20 mA) from the oxygen gas detector. In the case of oxygen depletion, the control panel then raises an alarm; as well as an indicator light on the control panel as a warning.

The locations of the oxygen alarms are tabulated as follows:

No.	Location of Oxygen Alarm
1	Transformer 1 Laboratory
2	Transformer 2 Laboratory
3	Lubes Laboratory
4	Fuel Oil Laboratory
5	Oil Research Laboratory
6	Proximate Laboratory
7	Ultimate and Fluxing Laboratory
8	XRF Laboratory
9	Metal Prep Laboratory
10	Instrument Laboratory
11	Microbiology Laboratory
12	Clean Laboratory
13	Project Laboratory
14	ICP Laboratory

Oxygen gas detectors need to be calibrated in line with manufacturing specifications once a year and the sensor needs replacement once in three years (due to a three-year lifespan) to ensure reliability.

## REVISED SCOPE OF WORK & TECHNICAL CRITERIA

### Maintenance of gas alarm system

Similarly, the pressures in the gas supply lines of multiple gases are monitored by measuring the active signal (4-20 mA) from the pressure transmitter. In the case of low pressure in the gas supply line, the control panel then raises an alarm; as well as an indicator light on the control panel as a warning.

The gas type for the low pressure gas alarms are tabulated as follows:

Gas Type		
Oil Ground Floor: West	Coal Ground Floor: East	Water & Microbiology: First Floor
Argon	Helium	Argon
Helium	Medical Oxygen	Helium
Hydrogen	Nitrogen	Nitrogen
Mixed Gas	Mixed Gas	Mixed Gas
Synthetic Air	Pure Oxygen	Synthetic Air
Medical Oxygen	Synthetic Air	LPG
Nitrogen	P 10	
P 10		

Gas pressure transmitters need to be calibrated in line with manufacturing specifications once a year to ensure reliability. The pressure transmitters need replacement only in the case of failure.

The 24 V DC power supply battery pack needs replacement once a year with a general system requiring a check once a year.

## 2. Specification of Product or Goods

The gas monitoring system includes the following hardware components:

- 2 x 3G Smartoo V4 GSM Modems
- 4 x 4 Smartoo Expansions Units
- Control panel with alarms
- Electrical enclosure
- 24V DC power supply and battery pack
- Oxygen gas detectors
- Pressure sensors (0-250 bar)
- Flat screen monitor (wall-mounted)

The software used is the custom scripted Tru Talk V5 04 and the system can be monitored remotely via the Kronos Monitoring website.

The currently installed gas monitoring system measures and monitors the oxygen levels in the laboratories and the pressure of multiple gases required to operate laboratory instruments.

The oxygen levels are monitored by measuring the active signal (4-20 mA) from the oxygen gas detector. In the case of oxygen depletion, the control panel then raises an alarm; as well as an indicator light on the control panel as a warning. Oxygen gas detectors need to be calibrated in line with manufacturing specifications once a year and the sensor needs replacement once in three years (due to a three-year lifespan) to ensure reliability.

Similarly, the pressures in the gas supply lines of multiple gases are monitored by measuring the active signal (4-20 mA) from the pressure transmitter. In the case of low pressure in the gas supply line, the control panel then raises an alarm; as well as an indicator light on the control panel as a warning. Gas pressure transmitters need to be calibrated in line with manufacturing specifications once a year to ensure reliability. The pressure transmitters need replacement only in the case of failure.

The 24 V DC power supply battery pack needs replacement once a year with a general system requiring a check once a year.

## REVISED SCOPE OF WORK & TECHNICAL CRITERIA

### Maintenance of gas alarm system

A summary of the maintenance required is tabulated as follows:

Description	Quantity
Inspection and service of Smartoo gas alarm panel, software and hardware check, power supply and battery replacement	1
Oxygen sensor cartridge replacement and calibration	14
Pressure sensor calibration	2
Website telemetry scripting, programming and set-up	1
Screen set-up and commissioning to display gas status	1
Telemetry software and license monitoring fee	1

### 3. The technical criteria to be used for evaluation is tabulated as follows:

Criteria Number	Technical Criteria Description	Total Score [%]	Range	Score %
1	Experience: Evidence of previous similar work performed in the last five years Submit minimum of three projects- (Purchase orders or contracts or task orders)	25	Three relevant projects submitted	25
			Two relevant projects submitted	10
			One relevant project submitted	5
			No relevant project	0
2	Competency: Provide training/ competency certificate on installation of oxygen sensors and gas alarm system. (CV and certificates)	20	CV and training on installation and maintenance of gas systems	20
			CV only	5
			No Cv	0
3	Proposal on how the calibration, replacement and maintenance of oxygen sensors and gas system will be carried out.	20	Detailed Proposal addressing all activities	20
			Proposal addressing only two activities	10
			Proposal addressing only one activity	5
			No proposal	0
4	Turnaround time of 48 hrs after the PO has been issued	20	Turnaround time: 48 hours	20
			Turnaround time: 49-72 hours	10
			Turnaround time: > 72hrs	0
5	References: Supplier to provide 3 references from customers where similar work was done with contact details – Name and contact numbers)	15	3 letters with contact details	15
			2 letters with contact details	10
			No Letter	0
6	Total	100%		
7	Threshold			75%

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