

SYSTEM DESCRIPTION SFY GAS DETECTION SYSTEM	Respons. dept GPMA	Date 2004-02-05	Reg. M DB 101
	Prepared Roger Jonsson		YAMAMA CEMENT

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Purpose of the system

The gas detection system is designed to detect a gas fuel leakage, to give an alarm at high level and to shut down the gas turbine at high-high level.

General description of the system

Please also see P&ID 2046 035.

Gas detectors in the outlet ventilation duct from the gas generator room senses the gas concentration in the air.

High gas concentration gives alarm and high-high gas concentration gives trip of the gas turbine.

High gas level: 10% LEL

High- high gas level: 25% LEL

The central unit has on/off switches, light emitting diodes for alarm and failure.

The line unit is also used for calibration purpose.

The central unit has on-off switches, light emitting diodes alarm and failure.

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Main components

- Gas detectors

SFY10CQ005

SFY10CQ010

The detectors are installed in the outlet ventilation ducts from the gas generator room.

Detectors are of ex-proof design for use in hazardous area zone 1.

Protection category IP65

- Central gas detection unit

The detection units are installed inside the fire cabinet. There is one detection unit for each gas detector.

The detection units are able to give following digital signals to SIEMENS supervision system.

Signals given:

- Warning, high gas level (H1) - Common signal for SFY10CQ005/CQ010.
- Alarm, high-high gas level (H2) - Common signal for SFY10CQ005/CQ010.
- Gas detection fault - Common signal for gas detectors installed on gas turbine.

The L.E.L for each detector can be displayed locally at the detection units.

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Function

Operation of the system is fully automatic.

Start up

The system automatically detects gas fuel leakage as long as it is not shut down at the central unit in the control room.

Continuous operation

During continuous operation the system automatically detects gas fuel leakage as long as it is not shut down at the central unit in the control room.

Turbine stop

During shut down of the gas turbine, the system can be in normal operation or shut down.

Stand still

When the gas turbine is not in operation, the system can be in normal operation or shut down.

After shut down of the gas turbine, the detectors can be calibrated.

Disturbances

Gas turbine trip

Does not affect the system.

Generator trip

Does not affect the system

Loss of power supply

The central control unit is powered from the 24 VDC battery back up.

System faults

Detector faults will give a fault signal to the control and supervision system.

Other faults

Fault in connecting systems:

No systems are connected to the gas detection system.

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Technical specification

Dimensioning data

The gas detectors are explosion proof for use in hazardous area zone 1.

Engineering data

Ambient data:

Temperature inside gas generator room:

Max. temp. 150 °C

Min. temp. -5 °C

Max. temp. at floor level 75 °C

Outdoor temperature:

Max. temp. 55 °C

Min. temp. -5 °C

Emergency power supply

The central control unit is powered from the 24 VDC battery back up.

Installation

Two detectors are as normal execution installed in the:

- outlet ventilation duct from the gas generator room.

The control unit is installed in the control room.

Component data

See the system lists.

Testing and service

Testing during normal operation

No function test is possible during normal operation.

Accessibility during normal operation

The detectors are not accessible during normal operation.

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SFY10CQ005

Gas detector, Ventilation Outlet Gas Generator Room2
SFY10CQ010
Gas detector, Ventilation Outlet Gas Generator Room2

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