Sampling Systems

The alternative to fixed point detectors

Single Point
Programmable
Air Aspirated
Transportable

CROWCON

Gas Detection You Can Trust

Sampling Systems

It is often the case that gas monitoring needs to take place in conditions unsuitable for a fixed point gas detector.

Crowcon offers our Sampling System range as the ideal solution.

Extreme conditions monitoring

The sampling system approach is **ideal for extreme environment conditions** such as:

- **Extreme humidity**, as found in digestor monitoring.
- **Dusty atmospheres**, for example in pulverised coal silos.
- Hot/cold.
- Wet/desiccating.
- High/low flow.

Easy maintenance

There is a much **reduced number of gas detectors** as they are central to the control panel. So:

- No cherry pickers or scaffolding is required to reach them.
- One man calibration.
- No two way radios are needed.
- No confined spaces entry.

Maintenance functions can be operated remotely via a PC.

Reduced cost

Lower capital cost due to the reduced number of detectors.

Lower installation cost as tubing is easier and cheaper to install than cable.

Lower Cost of Ownership because of the ease of maintenance as demonstrated above.

Flexibility

The number of **sampling points and the sampling order can be easily altered** to meet changing needs.

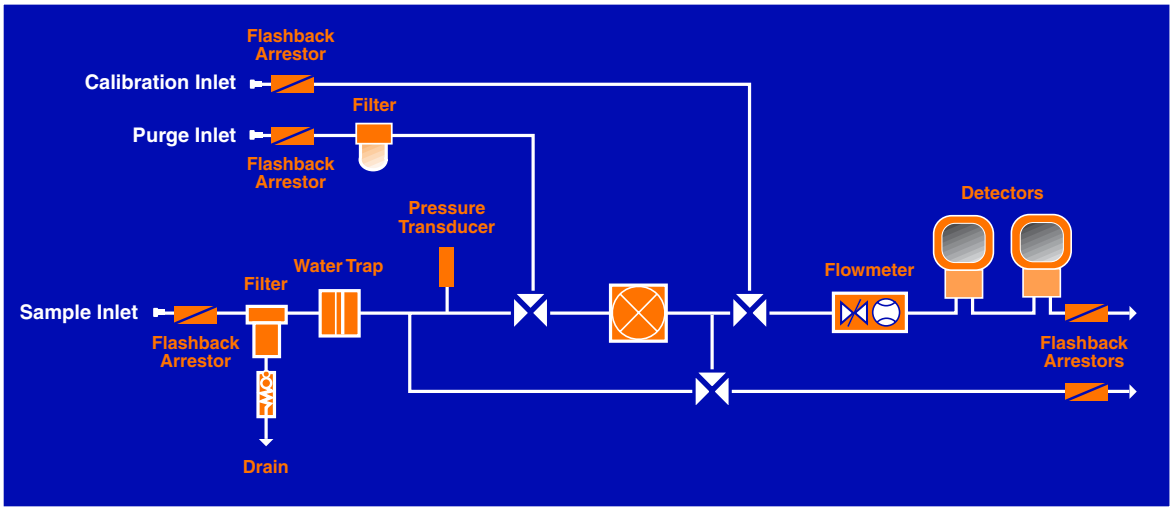
Serial outputs can be routed to an existing Building Management system.

Remote access & data transfer via a Modem, and remote dial out alarm function allows prompt hazard response.

The four configurations of Sampling Systems cover a wide range of applications, and are outlined on the following pages.

Single Point Sampling Systems

A sample of the gas is drawn from the monitoring area, passed through a series of conditioning components, including water and particulate filters. The sample is passed over up to three detectors, so you can detect the presence of up to three gases. A simple schematic is shown below:



The system itself is self contained and simple to install. It is safe to use when sampling flammable gasses due to the inline flashback arrestors and internal cabinet gas monitoring.

The inherent controller is the tried and tested Gasmaster, which provides DPCO output relays, both for common and individual detector outputs.

Single Point Sampling System Case Study

Coal Gas

There exists an emerging industry for recovering Coal Mines Methane (CMM) from abandoned coal mines. Post closure gas with a composition of 70% methane, desorbs from the coal. This can then be used in a gas utilisation scheme to fuel an industrial process or generate electricity.

A Single Point Sample System can be utilised to measure the methane, (a measure of gas quality), Oxygen, (normally present at very low levels, increased levels indicating a leaking system or an increased explosive hazard), Carbon Monoxide (early warning of an underground fire).

Infrared methane readings can be exaggerated by low levels of ethane that may be present. Bill Tonsk of Coal Gas says "***Crowcon researched the problem and produced an innovative and cost effective solution. We appreciated their commitment to meeting our application needs***".

Sampling Systems

Programmable Gas Sampling Systems

Where a number of detection points need to be monitored the Programmable system comes into its own. It can accommodate up to 32 sample inlets, and a maximum of 8 detectors, which can be a mixture of pellistor, electrochemical or infrared devices.

An industrial PC controls the sampling sequence, actuates alarm and fault conditions and provides graphical format gas level information.

Each sample point can be cycled in turn or more frequent sampling can occur for designated critical locations. As the unit is controlled by an embedded PC, each point of detection can have unique parameters.

There are two fundamental types of programmable sampling system:

PGS32[1] - Environmental Monitoring
For applications where long term trends in gas levels is required. Borehole monitoring is one such example.

PGS32[2] - Safety Monitoring
For where the gas response time is important. Such as building and property protection. An additional 'back up' pump is used to ensure that each sampling cycle draws a fresh sample of gas.

Programmable Gas Sampling System Case Study

Guildford Borough Council - Slyfield Industrial Estate

In 1980 the above development was extended onto a capped landfill site which had been lying dormant since 1974. The area was monitored monthly using portable equipment and it was regularly noted that traces of methane gas were present. In order to control the problem, Sampling Systems were installed in 1997, to monitor methane levels within existing buildings, with built in capacity for additional buildings as the development expanded.

"The Crowcon Programmable Sampling System was quick and easy to install; there were no problems with unsightly cabling, just HDPE tubing, and the sample runs of over 800m were well within the system's capabilities. The feedback and service response I received is excellent, as the expertise, equipment and software is all in house at Crowcon."

NEVIL TRUE, ENGINEER, GUILDFORD BOROUGH COUNCIL

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Air Aspirated Sampling Systems

These systems are air line fed, with no internal pump, so are ideal for hazardous area mounting.
The unit interfaces to a remote control panel, be it Crowcon or any other.

Aspirator systems are extremely reliable in operation and virtually maintenance free.

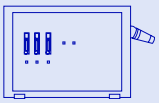
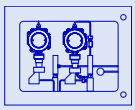
The size of these systems range from a single detector (such as the one opposite) to 5 channels.

Transportable Sampling Systems

Developed for the Water industry, a unit was required that could continuously monitor hydrogen sulphide levels, moving from one site to the next with the minimum of fuss. This unit was designed for Severn Trent Water and Anglian Water as a Multi powered system with a battery capacity of one week, as well as a mains input. This is enough sampling time to establish whether odour removing equipment is working effectively, or to establish a trend/cycle in gas concentrations.

The system is designed to monitor hydrogen sulphide from three different locations at different concentrations simultaneously. For example, these could be the inlet, intermediate and output levels of a scrubbing system.

The detection levels are connected to an internal logger, which can be accessed by computer on site, or removed for downloading at an office.

				
Model	**SGS01**	**PGS32**[1]	**Transportable**	**Air Aspirator**
No. of sample points	1	32 maximum	1	1-5
No. of gas detectors	3	8	4	1-5
Relay outputs	•	•	•	•
Analogue outputs	•	•	•	•
Datalogging			•	
Serial outputs			•	
STN (telephone line) access			•	
Hazardous area mounting				•
Will accept IR detector	•	•	•	•
Flow failure alarm	•	•	•	•
Cabinet safety monitor	•	•	n/a	n/a
Temperature controlled cabinet	•	•		
Auto drain of filters	•	•		
Microprocessor control		•		
Local display	•	•	•	
Sample line (10mmOD, 8mmID)	•	•	•	
Sampling system operating temperature range	10° to 25°C	10° to 25°C	10° to 25°C	-20° to 65°C
Typical sampling temperature range[1]	-40° to 200°C	-40° to 200°C	-40° to 200°C	-20° to 500°C
Typical Applications				
Water industry:				
Scrubber	•			
Odour	•		•	
Digester	•		•	
Power generation	•			•
Chemical dosing store	•			
Landfill sites:				
Perimeter borehole		•		
Production well		•		
Flare (including flame out)	•	•		
Building protection		•		
Power generation	•	•		
Automotive paint spray booths	•			•
Air conditioning ductwork				
Gas turbines	•	•		•
Offshore				•

[1] Actual temperature range is dependent on sample conditioning. Wider ranges for specialist applications, please enquire for details.

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