



Gas detection sampling systems for use in a wide range of applications including the Printing and Coating Industry

Gas Detection Sampling Systems



Custom Designed Solutions for use Throughout Industry

- Using a wide range of Honeywell Analytics' sensors
- Petrochemical
- Wastewater
- Industrial Manufacturing
- Contact Honeywell Analytics to discuss your application



Standard Solvent Monitoring Systems

- Using Searchpoint Optima Plus
- Proven to reduce costs and maximise profits
- Increased safety
- Compliance with legislation
- Single redundancy
- Venturi or pumped sampling
- Different solvent calibration types third party approved to EN60079-29-1
- Contact Honeywell Analytics for other solvents/mixes



Honeywell Analytics has over 50 years experience in the design, manufacture and installation of gas sampling systems throughout the world in a wide range of applications. Sampling systems are particularly useful when detection of flammable or toxic gases cannot be done by simply locating a detector in the required area. Factors preventing this may include physical location, temperature, humidity, dust, air flow and corrosive environments. A sampling system can be used to precondition a gas sample to enable accurate detection in both safety and process control type applications.

Our customer support teams are able to discuss in detail the requirements of even the most demanding applications, ensuring we supply solutions that deliver the required safety and performance.

In addition to custom built solutions, Honeywell Analytics have developed a range of standard sampling systems that utilise Searchpoint Optima Plus infra red point detectors for the detection of solvents in the printing and coating industries. By continually and accurately monitoring the levels of solvents in the atmosphere of a printing or coating machine, the process can be safely controlled enabling throughput to be maximised. Several thousand of these systems are already installed in major printing and coating manufacturing facilities ensuring safety while reducing costs and maximising profits.



Typical Applications and Solvents



Typical Applications and Solvents

Printed materials are around us in many different forms; newspapers, product packaging, film processing, video/audio tape production, food and groceries. Solvents are used in the manufacture of printing inks, varnishes and other materials to be deposited. The presses used are not limited to ink printing and also find uses in other industries such as pharmaceutical to deposit anaesthetic on a bandage for example. Solvents are both toxic and flammable. Ovens or dryers are used to remove the solvents from the finished products. During the drying process, solvent levels must be monitored and maintained below internationally recognised standards and regulations.

The design specification for safe operation is defined in safety codes. These limit the solvent concentration to 25% LEL under worst case operation unless a detector is employed when that limit is raised to 50% LEL, thereby improving process efficiency.

The hazardous nature of the process is typified by the close proximity of potentially explosive gases (i.e. vaporized solvents such as Acetone, Methanol, Ethanol, Ethyl Acetate etc) with ignition sources (drying oven surfaces or overheated bearings) and combustible materials (e.g. paper) in large volumes. The potential for catastrophic failures of plant is high with a high risk to human life due to their close proximity in working.

| Typical Applications and Solvents | | |
|---------------------------------------|--------------|-----------------------------------------------------------|
| Printing (packaging) | 80% of print | Ethanol/Ethyl Acetate 1:1 |
| Printing (catalogue) | 10% of print | Propanol/Butanol 1:2 |
| Printing (newspapers and other) | 10% of print | Toluene Acetone Hexane |
| Coatings / Conversion | | Acetone Hexane Toluene Xylene MEK Methanol |
| Other (cleaning, manufacturing, etc.) | | Toluene Plus the above |

The Advantage of Continuous Monitoring

The European Standard EN1539 also shows that dryers that meet the fundamental safety requirements defined and monitor the concentration of flammable substances can operate with increased flammable concentrations of up to 50%LEL. This means that an operator who has installed a continuous vapour monitoring system can reduce the ventilation rates and thereby also reduce his costs. Reduced ventilation rates can also provide large savings by reduction in size and therefore cost of the VOC cleaning system or allow multiple processes to use the same cleaning system.

Alternatively, the higher allowable vapour concentrations allow the operator to increase the throughput of product in the process, which increases productivity or can reduce product lead times.

Most importantly, the safety of a continuously monitored system is far greater. If a failure occurs in the process that causes the concentration to rise above the defined safe levels the system will immediately alert the operator and the process can be safely shut down.



Sensor and Sampling System Selection Guides



Sensor Selection Guide

Honeywell Analytics utilise its market leading Searchpoint Optima Plus Infrared gas detector as the sensor in the heart of its solvent gas sampling systems. Searchpoint Optima Plus has proven its unrivalled performance in the harshest of conditions worldwide with sales in well in excess of 30,000 units. Searchpoint Optima Plus's high speed of response and ability to be accurately calibrated for the detection of different solvents and solvent mixes, makes it the ideally suited to solvent monitoring in sampling systems.

Three different configurations of Searchpoint Optima Plus are available to suit the requirements of different solvent monitoring applications.

Contact Honeywell Analytics for further guidance on sensor selection for your application.

| Sensor | When Used | Note | Check List |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------|
| Optima Plus | When the constitution of the solvent gas mix is known. Correct calibration band can then be decided. Computers/PLCs can be used to switch between calibrations for different processes. | Can also be used as an area detector. | <input type="checkbox"/> |
| Optima X | When highest speed of response is required to open and shut the ventilation flaps. Unit is calibrated to Propane and relative response to solvent gas mixture is calculated. Control cards or PLCs can be used to switch between different gain factors for different processes. | Only for use in sampling systems. | <input type="checkbox"/> |
| Optima Z | Calibrated to Propane with a linear response to Ethanol, Ethyl Acetate, Isopropanol, Butanol, Toluene, Acetone and Hexane. Therefore switching calibrations or gain settings for different processes is not required. | Can also be used as an area detector. | <input type="checkbox"/> |

Sampling System Selection Guide

Many factors can affect the choice of sampling system for a particular application. Our experience has allowed us to develop a standard range of compact single and dual channel sampling systems, suitable for use in the printing and coating industry.

To find the correct part number for a sampling system that suits your application requirements, simply select the options you require from those listed below. Contact Honeywell Analytics for further assistance.

Series or parallel sensor configuration?

Standard single channel systems have a serial sensor configuration Standard dual channel systems have a parallel sensor configuration

Single or dual channel sampling points?

Dual Channel **Single Channel**

| | |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Redundant system EN1539 – flap control Takes up less space than 2 separate single channel | Non-redundant unless multiple systems Cheaper for single point Higher cost as requires 2 systems to meet EN1539 |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|

Notes:
 1. For shut-down only require single channel.
 2. 2 channel or more can cover multiple points more cost effectively for shut-down (not control); but need to match sample tube lengths to achieve similar response times.
 3. For Europe, to control flaps EN1539 mandates redundant system; hence two points per print machine.
 4. For dual systems we need to keep sampling pipes of similar length to achieve same response times between channels.

Single or dual sensor?

A single sensor can be used for shut down Two sensors are required for flap control

Enclosure or plate mounting?

The system can be plate or cabinet mounted Use a cabinet in 'dirty' environments

Injector or pump aspirated?

Injector **Pump**

| | |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Needs compressed air supply Lower maintenance Lower purchase price Physically smaller | No need for compressed air supply More flow creates fast loop and hence faster response time |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|

Notes:
 1. Use pumped when there is no compressed air available
 2. Supply of compressed air has cost implications to produce the compressed air and to process the increased solvent output from the sampling systems.



Our Product Range



Fixed Gas Monitoring

Honeywell Analytics offers a wide range of fixed gas detection solutions for a diverse array of industries and applications including: Commercial properties, industrial applications, semiconductor manufacturers, energy plants and petrochemical sites.

- » Detection of flammable, oxygen and toxic gases (including exotics)
- » Innovative use of 4 core sensing technologies – paper tape, electrochemical cell, catalytic bead and infrared
- » Capability to detect down to Parts Per Billion (ppb) or Percent by Volume (%v/v)
- » Cost effective regulatory compliance solutions

Portable Gas Monitoring

When it comes to personal protection from gas hazards, Honeywell Analytics has a wide range of reliable solutions ideally suited for use in confined or enclosed spaces.

These include:

- » Detection of flammable, oxygen and toxic gases
- » Single gas personal monitors – worn by the individual
- » Multi-gas portable gas monitors – used for confined space entry and regulatory compliance
- » Multi-gas transportable monitors – used for temporary protection of area during site construction and maintenance activities

Technical Services

At Honeywell Analytics, we believe in the value of great service and customer care. Our key commitment is providing complete and total customer satisfaction. Here are just a few of the services we can offer:

- » Full technical support
- » Expert team on hand to answer questions and queries
- » Fully equipped workshops to ensure quick turnaround on repairs
- » Comprehensive service engineer network
- » Training on product use and maintenance
- » Mobile calibration service
- » Customised programmes of preventative/corrective maintenance
- » Extended warranties on products

Find out more

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