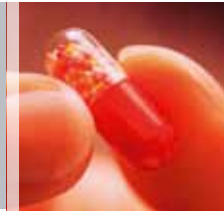


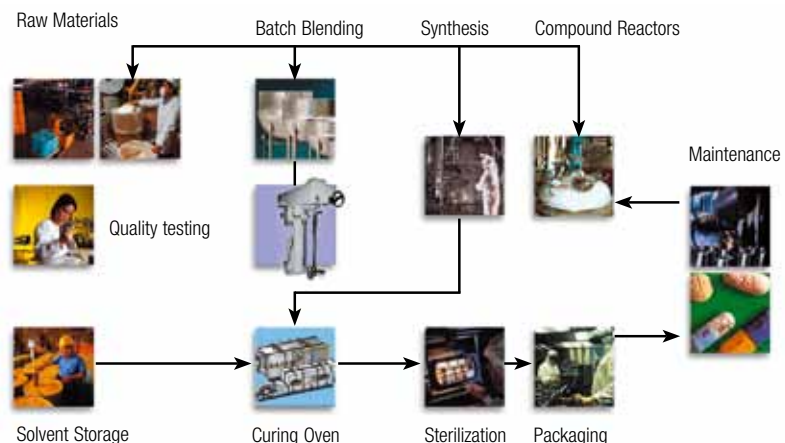


Pharmaceutical

Pharmaceutical



Pharmaceutical Production, whether continuous or batch, uses a variety of toxic and combustible materials in certain applications. Not all gases or solvents will be used in each process, but the general categories include Amines, Ammonia, Carbon Monoxide, Carbon Dioxide, various Halogens and Chlorides, Hydrogen Peroxide, Hydrogen Sulfide, sometimes other toxics including Hydrogen Cyanide and phosgene, and a variety of solvents. There are reportedly 22,000 pharmaceutical plants in the world. There are huge development costs associated with pharmaceutical products. Streamlining of production processes and improved efficiencies ensure swift payback of investment.



Market Drivers

Plant and equipment represent a significant investment. Maximising production throughput (product / hour) will reduce the payback period and maximise profits.

Emissions of solvents used within the production process (e.g. Ethanol, Butanone, MEK, Ethylacetate, Benzene and Xylene) must be minimised to meet latest international regulations on emissions. This requires significant investment in solvent reclamation equipment which must be protected.

By streamlining the production process, maximising throughput and working within required safety standards, capital investment may be recouped more quickly. The use of gas detection equipment to monitor solvent emissions during operation allows this to take place.

Every manufacturer has a duty of care to its workers. Local health and safety guidelines dictate safe working practices for personnel in connection with toxic substances. Failure to meet these minimum requirements exposes the operator to the risk of litigation.

In addition, the use of continuous flammable gas monitoring will reduce insurance premiums further while ensuring safety levels are maintained.

Potential Applications



Application 1:

Bulk Storage and Preparation

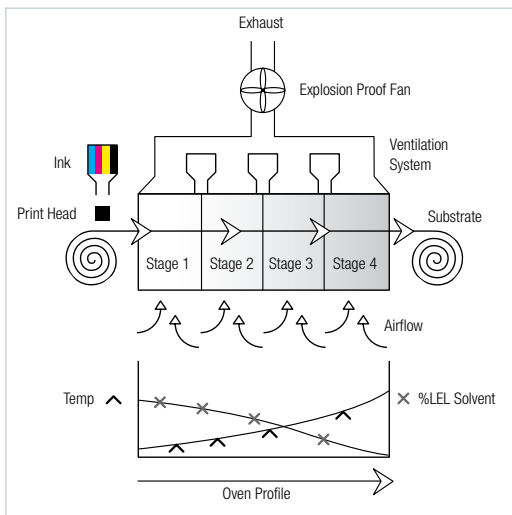
Solvents are both flammable and toxic. Bulk storage and preparation areas for production processes must be monitored for the build up of explosive atmospheres and dangers to personal health. Local fire regulations, as well as health and safety guidelines, must be followed. Typical equipment required will include infrared flammable gas detectors (point and open path) as well as flame and conventional smoke fire detectors.

Application 2:

Dryer and Oven Monitoring

EN1539 specifically addresses safety requirements in which flammable substances are released from coating processes and drying ovens. Two types of dryers are defined; Type A operates on the principle of diluting the flammable atmosphere, while Type B inert the atmosphere so that there is insufficient oxygen to support combustion. The majority of applications utilise Type A. Diagram 1 details a typical drying oven. As the printed material passes through the various stages of the dryer, solvent is evaporated through forced air ventilation and increasing temperature. The temperature profile is such that the solvent level is always maintained below pre-set limits that ensure an explosion cannot occur. By balancing the speed through which the printed material passes through the oven, the temperature profile and monitoring the gas level, throughput is maximised, minimising production costs. Drying ovens may change in configuration depending upon the product being manufactured. However, the fundamental principles described above still apply.

Diagram 1 Type A Drying Oven



Application 3:

Exhaust Monitoring

Forced air ventilation is used to carry the evaporated solvents away from the drying oven. Explosion proof fans are used and the solvent is recycled in the vapour recovery plant or exhausted to atmosphere (subject to local environmental pollution conditions). Solvent levels in the ducts may be monitored using a duct mounted Searchline Excel or duct mounted Optima Plus as an indication that solvent levels within the process are within acceptable limits, as a secondary precaution. Areas where ventilation, or vapour recovery equipment are housed should also be installed with flammable gas detectors to mitigate the risk from leaks in the process.

Application 4:

Chemical Compounding & Synthesis

Drugs contain complex chemical compounds that do not naturally occur in large volumes and so must be "manufactured". The manufacture of these chemicals requires solvents and other toxic compounds to be processed under increased temperature, pressure and humidity. The reactions that take place further produce toxic bi-products and hazardous gaseous compounds that represent explosive hazards and danger to personnel through inhalation. Gas detection equipment will allow local health and safety guidelines regarding personnel safety to be met, while also minimising the risk of flammable gas hazards and the loss of production due to an explosion. Hazards include Ammonia, Amines, Phenols, Benzene based compounds and gases.

Application 5:

Sterilisation

Equipment used in the manufacturing process or source materials used in the production of pharmaceutical products must be sterilised. This may be achieved through heat, radiation or exposure to aggressive cleansing agents. Such agents include Hydrogen Peroxide, Ethylene Oxide and Ozone. These gases and liquids are highly flammable or unstable and readily break down to further dangerous compounds. For example, Ozone is toxic but readily breaks down in the atmosphere to Oxygen. If left unchecked this could result in an Oxygen enriched environment which in turn increases the flammability of every day objects and, hence, the risk of fire. Environments where the sterilising agents are stored or used should be monitored for the source material as well as any potential bi-products of their use.

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

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