Table II

Industries Using Honeycat® Systems

Paper printing and coating
Metal decorating and printing
Food processing
Food frying
Animal rendering
Coil coating
Wood and board printing
Carpet manufacture
Tobacco drying
Organic chemical manufacture

or nitrogen oxides in oxygen deficient atmospheres. Industries currently using Honeycat® systems are listed in Table II.

Honeycat® Technology Applied to the Printing Industry

Printing is one specific industry which has benefited considerably from the use of catalytic incineration systems. The web-offset printing process uses solvent-based inks in large quantities. Once the inks have been applied to the paper all of the solvent is driven off in the print drier, with the result that heavily solvent-laden air is exhausted from the process. Increasingly planning or environmental protection authorities are placing restrictions upon the emissions that can be discharged from an industrial process. These regulations vary in different locations, but typical emission levels require catalyst efficiencies ranging from 95 per cent to greater than 99 per cent removal of the volatile organic compounds for many thousands of plant operating hours.

One of Europe's largest printing companies, Jarrold Printing of Norwich, England, specialising in the printing and binding of high quality magazines, catalogues and books has now installed its third Honeycat® system to treat the exhaust gases from print drying units. Jarrold installed its first Honeycat® system in 1985 following a successful on-site demonstration using a mobile Pilot Plant Unit (1). The trial was witnessed by members of the Norwich Environmental Department who expressed their satisfaction with the results.

The Honeycat® system was designed with a primary heat exchanger to preheat the incoming process gases, thus reducing the energy input requirement. Depending on the process conditions and solvent loadings the requirement for additional energy may be eliminated. Indeed, the temperature rise of around 80°C across the catalyst justified the installation of a secondary heat exchanger to provide hot water for factory heating. With the recent commissioning of the third Honeycat® system at least 50 per cent of the thermal energy needed to heat the factory in the coldest part of winter will be available, thus significantly reducing costs while controlling exhaust pollution.

There are now seventeen Honeycat® systems, designed and engineered by Johnson Matthey to comply with the local pollution regulations, operating on printing processes. These form part of over two hundred Honeycat® installations controlling the emission of volatile organic compounds from a vast range of industries throughout Europe.

Acknowledgement

Honeycat® is a Registered Trade Name of Johnson Matthey PLC.

Reference

1 Anon, *Platinum Metals Rev.*, 1987, **31**, (3), 122

Monitoring Combustible Gases

A recent report from Case Western Reserve University, Cleveland, Ohio, describes an experimental study of miniature thick-film calorimetric sensors which show good sensing characteristics for carbon monoxide, hydrogen and hydrocarbon gases. (A. Chen, R. Luo, T.-C. Tan and C.-C. Liu, *Sens. Actuators*, 1989, **19**, (3), 237–248).

A pair of identical platinum heater/resistance thermometer films are employed; one is coated with a platinum black or palladium oxidation catalyst while the other serves as a compensating element. Any resistance change due to heat released on catalysis can be related to the concentration of the combustible gas.