

Draft feature

BLACK GOES GREEN

The specified date for compliance with the Solvent Emission Regulations 2004 was 31st October 2007 and in order to reduce and control emissions of volatile organic compounds (VOCs) Black Teknigas has invested heavily in new equipment, reports Dave Martin. But acting in an environmentally responsible way can also increase competitive advantage.

With environmental issues moving ever higher up the political agenda, companies are clearly changing their working practices to safeguard their employees' health and strictly control emissions into the environment. What they are also acknowledging to an increasing degree is that this investment and a culture of regularly reviewing working practices can add significant value to the onward supply chain if sufficient information is communicated to the market.

St Neots-based Black Teknigas is a manufacturer and supplier of a highly comprehensive range of gas control equipment and the degreasing of both components and finished assemblies are important operations within the production cycle that impact significantly on the process. Where jointing, welding or brazing is involved, the quality of the finished product would not only be compromised by the presence of residual grease but it could also be hazardous in operation.

Over the past decade or so manufacturing industry has sought to comply with its legal responsibilities with regard to VOCs, and the most visible manifestation of this is the elimination of traditional open top degreasing tanks and even troughs of solvents. The practical solutions that were sometimes adopted were less than perfect

and the use of oversized industrial washing machines is a good example. While the cost of the latest specialist equipment to address the problem might be considered a barrier to market entry for some smaller manufacturers, for larger operations it is becoming suitably priced. In fact it has become sufficiently sophisticated not only to make its purchase and operation possible but actually to make a positive contribution to guaranteeing quality of finished output. Nevertheless adoption of this technology is still at an early stage and it is estimated that St Neots is the only facility in the local area to possess such plant.

CLEANING UP

As customers' technical requirements would not allow for the elimination of VOC trichloroethylene to be substituted, a detailed evaluation was conducted to find suitable high tech equipment which would allow Black Teknigas to continue to use the substance while complying with the directive. This detailed evaluation of the available equipment led management to choose a CS300 hermetically-sealed degreaser from Italian company AMA Universal. As a specialist in the field with several decades of experience, the company's surface treatment systems are designed to eliminate different types of potential pollutant, all types of metals and alloys which have been machined with a variety of waxes, oils and emulsified oils. The main characteristic of the machines is the airtight seal of the processing chamber. This, combined with the action of a system of vapour sensors, permits the complete elimination of emissions. There are three steps to the process:

Washing cycle: the system either rotates the basket or the support to facilitate the removal of solid waste and the drying process that follows. This sequential washing method utilises hot-cold-solvent vapour types of solvents which can also allow the possibility of adding an immersion phase (optional) that can eventually be combined with a strong mechanical action (forced water-jet drive, ultrasounds, etc.).

Drying cycle: this is a closed circuit hot air system with condensation of the solvent vapours which is achieved through the use of a low temperature refrigeration unit. The length of the drying cycle varies according to the type of materials processed. The possible vacuum type drying system ensures shorter times and yields the best results when processing items that have hollow spaces, dead holes or that are extremely small. The reduction of the residual concentration is achieved through an active carbon recycling unit, which is regenerated with hot air (also in a closed circuit system).

Recycling: In order to maintain the maximum purity of the washing liquid that comes into contact with the surface of the parts and guarantee consistent results, a water separation process (which removes the humidity present on the parts or that is possibly introduced through the outside each time the door is opened) plus a filtering process (which separates the solid polluting materials) and finally a distilling process (which separates all the polluting materials that are soluble in the solvent and from the liquid used in the process) all come together to ensure that the solvent always remains at levels of peak performance.

BENEFITS

The major benefits of this change is that emissions are reduced by 98% in comparison with the traditional open top systems. Furthermore the cleaning solvent within the machine is reusable making it a highly sustainable as well as an economic method of operation. In fact it is estimated that overall consumption of solvent will be reduced by approximately 80%. All this is fully in line with the company's policy of controlling all critical manufacturing operations in the interests of quality – a policy that has seen other considerable investment to create an all-in-house production site – and offers a valuable service to third party companies.

Since the commissioning the company has also noted significant savings in energy consumption and increases in productivity and an improved working environment.

Black Teknigas has taken an important step forward in terms of helping industry to meet its environmental obligations and it effectively sets an example for other manufacturers to follow.

Dave Martin is operations director with Black Teknigas. The company designs, develops and manufactures a range of gas control products and systems for combustion, industrial, medical, laboratory and specialty gas applications. It specialises in electro-hydraulically operated emergency shut off valves and also manufactures general purpose solenoid valves and pressure switches. The company is a key supplier of high pressure manifold systems to the UK's leading gas producers. Black Teknigas is part of Watts Industries.