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The **easy route** to fine chemical production



In the course of more than 25 years we have built up a distinctive and wide ranging technical capability for the contract manufacture of fine chemicals at our Seal Sands site. This gives our highly qualified, innovative and experienced team the flexibility to add value to customers' business at every stage: new product introduction, process development and commercial-scale production. The dedicated skills which serve innovative companies in our core pharmaceutical, crop-protection and speciality chemical markets are in demand worldwide.

### Our Values

Five core values underpin everything we do:

- Encourage all our people to develop their technical and interpersonal skills
- Ensure the highest standards of safety, health and quality with respect for the environment in which we work
- Develop and maintain a culture of Continuous Improvement as an essential tool in providing the competitive edge
- Embrace change as a necessary part of our culture and maintain a working environment where innovation is encouraged in every function
- Harness these values to provide you, the customer, with an excellent service completely respecting any intellectual property you may provide



L-R: Keith Hanson, Steve Catchpole, Craig Morgan and Kevin Russon

### Who Are We?

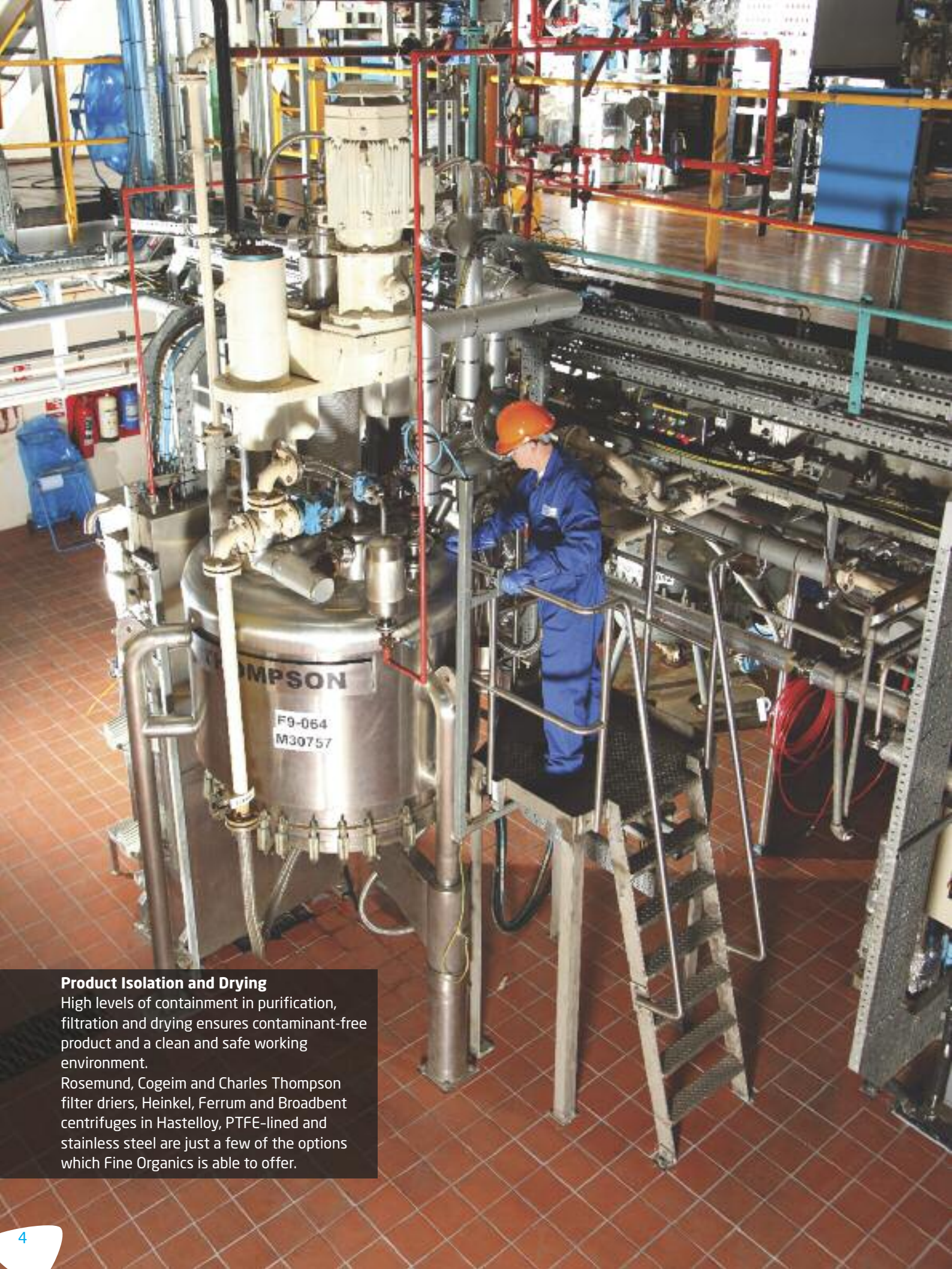
A Management Buy-out completed in 2008, led by Keith Hanson, brought the company back from multinational into private ownership. The new business has the advantage of over 100 years of Fine Organics experience shared by fellow Directors, Steve Catchpole (Operations), Craig Morgan (Technical) and Kevin Russon (Finance). Short decision making paths amongst the management team give us the commercial agility and our customers the responsiveness essential to move projects swiftly and efficiently through every stage of development.

## Product Quality

A 24 hour QC laboratory contains the most modern analytical equipment, including HPLC, GC and IR/UV.

Temperature and humidity controlled sample storage is available for product stability testing.





### **Product Isolation and Drying**

High levels of containment in purification, filtration and drying ensures contaminant-free product and a clean and safe working environment.

Rosemund, Cogeim and Charles Thompson filter driers, Heinkel, Ferrum and Broadbent centrifuges in Hastelloy, PTFE-lined and stainless steel are just a few of the options which Fine Organics is able to offer.

## Technology

### Chemistry

Our ever expanding range of specialist techniques and processes gives Fine Organics the expertise to manage energetic reactions which often involve toxic, dermatitic, flammable and malodorous compounds. Although by no means comprehensive, the examples on the right demonstrate a unique breadth of experience on a commercial scale.



### Raw Materials

To make complex products often requires an ability to handle a range of hazardous raw materials on a commercial scale. The examples of raw materials listed on the right again illustrate the breadth of capabilities we put at your service.



Left: MPB4 reactor floor and Hastelloy filter drier

### Chemistries

- Alkylation
- Asymmetric synthesis
- Balz-Schiemann Fluorination
- Biocatalysis
- Carbonylation / Formylation
- Diazotisation
- Diborane reduction
- Grignard reaction
- Halogenation
- Hydrogenation
- Low temperature capability to (-85°C)
- Organometallic chemistry
- Ozonolysis
- Oxidation & reduction technologies
- Photohalogenation
- Suzuki- & Heck-type coupling
- Thiophosgenation

### Raw Materials

- Ammonia
- Bromine
- Butyl lithium
- Carbon disulphide
- Carbon monoxide
- Chlorine
- Chlorsulphonic acid
- Dichloroethane
- Dichloromethane
- Diethyl ether
- Dimethyl sulphate
- Hydrogen chloride
- Hydrogen cyanide
- Hydrogen sulphide
- Mercaptans
- Metal hydrides
- Nitric Acid (70% and 98%)
- Nitromethane
- Phosphorus oxychloride
- Sulphur trioxide

## Infrastructure



### Location

Our plant within the Seal Sands Chemical Park is in the North East England heartland of UK chemical manufacture and research. Exclusively designated for chemical industry development, Seals Sands has fast links to port facilities equipped for chemical handling, the motorway, rail and air networks. With only around half of our 30 hectare (55 acre) site developed so far, we have opportunity for further expansion.



### Fire Protection

All Ex rated areas of the plant are protected by an automatically activated fixed foam fire protection system. Any deluge from this system is routed to a 400m<sup>3</sup> underground tank for treatment prior to disposal. The site has a permanently staffed emergency response team trained and equipped to deal with any on-site event.



### Storage

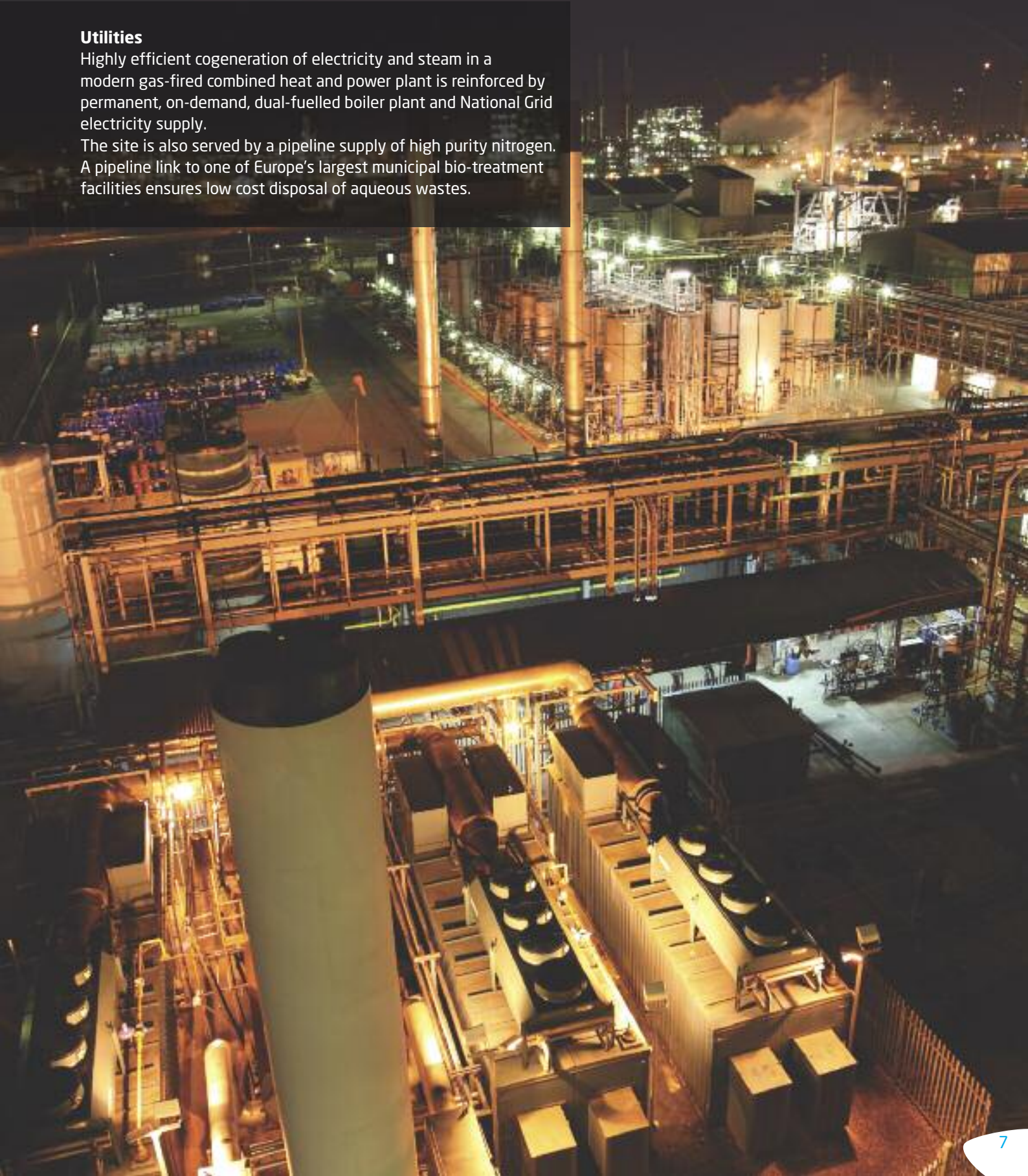
We have broad regulatory consent for storage of a wide range of materials in both bulk and drums. A fully fenced site, comprehensive CCTV coverage and 24/7 site based security and access control give us the ability to store and distribute Controlled Substances. Specialised temperature-controlled storage in the range of -15°C to +30°C extends our capability.

*Right: Looking South into the Seal Sands Chemical Park. In the foreground CHP plant generating 4MWe in 3 gas-fired engines.*

### Utilities

Highly efficient cogeneration of electricity and steam in a modern gas-fired combined heat and power plant is reinforced by permanent, on-demand, dual-fuelled boiler plant and National Grid electricity supply.

The site is also served by a pipeline supply of high purity nitrogen. A pipeline link to one of Europe's largest municipal bio-treatment facilities ensures low cost disposal of aqueous wastes.



## Equipment

### Capacity

More than 300,000 litres of reactor capacity is distributed over 4 production buildings. This versatile range of equipment is designed to be re-configured quickly and at minimum cost in response to your particular needs. The list (right) describes the broad range of plant capabilities.

### Process Development

The ability to match processes to plant is the core skill of our team of experienced engineers, development chemists and hazards specialists and a key to your competitive advantage. For new product introductions, multi-disciplined teams are led by experienced Project Managers responsible for carrying out the programmes and ensuring open and productive dialogue with the customer throughout.



*Right and Above: Henkel centrifuges  
(Hastelloy) in MPB4 and MPB2*



## Reactors

| m <sup>3</sup>      | 20 | 7-10 | 4-6 | 2-3.5 | 0.1-1.5 |
|---------------------|----|------|-----|-------|---------|
| Glass-lined         | 1  | 12   | 18  | 10    | 12      |
| Hastelloy           | 2  | 3    | -   | 4     | 3       |
| Stainless steel 316 | -  | 2    | 3   | 1     | -       |

- Normal operating range of -30°C to +140°C
- Specialist equipment to - 85°C and +180°C
- Operating pressure ratings from full vacuum to 8 bar.
- Nitrogen delivered to the points of use by a validated supply system.
- Laminar flow booth , AJAX and DEC charging systems
- Siemens PCS7 DCS control
- Specialised equipment for photochemistry and process intensification

## Product Isolation and Drying

- Filter driers: Rosemund (316 stainless), Cogeim (Hastelloy), Charles Thompson (Hastelloy)
- Centrifuges: Heinkel (Hastelloy), Ferrum (PTFE lined), Broadbent (Stainless)
- Paddle driers: Lodge (Stainless), Buss (Stainless)
- Rotary Cone Driers: Pfaudler Balfour (Glass-Lined)
- Sieving milling
- Distillation: Stainless steel batch stills, High vacuum glass still
- Hastelloy and stainless steel Luwa wiped film evaporators

## Other Specialist Capabilities

- USP-quality water generation
- Ozone generation
- Process intensification

## Sustainability



### Safety

The implementation of any change is based on assessment by a comprehensive hazard management system. Before introducing any new process a dedicated hazards testing laboratory - equipped with state of the art reaction calorimetry, such as RC1 with RTCal™, Differential Scanning Calorimetry, Carius Tube test and ARC - evaluates each reaction step to identify the basis and envelope of safety. The site is Top Tier COMAH (Seveso) compliant.



### Environmental Management

All site operations are permitted under PPC regulations with wide envelope approvals. Compliant with ISO 14001 our processes are designed to minimise waste production and we deploy equipment to recover materials for re-use wherever economically possible. High volume consents are in place to enable discharge of aqueous wastes by pipeline for biotreatment. We have an on-site incineration capability.



### Product Quality

The site is ISO 9001 accredited and where appropriate manufacture is to cGMP standard. We have expertise in maintaining Drug and Veterinary drug master files and European CEP's and have been inspected by the United States FDA.

The site is compliant with the European Crop Protection Agency guidelines on cross-contamination.



### Enterprise Management

Our Business Management System (BMS) was developed in-house to link every function on the site. Working on the principle of "data entered once, used by all", it enables rapid transfer of information around the site, minimising delays and maximising efficient working.

*Right: Real-time, on-plant data capture of equipment utilisation via touch-screen technology*



Explorer 18i



## Continuous Improvement (CI)

### A Way Of Life...

We are acutely aware of how much your success in today's competitive environment depends on best value supplies of critical products. That is why we continually work to introduce improvements such as:

- Value stream mapping across the supply chain.
- A detailed and well established training programme to put many of the tools associated with lean manufacture into the hands of every employee.
- Investment in the latest touch-screen technology for real-time, on-plant data gathering enabling us rapidly to pinpoint opportunities to remove waste from processes.
- The computation of OEE (operational equipment effectiveness) as the basis for driving improvements.

Such initiatives consistently ensure high levels of quality, cost and delivery performance to the benefit of our customers.