

Extreme pumping in the chemical industry



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PUMPS USED IN THE CHEMICAL INDUSTRY CAN RANGE FROM DOSING PUMPS WITH MINISCULE FLOW RATES, TO MASSIVE PUMPS WITH ENORMOUS FLOW RATES. BUT AT BOTH EXTREMES, MANY OF THE CHALLENGES ARE SIMILAR, AND THE NEED FOR SAFETY, RELIABILITY AND QUALITY IS PARAMOUNT.

Containing and transporting potentially hazardous products simply goes with the territory for pumps in the chemical industry. There is no room for error or complacency, and design, manufacture, service and repair must all be of the very highest quality to ensure risk-free operation. However, simply by doing the job they are designed to do, the pumps are exposed to aggressive and often damaging substances, which can have a detrimental effect on their service life.

Exotic solutions

Traditionally, building-in resistance to these aggressive chemicals and abrasives has required major expenditure on exotic metals and their alloys.

A more recent development has been the use of plastics with chemical resistance. When combined with steel casing armour to provide mechanical integrity, this type of pump construction offers a cost-effective alternative. Probably one of the largest-ever plastic pumps in this category has recently been built by Munsch. The Munsch Mammut has a discharge size of

400mm and can handle flow rates of up to 2000m³/h. Specifically designed to handle acids, alkalis or chemically contaminated fluids – with or without solids – the Mammut is a horizontal centrifugal pump with volute casing and single-entry, and a single-stage radial impeller. The casing armour meets EN-JS 1025.

Typical applications for the pump include not only chemical transfer, but also flue gas cleaning systems and exhaust gas scrubbing.

Big challenges

At the other end of the scale, chemical dosing pumps often have to meet equally big challenges and operate in equally harsh environments, but whilst handling flows at a fraction of those of the larger pumps. However, pressures can be as high as 700 bar. Milton Roy is a world leader in dosing equipment and a major manufacturer of chemical dosing pumps for over 50 years – manufacturing not only dosing pumps but also dosing valves and complete dosing systems.

ERIKS Dudley and Aberdeen are authorised service centres and engineers have undergone comprehensive training at the Milton Roy factory. Engineers are now fully competent to carry out every aspect of maintenance and repair of the pumps, from commissioning through to complete overhauls. In addition, ERIKS' Aberdeen facility is able to design and build bespoke Milton Roy dosing pump systems, that can either be skid mounted for offshore installation, or fully integrated into the production process of a chemical works.

Positive pumping

Milton Roy dosing pumps are reciprocating positive displacement pumps, with a variable flow rate than can be adjusted whether the pump is running or not. In contrast to their outsize cousins, Milton Roy dosing pumps can handle a range of doses from 0.0009ml/h to over 70,000l/h, at pressures from 7 torr to 700 bar, and at temperatures ranging from -70°C to over 300°C.



Munsch Mammut performance data

Pump capacity [Q]: up to 2000 m³/h
Differential head [H]: up to 70m
Solids content: up to 10 Vol.-%
Particle size: up to 15mm
Motor rating [P]: up to 450kW



Milton Roy performance data

Pump capacity:
0.009 ml/h to over 70,000 l/h
Pressures: from 7 torr to 700 bar
Temperature range:
- 70 degrees C to over 300 degrees C

The huge variety of fluids the pumps can handle includes most chemicals of varying viscosities, including slurry-laden, abrasive, corrosive, pyrophoric and radioactive substances.

Safer servicing

Even the most robust and high-quality pumps clearly still need servicing. And when they do, as when they are operational, the overriding concern is for Health and Safety.

ERIKS ensures potential exposure of staff to chemicals is minimised, by insisting on thorough decontamination of the pumps on site before they are moved to the workshop. Successful completion of the decontamination process must be certified prior to collection. MSDS sheets must be attached to the pumps when they are moved to the workshop, to alert staff to what products they have been in contact

with, which may still be present despite the decontamination.

ERIKS has developed exacting workshop procedures aimed at minimising risks of exposure to potentially dangerous substances. Segregation is an important element of repair processes for the chemical industry, and ERIKS operates a strict policy to avoid chemical pumps – and the equipment used in their service and repair – coming into contact with other pumps.

Standard pump repair request forms and processes ensure safe procedures are adhered to at all times. All repair work to centrifugal pumps is carried out to ISO13709 standards, to guarantee consistent quality when addressing clearances, tolerances and fits, during pump overhauls and repairs.

When dealing with chemical pumps, any mistake – whether in handling during maintenance or when the pump is reinstalled in the production line – may

have severe consequences. So ERIKS goes to the extreme to ensure that Milton Roy dosing pumps are serviced and repaired to the highest standards: not just maintenance but also for health and safety,



Dosing pump manufactured in Aberdeen

