



Solvents



Solvents are used extensively in the manufacture and processing of an extremely diverse range of products across many industry sectors. Solvents range from water to highly volatile Benzene and Ethyl Chloride, which are extremely flammable fluids.



Industry Sectors

- Paints and coatings
- Inks and dyes
- Plastics and resins
- Oils, fats and foods
- Rubbers, gums and compounds
- Pharmaceuticals
- Acetates
- Cleaning products and detergents
- Adhesives and cements
- Petroleum products
- Extraction processes
- Waxes
- Lubricants
- Perfumes and cosmetics

Process points

Solvents vary greatly, however many are flammable, highly flammable and/or have very low temperature flash points and are susceptible to ignition when in contact with oxygen.

It is critical to any plant manager to consider the handling of volatile fluids not only for the risk of fire or explosion but also the health and safety risks of immediate and prolonged exposure to employees from solvent vapour, which can cause immediate irritation and may cause more significant conditions long-term.

All pumps destined for solvent applications may be subject to ATEX classification, required to be leak-proof or highly resistant to leaks and be self-contained should the wet side sealing fail.

Wetted parts must be resistant to the often aggressive solvents that are used in many process lines. Basic rubber o-rings and other elastomers quickly degrade when in contact with solvents so teflon or kalrez elastomers are often recommended with a mechanical shaft seal where applicable.

As many solvents are of an extremely low viscosity, pump working principles must be suitable for water-thin fluids.

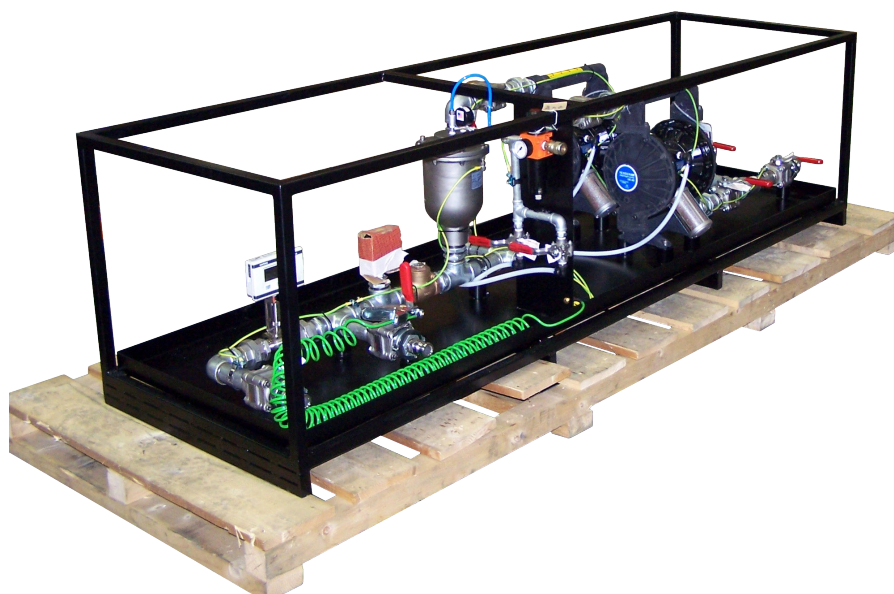
Where solvents are being added to mixtures, it is important for correct metering and delivery to be in place. A pump must be suitable for consistent and reliable flow rates and energy efficient.

Mixing

Where solvents are added to mixtures, the solution must be consistent, homogenous and have no wastage and build-up in mixer tanks.

Example solvents

- Acetone
- Ammonia
- Amyl Acetate
- Benzene
- Butyl Alcohol
- Chloroform
- Dimethyl Formamide
- Ethyl Acetate
- Ethyl Alcohol
- Ethyl Chloride
- Ethylene Dichloride
- Ethylene Glycol
- Furfural
- Glycerol
- Heptane
- Hexane
- Isopropyl Acetate
- Isopropyl Alcohol
- Methylene Chloride
- Morpholine
- Napthas
- Perchloroethylene
- Propylene Glycol
- Tetrahydrofuran
- Toluene
- Trichloroethane
- Triethylene Glycol
- Trichloroethylene
- Turpentine



An ATEX zone 1 rated skid with Verderair AODD pumps ready to be shipped for solvent handling

Pumping solutions

Verder UK offer a range of pumping and mixing solutions to handle solvents.

Verdermag Global

Verdermag Global is a range of high-quality centrifugal mag-drive pumps suitable for pumping in hazardous areas rated up to Atex zone 1.

The sealess design is perfect for pumping extremely low viscosity fluids. Low viscosity fluids are more 'searching' for flaws in seals, however with the Verdermag Global design there total containment form the atmosphere, eliminating the dangers of ignition and exposure of hazardous substances to employees and the work area.

The Verdermag Global range is available with many material options for compatibility with a solvent. Suitable for flow rates of up to 150m³ p/hr, up to 100m head and 200 bar operating pressure.

Verdermag Global is used extensively in CIP systems and is suitable for delivering the cleaning solutions at high pressures for process lines.

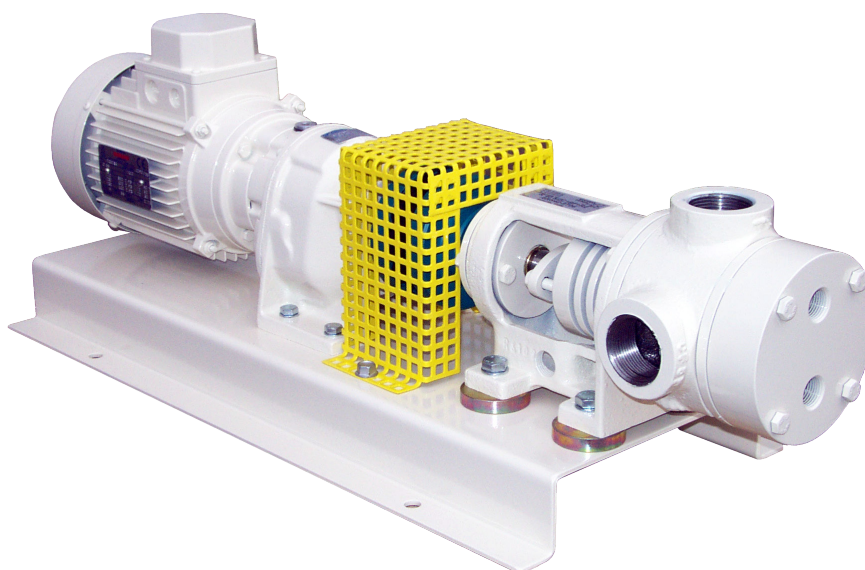
Verdergear

For applications involving higher pressures and greater head requirements, the Verdergear range of internal rotary pumps can handle up to 350m³ p/hr and deliver up to 160m at S.G. 1.

Verdergear pumps are available in ATEX rated specifications including a specific 'solvent build'. The model is a cast iron casing for high pressures with stainless steel pin, shaft and carbon bushings to cope with the low viscosity of the solvent and it's lack of self-lubricating properties. The rotor and idler are cast iron for close tolerance and to provide the most cost-effective specification.



A Verdermag Global Style 1 model. Every unit is 100% leak-free



The Verdergear range: capable of high flow rates and available in a specific 'solvent build'

Verderair

Verderair pumps are highly engineered diaphragm pumps suitable for solvent pumping. Verderair diaphragm models are very flexible and are easy to install and use.

Available in conductive ATEX specification, Verderair diaphragm pumps have a very wide range of materials for wetted parts and casing.

Verderair models are self-contained units which are totally contained from the environment and workforce and can safely run dry without damage.

Being a light and compact unit, Verderair pumps can be easily transported, built into custom turnkey solutions or be permanently installed with a very small footprint.

Verderair pumps are available in up to 16 bar/530 l/min or 8 bar/1060 l/min.

Verdermix

Where solvents are mixed with other fluids, the Verdermix range is highly suitable.

For blending and mixing of two or more fluids, static Verdermix models are installed within a line, eliminating exposure of a fluid to the atmosphere and staff onsite.

Verdermix is also available as a dynamic mixer for intank mixing. The propeller design is excellent for reducing deadspots within the tank.



Above: A series of Verderair pumps designed and installed by Verder UK to moving solvent from silos to the process line.

Right: A static Verdermix capable of homogenizing multiple fluid streams.

The inline blending eliminates any exposure to the atmosphere and is available for ATEX rating Zone 1 and can often remove tanks and dynamic mixers from the process entirely.

Static Verdermix models are built according to customer requirements and installed in a pipeline at our manufacturing facilities. This guarantees the customer a perfect product ready for the process line.

