

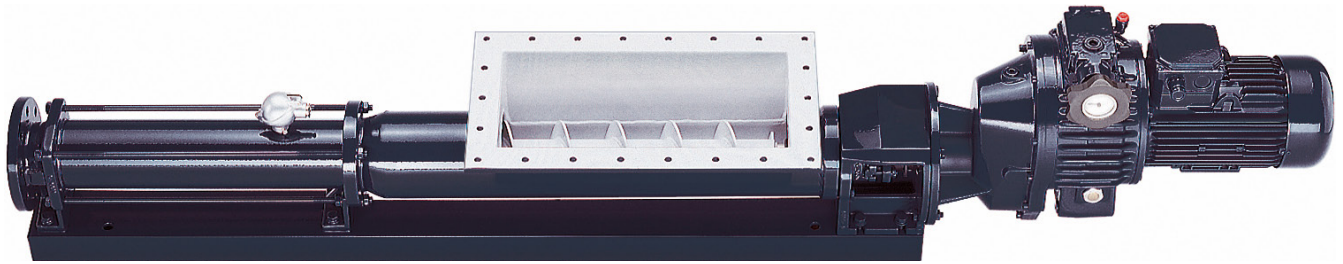
## Paper Pulp and de-inking

*Despite the promise in the 1980s of a paperless office by the 21st century, paper use has grown worldwide. This has meant the pressure on yields in recovering recycled material to produce either moulded pump packaging or recycled fibre pulp has increased as a mean for profitability ends.*



### **Paper Pulp**

Recycled pulp is an abrasive, starchy material, which can cause excessive wear of pump components, costly maintenance and periods of downtime in production. A pump must be designed to accommodate the viscous and fibrous nature of the recycled pulp in a near constant flow of high volume.



*The Verderpro progressive cavity pump has a specially designed inlet for the most demanding of media*

### Process points

Plant production managers look for a pumping process which gives a consistent, accurate flow to assist in monitoring the yields from raw material to pulp and a pumping action which will not degrade the quality of the pulp. The pumping process must allow for fluctuations in the make-up of various pulp types as well as be energy-efficient, leak-free and economical to maintain.

A pump must also be able to sit in a factory plant with a small footprint and be accessible to engineers.

Following the installation of any pump, a provision of quality service must be available for the on-going maintenance and where applicable, a long-term provision for spares and accessories for flexibility and continuity of production.

The Verderpro VPS is a progressive cavity pump, which is exceptionally suited to the efficient and reliable pumping of paper pulp.

A progressive cavity pump uses a positive displacement principle of a rotor forcing the pulp through a stator. The stator has one worm thread more than the rotor and twice the thread of the pitch. Consequently, there are continuous cavities which the thick pulp is forced through.

### Features of Verderpro

- The progressive cavity channel. The physical motion prevents the 'wrapping' of the pulp and blockages, which other pump designs may incur. The Rotor and Stator are resistant to wear and corrosion and are available in various surface coatings to maximise the efficiency of the process and for the protection of both the mechanism and pulp type.
- Sealed shaft design. The sealing of the drive mechanism prevents contact of greased and moving parts with the pulp. The sealed shaft design is resistant to wear and consists of just 5 parts and is available in many different materials and variations to best suit the exact nature of the pulp or media.
- Design of the internal mechanism – Pulp media is prevented from entering the shaft area and link-couplings which causes build-up, wrapping and dried pulp on the mechanisms.
- Variable flow rate – All Verderpro pumps can be configured to an accurate flow rate.
- Wide range of accessories and specification option – Including a Wide throat feed hopper – A

wider-inlet and feed screw mechanism mobilises very thick and viscous pulp and other media to ensure a perfect flow.

- Verder Service provision – A complete consultation is available for a specification, installation, servicing and overhaul of your pump.

### VerderHUS screw-channel pump

The VerderHUS screw-channel pump is designed to pump media which is fibrous, mash-like and is of a high solids content. Using a specially designed large impeller, a large mass of paper mash can be moved without the working principle being affected by a build up of material causing downtime. The VerderHUS range is highly efficient, minimizing energy use whilst maximizing the quantity of material moved.

### De-inking

During the de-inking process a pump capable of handling aggressive chemicals and other materials is needed. The greatest concern with this process is safety. A paper production manager will require a pump with leak-free operation for their engineer's safety and the prevention of damage to the pumping process and adjacent equipment.

## Typical materials

- Sodium silicate
- Sodium hydroxide
- Hydrogen peroxide
- Hard water
- Lime
- Calcium chloride
- Fatty acid
- Fatty acid emulsion
- Fatty acid soap
- Peroxides
- Hydrosulfites
- Dispersants
- Sludge by-product
- Acidic agents

Verder have a range of pumps which are vital in this process with the primary emphasis on leak-free pumping to protect your workforce and plant equipment.

The range of Verderair air-operated diaphragm pumps and Verdermag mag-drive centrifugal pumps provide an excellent solution for media that is of an aggressive or corrosive nature. Both Verderair and Verdermag are seal-less pumps which removes a major cause of leaks and potential downtime from your process.

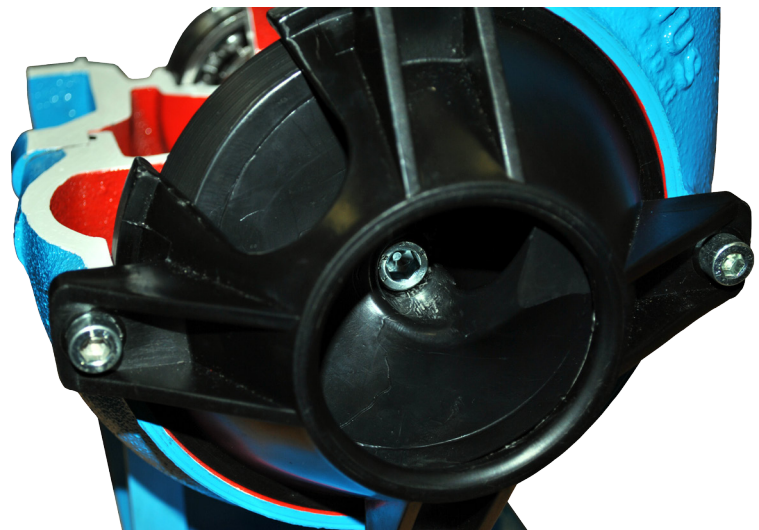
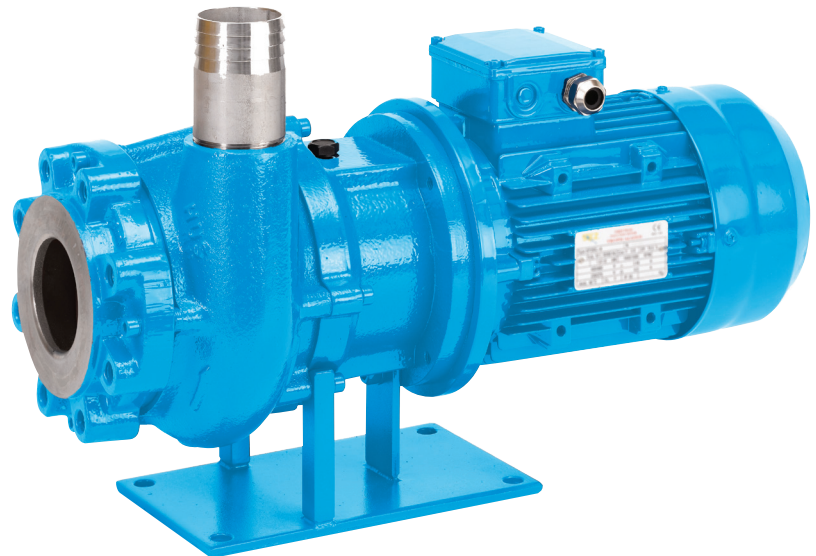
For reliable and accurate dosing, the Verderflex range of peristaltic pumps is an established brand. Previous installations of Verderflex pumps include the pumping of Sodium Hypochlorite 15% with the emphasis on leak-free operation and for the pump to be self-priming.

*Middle: A VerderHUS pump*

*Right: The open impeller uses a screw design to channel large bulky media without blockage or build-up*



*A paper mill collating waste paper ready for the mashing process. Paper mash is extremely difficult to pump with an efficient use of energy and avoiding costly downtime.*





## Waste Management

Waste produced in the de-inking process can contain highly toxic substances which need to be neutralised or processed to harvest reusable elements. Common processes such as bleaching virgin and recycled pulp can lead to chlorinated organic material as a byproduct including chlorinated dioxins. Pulp mill effluent also needs to be processed responsibly. The process produces a large amount of waste water containing residues including fibres, fillers and process chemicals. This water can be dosed with the neutralising agent calcium hydroxide by another Verderflex pump.

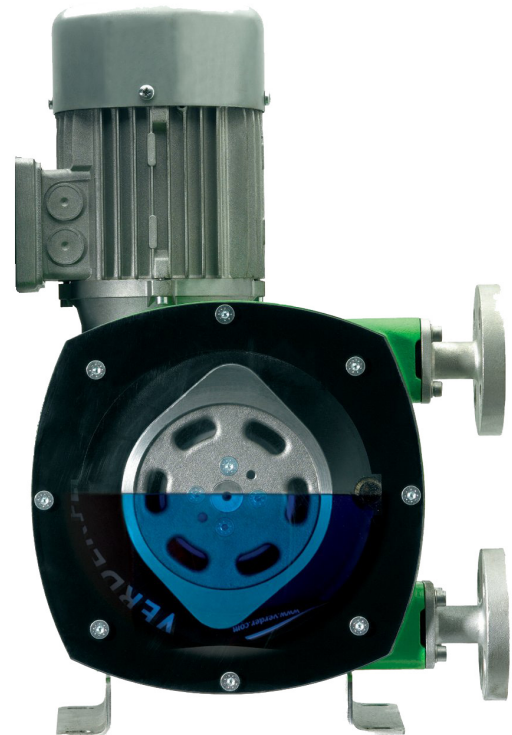
The waste fluid tends to clog at low flow rates, often causing increased

downtime and costly maintenance for other pump types such as an AODD model. When the fluid clogs at the suction side, as can happen easily with this application, simply reversing the Verderflex pump solves the problem.

The operating principle of the Verderflex VF25 pump is based on peristalsis, an alternating compression and relaxation of a hose, in a similar action to that found in the human throat and digestive system. A rotating shoe passes along the length of the hose compressing it so that it is completely closed. Once the shoe has passed by, the hose springs back and produces a strong vacuum to draw product into the hose giving the pump its powerful self priming capability.

The quality of the Verderflex hose is of key importance to the performance of the pump. The hose has a unique construction that prevents material fatigue and ensures an extremely long service life.

Verderflex dosing systems can dose both liquid and solid crystal solutions to treat water and wastewater to waterways. Chemical dosing using solid crystal-based material saves on delivery and process costs and maximizes efficiency of blending and reducing waste, as well as minimizing storage costs. The innovative system allows the flexibility to use a fluid-based solution where necessary.



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passion for pumps