

PUMPING SLUDGE

Hidrostal is widely acknowledged as expert in pumping a wide range of sewage sludges. This is a position that we are justly proud of and has been achieved from a combination of factors and not just because we have a screw centrifugal pump. Pumping sewage sludge makes high demands on the pumping equipment and the skills of the system designer if reliable long term operation is to be achieved incurring minimum life cycle costs.

WHY IS HIDROSTAL SO GOOD AT HANDLING SLUDGE?

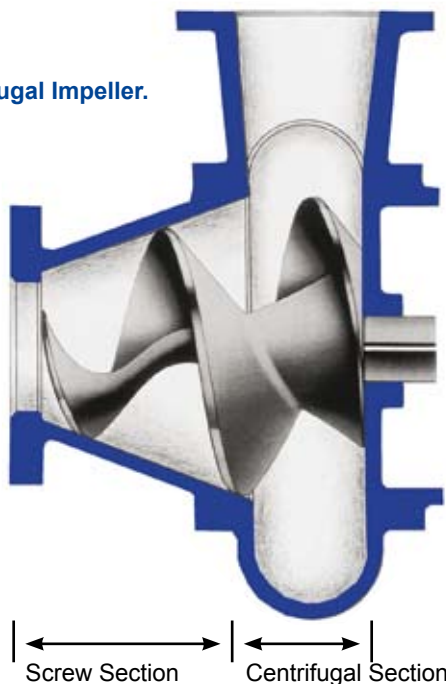
The most important factors contributing to this are:

- The unique properties of the screw centrifugal impeller
- The extensive range of impeller options - many designed specifically for sludge applications
- Material options to resist wear and corrosion
- Mechanical seals designed specifically for sludge applications
- Complete range of pump types – submersible, immersible, end suction, etc
- The expertise and skills of the engineers and technical staff
- Over 30 years of world-wide experience in sludge pumping



The Hidrostal screw centrifugal pump technology has revolutionised the application of centrifugal pumps for sludge pumping. The non-clogging construction of the Hidrostal screw centrifugal impeller, combined with the wide choice of build materials available ensures that the pumps can efficiently handle all types of sludges, up to 8% DSC, without suffering from blockages. As a consequence, Hidrostal pumps offer low maintenance and deliver real life cycle cost savings. A fact that is recognised by the numerous UK Water Utilities who have awarded framework agreements with Hidrostal for sludge pumping applications

The Screw Centrifugal Impeller.



The Screw Section

This part of the impeller is the key to successful pumping of high viscosity sludges. The scoop-shaped inlet to the impeller acts like a screw, positively feeding the sludge to the centrifugal section.

The Centrifugal Section

This part acts like any other centrifugal pump, converting the impeller energy into pressure and obeying the usual laws of centrifugal pumps. It does, however, produce a very steep stable H-Q curve which enables the pump to operate over a wide range of heads [discharge pressures].

Sludge pumping applications

The Hidrostal pump is available in many forms: submersible, immersible and end suction - horizontally or vertically mounted, electric or diesel driven self-priming etc. For high head transfer via long pipelines, series pumping can be employed. Solutions can be found for any installation,

Principle applications:

- Primary Sludge
- Humus Sludge
- Digester sludge recirculation
- Consolidated sludge
- Return activated sludge [no damage to floc]
- Surplus activated sludge
- Sludge Mixing (see section 12)
- Tanker Loading
- Storm Water Sludge



15kW - 250mm Pump Recirculating Primary Sewage Sludge on a 1000m³ Storage Tank



Heater recirculation plant using end suction pumps



Immersible



Sludge transfer station using 200 kw screw centrifugal pumps



Submersible

No two sludge pumping systems are the same. Each is unique with its own set of issues to be addressed. Successful system design and pump selection requires the application of a little science and a lot of experience gained through the supply of thousands of sludge pumps and knowledge from solving numerous problems.

Hidrostal has many years experience in sludge pumping and is able to offer a wealth of skills in the design and engineering of sludge pumping installations.

Hidrostal's systems engineers will help with:

- Selection of the correct pump type for the application
- Design of sludge holding tanks
- Position of pumps relative to sludge holding tanks
- Design of pipework
- Calculation of head loss due to friction
- Storm tank cleaning (See Section 11)
- Sludge tank & digester mixing (See section 12)
- Auto-desludging (see Section 13)

Whether it is primary sludge, thickened sludge, blends of poly-thickened sludges or digesting sludge Hidrostal has the experience. They also know when the limits of screw centrifugal pumping is reached and more expensive positive displacement pumps are required. Generally Hidrostal offer pumps to handle sludges having a DSC up to 8% although there are instances of higher DSC being handled but usually not involving Poly-thickened sludge.

Sludge is not a pure homogeneous mixture it is extremely variable in viscosity, solids content, etc. It can contain bulky solids, rags, fibre, grit, oils, fats, greases and gas. It is, therefore, important that the pumps selected are constructed of suitable materials. Hidrostal offer a wide range of materials so the optimum combination can be chosen for each application

Sludge has also changed in characteristic over the years; driven by the need to find more economical processes to treat and more eco-friendly ways to dispose of sludge. It is now infinitely more difficult to pump due to the changing processes employed in sewage/wastewater treatment. The experience and knowledge of Hidrostal staff and continuous refinement of Hidrosal's pumps has kept pace with the changing need.