



Volute Technology Introduction

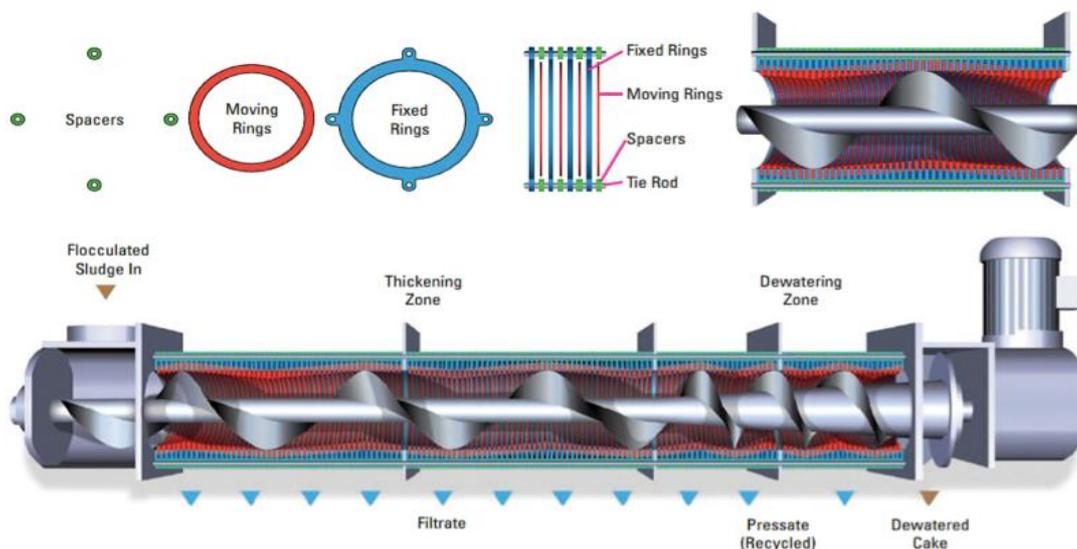
The Volute has the typical advantages of the screw press principle - a low maintenance intensity and low energy consumption – combined with a unique dewatering drum which offers process advantages.

Since the introduction in 1974 the Volute has been applied in **more than 2000 installations** and many different type applications. A big advantage is that its operational window already starts with a very low dry solids content of only 0.1 % in the sludge.



The dewatering drum is an assembly of fixed and moving rings. The movement of the screw causes the rings to move against each other and with this motion actively clean off the dirt in the apertures between the rings.

This active cleaning mechanism offers the advantage the even with a small unit one can always pursue the highest dry solids content in the cake without running too much risk of clogging the machine, as opposed to screw press models with a perforated stationary drum.





The dewatering principle is directed by the pitch of the screw. In the first part of the drum the free water is separated. Further on the pitch gets smaller and the open space between the rings is smaller. This results in more compression of the sludge and further dewatering. The total available open space between the rings is adjustable for result optimization.



System Cost

Because the system is in fact **continuously cleaning** itself, the risk that it clogs is vastly reduced compared to fixed perforated drum type constructions. Relative also to centrifuges, the Volute requires very little operator attention because of this, which allows personnel to concentrate on other duties.

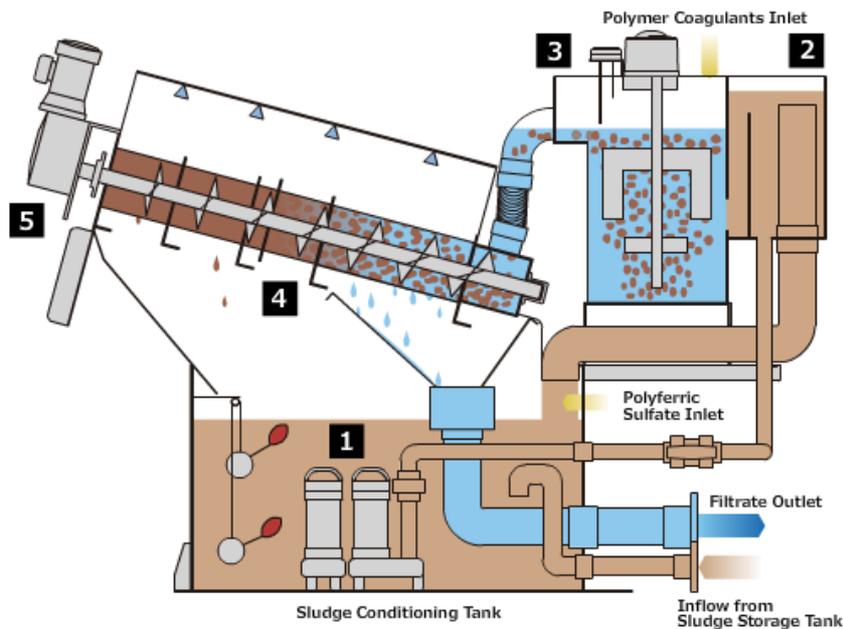
Because of the slow moving action the **energy consumption and maintenance cost** is also vastly reduced. The energy consumption is in the order of 20 W / kgDS compared to around 50W / kgDS for a centrifuge, a 60 percent saving. Compared to centrifuges, **a reduction in polymer use** may be expected due to the lower shear forces which allow for maximizing the efficiency of the long polymer chains.

A Volute press generally operates more than 5000 hours on even the most abrasive sludge before any first components need replacing. For municipal type sludge this is easily extended to > 20.000 hours.

Total operating cost for a large unit based on 8000 hours per year offers a **25 to 35 % reduction in cost per ton dry solids** compared to centrifuges.



Process flow



Sludge is pumped into a blending tank where coagulant is added. The mixture then flows to a flocculation tank where by means of polymer, the pollution is concentrated into flocs and as much as possible free water is created.

The sludge mixture then overflows into the drum where the dewatering and compression action take place.

The quality of the cake is controlled with the rotation speed of the screw and the total available space between the rings. The continuous self cleaning mechanism prevents clogging and allows for true optimization of the dry solids content in the cake. If the mechanism clogs after all because of an upset in the sludge or taking the optimization process too far, then the screw is removed and the system cleaned with a simple and quick procedure.