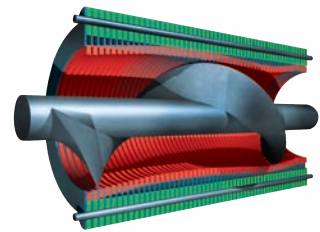
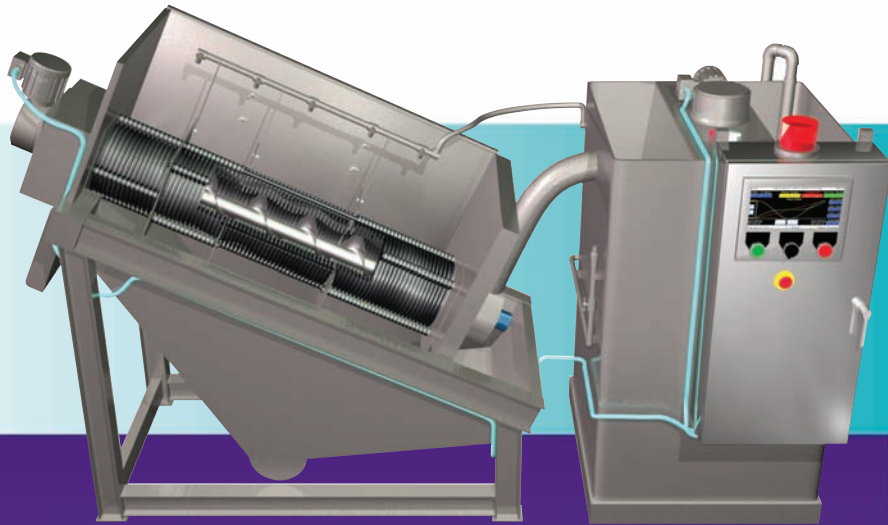


Volute Thickener

Simple, automated, and cost-effective sludge thickening



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Volute Thickener

PWTECH INTRODUCES A NEW TECHNOLOGY FOR SLUDGE THICKENING TO THE UNITED STATES

In the fall of 2008, Process Wastewater Technologies began piloting and selling the Volute® Thickener in the United States. This technology has been used extensively in Japan and has many of the benefits that is fast making the Volute Dewatering Press the go-to technology for many dewatering applications.

CONCEPT

The Volute Thickener design is based on the patented dewatering drum design used for the PWTech® Volute Dewatering Press sludge dewatering unit. The Volute Thickener is a very simple piece of equipment that is virtually maintenance-free and fully automated. It is designed to take dilute sludges and thicken them allowing for more cost-effective storage, dewatering, or transport.

Application of this technology includes automated sludge wasting from biological processes and thickening prior to storage, digestion, further dewatering, or transport.

PERFORMANCE

In a wastewater (sewage) treatment plant, waste sludge is typically around 0.4% to 0.8% solids. Typically the Volute Thickener can be adjusted to give a solids output in the range of 3% to 12%.

KEY BENEFITS

- Fully automated: the unit can operate itself from start-up to shutdown, allowing 24-hour unattended operation.
- Integrated system: the Volute Thickener is sold as a complete package for the entire sludge thickening process, including polymer system, feed pump (if required), flocculation tank, and controls.
- High solids recovery: typically over 99% of the solids are retained in the thickener so the filtrate is very clean and may not need to be returned through the entire treatment process.
- Very low power consumption: most units have no motors greater than one horsepower.
- Low maintenance requirements: units are designed to run in excess of 30,000 hours between overhauls. That's over 10 years at 8 hours per day, 7 days a week!
- Zero wash water requirements under regular operation.
- High-quality construction: stainless steel and engineering plastics, high-quality "sealed-for-life" drive motors, and robust, durable design result in long life and low maintenance.



Volute technology was pioneered by AMCON, Inc. and introduced in 1991. It innovates sludge dewatering and sludge thickening by automatically and continuously self-cleaning the filter mesh, eliminating clogging for stable and constant dewatering. Volute technology is available in the U.S. only through PWTech.

*Volute and the AMCON, Inc. logo are registered with the U.S. Patent and Trademark Office as trademarks of AMCON, Inc., Yokohama, Japan.

PROCESS DESCRIPTION

- Dilute sludge is dosed with polymer as it enters a flocculation tank.
- The sludge is gently mixed in the tank, separating into discrete agglomerations of solids (flocs) and free water, and then overflows into the thickening drums.
- Free water is discharged through the gaps in the thickening drum while solids are conveyed along the length of the drum and discharged at the opposite end.

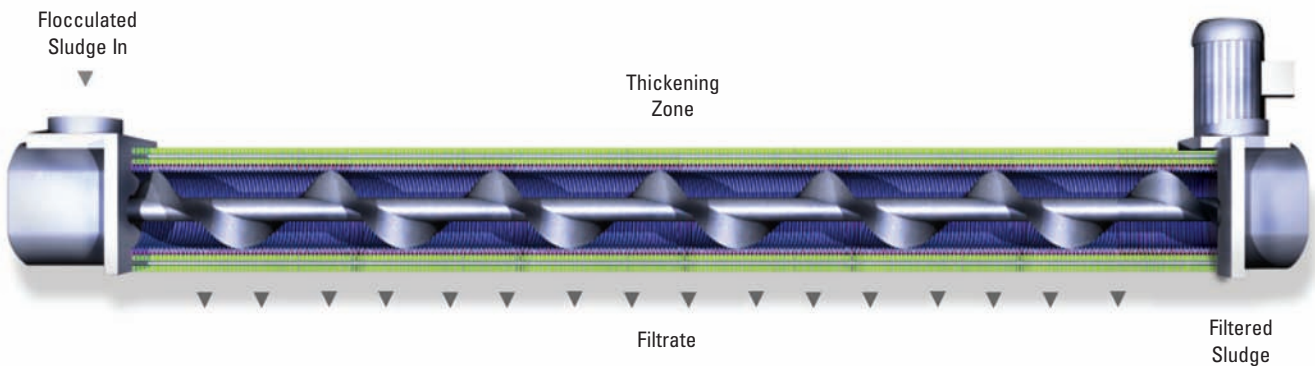
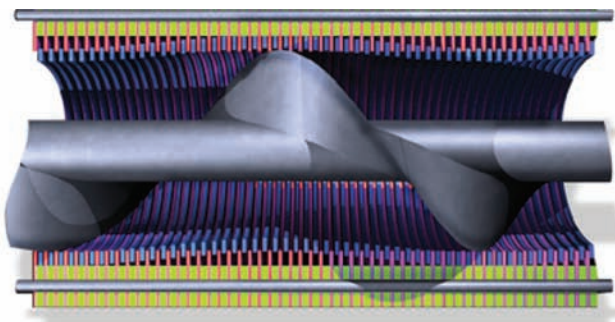
THICKENING DRUM DESIGN

The dewatering drum utilizes a series of fixed rings that are held together on tie rods and separated by spacers to form a cylinder around an Archimedean screw (see illustration). Between each fixed ring is a moving ring which is slightly narrower than the spacers and creates fine gaps between the fixed and moving rings. The moving rings also have a smaller inside diameter than the outside diameter of the screw, so as the screw rotates, it moves these rings.

The constant movement of the rings prevents the plugging of solids in fine gaps. Since the gaps are always clean, there is a continual discharge of fluid through them, allowing for very high solids capture in a very efficient operation.

DIFFERENCE BETWEEN THE VOLUTE DEWATERING PRESS AND THE VOLUTE THICKENER

While the basic design and operation of both the Thickening and Dewatering Drums are the same, the drum of the Volute Thickener is made entirely with plastic rings with a constant gap between the moving and fixed rings. The screw is a constant pitch, and there is no end plate. The drum's motor is less highly geared to allow for greater drum speeds. In addition, the piping connections are larger and the flocculation tank is larger to accommodate higher flows.



Standard Volute Thickener Models

Model	Maximum Capacities (GPM)	Dimensions (in.)			Power Use (kW)	Empty Weight (lb)
		Length	Width	Height		
VT101	5	70	32	42	0.3	350
VT131	15	70	32	42	0.3	374
VT201	45	96	36	70	1.2	792
VT202	90	103	46	70	1.9	1,030
VT301	150	137	52	80	1.5	1,848
VT302	300	142	58	80	3.0	3,300
VT303	450	162	67	80	4.5	4,290
VT304	600	172	84	80	6.0	5,100
VT305	750	182	101	80	7.5	6,000

All capacities, dimensions, and weights are approximate.
Dimensions and power use do not include control panel, polymer make-up, and dosing systems.

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