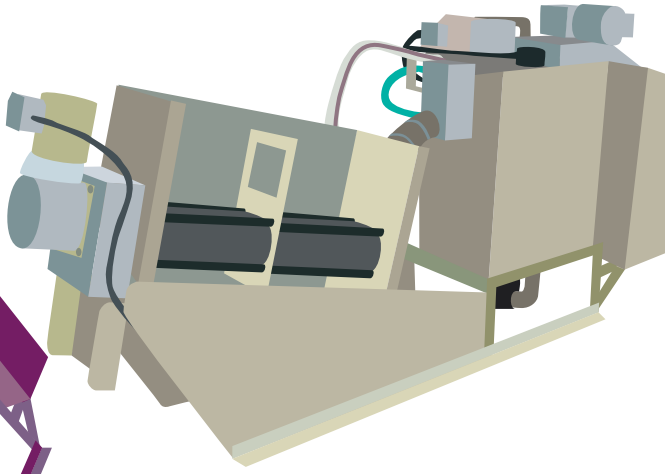
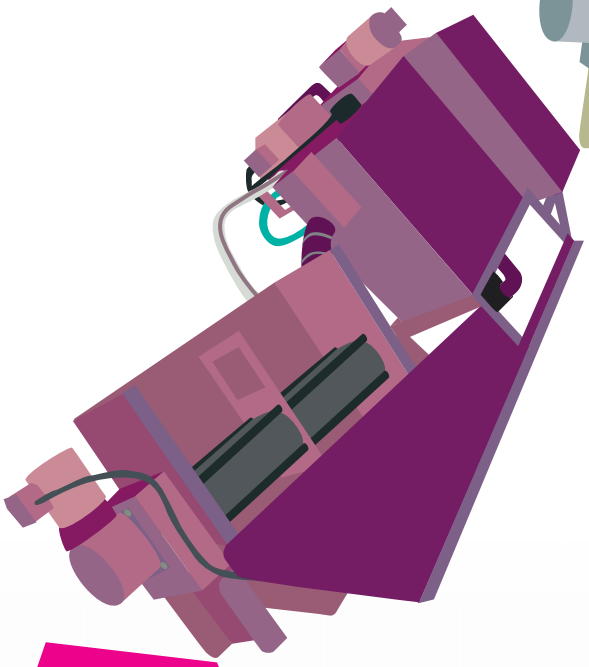
Amenity Convenience

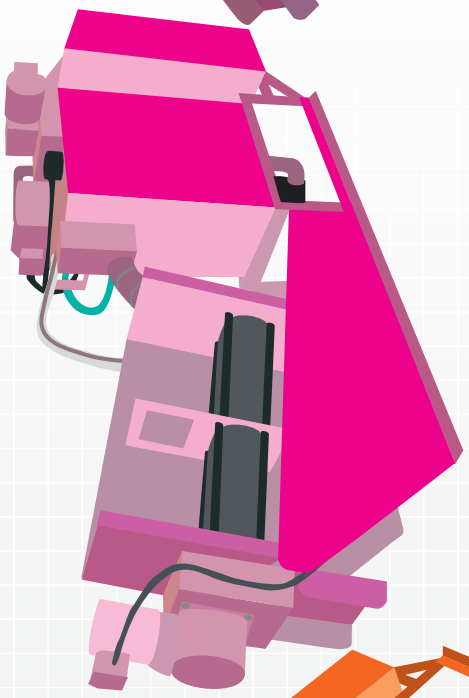
AMCON





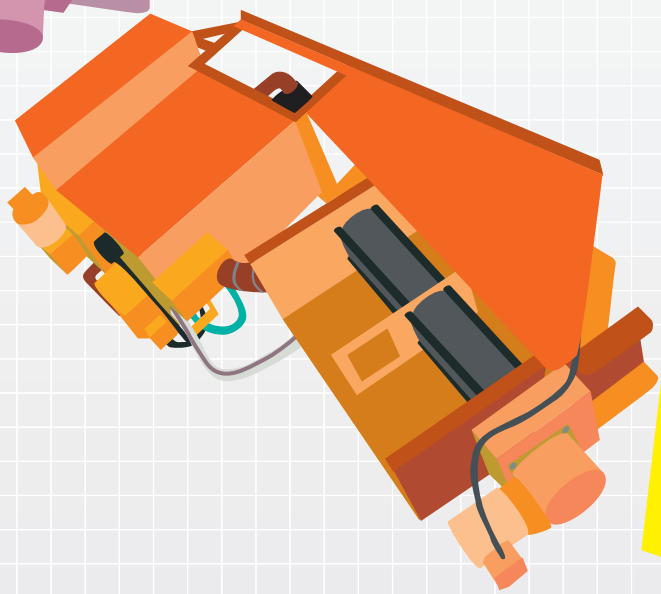
VOLUTE

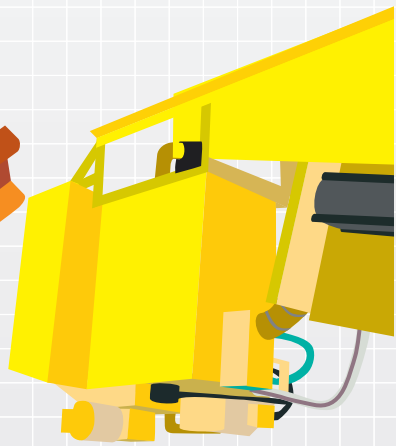
DEWATERING PRESS AND THICKENER



Make it convenient !!

AMCON Volute Dewatering Press,
versatile equipment, makes sludge processing simple,
economical and convenient.





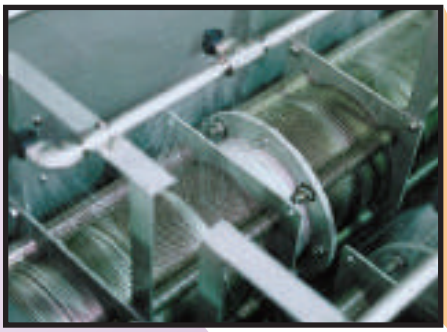
VOLUTE Technology

AMCON has opened a new door to sludge treatment !

Process Diagram

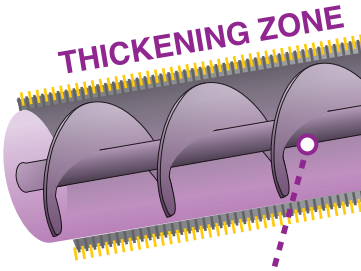
Thickening Zone

Filtrate is discharged from Thickening Zone.



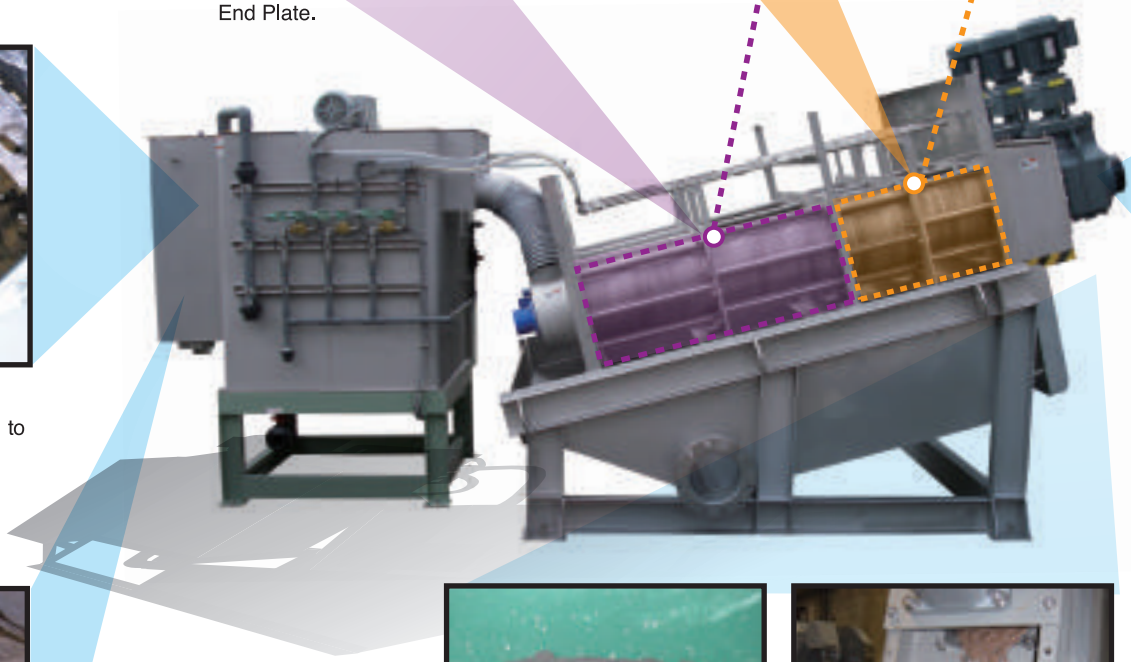
Dewatering Zone

The pitch of the screw narrows and the gaps between the rings decrease, increasing the internal pressure of the drum towards the End Plate.



Flocculation Tank

Polymer is mixed with sludge to separate solids and liquid.



Flow Control Tank

Sludge flow is fixed in this tank and the excess amount returns to the sludge storage tank.

Sludge Cake

Cake solids content of discharged sludge generally ranges from 15 to 30 %.

Thickened Sludge

Incoming sludge (0.2 %) can be thickened to > 4 %.

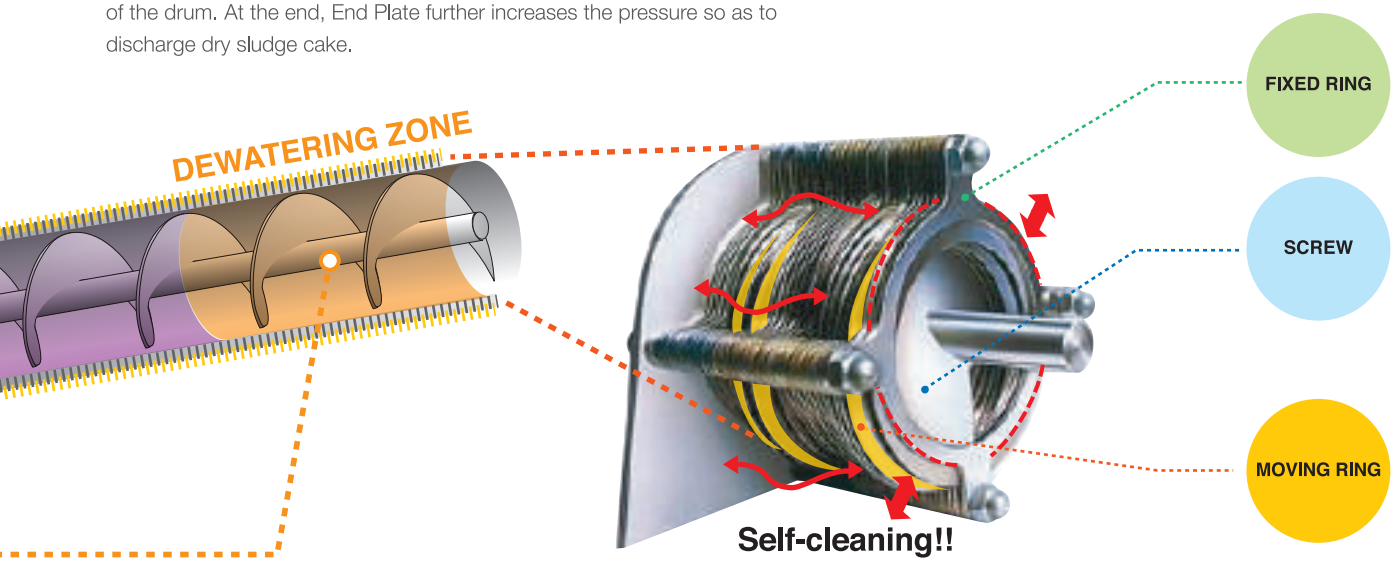
Worldwide Standards

We offer our products in World Standard, UL compatible or with CE marking

- European Standard CE marking **[machinery directive(2006/42/EC), EMC directive(2004/108/EC, low-voltage directive(2006/95/EC)]**
  This product is self-certified for CE marking
- North American Standard **[ANSI/NFPA70, ANSI/NFPA79, UL508, UL508A]**
  This product is certified for UL marking

Mechanical Principle

The initial section of dewatering drum is Thickening Zone where the solids-liquid separating process takes place and where the filtrate will be discharged. The pitch of the screw and the gaps between the rings decrease at the end of dewatering drum, increasing the internal pressure of the drum. At the end, End Plate further increases the pressure so as to discharge dry sludge cake.



End Plate (ES series)

End Plate further compresses sludge for dewatering.

Sludge Discharge Port (VT series)

Thickened Sludge is discharged from this port.

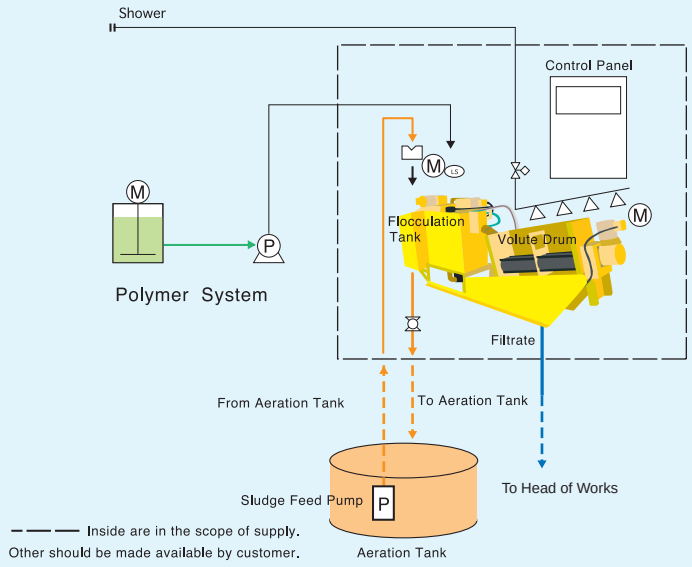
(VT series do not have Dewatering Zone and End Plate)

Design and Function

Layers of spacers, Fixed and Moving Rings are secured in place on the tie rod. The inner diameters of Moving Rings are slightly smaller than the outer diameter of screw and those rings, mobilized by the screw, continuously clean sludge out of the gaps and prevent clogging.

Process Diagram of the Volute Dewatering Press

Process Diagram



Sludge, first fed into the Flow Control Tank, flows into the Flocculation Tank where polymer coagulant is added. From there, the flocculated sludge overflows into the dewatering drum where it is filtered and compressed. The entire operation sequence, including sludge feed control, polymer makeup, dosing and sludge cake discharging, is controlled by the built-in timer and sensors of the Control Panel.

VOLUTE Changes the Sludge Management!!

Advantages

Direct treatment of thin sludge!!

Volute Dewatering Press is capable of dewatering low-concentrated sludge From biological processes, such as an oxidation ditch, aeration tank etc.,which decreases phosphorus in return water from sludge treatment.

Wide variety of sizes!!

Volute Dewatering Press comes in a variety of sizes suitable for small septage as well as large-scale wastewater treatment plants!!

Low operational cost!!

Energy efficient design of Volute Dewatering Press requires power consumption as low as 0.2kW and water consumption as low as 24 L/h.

24-hour automated operation!!

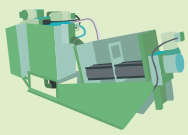
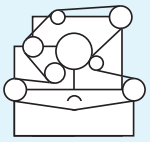
Volute Dewatering Press with its clog-free design operates fully automatic for 24 hours and it only requires periodic inspection and chemical replenishment.

Stress-free maintenance

A partial overhaul of the Dewatering Drum is a half-day work and it can be undertaken on site easily.

Clog-free construction!!

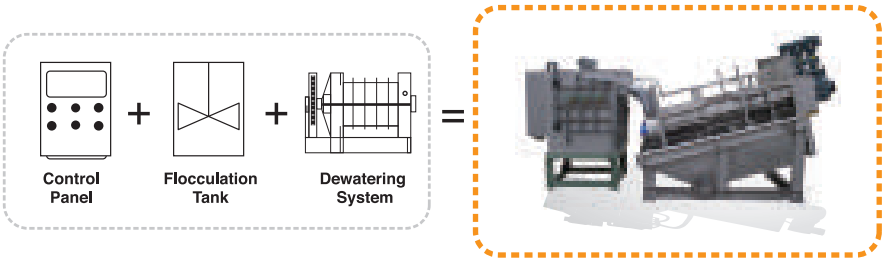
Built-in self-cleaning system handles oily sludge without clogging and requires no rinsing water to prevent clogging.

Comparison Table			
Dewatering System	VOLUTE	BELT PRESS	CENTRIFUGE
Low concentrated sludge	Yes	No	No
Pre-thickening	No	Yes	Yes
Storage Tank	No	Yes	Yes
Footprint	Small	Large	Small
Power Consumption	Low	High	High
Rinsing Water Consumption	Extremely Low	Extremely high	Low
Noise	Extremely Low	High	High
Vibration	Extremely Low	High	High
Maintenance	Easy	Difficult	Difficult
Maintenance Cost	Low	High	High
24 hour Operation	Yes	No	No

DEWATERING PRESS ES Series

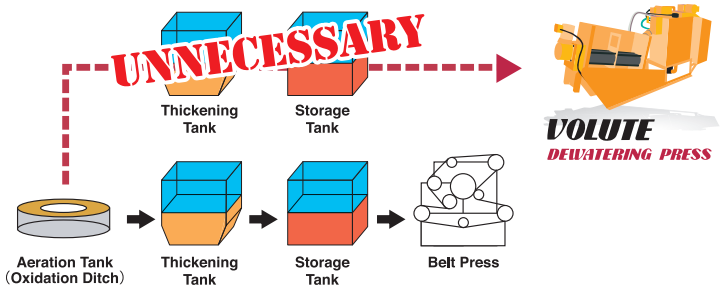
All-In-One Design

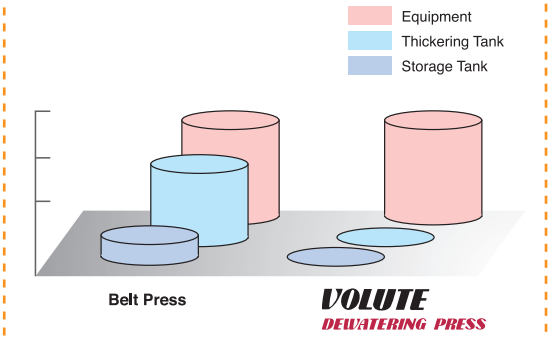
- Compact Design
- Easy Maintenance
- Small Footprint
- Easy Installation



Reduce Construction Costs!!

- Volute Dewatering Press has built-in thickening zone which eliminates the need for a thickener, sludge storage, or separate dosing facilities.
- Volute Dewatering Press is all-in-one construction which makes it very compact and economical.

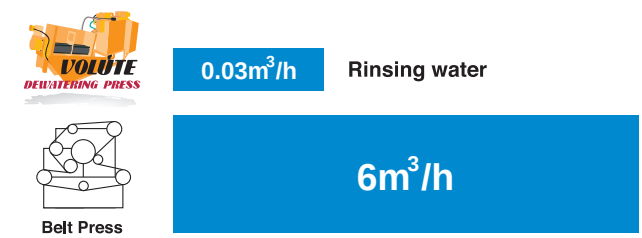




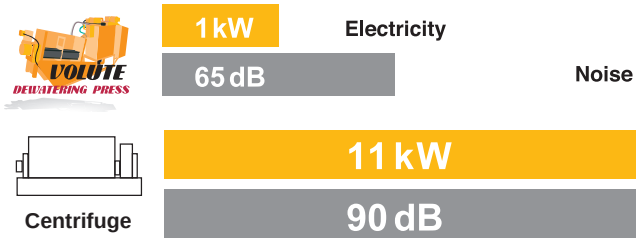
Low Running Costs!!

- Require no frequent operation attendance , lowering labor cost.
- Extremely low power and rinsing water consumption.

Rinsing Water



Electricity & Noise



Note:The comparison was made between similar size of equipments.

DEWATERING PRESS Client Reference

Application 1.

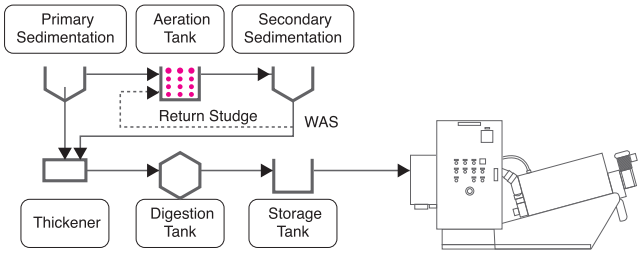
Comparison to Belt Press at Sewage Treatment Plant, ES-302

Problem

This sewage treatment plant had long-term issues with the existing belt press. The end-user had not only had problems with high cost for water consumption but also had maintenance issues arising out of frequent clogging problems. Since this plant mixes sludge cake with wood chips for composting, there had also been an issue concerning the dryness of sludge cake from the belt press, causing their composting process to be inefficient

Solution

Now, Volute Dewatering Press ES-302 is installed for sludge dewatering whereas the belt press is kept as a stock for emergencies.



Result

	Belt Press	Volute Dewatering Press
Sludge Information	Sewage Treatment Plant Digested Sludge 3.7 %	
Cake Solids Content	17.5 %	**21.5 %**
Sludge Cake Volume	6.4 t-wet/day	**5.2 t-wet /day**
Water Consumption	5.0 m^3/h	**0.08 m^3/h**
Power Consumption	2.0 kW	**1.2 kW**

End User's Voice

“Volute Dewatering Press enables fully automatic operation and the maintenance works now became much easier. The cost for water and power consumption was also reduced to a great extent. Furthermore, since we mix the sludge cake with wood chips for composting, we are now extremely satisfied with the high dry solids content of sludge cake achieved by Volute Dewatering Press”.

Application 2.

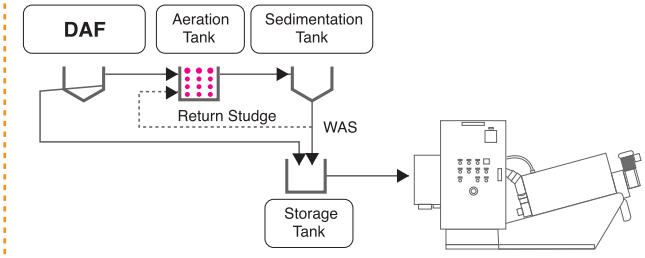
Poultry Processing Plant in Ukraine, ES-303

Problem

In this Poultry Processing Plant, the cost for sludge disposal had been extremely high since they disposed of sludge by tanker truck without sludge dewatering process. Because of the high sludge disposal cost, they had looked for a sludge dewatering equipment suitable for dewatering oily sludge, but could never find a solution.

Solution

Volute Dewatering Press ES-303 was installed to handle oily sludge.



Result

	Volute Dewatering Press
Sludge Type	**Mixture of DAF Sludge & WAS**
Sludge Supply	**4.0 m^3**
Sludge Input	**4.0 %**
Cake Solids Content	**28.5 %**
Operation Time	**8 h/day(automatic)**

End User's Voice

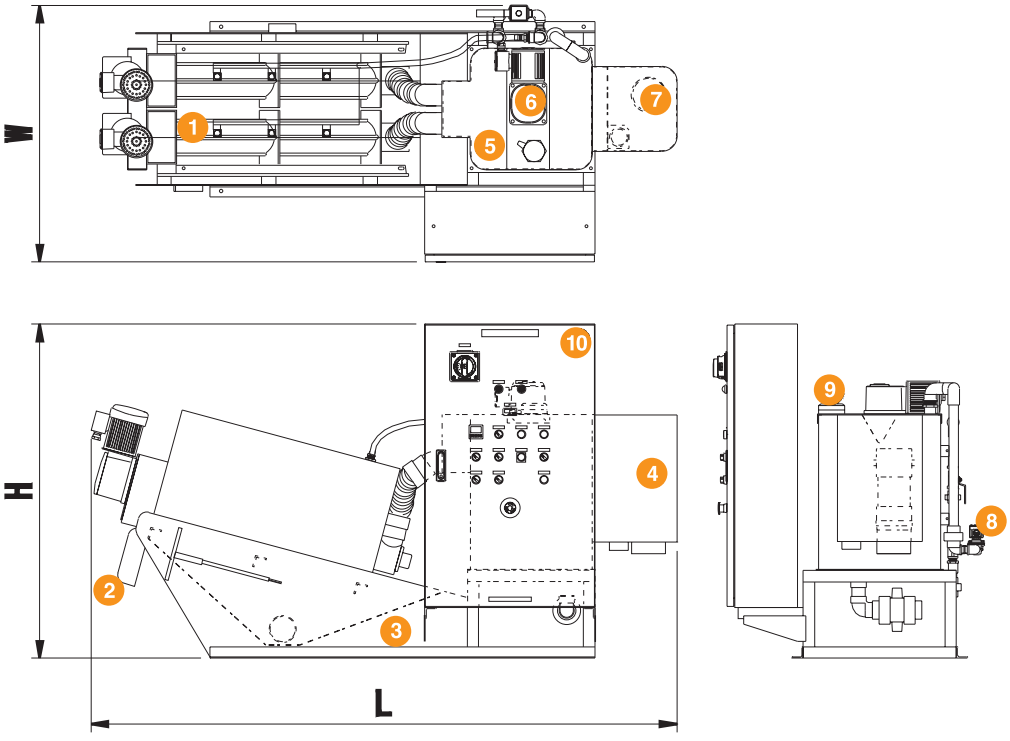
"We had always been concerned about clogging problems which could be caused by dewatering such oily sludge. Nevertheless, Volute with its high resistance to oily sludge has now been operating without any clogging problems and we are very content with the installation. Furthermore, our operator now needs minimum attention to the equipment because of its fully automatic operation. Overall, the cake dry solids content achieved is as high as 28.5 % and we are very satisfied with the solution which Volute Dewatering Press brought to us".

DEWATERING PRESS Specification

	Throughput(kg-DS/h)			Volute Cylinder Type	Dimensions(mm)			Electrical Power (kW)	Rinsing Water Consumption (L/h)	Empty Weight (kg)	Operating Weight (kg)
	Flow Rate(m^3/h)				L	W	H				
	Waste Activated Sludge · Chemically Sedimented-Sludge at 1%	DAF Sludge at 2%	Mixture of Primary and Waste Activated Sludge at 3%								
ES-051SA	~1 kg-DS/h ~0.1 m^3/h	~2 kg-DS/h ~0.1 m^3/h	~5 kg-DS/h ~0.17 m^3/h	ϕ50x1	1095	738	1100	0.2	24	155	175
ES-101SA	~3 kg-DS/h ~0.3 m^3/h	~5 kg-DS/h ~0.25 m^3/h	~13 kg-DS/h ~0.43 m^3/h	ϕ100x1	1831	766	1180	0.2	24	240	330
ES-131SA	~6 kg-DS/h ~0.6 m^3/h	~10 kg-DS/h ~0.5 m^3/h	~26 kg-DS/h ~0.87 m^3/h	ϕ130x1	1974	766	1180	0.2	24	260	355
ES-132SA	~12 kg-DS/h ~1.2 m^3/h	~20 kg-DS/h ~1.0 m^3/h	~52kg-DS/h ~1.73 m^3/h	ϕ130x2	2068	906	1180	0.3	48	340	485
ES-201SA	~12 kg-DS/h ~1.2 m^3/h	~20 kg-DS/h ~1.0 m^3/h	~52kg-DS/h ~1.73 m^3/h	ϕ200x1	2548	879	1389	0.28	32	325	475
ES-202SA	~24 kg-DS/h ~2.4 m^3/h	~40 kg-DS/h ~2.0 m^3/h	~104kg-DS/h ~3.47m^3/h	ϕ200x2	2548	1140	1389	0.76	64	660	880
ES-301F/SA	~30 kg-DS/h ~3.0 m^3/h	~50 kg-DS/h ~2.5 m^3/h	~130kg-DS/h ~4.33m^3/h	ϕ300x1	3292	970	1678	0.74	40	855	1145
ES-302F/SA	~60 kg-DS/h ~6.0 m^3/h	~100 kg-DS/h ~5.0 m^3/h	~260kg-DS/h ~8.67m^3/h	ϕ300x2	3492	1250	1678	1.11	80	1310	1990
ES-303F/SA	~90 kg-DS/h ~9.0 m^3/h	~150 kg-DS/h ~7.5 m^3/h	~390kg-DS/h ~13 m^3/h	ϕ300x3	3641	1596	1678	1.86	120	1805	2775
ES-351SA	~60 kg-DS/h ~6.0 m^3/h	~100 kg-DS/h ~5.0 m^3/h	~260kg-DS/h ~8.67m^3/h	ϕ350x1	3859	1160	2247	1.87	80	1570	2170
ES-352SA	~120 kg-DS/h ~12 m^3/h	~200 kg-DS/h ~10 m^3/h	~520kg-DS/h ~17.3m^3/h	ϕ350x2	4159	1550	2247	3.75	160	2660	3610
ES-353SA	~180 kg-DS/h ~18 m^3/h	~300 kg-DS/h ~15 m^3/h	~780kg-DS/h ~26 m^3/h	ϕ350x3	4424	2100	2247	6.0	240	3870	5370

Throughput refers to dry solids (kg-DS/h) being discharged from the equipment.
Standard throughput is based on sludge cake with 80±5% water content (20±5% solids content)
Figures above may vary depending on conditions.
Specifications may be changed without notice. Updated technical data furnished upon request.

Layout Drawings



1. Volute Drum
2. Cake Chute
3. Filtrate Pan
4. Flow Control Tank
5. Flocculation Tank
6. Flocculation Tank Agitator
7. Water Level Adjuster
8. Solenoid Valve
9. Electrode
10. Control Panel

THICKENER Advantages

Advantages

High thickening performance

Volute Thickener thickens low concentration sludge with 0.2 % to >4 %

Stable sludge output

The clog-free construction of Volute Thickener allows thickening sludge with an extremely small amount of rinsing water.

Stress-free maintenance

A partial overhaul of the Thickening Drum is a half-day work and it can be undertaken on site easily.

Client Reference

Underground Wastewater Treatment Plant in Commercial Buildings VOLUTE THICKENER VT-101 MODEL

Problem

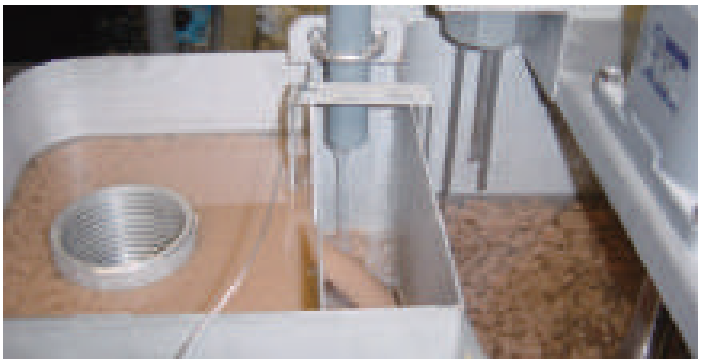
High sludge disposal cost had always been a major issue and they looked for a sludge dewatering unit to reduce this cost. Nevertheless, there were difficulties in conveying the dewatered sludge cake from underground, so they instead used a thickener to pre-thicken the sludge to make it easier to handle. However, none of the thickeners they had found could fit in the limited space in the underground WWTP for installation.

Solution

Volute Thickener VT-101 model was installed in the WWTP to solve their problems. Volute Thickener VT-101 model, which is very compact in size (1.6 m^2), was the best fit for this type of underground WWTP and Volute Thickener not only made installation in such limited space possible but also successfully reduced the sludge disposal cost by 1/5.

Result

Volute Thickener	
Sludge Type	**Waste Activated Sludge**
Sludge Supply	**1.5 m^3/h**
Sludge Input	**0.9 %**
Sludge Output	**5.4 %**
Polymer Addition	**10 g/kg-DS**
Operation Time	**8 h/day(automatic)**



End User's Voice

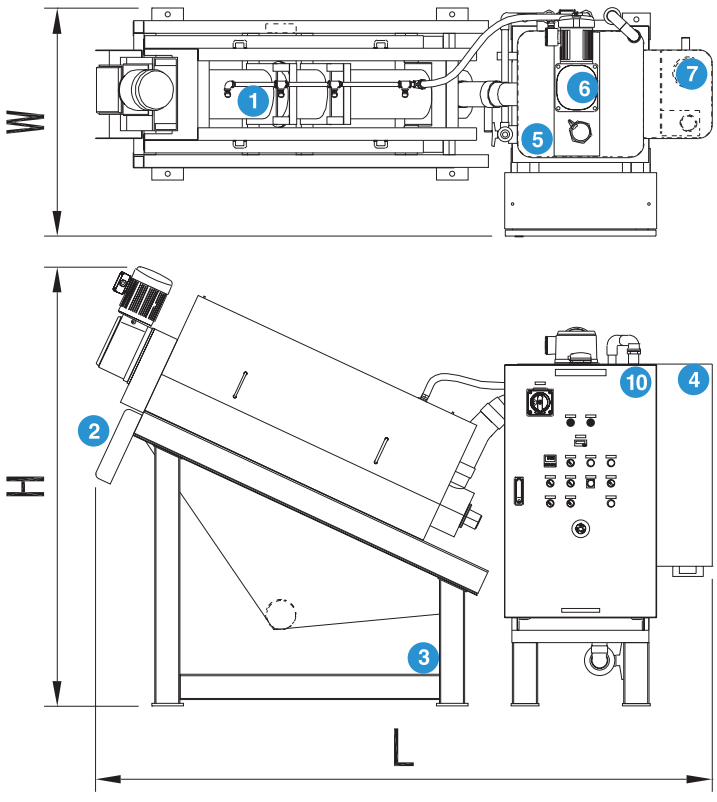
We had looked for a thickener for the WWTP, but could never find a suitable one until we found VT-101 model.
VT-101 model manufactured by AMCON is very compact and we were able to install the system in WWTP without any difficulties, despite there was only little space available. Also, the maintenance of Volute Thickener, because of its fully automatic design, is very easy and the total sludge disposal cost was reduced to a great extent. We are overall very happy and satisfied with the installation of Volute Thickener.

THICKENER Specification

	Capacity(Inflow) m³/h Feed Sludge Concentration 0.4 % Outlet Sludge Concentration 4.0 %	Volute Cylinder Specifications	Dimensions(mm)			Electrical Power (kW)	Rinsing Water Consumption (L/h)	Empty Weight (Kg)
			L	W	H			
VT-101	~ 1	ϕ100x1	1771	906	1250	0.3	24	180
VT-131	~ 3	ϕ130x1	1771	906	1250	0.3	24	190
VT-201	~ 10	ϕ200x1	2451	900	1736	1.15	32	365
VT-301	~ 30	ϕ300x1	3477	1323	2025	1.5	40	845
VT-302	~ 60	ϕ300x2	4777	1685	2025	3.0	80	1505
VT-303	~ 90	ϕ300x3	4977	1930	2025	4.45	120	1955

Capacity shall be based on an operation thickening sludge with 0.2 % concentration into >4 %
Figures above may vary depending on conditions.
Specifications may be changed without notice. Updated technical data furnished upon request.

Layout Drawings



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Applications

Type of Industry

Volute Dewatering Press ES-131 Model

Volute Thickener VT-303 Model

Industrial Applications

Food Processing Plant

Dairy Product, Soft Drink, Wine, Beer, Sauce, Confectionery, Bread, Meat, Fish, Noodle, Seasoning, Flour, Frozen Food, Sausage, Prepared Food, Cooking Oil, Slaughterhouse

Chemical Plant

Chemical, Cosmetic, Textile, Paint, Adhesive, Cleaner, Cast Metal, Pharmaceutica

Manufacturing Plant

Automobile, Automobile Parts, Control Circuit, Electric

Municipal Applications

Sewage, Septage Tank, Rural Sewerage Projects

Other Applications

Livestock farm (hog, cow, poultry),
Livestock Experimental Station

Type of Sludge

Waste Activated Sludge

SBR
Extended Aeration
Oxidation Ditch

DAF Sludge

Dissolved Air Flotation

Chemical Sludge

Chemical Precipitation

Digested Sludge

Anaerobic Digestion
Aerobic Digestion

Raw Sludge

Volute Thickener
VT-303 Model

Volute Dewatering Press
ES-353 Model

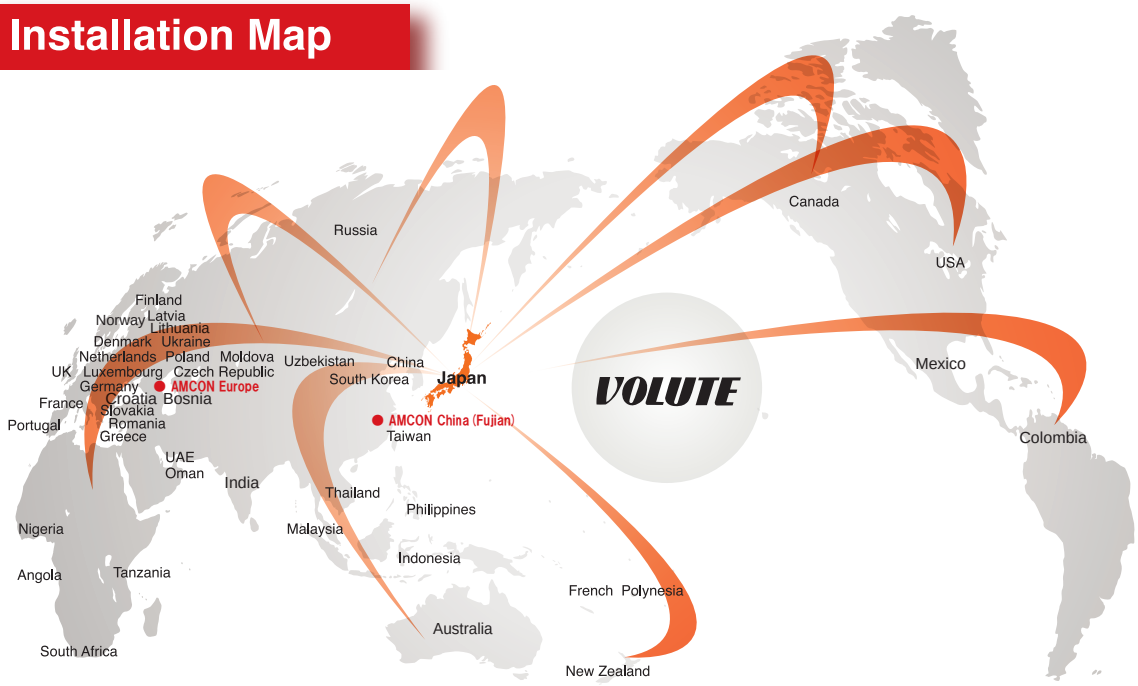
VOLUTE Achievement

Installation Map

■Total Amount:2057
(December,2013)

■Japan:1366
■Overseas:691

(■Municipal:622)
(■Industrial:1435)

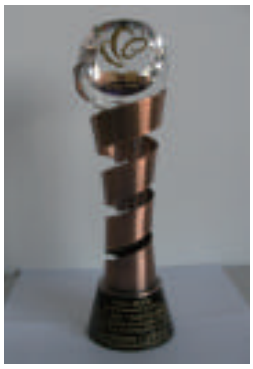


Asia
Middle East
Europe
Africa
Oceania
Americas
More than 56 countries.

AMCON INC. Has Gained World Recognition for its Dewatering Press

China International Industry Fair 2007

Volute Dewatering Press was awarded with the glorious bronze prize for its superb technology at "China International Industry Fair 2007" held in Shanghai in November 2007. Only 30 companies won the prizes out of 1775 exhibitors in this fair and the technology of Volute Dewatering Press was also approved by China. CIIF 2007, sponsored by the Chinese government, was one of the biggest events of the industry fairs held in China, comprising 1775 exhibitors, 4522 booths and over 90,000 visitors. The primary reason for winning the bronze prize lies in its innovative "clog-free"construction, which is distinct from traditional sludge dewatering equipments.
AMCON INC. will continue to offer the innovative features of Volute Dewatering Press to customers all over the world.



Amsterdam Aquatech 2004

In Amsterdam AQUATEC Exhibition 2004, one of the big three international events for water treatment technology held once every two years in the Netherlands, AMCON's Volute Dewatering Press was nominated for an authoritative innovation award. In the field of water treatment technology where foreign technology importation is widespread, the Japanese technology is certified by world's water specialists!
AMCON INC. will move towards developing technologies which are revered around the world for its originality.

AMCON Corporate Profile

AMCON manufactures and markets Volute Dewatering Press "ES series", developed in 1991 with its original "clog-free structure", and Volute Thickener "VT series".

Volute Dewatering Press, patented or patent pending in a various regions, including North America, Europe, Asia, Africa, is currently installed in 57 countries (Dec. 2013) and has been demonstrating great performance in various plants.

AMCON will continue to offer many advantages over current sludge management practice to meet our client's needs.

Amenity Convenience

AMCON

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