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ROTARY DRUM AND GRAVITY TABLE SLUDGE THICKENERS

The Rotary Drum and Gravity Table Sludge Thickeners are simple and compact equipments. The water separation from sludge occurs by gravity as the sludge is filtered over a draining cloth. The separated water goes through the cloth while the thickened sludge is retained on it. For a correct thickening of the sludge it must be mixed with a proper polymer solution. There are two types of Sludge Thickeners:

- with Rotary Drum
- with Gravity Table

The Rotary Drum Sludge Thickeners are recommended to treat up to 80 m³/h of sludge, beyond this limit Gravity Table Sludge Thickeners are more suitable and efficient.

The Rotary Drum and Gravity Table Sludge Thickeners can treat a sludge with a minimum concentration of 0.4 %.

The percentage of dry solids in the treated product goes from 5 to 7%.

Our range of production of Rotary Drum and Gravity Table Sludge Thickeners includes:

No. 5 models with Rotary Drum whose capacity goes from 5 up to 80 m³/h.

No. 5 models with Gravity Table whose capacity goes from 20 up to 150 m³/h and more.

Accessori

Automatic Polymer Preparation Units

Feed pumps

Dosing pumps

Wash water pumps

Control panels

OUTLINES OF SLUDGE THICKENING

The aim of the sludge thickening process is the increase of the suspended solids concentration in the sludge to be treated, usually by 0.5÷1% but even by 5÷6%.

The dynamic thickening does not follow the principles of decantation by gravity because, in this case, the sludge is conditioned with a polymer solution.

A good and correct conditioning of sludge gives a flocculation capable of producing large size flocs which allows to achieve, by filtering the sludge over a belt, very high flow rates and concentrations.

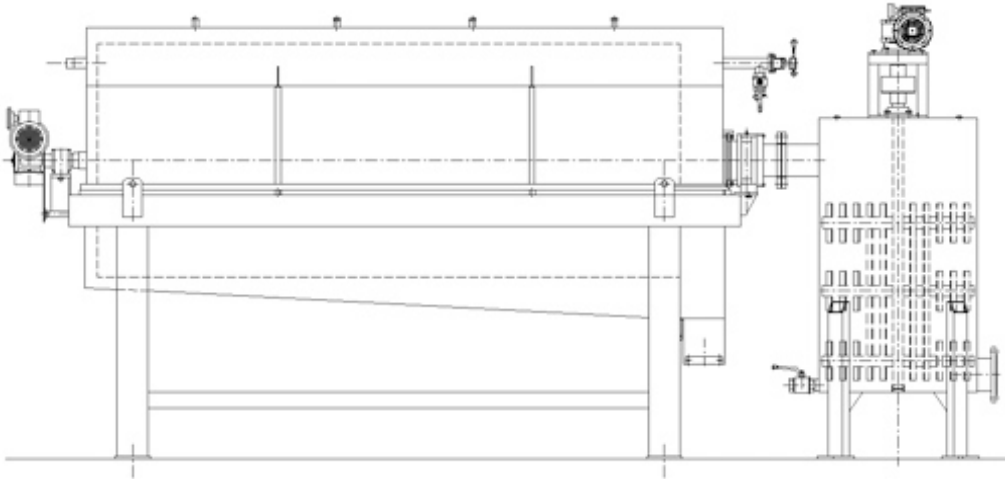
The sludge concentration, resulting from the dynamic thickening depends on:

- a correct polyelectrolyte dosing, measured in grams per kg. of dry solids;
- a correct time of the sludge mixing with the polymer solution;
- a correct gradient of velocity of mixing, measured in seconds⁻¹
- the specific hydraulic flow rate, measured in m³/hour of sludge per m² of filtering cloth

The mixing of sludge during the sludge thickening by rotary drum occurs during the continuous rotation of the drum itself.

During the sludge thickening by gravity table, the sludge is "turned up" by means of turning devices fixed over the draining belt. The higher efficiency of the continuous mixing in the rotary drum, rather than the action of the sludge turning devices on the belt, normally allows to achieve a better concentration of the sludge thickened by means of a rotary drum

ROTARY DRUM SLUDGE THICKENER MOD. EM 130



Application	Sludge thickening.
Characteristics	The equipment consists of a mixer and a rotary drum.
Operation	The sludge to be treated is conditioned with polyelectrolyte in the mixer, then the flocculated sludge goes into the drum where, during rotation, it is furtherly mixed and the water is separated and drained through the filtering belt. The thickened sludge is discharged outside the drum.
Materials	AISI 304 or AISI 316 stainless steel.
Installation	The drum and the mixer are supplied completely assembled and ready to be installed.
Drum diameter	800-600-1200 mm.
Drum length	1500-2000-3000 mm.

Operation principles

The equipment proposed allows to achieve an efficient thickening of the sludge.
The separation process can be summarized and divided into the following phases:

Mixing.

The sludge is pumped into the mixer where it is deeply mixed with the polymer solution.
In this way we obtain a suspension of "flocs" which can easily and quickly release the free water through the filtering cloth.

Drainage by gravity

The sludge, previously mixed with the polymer, is conveyed into the drum thickener through a pipe and is forced to cross all the drum length, in contact with the filtering cloth, in order to reach the outlet.

Thanks to the drum rotation, a large filtering area, which is continuously cleaned by the washing system, gets in contact with the mixed sludge. This allows the water, separated from the sludge thanks to the polymer action, to filter out through the cloth.

Cloth washing system

Consisting of a header pipe equipped with spraying nozzles and a brush to clean them which operates when the equipment is running.

The system is placed in a sealed tank in order to avoid any possible aerosol effect.

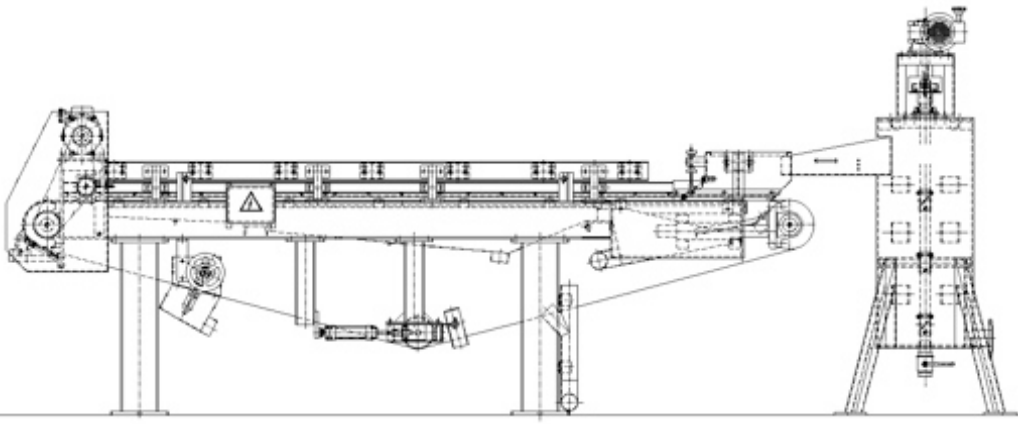
The dewatered sludge concentration can be adjusted by changing:

- a) the polymer quantity in the solution;
- b) the drum rotation speed;
- c) the cloth washing flow pressure.

Dati tecnici e dimensionali

		ID6015	ID6020	ID8020	ID8025	ID1230	
1.1	Sludge to be treated flow rate	: m ³ /h.	15	25	30	40	80
1.2	Sludge to be treated concentration	: %	0,5-3	0,5-3	0,5-3	0,5-3	0,5-3
1.3	Dewatered sludge concentration	: %	5-8	5-8	5-8	5-8	5-8
1.4	Washwater delivery at 3 bar	: m ³ /h	3	4	4	5	6
1.5	Polyelectrolyte consumption	: Kg/ton S.S.	3-5	3-5	3-5	3-5	3-5
1.6	Mixer diameter	: mm.	500	500	500	800	800
1.7	Mixer height	: mm.	1200	1200	1200	1400	1400
2.8	Mixer useful volume	: litri.	0,2	0,2	0,2	0,6	0,6
2.9	Contact time in the mixer	: sec					
2.10	Filtering drum diameter	: mm.	600	600	800	800	1200
2.11	Filtering drum length	: mm.	1500	2000	2000	2500	3000
2.12	Filtering drum speed	: RPM	3-16	3-16	3-16	3-16	3-16
2.13	Mixer power	: kW.	0,75	0,75	0,75	0,75	0,75
2.14	Drum power	: kW.	0,37	0,55	0,37	0,55	1,1
2.15	Service factor	: f.s.	1,8	1,8	1,8	1,8	1,8
2.16	Motors protection	: IP	55	55	55	55	55
2.17	Insulation class		F	F	F	F	F

GRAVITY TABLE SLUDGE THICKENER MOD. EM 100



Application	Sludge thickening.
Characteristics	The equipment consists of a mixer and a gravity table.
Operation	The sludge to be treated is conditioned with polyelectrolyte in the mixer, then the flocculated sludge is discharged on the draining belt of the gravity table by means of a spreading device. The water is separated and drained through the filtering belt. The thickened sludge is discharged outside the table. The sludge turning devices placed over the belt make the water drain out.
Materials	Galvanized carbon steel or Stainless steel.
Installation	The machine is supplied completely assembled and ready to be installed.
Belt width	1200-1600-2100-2500-3000 mm.

Operation principles

The operation of the equipment mainly consists in draining the water by gravity and in evacuating the sludge by means of a polyester belt which, supported by a grating in plastic material, carries it away continuously. The separation process can be summarized and divided into the following phases:

a) Mixer. Steel-made, it is equipped with a cylindrical body and an impeller capable of deeply mixing the sludge with the polymer solution. In this way we obtain a suspension of "flocs" which can easily and quickly release the free water through the filtering cloth.

b) Sludge distribution The flocculated sludge is evenly spread over the belt by a special system (distribution box).

c) Drainage by gravity The water is separated by gravity. The sludge, while it is carried on the belt, is turned up by some triangle-shaped special devices which make the separation process easier.

d) Belt washing Consisting of a header pipe equipped with spraying nozzles and a brush to clean them which operates when the equipment is running. The system is placed in a sealed tank in order to avoid any possible aerosol effect.

e) Dewatered sludge removal The solid sludge cake which remains on the cloth is scraped away by a blade which is kept in contact with the belt thanks to a system of springs.

Technical and dimensional data

			EM 100/1200	EM 100/1600	EM 100/2100	EM 100/2500	EM 100/3000
1.1	Sludge to be treated	m ³ /hr:	50	75	100	125	150
1.2	Sludge to be treated concentration	: %	0,5÷2	0,5÷2	0,5÷2	0,5÷2	0,5÷2
1.3	Dewatered sludge concentration	: %	4÷7	4÷7	4÷7	4÷7	4÷7
1.4	Polyelectrolyte consumption	: gr/Kgss	3÷5	3÷5	3÷5	3÷5	3÷5
1.5	Belt width	: mm	1200	1600	2100	2500	3000
1.6	Belt speed	: mt/min.	1,6-8,5	1,6-8,5	1,6-8,5	1,6-8,5	1,6-8,5
1.7	Mixer diameter	: mm	500	500	500	800	800
1.8	Mixer height	: mm	1200	1200	1200	1400	1400
1.9	Mixer useful volume	: m ³	0,18	0,18	0,18	0,7	0,7
1.10	Contact time in the mixer	: sec.	>17	>11	>19	>15	>12
SERVICES							
Belt wash water							
1.10	Flow rate	: m ³ /hr	3	5	6	8	10
1.11	Head	: Bar	5	5	5	5	5
Compressed air							
1.12	Flow rate	: lt/min.	25	25	25	25	25
1.13	Pressure	: Bar	7	7	7	7	7
Polymer							
1.15	Delivery pressure	: Bar	2,5	2,5	2,5	2,5	2,5
Equipments voltage and power							
1.16	Equipments voltage	:	380-3-50	380-3-50	380-3-50	380-3-50	380-3-50
1.17	Auxiliaries	:	110	110	110	110	110
1.18	Gravity table belt drive	: kW	0,75	0,75	0,75	0,75	0,75
1.19	Mixer drive	: kW	0,55	0,75	0,75	1,1	1,5