



ECOMACCHINE

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OGGETTO/SUBJECT: Our offer no. 22-484-10-GC

Dear Sir,

In reply to your enquiry, please find herewith enclosed our quotation.

Should you need any further information, please do not hesitate to contact us.

Looking forward to hearing from you soon, best regards.

ECOMACCHINE srl
Sales Dept.,
Eng. Gabriele Caccia

**BELT FILTER PRESS
C/W PREDEWATERING DRUM B
+ STATIC MIXER
MODEL EM 405/800-B**

1. PROCESS AND OPERATION PRINCIPLES

The operating principle of the belt filter press is to press the sludge between the two permeable clothes that run and wind up and off in synchronism around the pressure rollers. The sludge pressing is the result of the tension applied to the filtering clothes. The dewatering process may be summarized as follows:

1.1 *Predewatering.*

Carried out by means of a predewatering drum where the sludge/polymer mixing takes place and the water coming from suspended particles is drained away through the drum outer filtering cloth.

This step is particularly important in case of diluted sludge. As a matter of fact, in this case, only the use of a predewatering drum allows the formation of a sludge solid cake on the filtering clothes, which can be easily removed by the doctor blades, avoid any side dripping.

1.2 *Drainage by gravity*

The sludge discharged by the pre-dewatering drum is distributed on the cloth. In the first phase the sludge dewateres by gravity. In this way it is possible to obtain concentrations more and more increasing before getting to the pre-compression phase.

1.3 Pre-compression

The clothes getting nearer each other wedgewise while running, compress gradually the sludge.

The sludge amount may be varied, according to its characteristics, affecting the cloth speed system.

1.4 Compression

The clothes, winding up on the cylinders, alternatively compress strongly the sludge cake, causing the dewatering of the cake.

The dewatering efficiency can be adjusted changing the tension applied to the clothes.

1.5 Cake breakaway

The clothes, winding up on the final cylinders, let the dewatered sludge falling down onto a conveying system, in any case it can be easily removed by means of scrapers, kept in touch with the clothes by an adjustable springs system.

2. TECHNICAL CHARACTERISTICS

2.1	Sludge characteristics:		
2.1.1	Kind of sludge	: Biological DIGESTED SLUDGE	
2.1.3	Sludge concentration	: %	2,6
2.1.5	Working hours	: hr/day	16/24
2.1.6	Feed flowrate	: m ³ /hr	4,42
2.1.7	Dry delivery	: Kg/hr	115
2.1.8	Dry delivery per day	: Kg/day	1.840
2.1.9	Polyelectrolite specific cons.	: gr/Kg	5
2.2	Filter press sizing:		
2.2.1	Type	: EM 405	800
2.2.2	Pressing rollers	: No.	5
2.2.3	Clothes width	: mm.	800
2.2.4	Filtering clothes speed	: mt/min.	1 ÷ 6
2.2.7	Dry concentration in outlet	: %	15-22
2.2.8	Machine weight	: Kg	2300
2.2.9	Overall width	: mm.	1675
2.2.10	Overall length	: mm.	3640
2.2.11	Width between supports	: mm.	1270
2.2.12	Length between supports	: mm.	1800
2.2.13	Height	: mm.	2530

	Predewatering drum B		
3.1	Drum diameter	: mt.	0.6
3.2	Drum length	: mt.	0,75
3.3	Total length	: mt.	1,5
3.4	Total width	: mt.	0,89
3.5	Installed power	: Kw	0.37
3.6	Sludge inlet pipe diameter	: DN	50
3.7	Inlet flowrate	: m ³ /hr	4,42
3.8	Inlet concentration	: %	2-3

3.9	Outlet concentration	: %	~5÷6
3.10	Total weight	: Kg.	500
	<i>Static mixer characteristics:</i>		
4.1	Diameter	: mm	150
4.2	Height	: mm	200

3. REQUIRED SERVICES

3.1	<i>Cloth washwater:</i>		
3.1.1	Flowrate	: m ³ /hr	8 ÷ 10
3.1.2	Head	: bar	5
3.2	<i>Services air:</i>		
3.2.1	Mass	: lt/min.	25
3.2.2	Head	: bar	7
3.3	<i>Polyelectrolyte:</i>		
3.3.1	Pump delivery	: lt/hr	130 ÷ 650 @288 l/hr at 0,2%
3.3.2	Head	: bar	2
3.4	<i>Electric uses:</i>		
3.4.1	Equipment voltage	: 400 - 3 - 50	
3.4.2	Auxiliary services voltage	: 110 V	
3.4.3	Installed powers:		
3.4.3.2	Filter press clothes traction	: kW	0.55

4. SUPPLY DESCRIPTION

4.2 *Bearing frame*

Frame realized in SST 304L.

4.3 *Inlet sludge distribution hopper*

Completely made of SST AISI 304L.

4.4 *Rollers*

- ◇ no. 5 pre-compression rollers
- ◇ no. 5 pressing rollers
- ◇ no. 2 tension rollers
- ◇ no. 2 transmission and sludge discharge rollers
- ◇ no. 2 trajectory correction rollers

The pre-compression rollers in the wedge zone are made of mild steel coated by Rilsan (Bayer).

The pressing, tensioning, transmission and sludge discharge rollers, as well as the motorized pressing roller and the trajectory correction one are coated by 8 mm. of rectified rubber layer.

4.5 *Bearings*

All the rollers are supported by ball bearings which are suitably sized and guarantee a perfect water proof.

4.6 *Filtering belts*

The filter press is equipped with SST clipper seam belts, protected by epoxy resins.

4.7 *Belts traction system*

With epicyclic variable speed gearbox with manual speed adjustment, directly keyed to the roller.

4.8 Belts guide system

Pneumatic type with proportional action probes to keep the belts continuously centred and one upon the other.

4.9 Belts tension system

With pneumatic jacks (working pressure bars 3÷7).

4.10 Cake scraping doctor blades

They consist of no. 2 double plastic blades.

4.11 Belts washing system

It consists of three spray header pipes (two for the belts and one for the predewatering drum) c/w nozzles which can be cleaned by a special device with brush which can be operated by outside. The header pipes are protected by enclosures which avoid the aerosol effect and collect the belts wash water separately. The whole system is made of SST AISI 304L.

4.12 Water collecting pans

They are completely made of SST AISI 304L and are equipped with suitable slopes and outlets pipes.

4.13 Electric and pneumatic plants on board of the machine

Electric plant in waterproof casing with terminal strips for all the power cables and signals.

The machine is also equipped with a pneumatic plant complete with reduction filters and manometers to adjust the belts tension and the speed of the trajectory correction devices. All the conduits of the electric cables and the air pipes are made of self-extinguishing PVC, in accordance with the law.

4.14 Safety and alarms

The machine is equipped with push-buttons and limit switches to give alarm and stop when the belts tend to move out of the rollers (a malfunction of the belts trajectories control system).

As regards the safety, grating panels and protecting structures wherever the operator runs the risk to hurt in case of a careless operation, protect the machine, according to EEC regulations.