Fournier

SLUDGE DEWATERING – THE ROTARY PRESS

2017-05-12

Company Profile

- Founded in 1960
- Located in Quebec, Canada
- 250 Employees
- Building the Rotary Press since 1989
- Full fabrication shop

Rotary Press Installations (as of 5-1-17)		
USA	Canada	Rest of World
202	105	181

Rotary Press Installations vs Applications
May 2017

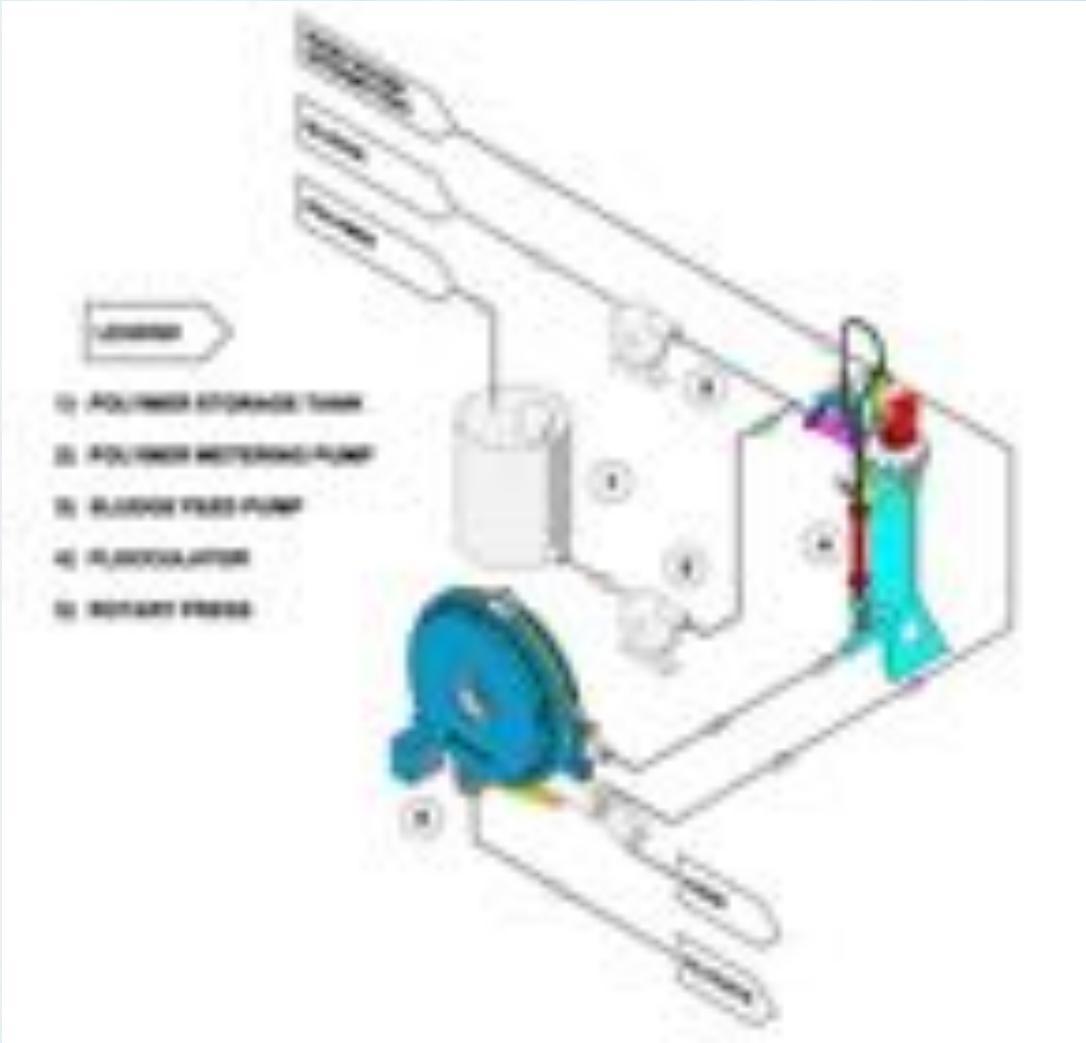
Applications	Number of units
Municipal	414
Septage sludge	22
Pulp and Paper	10
Animal manure	8
Industrial	16
Others	18
TOTAL	488

Discussion Outline

- Process Description
- Anatomy of the Press
- Performance

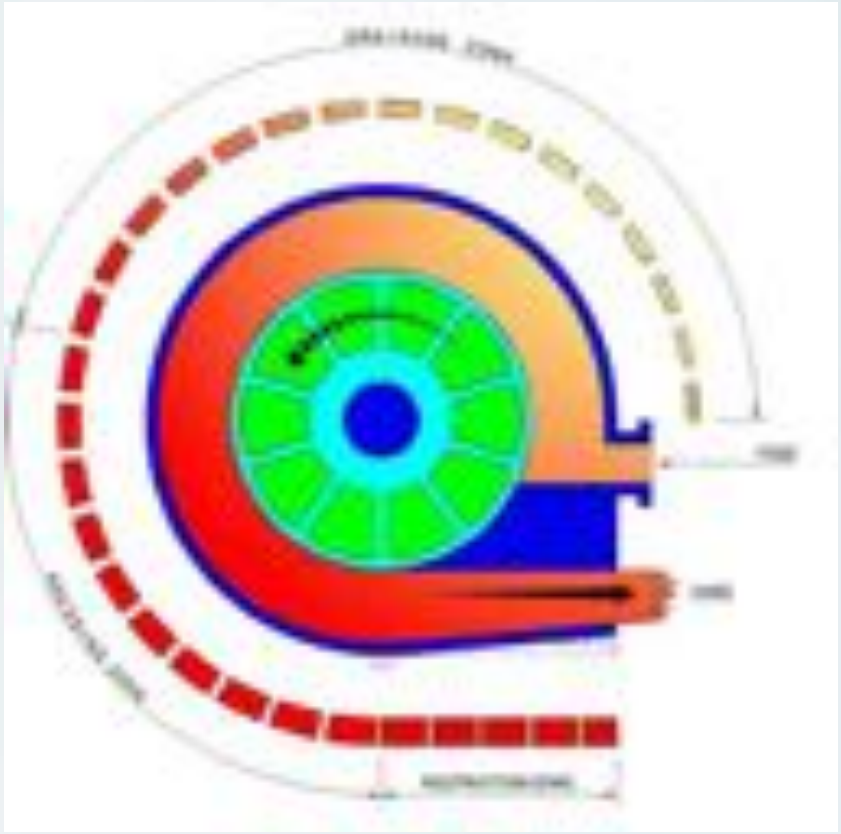
- Maintenance
- Selected Installations
- Q&A

Process Flow

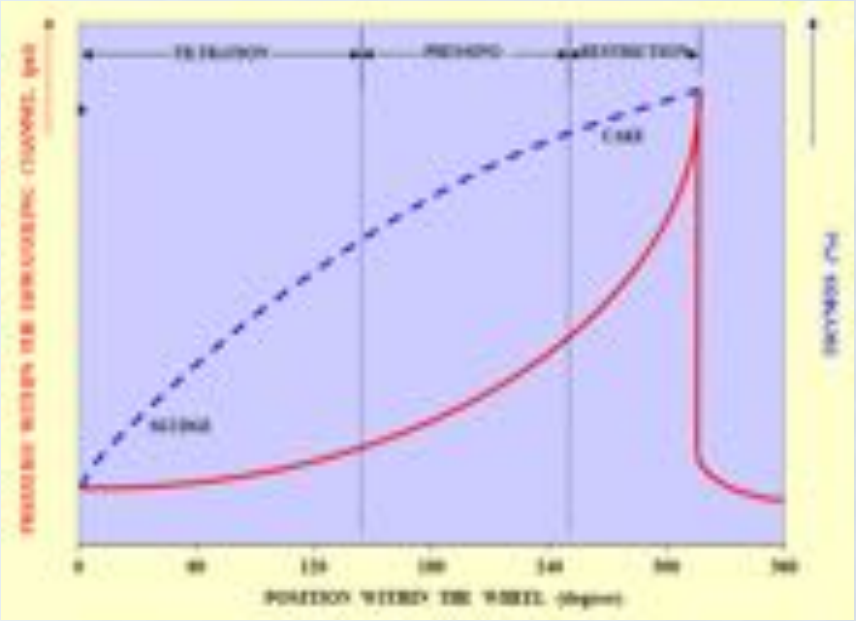


3D Animation

Inside the Channel

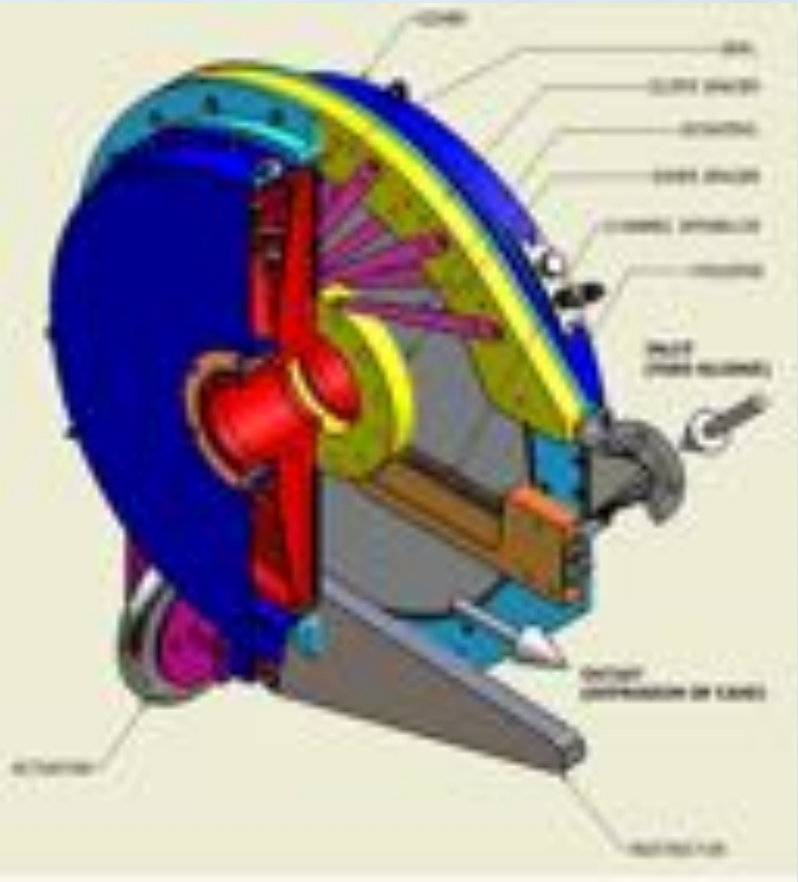


- Drainage Zone
- Pressing Zone
- Restriction Zone



Cutaway View

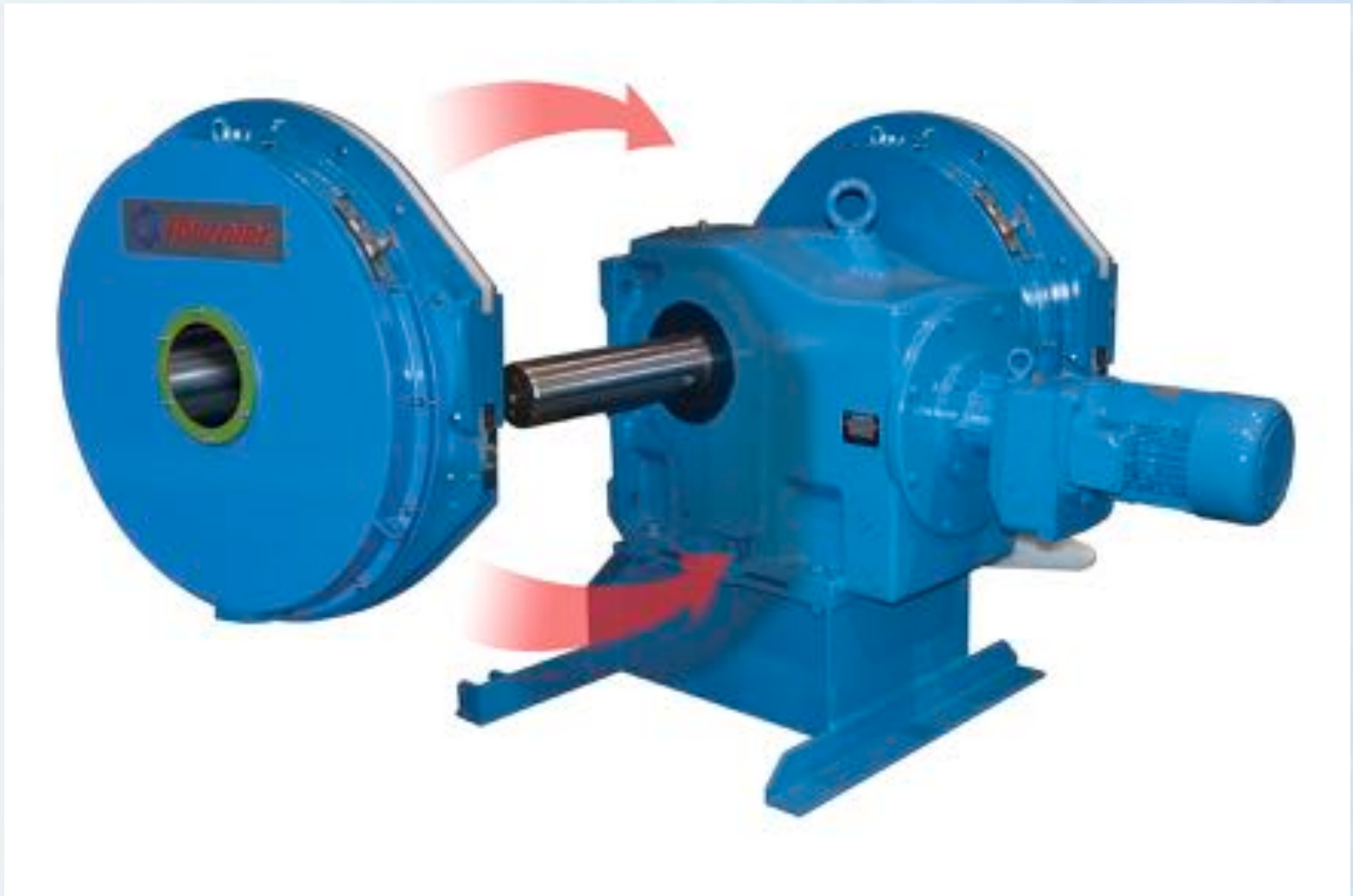
- 36” diameter wheel
- 2” channel bracketed with dewatering screens
- Sludge scrapers
- Air actuated restrictor bar
- FRP covers
- Water spray nozzles



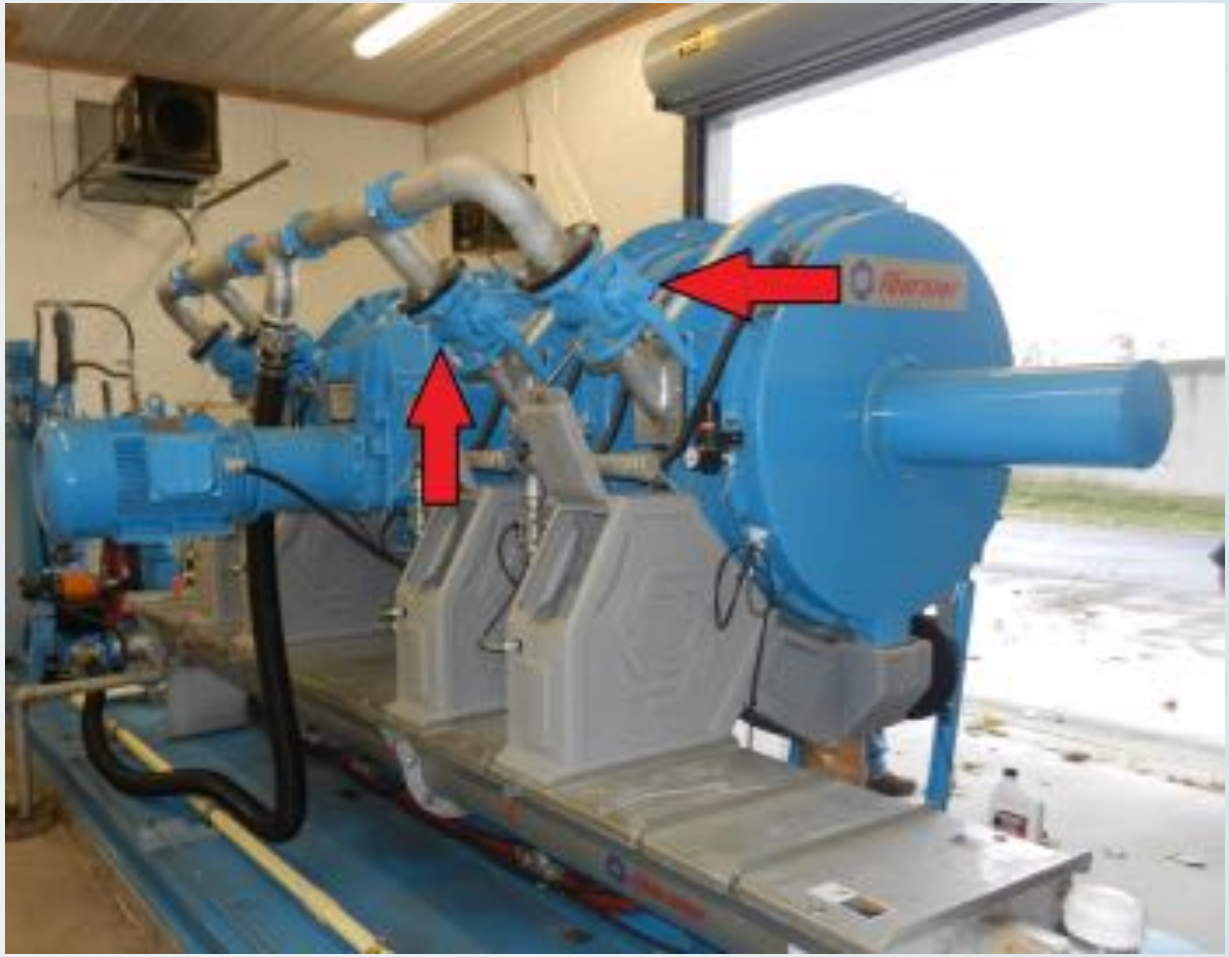
Gear Units

- Solid cast construction – greater rigidity, low noise.
- Case hardened gearing – proven long-term performance for strength and durability.
- High capacity roller bearings.
- Nitrided hollow bore standard on shaft mounted units – resists fretting corrosion.
- Hardened and group pinion shaft – long wearing seal surface.

Expandability

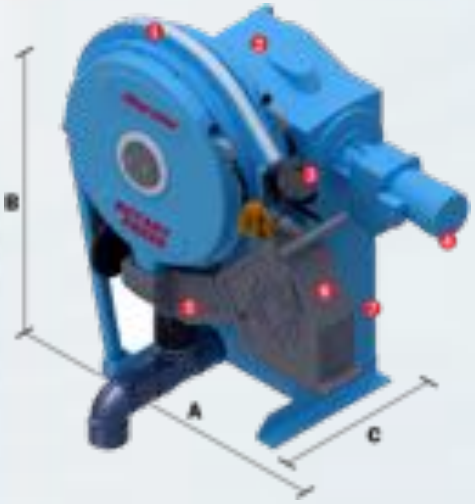


Isolation



Flexible Placement

Specifications



1 DEWATERING UNIT
2 GEAR UNIT
3 FEED INLET
4 MOTOR
5 FILTRATE DISCHARGE
6 CAKE OUTLET
7 BASE

Model No.	Model Channel	Dimensions (inches / mm)			Weight lb (kg)	Motor HP (kW)
		A	B	C		
1-900/1000CV	1	70.3" (1785 mm)	72.0" (1830 mm)	40.5" (1028 mm)	3966 lb (1799 kg)	5.0 HP (3.7 kW)
2-900/2000CV	2	77.5" (1969 mm)	72.0" (1830 mm)	64.8" (1646 mm)	6854 lb (3109 kg)	7.5 HP (5.6 kW)
3-900/3000CV	3	79.0" (2007 mm)	72.0" (1830 mm)	85.8" (2180 mm)	8498 lb (3855 kg)	10.0 HP (7.5 kW)
4-900/4000CV	4	91.3" (2320 mm)	75.4" (1915 mm)	101.6" (2580 mm)	10280 lb (4663 kg)	15.0 HP (11.1 kW)
5-900/5000CV	5	92.8" (2358 mm)	75.4" (1915 mm)	123.0" (3124 mm)	12235 lb (5550 kg)	20.0 HP (15.0 kW)
6-900/6000CV	6	92.8" (2358 mm)	75.4" (1915 mm)	144.4" (3668 mm)	13649 lb (6191 kg)	20.0 HP (15.0 kW)
7-900/7000CV	7	94" (2388 mm)	79" (2007 mm)	176" (4471 mm)	17409 lb (7913 kg)	30.0 HP (22.5 kW)
8-900/8000CV	8	94" (2388 mm)	79" (2007 mm)	187" (4750 mm)	18820 lb (8555 kg)	30.0 HP (22.5 kW)
* Varies as per installation layout						

Process Control Parameters

- Sludge inlet pressure – 2 to 7 PSI
- Outlet restrictor – 0 to 100 PSI
- Press rotating speed – 0.2 to 1.6 RPM
- Flocculator mixing speed –
- 100 to 450 RPM
- Polymer dose – 1% to 15%

All above parameters are accessible to the operator.

Unattended Operation

- Programmable to start and / or stop and wash down at a desired time
- Control system will shut the system down and send out an alarm if problems arise

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Sludge Comparison

Primary Sludge

- Fibrous and thick
- Typically 2% - 4%
- Dewaters to mid 30s
- Can run fast through the rotary press (up to 500 dry lbs/hr/channel)

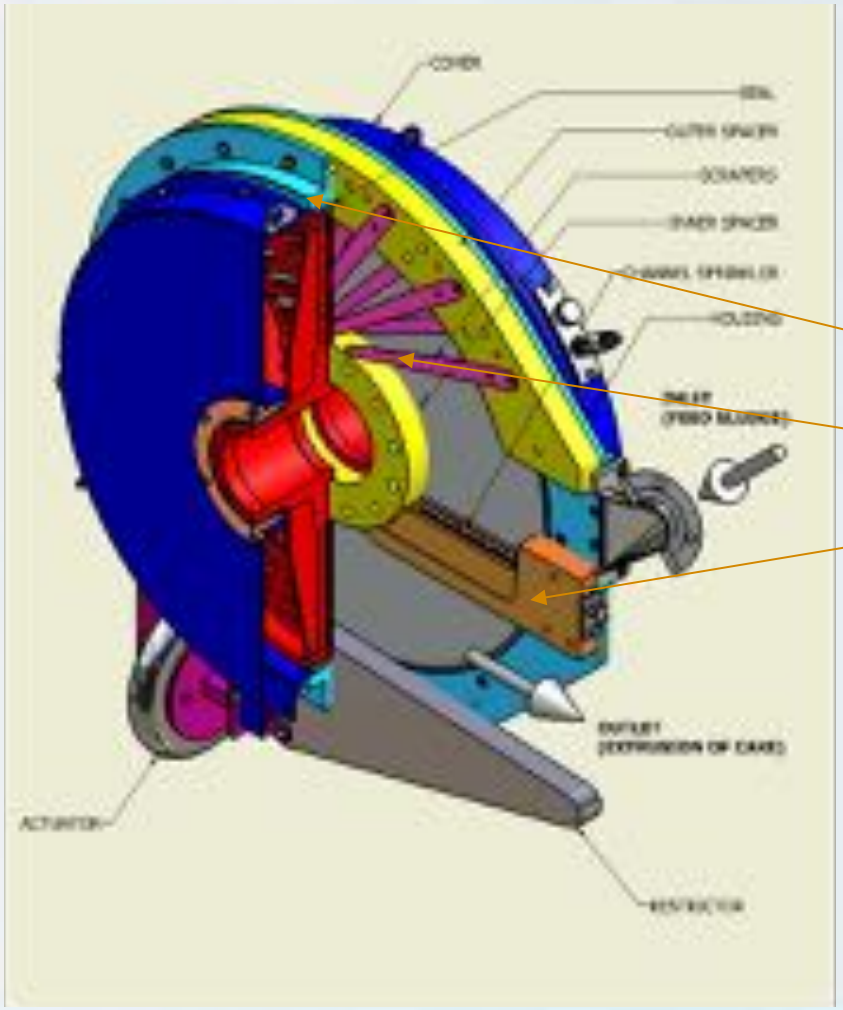
Secondary Sludge

- Slimy and thin
- Typically 0.5% - 1.5%
- Dewaters to mid teens
- Must run slow through the rotary press (less than 100 dry lbs/hr/channel)

Typical Municipal Performance

Type of sludge	Feed Concentration (%)	Sludge Flow (gpm)	Cake Dryness (%)	Production Rate Per Channel (dry lbs/hr)	Capture Rate (%)
Domestic Septage	0.5	60	40	110	>95
	1.0	58	40	250	>90
	2.0	58	39	500	>90
	4.0	55	38	1100	>95
Primary	3.0	40	32	480	>95
	4.0	30	32	550	>95
60% Prim. / 40% WAS	4.0	23 - 30	27 - 33	375 - 450	>95
50% Primary / 50% WAS	3.5	19 - 30	25 - 28	225 - 300	>95
30% Primary / 70% WAS	3.0	12 - 18	23 - 26	165 - 275	>95
Anaerobic Digested (primary or mixed)	1.5 - 2.5	15 - 25	22 - 24	130 - 165	>95
Anaerobic Digested (WAS only)	1.5 - 2.5	8 - 15	18 - 22	65 - 140	>95
Aerobic Digested (Ext. Aeration)	1.5 - 2.5	13 - 15	15 - 20	85 - 120	>93
WAS (Conventional Activated)	1.5 - 2.5	10 - 15	15 - 17	75 - 100	>90
	1.0 - 1.5	13 - 20	14 - 16	85 - 85	>93
SBR WAS	2.0 - 3.0	8 - 15	18 - 20	85 - 120	>95
	1.5 - 2.0	13 - 20	15 - 18	85 - 115	>93
Ox. Ditch/MBR WAS	0.6 - 1.0	15 - 25	12 - 16	90 - 85	>93

Maintenance Schedule



Wear Parts:

-Seals (2 per channel)

- Scrapers (6 per channel)

-Deflector (1 per channel)

Wear Parts	8,000 hours
2 screens	60,000 hours
Gearbox	100,000 hours

Features and Benefits

- Completely enclosed minimal odors
- Few moving/wear parts
- Minimal footprint
- Low energy requirement
- Smooth operation with changing sludge quality, feed rate
- Low speed < 3 RPM
  - quiet
  - safe for unattended automatic operation
  - minimal structural support
  - minimal wear

Features and Benefits

- Easy start-up and shutdown
- Polymer use comparable to or lower than centrifuge and belt press
- Excellent capture rate and cake dryness on selected sludges
- Low wash water requirement, 5 minutes/day at shutdown only
- Low maintenance vs other technologies
- Complete automation of process
- Easily expandable

On-Site Piloting

- One week duration
- Process optimization on your unique sludge
- Chance for plant operators to see how to run the machine
- Establish basis for performance guarantee

Press Locations

- 20 Pennsylvania Rotary Press Installations:

Questions?

Thank you for your attention!

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