SLUDGE DEWATERING – THE ROTARY PRESS

2017-05-12
• 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)

<table>
<thead>
<tr>
<th></th>
<th>USA</th>
<th>Canada</th>
<th>Rest of World</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>202</td>
<td>105</td>
<td>181</td>
</tr>
</tbody>
</table>
# Rotary Press Installations vs Applications

## May 2017

<table>
<thead>
<tr>
<th>Applications</th>
<th>Number of units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal</td>
<td>414</td>
</tr>
<tr>
<td>Septage sludge</td>
<td>22</td>
</tr>
<tr>
<td>Pulp and Paper</td>
<td>10</td>
</tr>
<tr>
<td>Animal manure</td>
<td>8</td>
</tr>
<tr>
<td>Industrial</td>
<td>16</td>
</tr>
<tr>
<td>Others</td>
<td>18</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>488</strong></td>
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</table>
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

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Model</th>
<th>Dimensions (inches / mm)</th>
<th>Weight (lb, kg)</th>
<th>Motor HP (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>1-900/1000CV</td>
<td>1</td>
<td>70.3&quot; (1785 mm)</td>
<td>72.0&quot; (1830 mm)</td>
<td>40.5&quot; (1028 mm)</td>
</tr>
<tr>
<td>2-900/2000CV</td>
<td>2</td>
<td>77.5&quot; (1969 mm)</td>
<td>72.0&quot; (1830 mm)</td>
<td>64.8&quot; (1646 mm)</td>
</tr>
<tr>
<td>3-900/3000CV</td>
<td>3</td>
<td>79.0&quot; (2007 mm)</td>
<td>72.0&quot; (1830 mm)</td>
<td>85.8&quot; (2180 mm)</td>
</tr>
<tr>
<td>4-900/4000CV</td>
<td>4</td>
<td>91.3&quot; (2320 mm)</td>
<td>75.4&quot; (1915 mm)</td>
<td>101.6&quot; (2580 mm)</td>
</tr>
<tr>
<td>5-900/5000CV</td>
<td>5</td>
<td>92.8&quot; (2358 mm)</td>
<td>75.4&quot; (1915 mm)</td>
<td>123.0&quot; (3124 mm)</td>
</tr>
<tr>
<td>6-900/6000CV</td>
<td>6</td>
<td>92.8&quot; (2358 mm)</td>
<td>75.4&quot; (1915 mm)</td>
<td>144.4&quot; (3668 mm)</td>
</tr>
<tr>
<td>7-900/7000CV</td>
<td>7</td>
<td>94&quot; (2388 mm)</td>
<td>79&quot; (2007 mm)</td>
<td>176&quot; (4471 mm)</td>
</tr>
<tr>
<td>8-900/8000CV</td>
<td>8</td>
<td>94&quot; (2388 mm)</td>
<td>79&quot; (2007 mm)</td>
<td>187&quot; (4750 mm)</td>
</tr>
</tbody>
</table>

*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
**Primary Sludge**
- Fibrous and thick
- Typically 2% - 4%
- Dewatered 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%
- Dewatered to mid teens
- Must run slow through the rotary press (less than 100 dry lbs/hr/channel)
Typical Municipal Performance

<table>
<thead>
<tr>
<th>Type of sludge</th>
<th>Feed Concentration (%)</th>
<th>Sludge Flow (cpsi)</th>
<th>Cake Dryness (%)</th>
<th>Production Rate Per Channel (dry lb/hr)</th>
<th>Capture Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Sewage</td>
<td>0.3</td>
<td>63</td>
<td>40</td>
<td>110</td>
<td>&gt;95</td>
</tr>
<tr>
<td></td>
<td>1.0</td>
<td>58</td>
<td>40</td>
<td>275</td>
<td>&gt;95</td>
</tr>
<tr>
<td></td>
<td>2.0</td>
<td>58</td>
<td>39</td>
<td>500</td>
<td>&gt;95</td>
</tr>
<tr>
<td></td>
<td>4.0</td>
<td>55</td>
<td>38</td>
<td>1100</td>
<td>&gt;95</td>
</tr>
<tr>
<td>Primary</td>
<td>2.0</td>
<td>45</td>
<td>32</td>
<td>450</td>
<td>&gt;95</td>
</tr>
<tr>
<td></td>
<td>4.0</td>
<td>30</td>
<td>32</td>
<td>550</td>
<td>&gt;95</td>
</tr>
<tr>
<td>50% Primary / 50% WAS</td>
<td>4.0</td>
<td>25 - 35</td>
<td>27 - 32</td>
<td>875 - 450</td>
<td>&gt;95</td>
</tr>
<tr>
<td>30% Primary / 70% WAS</td>
<td>3.5</td>
<td>19 - 25</td>
<td>25 - 28</td>
<td>225 - 300</td>
<td>&gt;95</td>
</tr>
<tr>
<td>Anoxic Digestate (primary or mixed)</td>
<td>3.0</td>
<td>12 - 15</td>
<td>23 - 25</td>
<td>185 - 275</td>
<td>&gt;95</td>
</tr>
<tr>
<td>Anaerobic Digested (WAS only)</td>
<td>1.5 - 2.5</td>
<td>18 - 25</td>
<td>22 - 26</td>
<td>100 - 185</td>
<td>&gt;95</td>
</tr>
<tr>
<td>Anaerobic Digested (ExL. Assim.)</td>
<td>1.5 - 2.5</td>
<td>13 - 15</td>
<td>16 - 20</td>
<td>85 - 120</td>
<td>&gt;95</td>
</tr>
<tr>
<td>WAS (Conventional Activated)</td>
<td>1.5 - 2.5</td>
<td>19 - 25</td>
<td>16 - 17</td>
<td>75 - 100</td>
<td>&gt;95</td>
</tr>
<tr>
<td>SBR WAS</td>
<td>1.0 - 1.5</td>
<td>13 - 20</td>
<td>14 - 19</td>
<td>85 - 85</td>
<td>&gt;95</td>
</tr>
<tr>
<td>ExL. Detox/Ambl WAS</td>
<td>0.5 - 1.0</td>
<td>15 - 20</td>
<td>12 - 20</td>
<td>80 - 85</td>
<td>&gt;95</td>
</tr>
</tbody>
</table>
Maintenance Schedule

Wear Parts:
- Seals (2 per channel)
- Scrapers (6 per channel)
- Deflector (1 per channel)

<table>
<thead>
<tr>
<th>Wear Parts</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 screens</td>
<td>60,000</td>
</tr>
<tr>
<td>Gearbox</td>
<td>100,000</td>
</tr>
</tbody>
</table>

8,000 hours
60,000 hours
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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