The Highland Valley Copper Mine is located just outside the town of Kamloops in British Columbia, Canada. The mine produces copper (435,000 tones in 2003) and molybdenum (6405 tones in 2003) concentrates. The tailings pumped to the Valley Impoundment in 2003 were 48.5 million tons.

Submarine Tailings Disposal (STD) is perhaps the most common offshore disposal technique and involves the deep water discharge of tailings to the sea.
Facts about Tailings and the handling processes

- Depending on the type of mineral the tailings can represent anywhere from 30% to 99% of the solids mined.
- Most minerals tailings currently are handled with wet tailings process and stored in tailings impoundments.
- These need careful construction, maintenance and monitoring, and also suffer from high evaporation/loss rates.
Facts about Tailings and the handling processes

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- Most minerals tailings currently are handled with wet tailings process and stored in tailings impoundments

- These need careful construction, maintenance and monitoring, and also suffer from high evaporation/loss rates

- Several drivers towards dry tailings, including:
  - lack and cost of water
  - Suitable tailing pond lands,
  - reclamation responsibilities,
  - environmental legislation and,
  - wet tailings storage risks
# Dry Stacking Drivers

<table>
<thead>
<tr>
<th>Industry acceptance</th>
<th>Recycling more water</th>
<th>Tailings land cost</th>
<th>Environmental Legislation</th>
<th>Risk mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry tailings experiences</td>
<td>Cost of water</td>
<td>Tailings land availability</td>
<td>Environmental impact</td>
<td>Long term liabilities</td>
</tr>
<tr>
<td>Available dry technology</td>
<td>Lack of water</td>
<td>Mining permits</td>
<td>Political pressure</td>
<td>Tailings accidents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mine locations Desert Very Cold</td>
<td>Social acceptance</td>
<td>Wet tailings</td>
</tr>
</tbody>
</table>

- Lower Ore Grades
- More material Mined
- More Material Processes
- More Tailings

High demand - High metal prices
Tailings Solutions Options

Dry stacking-La Coipa Mine (Anglo American, Chile)

Surface thickened Thickened discharge at Kidd Creek, ON, Canada (left) and at Mt Keith, Western Australia (right)

Surface paste disposal at Myra Falls Mine, Vancouver Island, Canada

Fresh paste depositing over a desiccated layer (left) and one of the risers at the Bulyanhulu Mine (Barrick), Tanzania (Courtesy Golder Associates)
Wet or Dry Tailings?

**Least efficient water conservation** - losses to evaporation and void space
- Containment dams required
- Seepage issues depending on dam/impoundment type
- Relatively complex water management

**Tailings Slurry** (Typically segregating)

**Thickened Tailings** (Dewatered, >100% saturated - ideally non-segregating)
- Paste (additive(s) to thickened tailings)

**“Wet” Cake** (At or near 100% saturation)

**“Dry” Cake** (Unsaturated - typically 70 to 85% saturation)

**Most efficient water conservation**
- Negligible seepage losses from stack
- Progressive covering & reclamation
- Stable tailings mass
- Minimal containment requirements
- Simple water management

**Pumpable**

**Non-Pumpable**
## Water ratio’s for typical granular tailings

<table>
<thead>
<tr>
<th>Slurry % solids</th>
<th>H₂O vol. / mt Tailings (m³/mt)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>4.0</td>
<td>Ore processing</td>
</tr>
<tr>
<td>30</td>
<td>2.3</td>
<td>Plant tailings</td>
</tr>
<tr>
<td>50</td>
<td>1.0</td>
<td>Thickened slurry</td>
</tr>
<tr>
<td>60</td>
<td>0.67</td>
<td>High Density slurry</td>
</tr>
<tr>
<td>75</td>
<td>0.33</td>
<td>Thickened to paste</td>
</tr>
<tr>
<td>82</td>
<td>0.21</td>
<td>Vacuum filter</td>
</tr>
<tr>
<td>88</td>
<td>0.13</td>
<td>Pressure filter</td>
</tr>
</tbody>
</table>

**COURTESY MINE PASTE ENGINEERING LTD.**

---

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Slurry Material Continuum

- Dilute Slurry
- Segregating Thickened Slurry
- Non-Segregating Thickened Slurry
- Paste
- Dewatering
- Wet Filter Cake
- Dry Filter Cake

COURTESY MINE PASTE ENGINEERING LTD.
Facts about Tailings and the handling processes

- The dry tailings process will increase with new operations, especially those situated in deserts environments and areas where tailings land availability is a constraining factor.

- Solids content in thickened tailings is between 40% and 70%.

- Dry cake tailings solutions can increase the solids content to as high as 85%, which represents substantial water savings for the mine.

- Dry tailings are also easier to reclaim and have lower environmental impact risks during operation and after the closure.

- Dry Tailings provide the lowest risk profile with respect to failures and the costs associated with cleaning up those failures.
Tailings accidents

The majority of historical tailings related incidents have been influenced by poor day to day management.

Accident in Stava Trento Italy, 1985
Cycloned sand tailings
Along its path, the mud killed 268 people and completely destroyed 3 hotels, 53 homes, and six industrial buildings; 8 bridges were demolished and 9 buildings were seriously damaged. A thick layer of mud measuring between 20 and 40 cm in thickness covered an overall 435,000 square m over 4.2 km. According to the subsequent inquiries, the collapse was caused by the chronic instability of the dams, especially in the upper one, which were below the minimum factor of safety required to avoid collapses.

Cerro Negro near Santiago Chile 2003
Wet tailings

The TVA Kingston Fossil Plant coal in the USA fly ash slurry spill occurred just before 1 a.m. on Monday December 22, 2008, when an ash dike ruptured at an 84-acre (0.34 km2) solid waste containment area at the Tennessee Valley Authority’s Kingston Fossil Plant in Roane County, Tennessee, USA. 1.1 billion gallons (4.2 million m³) of coal fly ash slurry was released.

Marriespruit South Africa 1994
Wet tailings
The Ajka Timfoldgyar Alumina Plant Tailings Dam Accident October 4th 2010 in Hungary. Hungary’s government estimated that it would cost more than US$51 million and take at least a year to clean up the damage. Hungarian state news service MTI estimated at the time of the accident that Hungary stores about 50 million tons of the red tailings with about 800,000 tons generated annually.
World Market for Dry Tailings
Expected high global growth

Dry Tailings Global Market Outlook & FLSmidth Strategy

FLSmidth’s Tailings Strategy
2011
✓ One of the leading suppliers of tailings equipment and bundled products.

Near Future
✓ The leading supplier of dry tailings islands solutions.

Long Term
✓ The Leading supplier of dry tailings management solutions

Dry Tailings Opportunities & FLSmidth Locations

Targeted markets
#1 Copper, Gold, Coal
#2 All base metals and PMs

Dry Tailings
➢ Dry, desert areas, lack of water. Southern Hemisphere in specific
➢ Water issues and TSF type guided by strong environmental legislation
➢ Very cold climates, freezing temperatures, permafrost

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FLS Dry Tailings Solutions

Largest Minerals Filter Press for 100,000 tons/day operation
FLS Values for Tailings Solutions

- **Sustainable solutions**
  - Dry tailings solutions
    - Recycling of water
    - Environmentally sound
    - Lower cost

- **Peace of mind**
  - Our solutions combine technical and operational reliability
    - Reliability of operations
    - Proven results
    - Proven technology
    - Experience
    - References
    - Process knowledge
  - One source for solutions or individual equipment
    - Tailings islands
    - Customer Service
    - Maintenance contracts

- **Low TCO**
  - Our approach is holistic concentrating in effective tailings solution for the life of the mine
  - Cost of water
  - Our industry presence, customer contacts and large reference give basis for continuous innovation
    - Productivity of the equipment
    - Leading technical solutions
    - Parts, spares, wear materials
    - Automation and monitoring
    - New methods
    - System integrations

- **Customized solutions**
  - We provide individualized solutions which meets the specific customer tailings management requirements
    - Wet or Dry
    - Different minerals and materials
    - Different conditions
    - Different production requirements
# FLSmidth Filtration

## Key filter lines

<table>
<thead>
<tr>
<th>Vacuum Filters</th>
<th>Pressure Filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Horizontal</td>
<td>➢ Horizontal</td>
</tr>
<tr>
<td>➢ Belt Filters and Pan Filters up to 250m²</td>
<td>➢ Filter Press up to 24m² volume, 960m² area</td>
</tr>
<tr>
<td>➢ High Performance and Flexible</td>
<td>➢ Simple, Robust and Reliable</td>
</tr>
<tr>
<td>➢ Vertical</td>
<td>➢ Vertical</td>
</tr>
<tr>
<td>➢ Drum Filters and Disc Filters up to 310m²</td>
<td>➢ Pheumapress up to 100m² area</td>
</tr>
<tr>
<td>➢ Simple, Robust and Reliable</td>
<td>➢ High Performance and Flexible</td>
</tr>
</tbody>
</table>

- **Global Clients**: bhpbilliton, ANGLO AMERICAN, CODELCO, VALE

- **Installed Base**: +30,000

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Lab and Pilot Testing

Bench-Scale and/or Pilot Testing are used to determine material filtration characteristics for equipment proper selection and sizing.
AFP Pilot Unit
FLSmidth Pilot Filter Press
500mm Membrane Mixed-Pack Plate Stack
Tailings Dewatering Options Tested
# Options for Tailings Dewatering

## FILTRATION CYCLE TIMES

<table>
<thead>
<tr>
<th></th>
<th>(Minutes)</th>
<th></th>
<th>(Minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill Empty Filter</td>
<td>1.48</td>
<td>Fill Empty Filter</td>
<td>0.81</td>
</tr>
<tr>
<td>Filtration to Solids Consolidation</td>
<td>5.51</td>
<td>Filtration to Solids Consolidation</td>
<td>5.38</td>
</tr>
<tr>
<td>Wash Solids</td>
<td>0.00</td>
<td>Wash Solids</td>
<td>0.00</td>
</tr>
<tr>
<td>Inflate + Hold + Deflate Membranes</td>
<td>0.00</td>
<td>Inflate + Hold + Deflate Membranes</td>
<td>0.00</td>
</tr>
<tr>
<td>Cake Blow</td>
<td>0.25</td>
<td>Cake Blow</td>
<td>0.25</td>
</tr>
<tr>
<td>Core Wash/Blow</td>
<td>0.50</td>
<td>Core Wash/Blow</td>
<td>0.50</td>
</tr>
<tr>
<td>Shake Cloth</td>
<td>0.50</td>
<td>Shake Cloth</td>
<td>0.50</td>
</tr>
<tr>
<td>Filter Cloth Wash &amp; Purge</td>
<td>0.50</td>
<td>Filter Cloth Wash &amp; Purge</td>
<td>0.50</td>
</tr>
<tr>
<td>Open &amp; Close Filter</td>
<td>1.89</td>
<td>Open &amp; Close Filter</td>
<td>1.50</td>
</tr>
<tr>
<td><strong>Total Cycle Time</strong></td>
<td><strong>10.63</strong></td>
<td><strong>Total Cycle Time</strong></td>
<td><strong>9.44</strong></td>
</tr>
</tbody>
</table>

- **Fine Tails – Cyclone Overflow**
  - 26% Cake
  - P80 - 30.5

- **Total Tails**
  - 18 % Cake
  - P80 - 204

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Most Effective Solution – Filter Cake

Filter Press Technology Produce Consistent Dry Cake w/o the Need for Expensive Polymers
Full Range of Filter Press Products

- Filter Presses from small to large / Fully and Fully Automatic to Fully Manual

- Worlds Largest Minerals Filter Press → 10% capital cost saving
  - 120 Chambers – twice the size of Competitors
  - 2x2 lower feed eye filter plates

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Key Elements for Cost Effective Filter Design

• **TCO must be competitive with traditional solutions**
  • High Initial Costs > $100,000,000 USD
  • Low Operating Costs > $0.75 USD/ton

• **Minimize Filtration Capital Costs**
  • Minimize Cycle time
  • Maximum Filter Size

• **Minimize Filtration Operational Costs**
  • Minimize energy usage
  • Eliminate wasted energy
  • Minimize Cloth Consumption
  • Use cost effective design
For High-Volume Production
Large-Scale Filters with 2M x 2M Plates

Filter Specifications:
- 2 x 2 Plates
- 16 bar rated
- Overhead Type
- 100 Bar Cloth Washer
Single Plate Indexing – Discharge = 10 min.

Shriver® Filter Press
Cake Filtration STAGES - Dewatering

- Cake Formation
- Cake Dewatering
- Technical Time

Air Penetration / Deliquoring phase

Air Drying / Co-transportation

Residual moisture % by wt.

Air flow rate m³/MIN

Cycle Time
Typical Tailings Cycle Time

Cycle Time Comparison

- Open / Close Filter
- Cloth Wash
- Cake Discharge
- Manifold/Core flush
- Blow
- Mem. Squeeze
- Filtration
- Fill

Time (min.)
0  2  4  6  8  10  12

AFP  MemAFP
Minimize Cycle Time
Eliminate Membranes

Bottom Feed Recessed Chamber  Top Feed Membrane

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AFP IV™ FILTER
Filtration Pressure

- Slurry Pumps Are Used To Create The Filtration Flow and Pressure
- VFD control ensures pumps operate to required filtration curve.

Liquid Core Allows Pressure to be Applied Uniformly Over Entire Forming Cake

Uniform Filling

Cake Forms in Layers

Homogenous Cake

Turbulence Maintained
Competition
Upper Feed Eye

- Chambers fill in series, not in parallel
- Cakes are more consolidated at the bottom of the plate than at the top of the plate
- Membranes are required to consolidate into even cakes

Low density

High density
PLATE DESIGN

Membrane Plate Section
## Filter Plates Comparison

<table>
<thead>
<tr>
<th>Top Feed</th>
<th>Bottom Feed – FLS Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Membranes required</td>
<td>- No membranes required</td>
</tr>
<tr>
<td>- Plate removal not required for cloth change</td>
<td>- Remove plate for cloth change – Not significant</td>
</tr>
<tr>
<td>- Plate life limited</td>
<td>- Plate life extended</td>
</tr>
<tr>
<td>- Cost up to US$ 20,000 each</td>
<td>- Cost US$2,000 each</td>
</tr>
<tr>
<td>- Membrane accessories needed – higher Opex</td>
<td></td>
</tr>
<tr>
<td>- Longer cycles for membrane squeeze means less production per cycle and more filter press area required</td>
<td></td>
</tr>
</tbody>
</table>
Minimize Cycle Time
Discharges In < 1 Min.

AFP IV™ Automatic Filter Press
Cross Head System
Discharges 120 Chambers in < 1 Min.

Cross head system lock pins
Optimized Design

Filter Plate System

Rolling Crosshead and Follower

Flood Wash System

Shaker
The Heart of Filtered Tailings
AFP IV™ Automatic Filter Press

Filter and Drip Tray on Assembly Floor
AFP IV™ Automatic Filter Press

2x2 AFP Operation
Automatic Filter Press
AFP Operation (without Cake Wash)
Automatic Filter Press
Core Blowing to Clear Feed Eye
For High-Volume Production
Large-Scale Filters with 2M x 2M Plates

Filter Specifications:
- 9,015 ft² (838 M²)
- 475 ft³ (13.5 M³)
- 225 psi (16 bar)
- Dry Wgt: 165 tons
Typical Open Discharge Arrangement

Filtrate is Discharged Directly to the Drip Tray or Launder
Flood Wash Arrangement

Water Connection

Bottom Wash Supply
Shaker System

Shaker Drive Configuration

Right Angle Gearbox
Hydraulic Motor
Right Angle Gearbox
Gear Box
FLSmidth Automation Controls
w/Local PLC and DCS Connectivity
Copper Tailings Filtration

Largest Operating Minerals Filter Press

- (14) (12 operating 2 spare) 2x2 AFP Filters
- 120 Chambers
- Capable of 100,000 mt per day
  - 8,300 tpd/filter
- 65 % feed solids
- 16 % cake moisture
Filter Press with Surge Tank

Normally Used with Conventional Thickener Technology
Rosemont

SMALLEST FOOTPRINT, LEAST WATER, HIGHEST YIELD
# Rosemont Tailings

## Filtration Cycle Times

<table>
<thead>
<tr>
<th>Task</th>
<th>Time (Minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill Empty Filter</td>
<td>0.57</td>
</tr>
<tr>
<td>Filtration to Solids Consol</td>
<td>3.07</td>
</tr>
<tr>
<td>Wash Solids</td>
<td>0.00</td>
</tr>
<tr>
<td>Cake Blow</td>
<td>4.00</td>
</tr>
<tr>
<td>Core Wash/Blow</td>
<td>0.50</td>
</tr>
<tr>
<td>Shake Cloth</td>
<td>0.50</td>
</tr>
<tr>
<td>Filter Cloth Wash &amp; Purge</td>
<td>0.50</td>
</tr>
<tr>
<td>Open &amp; Close Filter</td>
<td>1.50</td>
</tr>
</tbody>
</table>

**Total Cycle Time:** 10.64

~ 8,500 tpd / filter  
~ 350 tph / filter  
~ 16 wt% cake moisture

---

![Graph](image-url)  

**P80 127 microns**  

---

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M2020 in Operation
### Copper Tailings Filtration Scenarios
(Data From Testing)

<table>
<thead>
<tr>
<th></th>
<th>Combined Fine and Coarse</th>
<th>Fine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Sg</td>
<td>2.73</td>
<td>2.73</td>
</tr>
<tr>
<td>Feed Wt% Solids</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>P80µm</td>
<td>204</td>
<td>30.5</td>
</tr>
<tr>
<td>Mtph</td>
<td>10570</td>
<td>5913</td>
</tr>
<tr>
<td>Cake Moisture Wt %</td>
<td>18.5</td>
<td>25.9</td>
</tr>
<tr>
<td>Cake Thickness mm</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Filter Type</td>
<td>Recessed Chamber</td>
<td></td>
</tr>
<tr>
<td>Total Cycle Time (min)</td>
<td>9.4</td>
<td>10.63</td>
</tr>
<tr>
<td>Filtration Rate kgh/m² (lb/h/ft²)</td>
<td>183 (38)</td>
<td>146 (30)</td>
</tr>
<tr>
<td>Terminal Feed Pressure kg/cm² (psi)</td>
<td>9 (140)</td>
<td>9 (140)</td>
</tr>
<tr>
<td>Filter Size (ea) M2020 – Ch Qty/M²/M³</td>
<td>152/1018/19</td>
<td>152/1018/19</td>
</tr>
<tr>
<td>Qty Filter Required</td>
<td>57</td>
<td>40</td>
</tr>
</tbody>
</table>
Mongolian Copper Mine

- M1500 – 77 Chambers
- Copper Concentrate
- Slurry Sg: 1.86
- Cake Dryness: 8-9 wt%
- Through put: 1200 mtpd
- Availability: >90%
- Cycles Operated: >100,000
FLSmidth Automatic Filter Installation
FLSmidth Automatic Filter Installation
## Operating Costs

### Copper Tailings

#### COST ANALYSIS OUTPUT

<table>
<thead>
<tr>
<th>$/MT</th>
<th>%</th>
<th>Cost Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ 0.001</td>
<td>0.8%</td>
<td>Feed pump repairs</td>
</tr>
<tr>
<td>$ 0.000</td>
<td>0.1%</td>
<td>Compressor repairs</td>
</tr>
<tr>
<td>$ 0.000</td>
<td>0.2%</td>
<td>Hydraulic system</td>
</tr>
<tr>
<td>$ 0.000</td>
<td>0.2%</td>
<td>Cloth wash system</td>
</tr>
<tr>
<td>$ 0.001</td>
<td>0.5%</td>
<td>Filter plates @ 2% / yr</td>
</tr>
<tr>
<td>$ -</td>
<td>0.0%</td>
<td>Body plates @ 2% / yr</td>
</tr>
<tr>
<td>$ -</td>
<td>0.0%</td>
<td>Membranes @ 10% / yr</td>
</tr>
<tr>
<td>$ 0.000</td>
<td>0.2%</td>
<td>Filter spare parts</td>
</tr>
<tr>
<td>$ 0.013</td>
<td>6.5%</td>
<td>Valves (15000 cycle life)</td>
</tr>
<tr>
<td>$ 0.001</td>
<td>0.5%</td>
<td>Instrumentation</td>
</tr>
<tr>
<td>$ 0.002</td>
<td>1.0%</td>
<td>Rebuild Shaker every 3 years</td>
</tr>
<tr>
<td>$ 0.000</td>
<td>0.2%</td>
<td>Piping repairs from erosion</td>
</tr>
<tr>
<td>$ 0.001</td>
<td>0.7%</td>
<td>Maintenance labor</td>
</tr>
<tr>
<td>$ 0.000</td>
<td>0.1%</td>
<td>Operating labor</td>
</tr>
<tr>
<td>$ 0.060</td>
<td>31.2%</td>
<td>Electric power</td>
</tr>
<tr>
<td>$ 0.018</td>
<td>9.2%</td>
<td>Water</td>
</tr>
<tr>
<td>$ 0.094</td>
<td>48.6%</td>
<td>Filter cloth @ 3000 cycle life</td>
</tr>
<tr>
<td>$ -</td>
<td>0.0%</td>
<td>Depreciation - Straight Line</td>
</tr>
</tbody>
</table>

#### TOTAL

| $ 0.194 |            |                          |

#### COST ANALYSIS INPUT DATA

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of filters</td>
<td>Chambers per filter</td>
<td>Cycles per day per filter</td>
</tr>
<tr>
<td>12</td>
<td>120</td>
<td>238</td>
</tr>
<tr>
<td>Operation (Days/Year)</td>
<td>Dry solids production rate (MTPD)</td>
<td>Addition capacity (% of Design)</td>
</tr>
<tr>
<td>365</td>
<td>106437</td>
<td>0.0%</td>
</tr>
<tr>
<td>Operator labor rate ($/Hr)</td>
<td>Maintenance labor rate ($/Hr)</td>
<td>Maintenance men per shift (different trades)</td>
</tr>
<tr>
<td>50.00</td>
<td>50.00</td>
<td>0.010</td>
</tr>
<tr>
<td>Operators per shift</td>
<td>Energy consumption (KWHr/MT)</td>
<td>Water cost ($/m³)</td>
</tr>
<tr>
<td>0.025</td>
<td>0.8</td>
<td>0.04</td>
</tr>
<tr>
<td>Maintenance air consumed (SCF/Filter)</td>
<td>Dewatering time (Minutes)</td>
<td>Compressed air rate (SCFM/FT³)</td>
</tr>
<tr>
<td>2228</td>
<td>0.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Compressed air consumed (M³/Filter)</td>
<td>Compressed air consumed (M³/Filter)</td>
<td>Water consumption (GPM)</td>
</tr>
<tr>
<td>1968.5</td>
<td>2</td>
<td>8068</td>
</tr>
<tr>
<td>Filter cloth price, per chamber ($)</td>
<td>Filter cloth change time (Minutes)</td>
<td>Filter plate with cloth support price ($)</td>
</tr>
<tr>
<td>75</td>
<td>15</td>
<td>1260</td>
</tr>
<tr>
<td>Replaceable Membrane price ($)</td>
<td>Membrane Body plate with cloth support price ($)</td>
<td>Capital investment ($)</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Depreciation period (years)</td>
<td>Salvage Value ($)</td>
<td>Depreciation period (years)</td>
</tr>
<tr>
<td>20</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Valves Per Filter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Patent Pending Colossal AFP
Copper Tailings Filtration

Worlds Largest Filter Press
- Twice the capacity of current filters
- 120 Chambers
- Each filter > 15,000 tpd/filter
FLSmidth Plant Layout
Fourteen (14) Automatic Pressure Filters
Total Filter Area 12,000 Sq M
FLS Plant Layout w/14 Pressure Filters
Filter Cake Collection System

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## Summary

**FLS Filter Press Advantages:**

- Largest Filter on the Market
- Lower Feed Eye = High Equipment Availability
- Heavy-duty = Less Down Time
- No diaphragms = Less maintenance
  - Inexpensive filter plates
- Short Cycles = High Throughput Per Area
  - Reduced number of filters
  - Low installed cost
- Low Cost sourcing available
Summary

Filtered Tailings Advantages:

- Maximum Water Recovery
- Minimum Fresh Water Needed
- Lowest Environmental Impact
- Co-current Land Reclamation
- Lowest Risk Profile
- Competitive Life Cycle Costs