ClearBakk

A member of the ALSYS Group

Mine Tailings Dewatering Polymer Hydration

Alberta Oil Sands Client

403.295.8054 | clearbakk@alsys-group.com | www.clearbakk.com

Mine Tailings Dewatering Polymer Hydration

Alberta Oil Sands Client

BACKGROUND

ClearBakk has expertise in polymer hydration and water treatment design / package construction with a proven track record serving a wide range of clients in Western Canada and across North America.

ClearBakk was approached by a major oil sands client in Alberta to design and provide a polymer hydration plant for accelerated mine tailings dewatering. ClearBakk successfully delivered the largest polymer hydration plant in the world in terms of dry polymer throughput.

CHALLENGES

- The largest polymer hydration plant in the world.
- Shipping restrictions on maximum building weight and dimensions, which posed a unique challenge during equipment selection and system design.
- Requirement for a high plant turndown ratio.
- Difficulties of handling and hydration of polymer due to its unique physical and chemical characteristics.
- Condensed project schedule of just over one year for design, construction and commissioning.

CLEARBAKK
A member of the ALSYS Group

403.295.8054
clearbakk@alsys-group.com
www.clearbakk.com

Mine Tailings Dewatering Polymer Hydration

Alberta Oil Sands Client

SOLUTION

- Compact design to meet transportation restrictions, and minimize transportation cost.
- Optimized use of trains allows for a very low minimum plant output during high turndown, whicle still being able to achieve a high maximum output.
- Polymer wetting, dissolving, mixing, ageing and solution feeding are done under very specific, controlled conditions to avoid system plugging, process control issues or hydration failure.
- Fast project execution with condensed schedule. Maintained constant communication with the client.
- Minimum on-site work and time. Considered climate and regulatory requirements factors during design and schedule planning.

ADVANTAGES

- Modularizaed packages were easy to transport, easy to install, and minimized site work.
- Compact design, which minimized site footprint, and transportation cost.

SYSTEM OVERVIEW

Design Criteria:

- Final Solution Injection Flow Rate: 400-1500 m^3/day
- Final Solution Concentration: 0.45-0.65 w%
- Final Discharge Pressure: 800-3200 kPa
- Footprint: 9270 m^2

CLEARBAKK
A member of the ALSYS Group

403.295.8054
clearbakk@alsys-group.com
www.clearbakk.com

Mine Tailings Dewatering Polymer Hydration

Alberta Oil Sands Client

PLANT OVERVIEW

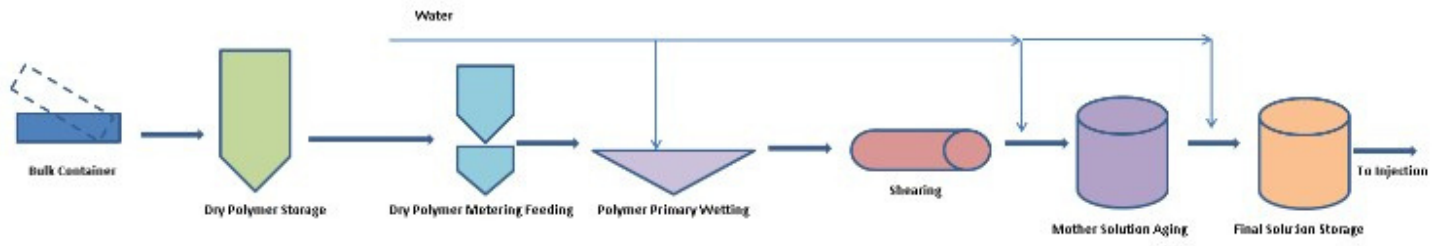
Polymer wetting, dissolving, mixing, aging and solution injection were engineered to provide a consistent supply of homogeneous polymer solution at the desired concentration. Uptime is maintained through proper system design, preventative process monitoring, automated flushing, and proprietary dust capturing technology.

7 Modularized Indoor Packages:

- Dry polymer transfer blowers c/w electrical room
- Polymer wetting and shearing package c/w electrical room
- Mother solution dilution and transfer package c/w electrical room
- Final solution injection package
- Instrument compressors c/w electrical room
- Diverter valves kits package

4 Outdoor Process Packages:

- Blower dehumidification and heat exchanging
- Dry polymer unloading and storage
- Mother solution tankage
- Final solution tankage



CLEARBAKK
A member of the ALSYS Group

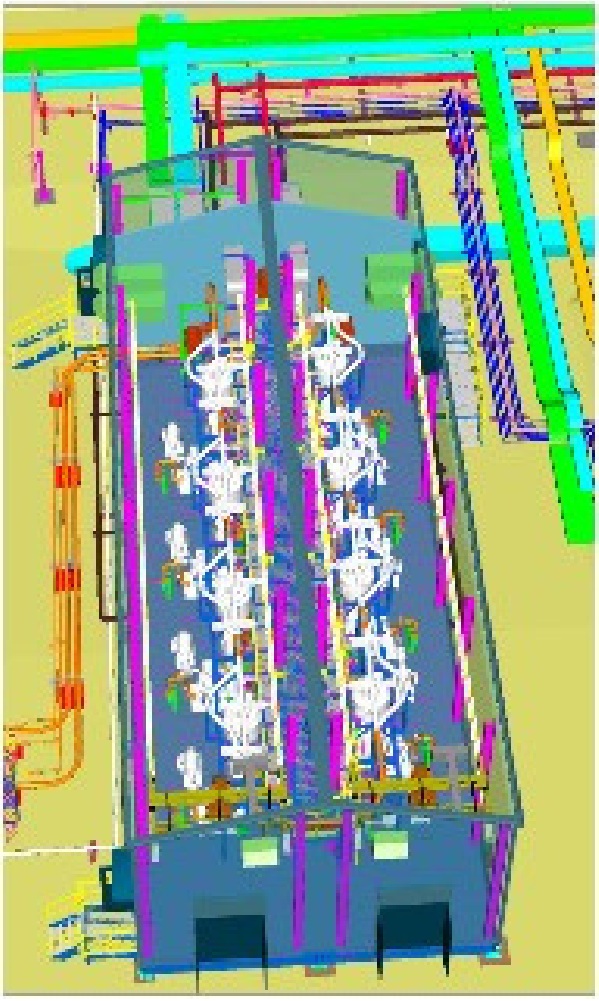
403.295.8054
clearbakk@alsys-group.com
www.clearbakk.com

Mine Tailings Dewatering Polymer Hydration

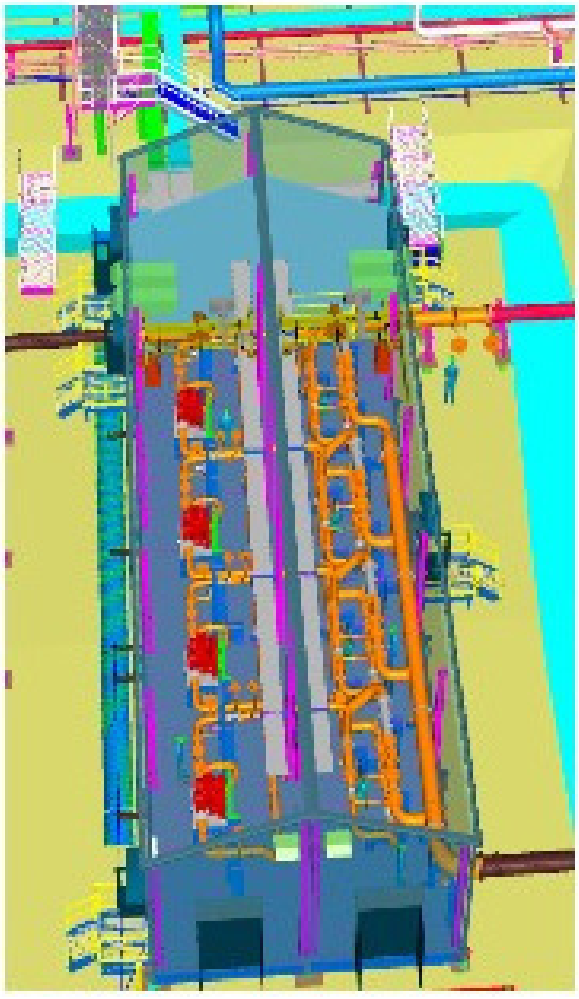
Alberta Oil Sands Client

MODULARIZED PACKAGES

- Easy to install with minimal inter-module connections resulting in minimal site work.
- Optimized design that minimizes footprint and transportation cost.
- Numerous safety and operator friendly features
- Oversized buildings are split into two halves for transportation, then re-assembled on site.



Primary Wetting and Shearing Package



Mother Solution Dilution and Transfer Package

CLEARBAKK
A member of the ALSYS Group

403.295.8054
clearbakk@alsys-group.com
www.clearbakk.com