How does TNS™ Technology Impact Solid Liquid Separation?

TNS™ is designed with an innovative approach for dewatering and facilitating hydrocarbon/solid separation in contrast to conventional chemistries that attempt to modify the particle surface chemistry. **TNS™ differs from conventional technologies by disrupting the particle surface charge allowing them to collapse and consolidate quickly and efficiently improving separation performance**.

For most operators, issues with fine clays make separation difficult, resulting in high GHG for biological processes, poor filter press filtration performance or reduced thickener throughput creating operational constraints and economic loss.

The typical constraints and risks associated with separating oil contaminated streams are reduced through the TNS™ technology, offering a competitive advantage over conventional technological solutions.

Delivering a sustainable solution by combining:

- ✓ Establish and deploy a **team with expertise** in geotechnical, chemical, and environmental disciplines
- ✓ **Integrate TNS™ and dewatering solution** without disrupting existing operations
- ✓ **Scale-up: simple and efficient**
- ✓ **Significant lab and pilot** plant experiences

Main Advantages of TNS™ Technology

- ✓ TNS requires **minimal mixing** and allows flocculation **at higher solids concentrations**.
- ✓ The **ease** of flocculation and **efficient** capture of ultra-fines produce a clear supernatant/filtrate/dilbit.
- ✓ **Reduce** tailing construction storage **costs** and reduce **fresh-water consumption** via recycled water.
- ✓ The **higher dewatering rates reduce the CapEx and OpEx** of dewatering equipment such as tailings thickeners and filters.
- ✓ The TNS™ chemistry **improves** flocculation, **allows faster dewatering rates** than the conventional polymer technology.
- ✓ The **consistency** in dewatering will translate to a significant risk reduction associated with plant performance and storage of filtered tailings.

TNS™ Applications

The filtered tailings benefit can now be achieved even with tailings that have extremely high/difficult clay contents. The TNS™ technology makes possible the reduction of fresh-water intake through improved water recovery and thereby better water utilization as well as reducing the potential of liquefaction of tailings storage facilities by reducing the water content within the stored tailings. The technology has successfully been tested on various tailings streams including:

- ➢ Ease of use for processing challenging tailings
- ➢ Improve metals recovery (gold, silver, copper)
- ➢ Iron tailings streams (slimes – coarse mixtures)
- ➢ Oil spill remediation & reclaiming hydrocarbons (Clean-up of contaminated sands)
- ➢ Oil sand extraction from surface mining

Extrakt Pilot Plant for the TNS™ Technology Demonstration (Bowling Green – Kentucky, USA)

Service Available for TNS Technology Implementation

- ❖ Test-work and conceptual studies.
- ❖ Consulting & optimizations studies.
- ❖ Pre-feasibility or feasibility studies.
- ❖ Pilot or demonstration test work.
- ❖ License and technology design package.
- ❖ Detailed engineering, procurement, construction (EPC).
- ❖ Commissioning, maintenance, technical support and asset optimization services.

Extrakt PROCESS SOLUTIONS

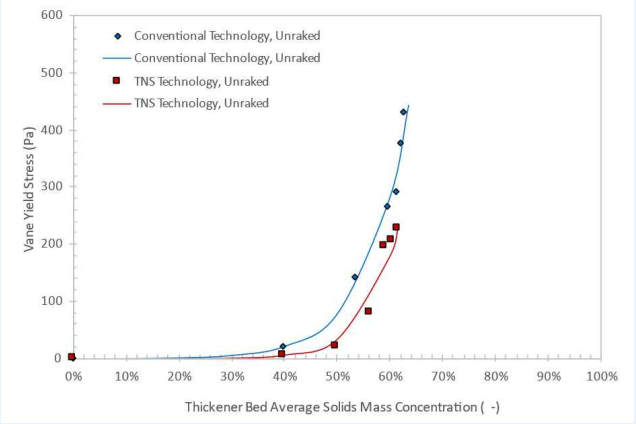
BECHTEL

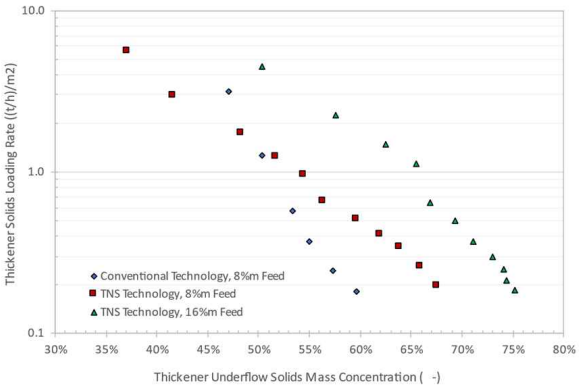
BANTREL

Application: Copper Tailings Dewatering

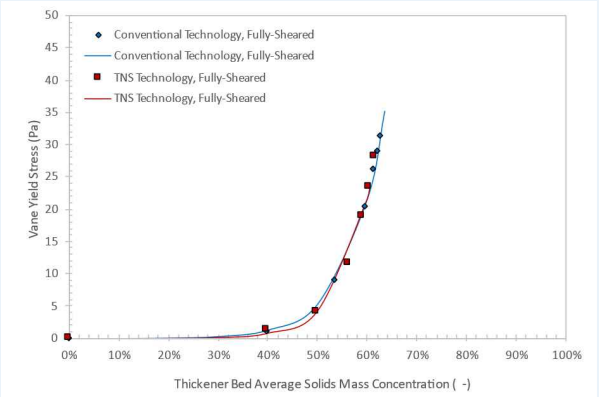
Compared with conventional flocculants, TNS™ chemistry exhibits by far better thickener dewatering, even with:

- Higher [feed] solids loading rates [up to 6 tonne/hr/m^2]
- Higher [feed] solids concentrations
- Higher underflow solids concentration

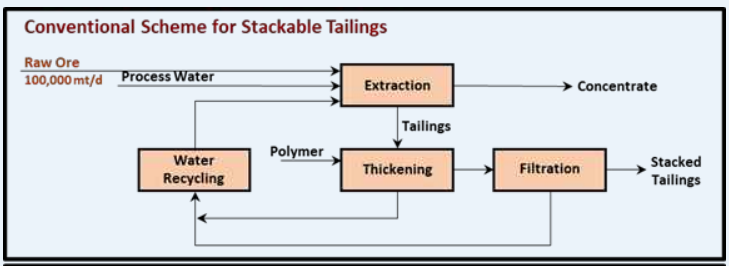


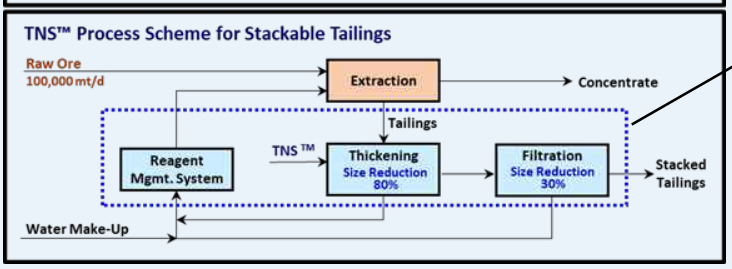


Slurry, flocculated with the TNS™ not subjected to raking or shear exhibits a better rheological behavior than the conventional polymer flocculated slurry.



At the fully-sheared condition, there is no significant difference in rheology between the two chemistries.





TNS Results vs Conventional	
CapEx Reduction	20-30%
OpEx Reduction	40-50%
↓ Thickener Size Reduced	
↓ Filter Size Reduced	
↓ Footprint Reduced	
↓ Less Utilities & No High-cost Chemicals	

Extrakt PROCESS SOLUTIONS

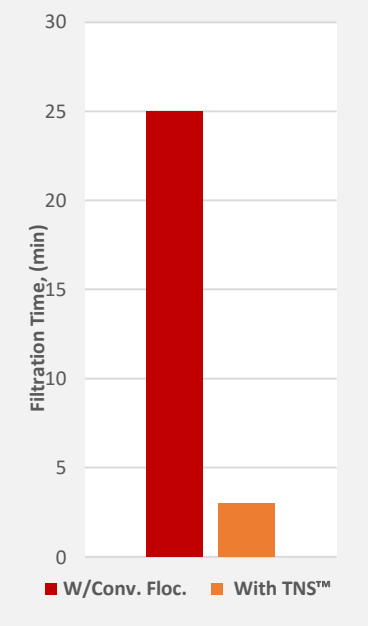
BECHTEL

BANTREL

Application: Conventional Gold Leaching Tailings Dewatering

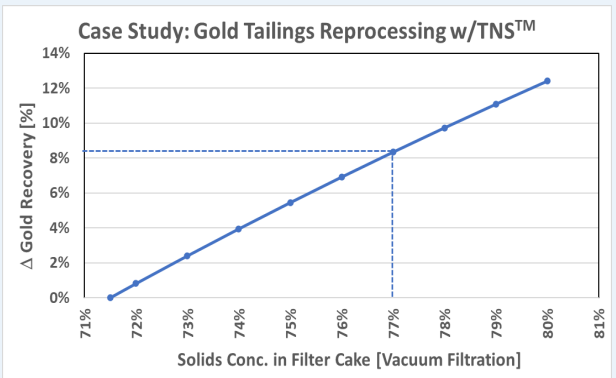
TNS™ Test on Gold Ore with a Major Equipment Supplier

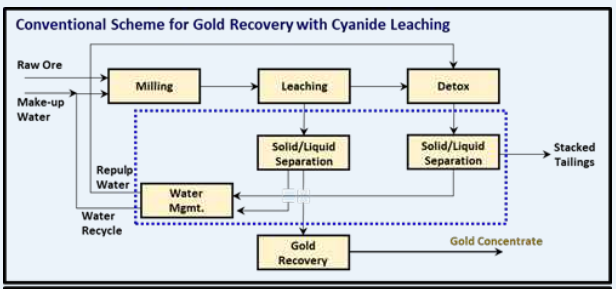
- TNS™ technology reduced the filtration time for difficult tailings from 25 minutes to 2.5 minutes
- TNS™ demonstrated high rate of dewatering, while providing high cake density and low cake moisture content

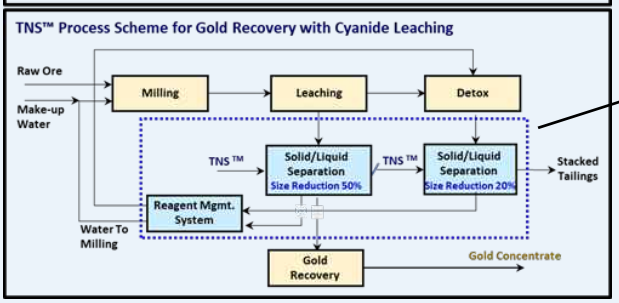


TNS™ Test on Gold Ore for a Gold Producer in USA

- Over 35 tests conducted for mining companies showed up to 10% increase in pregnant solution [metal liquor] recovery due to enhanced dewatering, mostly from med-to-high-clay materials.
- Case studies for a US producer projected an increase in the range of 8% to 13% in gold recovery resulting in reduced operating cost an increased revenues







TNS Results vs Conventional	
CapEx Reduction	35%
OpEx Reduction	30%
Additional Revenues	15%
↓ Filter Size Reduced	
↓ Footprint Reduced	

Extrakt PROCESS SOLUTIONS

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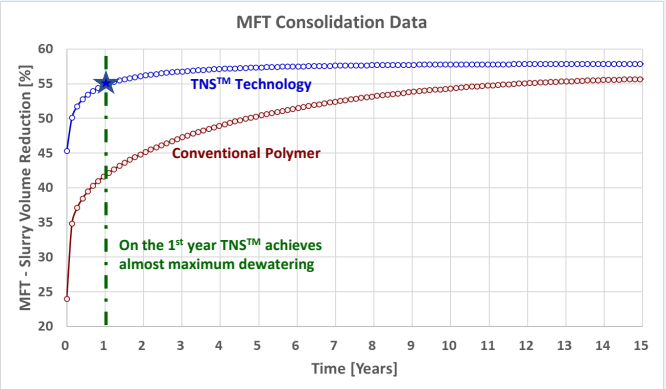
BANTREL

Application: MFT Dewatering

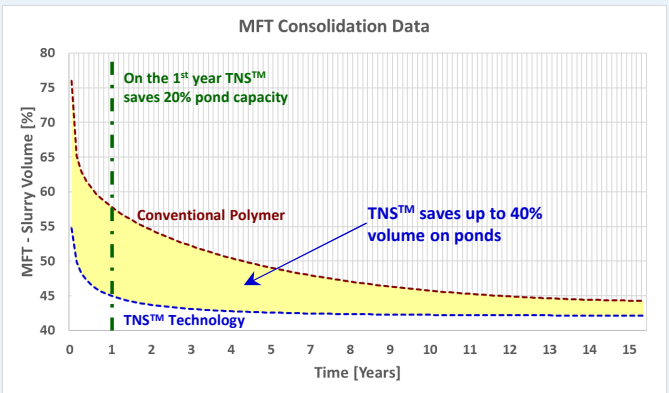
Performance of the TNS™ chemistry against a commercial polymer shows:

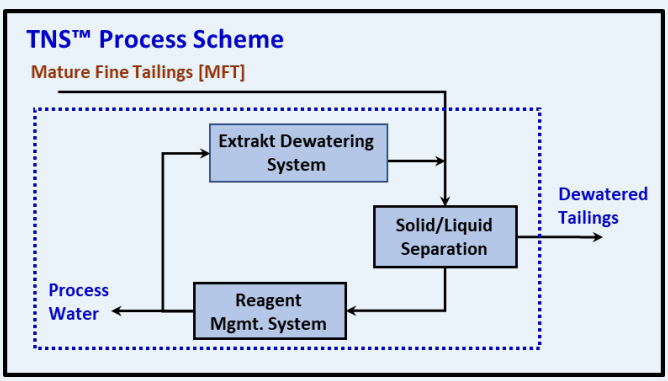
- Higher initial MFT dewatering rate than the commercial polymers
- Better long-term consolidation than the commercial polymers



Performance of the TNS™ chemistry against a commercial polymer shows :

- Higher dewatering rates for difficult systems like MFT.
- A significant initial MFT dewatering, on the first year it saves up to 20% capacity on pond storage.
- At the end, TNS™ chemistry improves the management of tailings with better long-term consolidation in the impoundment helping to save up to 40% on legacy tailings storage in addition to more water recovered than the commercial polymers.





How does TNS™ technology impact dewatering?

- ✓ Higher settling rates
- ✓ Higher thickener underflow density
- ✓ Higher consolidation rates
- ✓ Higher filtration rates
- ✓ Reduced environmental risks due to dry, clean and stackable tailings.

Extrakt PROCESS SOLUTIONS

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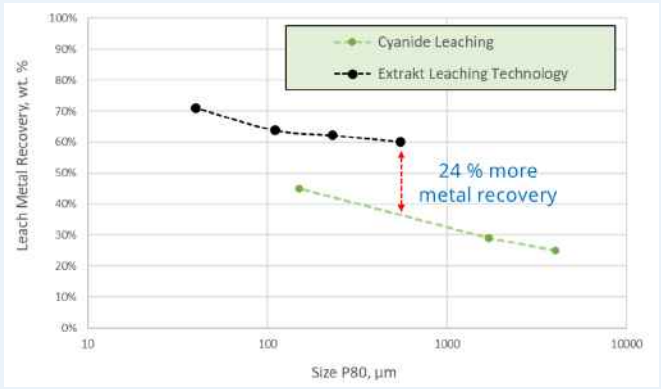
BANTREL

Application: Tailings Reprocessing Extrakt Leaching Technology

Extrakt Process Solutions, LLC. (EPS) has developed novel extraction technology suitable for the recovery of Lithium, Gold and Silver from refractory ores.

- The Leaching process is not a conventional cyanide leaching technology.
- A North American mining producer has issued a press release after promising results using this technology.
- Reduced footprint



Silver One Resources Press Release

Source:
https://www.prnewswire.com/news-releases/silver-one-reports-on-metallurgical-test-results-using-innovative-separation-and-leaching-technology-at-its-candelaria-silver-mine-nevada-302105123.html

SILVER ONE REPORTS ON METALLURGICAL TEST RESULTS USING INNOVATIVE SEPARATION AND LEACHING TECHNOLOGY AT ITS CANDELARIA SILVER MINE, NEVADA

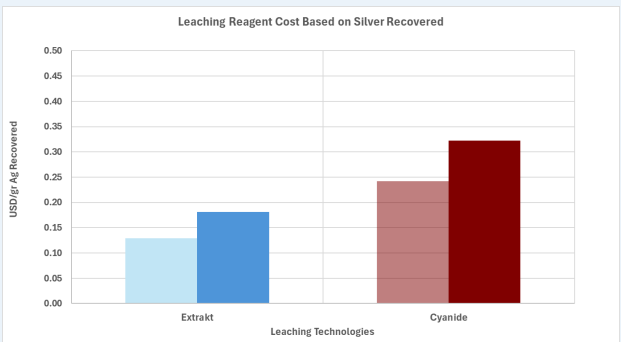
SILVER ONE

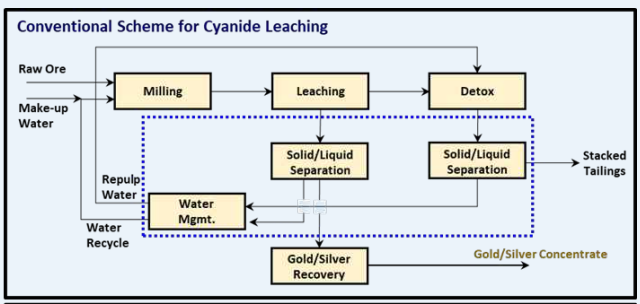
NEWS PROVIDED BY
Silver One Resources Inc. →
Apr 02, 2024, 09:15 ET

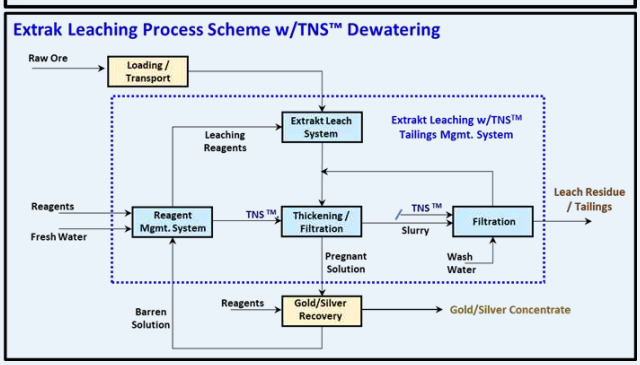
NON-TOXIC, CYANIDE-FREE TECHNOLOGY CAN POTENTIALLY DOUBLE SILVER RECOVERIES AND SIGNIFICANTLY CUT LEACHING TIMES

VANCOUVER, BC, April 2, 2024 /PRNewswire/ -- Silver One Resources Inc. (TSXV: SVE) (OTCQX: SLVRF) (FSE: BRK1) - "Silver One" or the "Company") announces the results of initial metallurgical testing using a novel, cyanide-free leaching process that can **potentially double silver recoveries** and cut leaching times. The leaching process is used in conjunction with a unique extraction process which is suitable for the recovery of silver from refractory mineralization. This innovative leaching process involves a trademarked technology called TNS, developed by Extrakt Processing Solutions, LLC ("EPS") Ky, USA. The tests were conducted on representative samples of the largest heap leach pad (LP1) from the Company's 100% owned, past-producing Candelaria Silver Mine in Nevada. Recently, EPS announced a strategic global alliance with Bechtel Energy Technologies & Solutions, Inc. ("Bechtel") to commercialize Extrakt's groundbreaking TNS™ technology (see **https://www.bechtel.com/newsroom/press-releases/extrakt-and-bechtel-partner-to-commercialize-groundbreaking-solid-liquid-separation-technology/**).

Extrakt's leaching process uses less harmful chemicals than the conventional cyanide leaching process and reduces the cost of chemicals used during leaching. Additionally, the residues (tailings) are inert and non-acid generating.







Extrakt Leaching Technology

- **Refractory gold and silver.**
- **Reduce environmental risk/impact - less toxic reagents**
- **Less water consumption & better water management**
- **Footprint reduction**
- **Leaching time reduction**
- **Lower CapEX / OpEX**

Extrakt PROCESS SOLUTIONS

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BANTREL

Application: Hydrocarbon (oil sands) Separation

What are industry needs?

- Improve solid-liquid-liquid separation systems
- Reduce environmental risk/impact
  - — Remediate oil contaminated soil exposed to weathering.
  - — Minimize altering soil properties to promote the recovery of wildlife in the contaminated area
  - — Avoid contamination of the fresh groundwater aquifers
  - — Smaller footprint [drier and/or stackable tailings]
  - — Less water consumption & better water management

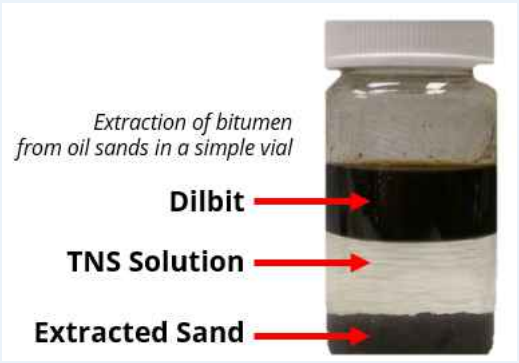
Extrakt TNS™ solution better than conventional:

Solid-Liquid-Liquid Separation Systems

- Chemistry causes higher hydraulic conductivity & fast solids settling/consolidation and dewatering
- Recovered sand with very low oil content and low moisture
- Robust operation with variable mineralogy and/or clay/fines content in feed

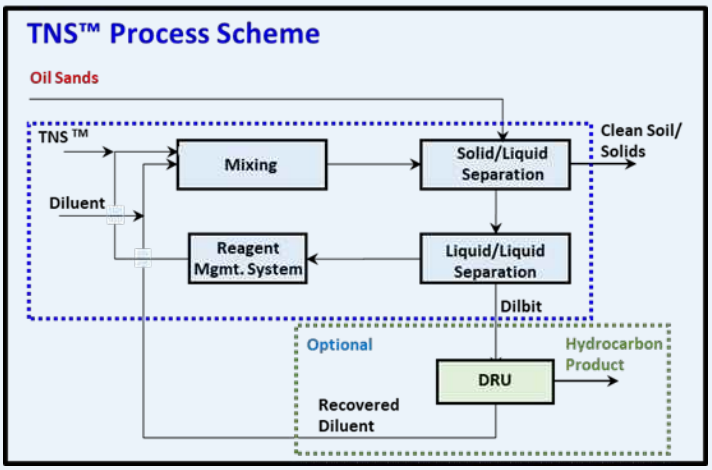
Environmental Risk/Impact

- Enables production of dry, clean, stackable tailings, eliminating the need for tailings ponds.
- Higher water recovery leading to reduction of make-up water requirement
- Water management system to meet environmental regulations



TNS™ technology impact:

- ✓ **Higher oil recovery by using efficient means of solids removal**
- ✓ **Higher oil quality attained with effective liquid-liquid separation**
- ✓ **Higher hydrocarbon recovery**
- ✓ **Smaller footprint**
- ✓ **Robust with feed variations**



Extrakt PROCESS SOLUTIONS

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