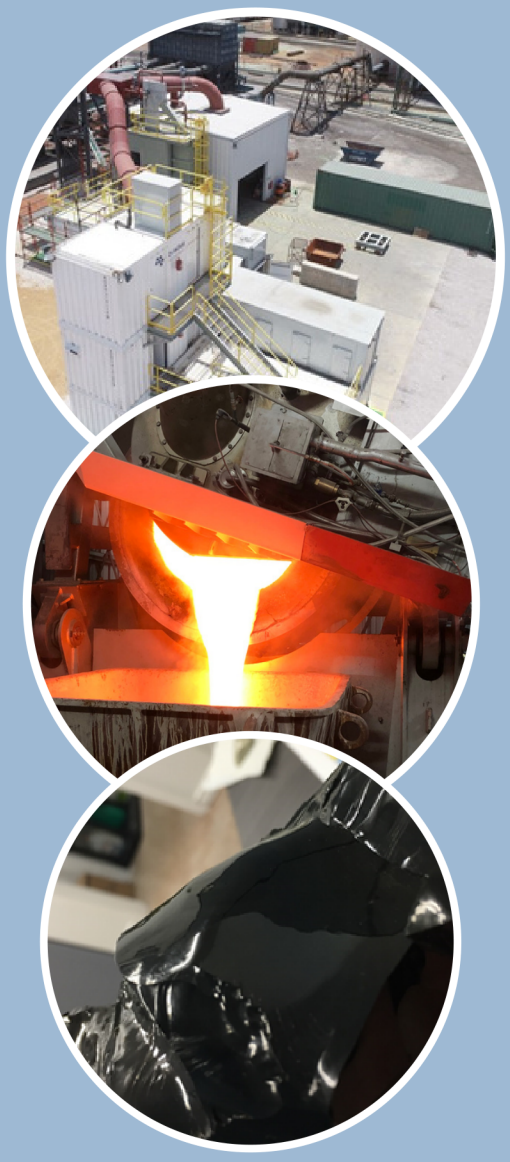
GLASSLOCK PROCESS™

DST has developed a novel cost-effective and environmentally friendly process for the removal and stabilization of arsenic often associated with precious and base metals deposits.

GlassLock incorporates arsenic into a highly stable glass matrix that can contain up to 20% arsenic.



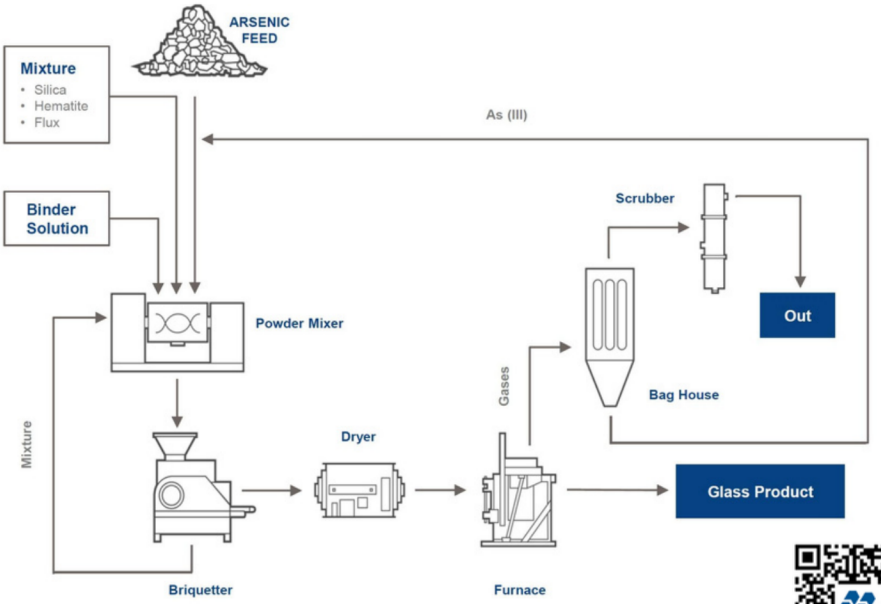
DUNDEE SUSTAINABLE TECHNOLOGIES

The **GlassLock Process** vitrifies the arsenic by integrating it in a mixture of silica, hematite, and sodium carbonate. The resulting glass is a stable oxide system of As2O5-SiO2-Fe2O3-Na2O which can hold up to 20% arsenic while meeting and/or exceeding environmental norms and industry standards, such as the requirements of the TCLP (or EPA's method 1311). DST has also demonstrated the ability of its process to declassify the resulting waste from "hazardous" to "general".

Using GlassLock, arsenical compounds can be successfully and permanently stabilized from their amorphous states. The stability of glass offers a perpetual sequestration solution for arsenic which removes the need for long-term waste disposal monitoring and site closure risk management.

- ✓ Robust, stable and insoluble glass product
- ✓ Incorporates up to 20% arsenic within glass
- ✓ Increased operational efficiency
- ✓ Very competitive CAPEX and OPEX
- ✓ Complies with environmental regulations (US EPA methods 1311, 1315…)
- ✓ Decreased current and future environmental liabilities
- ✓ Reduced carbon footprint

DST has developed an approach for the removal of arsenic contained in sulphide mineral concentrates. The removal of arsenic presented in the form of arsenopyrite, enargite or cobaltite is done using a thermal decomposition in an inert environment in combination with the stabilisation of arsenic by vitrification. This implies that concentrates can undergo an arsenic removal pre-treatment and output an arsenic depleted mineral concentrate amenable to traditional leaching circuits, or base metal smelters.



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CLEVR PROCESS™

DST offers a cleaner, efficient, and cost-effective alternative for extracting gold.

CLEVR operates in a fully closed loop, uses no cyanide and produces no toxic solid residues, no liquid or gaseous effluents.

DUNDEE SUSTAINABLE TECHNOLOGIES

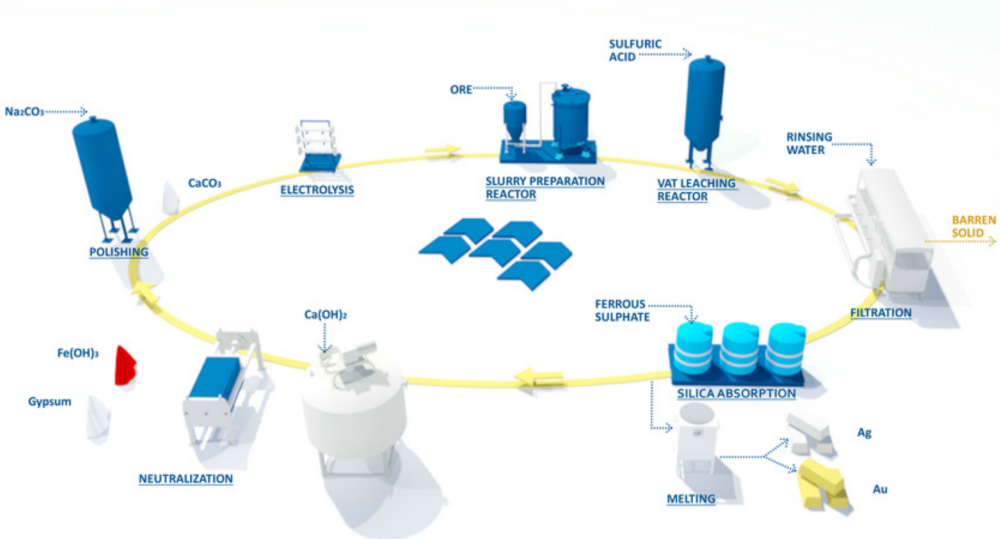
The **CLEVR Process** uses sodium hypochlorite with a catalytic amount of sodium hypobromite in acidic conditions to put the gold into solution. Contact time is short, and the process operates in a fully closed loop. All chemicals are recycled within the circuit and, if needed, sea water may be used.

Tailings from the process are low in moisture, sulphide depleted and inert - as a result, they meet and/or exceed environmental norms and standards. CLEVR eliminates the need for costly tailings ponds and the risks of failure.

The process has demonstrated, at an industrial scale, excellent gold recoveries within a fraction of the time needed for cyanidation to obtain similar results. In addition, precious metal deposits containing accessory base metals can also be treated effectively. The efficiency of the process, coupled with its ambient temperature and pressure, operating conditions, plant size and construction materials allow for competitive capital and operating costs.

- ✓ Achieve >95% gold extraction yields
- ✓ Increased gold recovery in a fraction of the time (1-2hrs)
- ✓ Handles and recovers base metals (Copper, Zinc)
- ✓ Competitive CAPEX and OPEX
- ✓ Cyanide-Free
- ✓ Non-toxic solid tails
- ✓ Closed loop
- ✓ Decreased current and future environmental liabilities
- ✓ Reduced carbon footprint

DST has received an **ISO 14034: 2016 certification** through the Canadian Environmental Technology Verification Program ("ETV"), which represents an independent certification of the performance of the CLEVR process.



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