



**DUNDEE**  
SUSTAINABLE TECHNOLOGIES

**GLASSLOCK**  
PROCESS™

**CLEVR**PROCESS™

**CSE:DST**

MAY 2021

# Forward Looking Statements

This presentation contains forward-looking statements that address future events and conditions, which are subject to various risks and uncertainties. Actual results could differ materially from those anticipated in such forward-looking statements as a result of numerous factors, some of which may be beyond the Corporation's control. These factors include: general market and industry conditions, risks related to continuous operations and to commercialization of a new technology and other risks disclosed in the Corporation's filings with Canadian Securities Regulators.

Forward-looking statements are based on the expectations and opinions of the Corporation's management on the date the statements are made. The assumptions used in the preparation of such statements, although considered reasonable at the time of preparation, may prove to be imprecise and, as such, undue reliance should not be placed on forward-looking statements. The Corporation expressly disclaims any intention or obligation to update or revise any forward-looking statements whether as a result of new information, future events or otherwise, except as required by applicable law.

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# DST Overview

Dundee Sustainable Technologies (DST) is engaged in the development and commercialization of environment-friendly technologies for the treatment of materials in the mining industry.

Invested \$45 million developing its processes

Technologies successfully demonstrated and ready for commercialization

54 patents in 18 countries



# Industry Challenges

## Environmental

- **Cyanide**
  - Jurisdictions have banned or restricted cyanide
- **Arsenic**
  - Industry is turning to deposits with greater concentration of arsenic
  - Few facilities currently treat high arsenic material
  - Industry requires a permanent arsenic disposal process

## Metallurgical

- Gold recovery from refractory ores
- Base metals, tellurium or organic carbon in gold ores





## DST Solutions

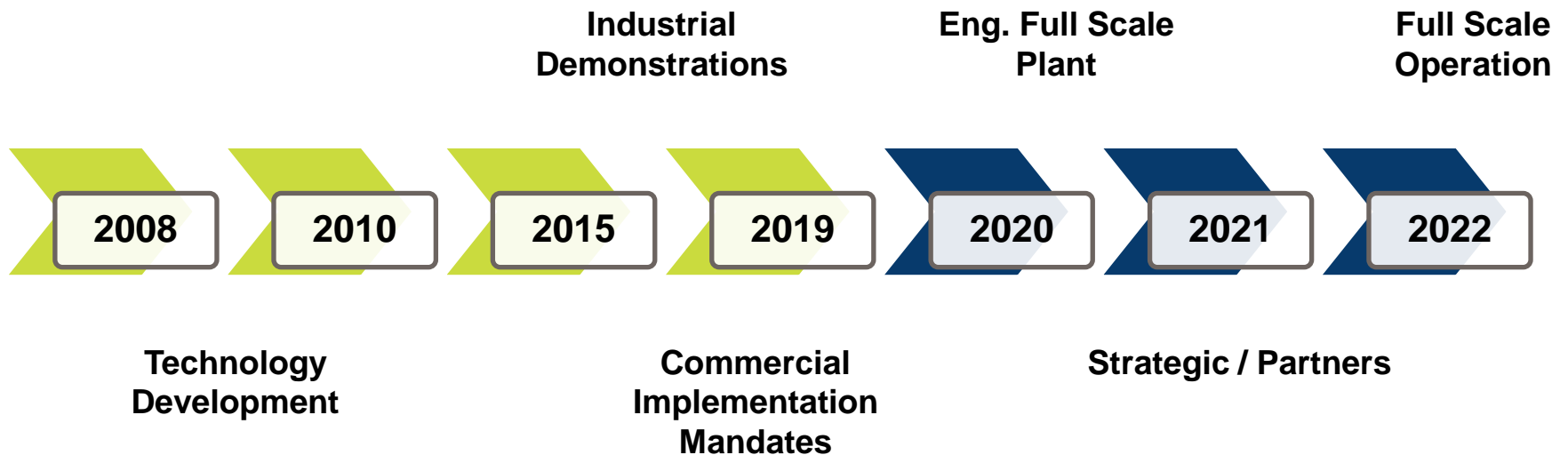
### **CLEVR**PROCESS™

- Cyanide-free gold extraction
- No liquid effluents
- Refractory ores

### **GLASSLOCK**PROCESS™

- Arsenic stabilisation
- Allows access to complex ores
- Permanent disposal solution

# DST Development Roadmap to Commercialization

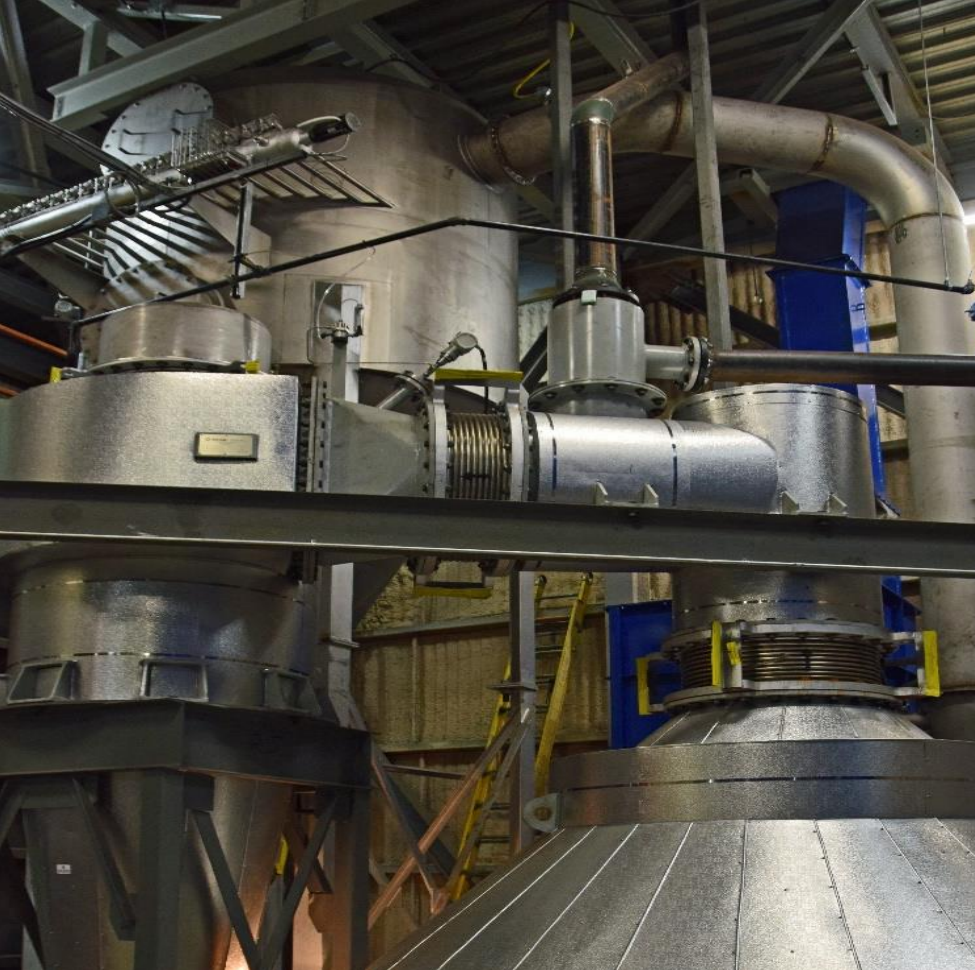


**DEVELOPMENT PROCESS COMPLETED**

**COMMERCIAL IMPLEMENTATION**

# CLEVR Process – Gold Extraction Overview





**CLEVR**PROCESS™

**DST's Industrial Plant  
Thetford Mines, QC**



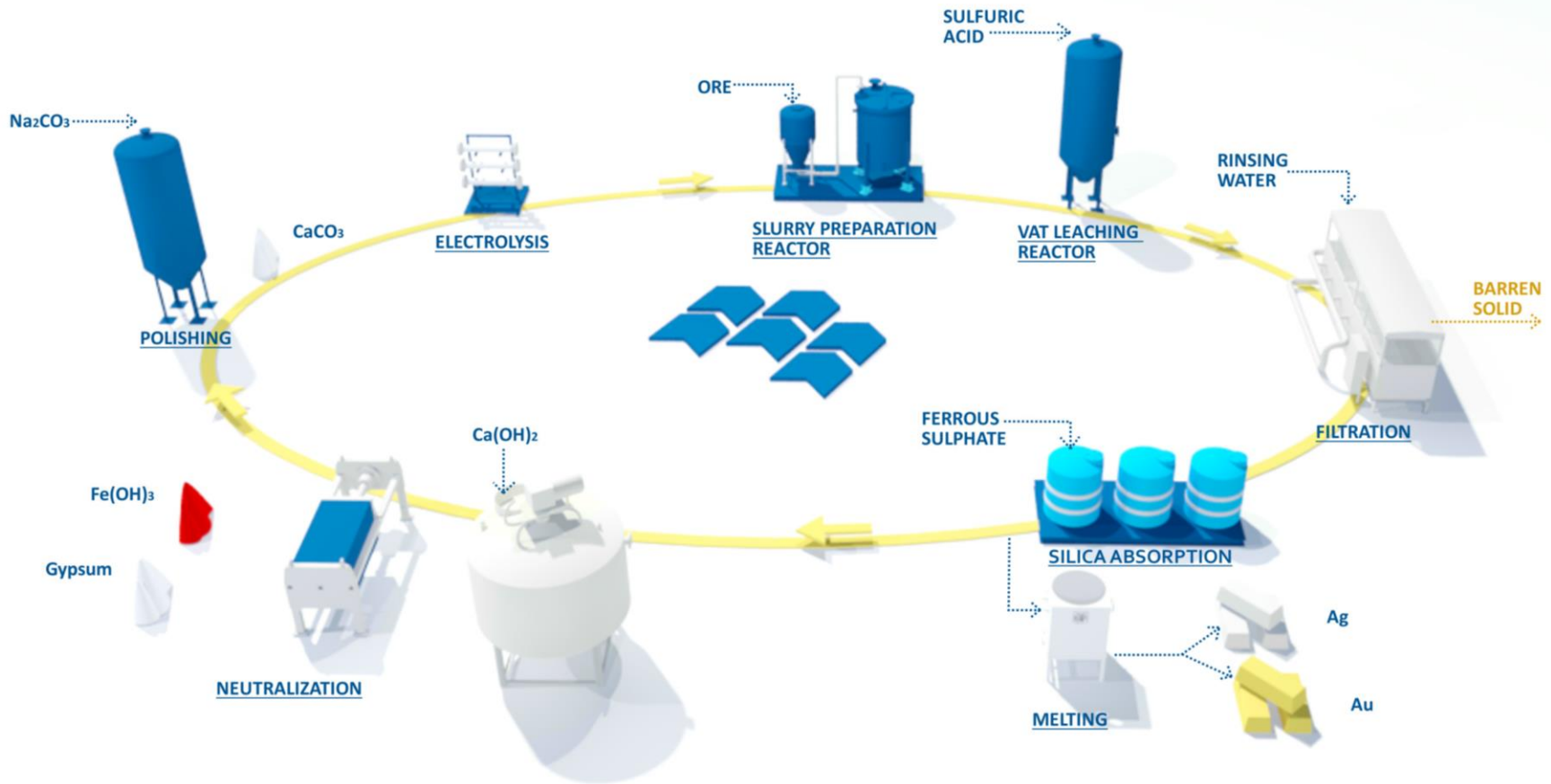
# CLEVR Chemistry Involved

Hypochlorite, along with a catalytic amount of hypobromite, are used as oxidizing agents because of the particularly **fast reaction of bromine with gold**.

The capability of chlorine to oxidize bromides to bromine, explains the low concentration of bromide required in the brine.



# CLEVR Process - Closed Loop Circuit



# Technology Validation

## Cyanide-Free Gold Extraction Process

Developed by Dundee Sustainable Technologies Inc.  
Thetford Mines, QC, Canada

**Registration: GPS-ETV\_VR2019-06-30**

In accordance with

**ISO 14034:2016**

**Environmental Management —  
Environmental Technology Verification (ETV)**







# **Arsenic Vitrification The GlassLock™ Process**



# GLASSLOCK<sup>™</sup>

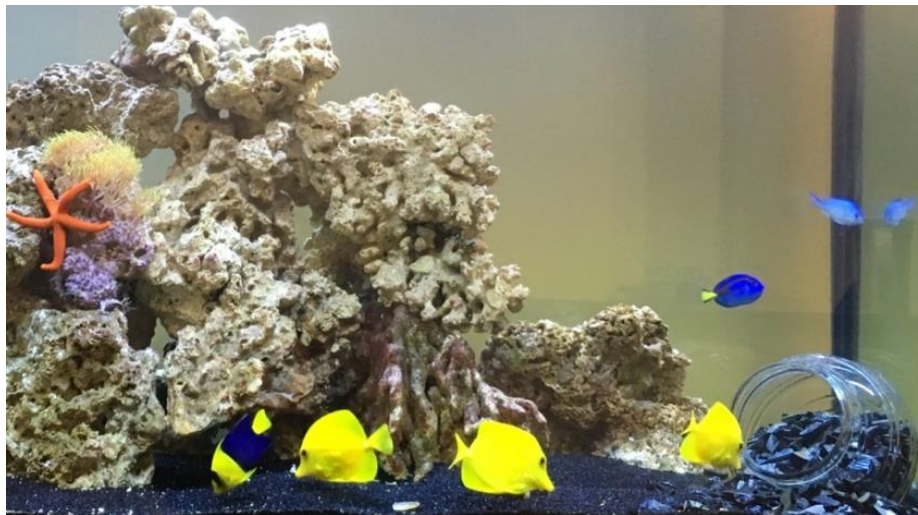
PROCESS

## DST's Industrial Plant Namibia, Africa



# GlassLock™ Process - Arsenic Stabilization

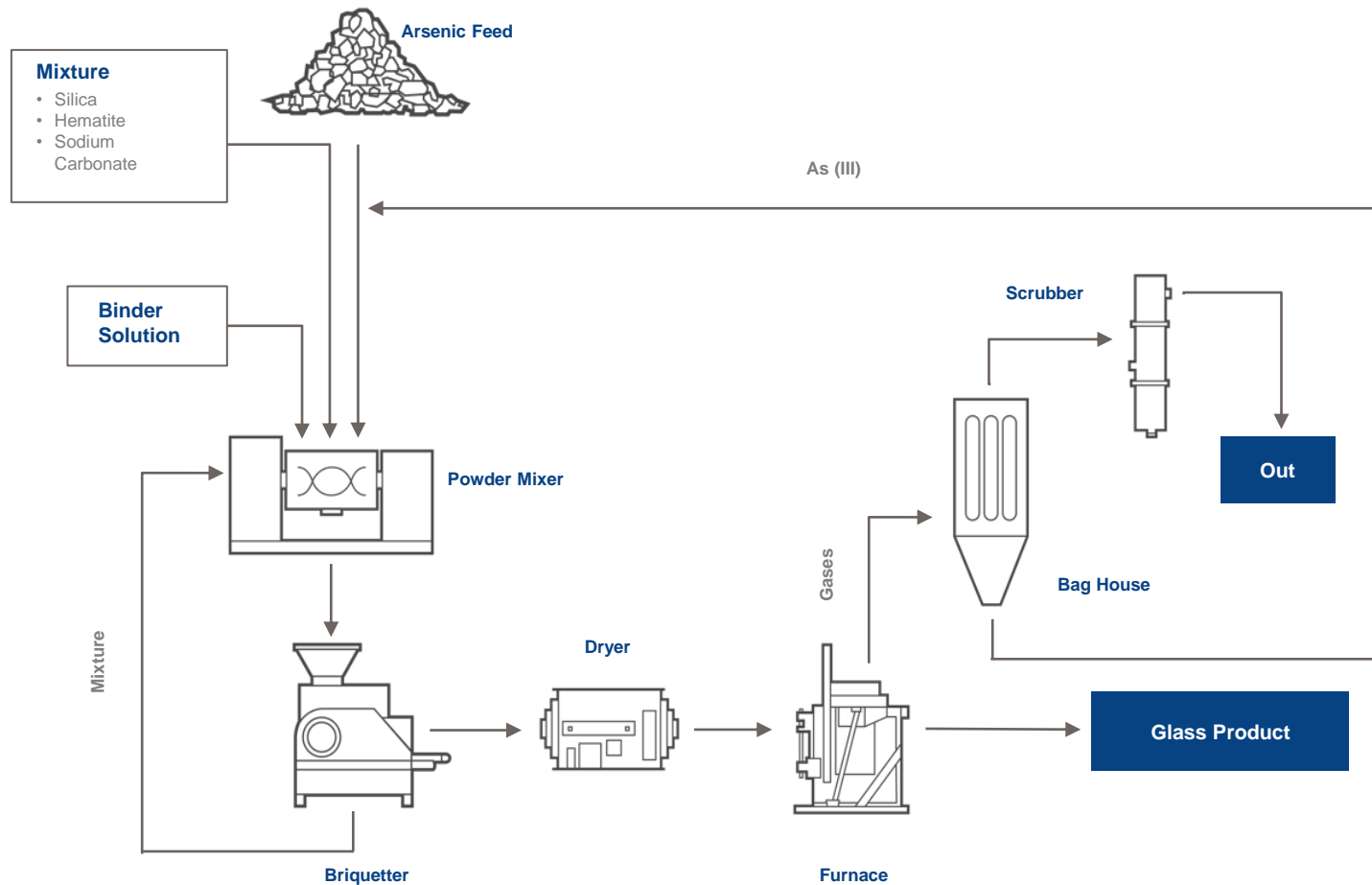
- Stabilization by vitrification
- Intermediate compound that can sustain vitrification temperature
- Produces glass with over 20% As
- 1-2 ppm As, exceeds EPA's TCLP (5 ppm)
- Widely available reagents / equipment



*DST aquarium containing arsenic glass*



# GlassLock™ Process – Circuit



# Arsenic Glass Product

## Glass Samples & TCLP

	Sample 1	Sample 2
As (%)	17.5 %	18.1 %
TCLP (mg As /L)	1.79	1.95

- Glass density: 2.7
- Amorphous/single phase silica matrix
- Contaminants such as **Sb, Cd, Bi, Te and Pb** present in the dusts would also be stabilized within the glass product.



# Technical Services

## Technical & Industrial Complex

DST currently possesses the amenities required to perform testing programs at scales ranging from 1 kilogram to 1,000+ tonnes.

- **Laboratory and Analytical Facilities**
- **Process Simulation**
- **Mineral Processing Circuits  
(Crushing, grinding, gravity & flotation)**
- **Piloting Facilities**
- **Demonstration Facilities**



*Laboratory & hydrometallurgical pilot facilities*



*Pyrometallurgical & arsenic vitrification pilot facilities*



*Demonstration plant & comminution circuit*



# Directors and Officers

## Directors

- **Robert Sellars,**  
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- **Hubert Marleau**
- **Mario Jacob**
- **Jean-Marc Lalancette,**  
Chairman Emeritus

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President & CEO
- **Jean-Philippe Mai,**  
Executive Vice President
- **Arved Marin,**  
Chief Financial Officer
- **Jean Tardif,** General  
Manager
- **Patricia Ososio,**  
Corporate Secretary



# DUNDEE SUSTAINABLE TECHNOLOGIES

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**GLASSLOCK**  
PROCESS™

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