

HyperSparge™

High intensity gas injection
for efficient oxidation

The logo for HyperSparge, featuring the word "HYPER" in a bold, italicized font above "SPARGE" in a similar font, with a horizontal swoosh underline that passes through the middle of the letters.

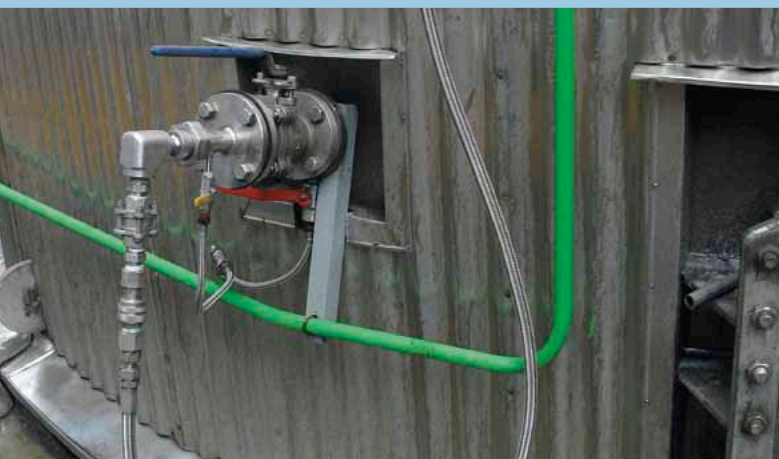
**HYPER
SPARGE**

The logo for xstrata technology, featuring a stylized 'X' symbol above the word "xstrata" in a lowercase sans-serif font, with "technology" in a smaller font below it.

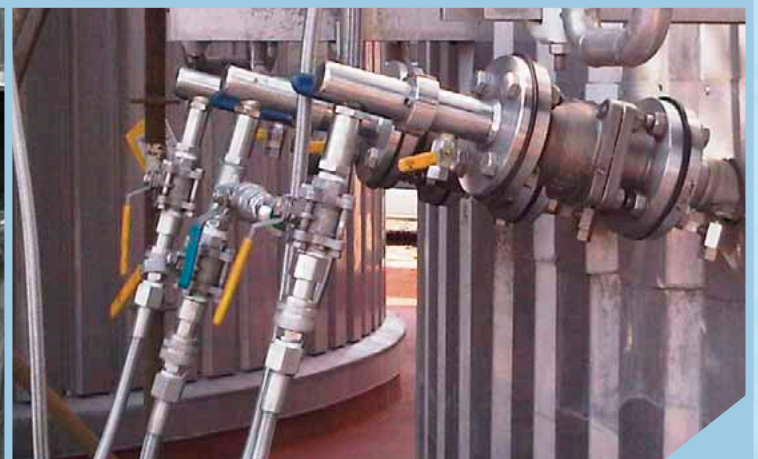
xstrata
technology

HyperSparge™

The HyperSparge™ has been developed by Xstrata Technology to provide a proven and cost effective sparging system for delivering air, oxygen or other process gases for leaching or oxidation processes. It uses an alloy steel injection lance fitted with a hard wearing ceramic nozzle to inject a concentrated supersonic jet of gas into the process solution or slurry. The supersonic gas jet enters the process stream at velocities in excess of 400 m/s, creating a region of very high local shear and fine bubbles, resulting in very efficient mass transfer.



HyperSparge™ in operation at Xstrata Zinc's Albion Process at San Juan de Neiva Zinc Refinery, Spain



HyperSparge™ operation at Xstrata Zinc's Albion Process pilot plant in Nordenham, Germany, designed to produce 30,000tpy zinc metal

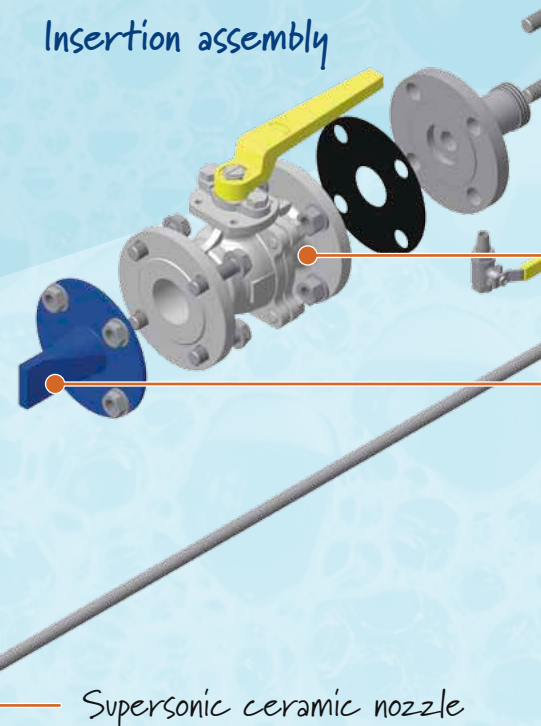
The HyperSparge™ is a complete gas injection system, consisting of several sub assemblies that are designed for safe live insertion and removal of the sparger, so that process downtime is minimised. The HyperSparge™ is inserted into the process through a nozzle in the side of the vessel, at waist height, so that the main components of the HyperSparge™ are located outside the vessel for ease of access and maintenance.

The HyperSparge™ will operate at oxygen pressures up to 1000 kPa(g), with a typical operating pressure in the range 300–500 kPa(g). The materials of construction are designed to be entirely oxygen safe under these operating conditions.

The HyperSparge™ can be operated at temperatures up to 200°C.

The gas flowrate for the HyperSparge™ can be easily varied from 20–300 Nm³/hr by simply changing the ceramic nozzle.

Insertion assembly



HYPER SPARGE

HyperSparge™ advantages

- ✓ Increased leaching rates, creation of high shear rates and small bubbles creates fast reaction rates
- ✓ Lower oxygen consumption through efficient mass transfer
- ✓ Live insertion and removal, no process downtime
- ✓ Improved safety
- ✓ Lower reagent usage
- ✓ Simple design and construction
- ✓ Robust, long life materials designed for the process

HyperSparge™ applications

Mining

- » Oxidative leaching, CIP/CIL processing of gold ores
- » Processing of uranium ores
- » Conditioning flotation pulps
- » Column flotation

Wastewater Treatment

- » Removal of VOC's
- » Sulphide and sulphite oxidation
- » Groundwater remediation
- » High BOD liquors
- » Oxygen stripping with inert gas

Fermentation

- » Brewing
- » Food and beverage
- » Pharmaceuticals

Hose assembly

Teflon lined,
stainless steel
braided hose

Manifold
connection kit
and solenoid
isolation valve

Sparger dual seal

Isolation valve

EPDM internal
non return valve

HyperSparge™ sparger



Xstrata operates mines throughout the world.
Tough testing grounds that make our process technologies the best on earth.

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