CONTINUOUS VAT LEACHING
Continuous Vat Leaching

INNOVAT MPS Limited is the inventor of the patented Continuous Vat Leaching (CVL) process which is far more efficient than traditional leaching methods.

Developed in the late 1980’s, a 5 TPD pilot plant was installed at Process Research Ortech to prove the economics for gold, silver and copper. In the mid 1990’s, a full scale 150 TPD gold processing plant was constructed and operated in Costa Rica.

The INNOVAT CVL process works by fluidizing a bed of crushed ore using intermittent pulses. The up flow moves the ore through the vat while maximizing energy and efficiency. Testing has proven recoveries up to 90%, while the tailings are fully washed and detoxified usually only containing <15% moisture. The tailings can typically be placed directly into a disposal area without the need for tailings dams.

INNOVAT’s unique turnkey design compares favorably against traditional heap leaching by outperforming in recovery with leach times of 24 – 72 hours (depending on ore type). Without the need of a tailings dam and fully detoxified tailings, the INNOVAT process is ideal for environmentally sensitive locations.
INNOVAT has signed an agreement with RMDSTEM Limited to be their exclusive service provider in the Australasian region. The agreement means that the local agent for INNOVAT in Australasia, Frank Trask, now has the technical capability to undertake all test work, pilot plant trials and feasibility studies. He may also provide design, construction and commissioning assistance with new plants in the region.
INNOVAT Process

INNOVAT CVL utilizes several simple processes to accomplish all the necessary work within the vat. Feed ore is supplied on a continuous basis at a crushed size of ¼” (6mm). The submerged ore is then fluidized during predetermined intervals utilizing energy from rapidly draining a head tank. A result of the fluidization process is liquefaction. Liquefaction is similar to the properties of quicksand and results in rapid leaching of the ore. The fluidization process may occur up to 20 times per hour with flows peaking at 30,000 L/h/m². In comparison, a traditional vat flows at 350 L/h/m² and a heap leach would flow at 10 L/h/m².

The driving force behind the ore movement is the bucket wheel discharger which creates a void in the ore bed. By constantly adding and removing ore, the ore has a tendency to re-establish a level surface and thus generally moves towards the discharge wheel.

This discharge method is similar to large bucket wheel excavators. As the bucket wheel excavates leached ore from the vat, it deposits it on a discharge belt where it may be combined with paste from the thickener. This discharge is typically dry with less than 15% moisture. This can then be further passed through screens and filter presses depending on the mine requirements.
INNOVAT Paste Thickening

INNOVAT’s revolutionary ground up paste thickener design is one of the simplest and most cost effective units available on the market. The INNOVAT paste thickener utilizes a peripheral feed arrangement which distributes the solids laden in solution to the outer edges of the thickener. Clear solution is allowed to rise and is either drawn back into the feed pipes as a diluting agent or overflowed into a launder where it can be distributed further.

The INNOVAT thickener’s rake-less design means no moving parts resulting in lower power consumption and maintenance.

In practice, INNOVAT thickeners have been shown to perform exceptionally well particularly when tied to INNOVAT’s CVL process. In many cases, the paste is ready for direct placement into a disposal area without the need for tailings dams.
INNOVAT MPS Limited has a clearly defined series of metallurgical tests that have been devised to test the efficacy of the INNOVAT CVL leaching technology. Test apparatus is available in North America at Lakefield Ontario and Reno Nevada. Testing facilities are also available in Perth, Western Australia.

These facilities are independent of INNOVAT MPS Limited.

Please contact us for more information regarding testing your ore for CVL.
Dan Mackie & Associates

An EPCM Company

Working in conjunction with INNOVAT, Dan Mackie & Associates (DMA) is a full service Engineering, Procurement, Construction Management (EPCM) company. Established in 1982, DMA is dedicated to the minerals processing sector, our Engineering group focuses on plant and process design covering metallurgical, economic and technical feasibility studies, detailed engineering, plant construction, commissioning and operations.

DMA’s team of experienced technical professionals provides capabilities to offer expertise in metallurgy and processing of base and precious metals; energy minerals and rare earth elements. Our knowledge in the mineral processing sector covers the total process cycle including crushing, grinding, leaching, concentration, pressure, extraction and tailings management.

Possessing a vast knowledge of regulatory and financial requirements relating to development of mineral projects, DMA is committed to providing value-added engineering services to clients with the experience to maximize economic return to your project.
**North America**

Dan Mackie  
905-333-7133  
405C – 760 Brant Street  
Burlington, Ontario L7R 4B8  
Canada  
info@danmackie.com

**Australasia**

Frank Trask  
+61(0)409 302 276  
+61(0)892 160 400  
RMDSTEM Limited  
14 Outram Street  
West Perth, WA 6005  
Western Australia  
ftrask@gmail.com

**South America**

Andreas Vorwerk  
andreas.vorwerk@vorwerk.cl

Alberto Rochefort  
alberto.roche@hotmail.com

www.vatleach.com