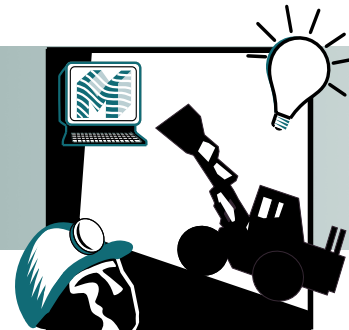


MINING

Project Fact Sheet



TREATMENT OF CYANIDE SOLUTIONS AND SLURRIES USING AIR-SPARGED HYDROCYCLONE TECHNOLOGY

BENEFITS

- Reduces capital costs associated with cyanide recovery and re-use
- Reduces power costs compared to current cyanide destruction systems
- Increases re-use of cyanide which increases environmental benefits

APPLICATION

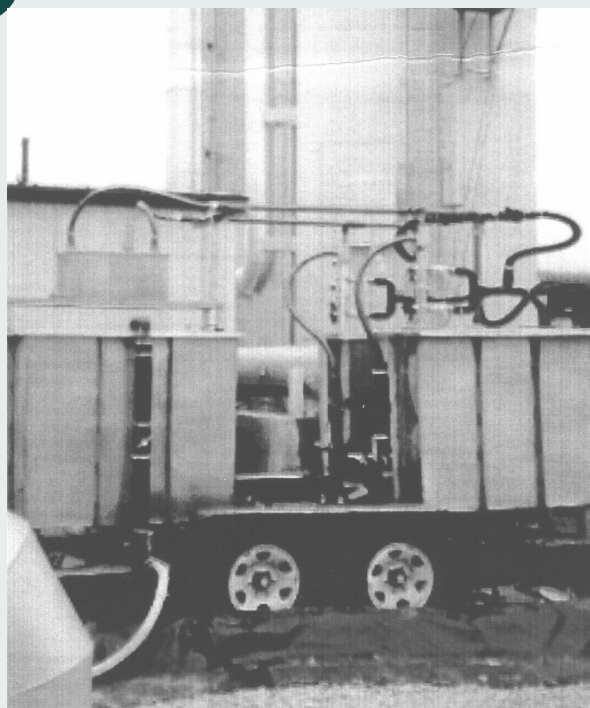
Using Air-Sparged Hydrocyclone technology for cyanide recovery and/or destruction would potentially be applicable to mineral and other industries using cyanide in their processing.

AIR-SPARGED HYDROCYCLONE TECHNOLOGY REDUCES THE NEED FOR CYANIDE DESTRUCTION

Treatment of cyanide solutions and slurries using air-sparged hydrocyclone (ASH) technology can reduce the overall cost of cyanide recovery and re-use. It also may be used for cyanide destruction. Cyanide recovery is the preferred treatment method for cyanide. However, in many cases the concentration of cyanide is too low and recovery is not economical. Therefore, the cyanide must go through a destruction process.

The largest single disadvantage of the cyanide recovery process is the large capital cost associated with the recovery plant. Conventional cyanide stripping towers are not only expensive but require frequent maintenance and de-scaling to maintain operation efficiency. Preliminary tests indicate that the ASH technology is ideally suited for stripping of cyanide gas for recycling and it may provide an economical alternative to large stripping towers. ASH could reduce the capital costs by a large factor and increase significantly the number of cyanidation plants for which recovery would be economically viable.

MOBILE ASH SYSTEM



A mobile ASH system such as the one shown above will be used for cyanide recovery/destruction.



Project Description

Objective: To adapt and field test the air-sparged hydrocyclone (ASH) technology for the low cost recovery or destruction of cyanide used in some mining operations.

The ASH technology was originally developed at the University of Utah for flotation of fine particles in the mineral industry. It is now successfully being used to remove oil from contaminated soil, volatile organic compounds from water, and to treat industrial wastewater.

The laboratory work will be completed in the first year at the University of Utah facility. Based upon the results of these laboratory tests the specification of the field testing equipment will be determined by the University of Utah and UniField, Engineering, Inc. In the beginning of the second year, the mobile unit will be installed at the plant site by ZPM Inc. and UniField Engineering, Inc. The University of Utah, UniField Engineering, Inc. and representatives of the plant will undertake the field tests. However, any modification of the equipment if needed at this point will be performed by ZPM Inc. The University of Utah and UniField Engineering, Inc. will be in charge of data analysis, technical and economic evaluation.

Progress and Milestones

Activities to be completed in this project include:

- Complete lab test and data analysis for cyanide recovery: clear solution application and slurry application
- Complete lab tests and data analysis for cyanide destruction: clear solution and slurry applications
- Selection of slurry vs. clear solution for cyanide recovery, and slurry vs. clear solution for cyanide destruction
- Complete design specifications
- Modify existing pilot plant
- Complete installation and debugging
- Complete pilot plant runs

Commercialization Plan

Industry sponsors have been selected to provide both technical input and commercialization assistance. UniField Engineering, Inc. is internationally known for their expertise in designing and constructing cyanide recovery and destruction plants. Solvay Minerals will actively market the destruction process to potential users. ZPM, Inc. is actively marketing the ASH technology for a number of non-mining applications.



PROJECT PARTNERS

University of Utah
Salt Lake City, UT

Baker Hughes
Salt Lake City, UT

Dawson Laboratories
Salt Lake City, UT

Midas Mining Company
Ken Snyder Mine
Midas, NV

Solvay Minerals
Houston, TX

UniField Engineering, Inc.
Billings, MT

Utah Engineering Experiment Station
Salt Lake City, UT

ZPM, Inc.
Goleta, CA

Doug Halbe (consultant)
Salt Lake City, UT

Placer Dome
Vancouver, British Columbia

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

Office of Industrial Technologies
Clearinghouse
Phone: (800) 862-2086
Fax: (360) 586-8303
clearinghouse@ee.doe.gov

Visit our home page at
www.oit.doe.gov/mining

Office of Industrial Technologies
Energy Efficiency
and Renewable Energy
U.S. Department of Energy
Washington, D.C. 20585



June 2001