

sherritt technologies

ARTIFICIAL
INTELLIGENCE

Artificial Intelligence (A.I.) in HPAL

Modeling and optimization of HPAL operation based on 'real-time' operating conditions, economic factors and plant constraints.



Profitability



- 'Real-time' optimization of operating parameters
- Reduced operating costs
- Improved recovery

Process Stability & Reliability



- Process upset identification and remediation recommendations
- Consistent, data driven decision making
- Continuous learning of changing operating conditions

Training



- Scenario analysis for use in evaluation of operating condition
- Training tool for operations, technical staff and management

Trouble Shooting



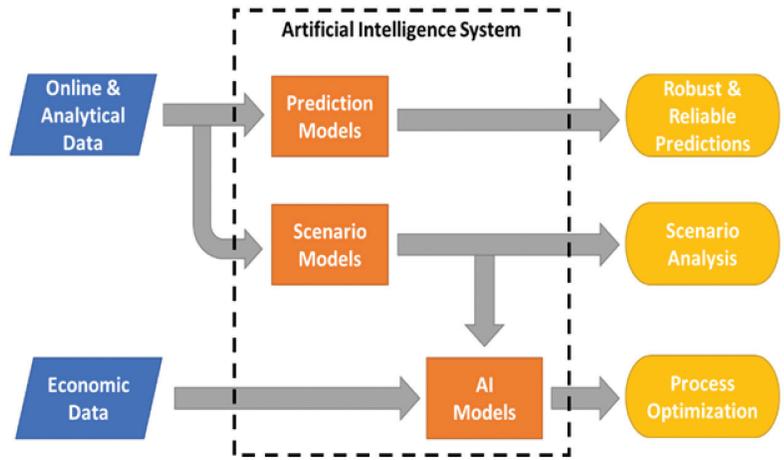
- Identify key influences that affect process
- Cross-validation of measured data to assist in error identification

Artificial intelligence in the mining industry

The use of A.I. for process optimization is expected to play an increasingly important role in the future of the mining industry. Within a hydrometallurgical facility, key process data can be difficult to obtain in a timely manner due to technical or economic limitations. Application of A.I. to a hydrometallurgical process has the potential to produce data driven virtual sensors using historical data that can estimate unmeasurable characteristics of the process and provide appropriate recommendations during operation to optimize and improve stability of the process. A.I. serves as a tool to extract information from process data and advise on a continuous basis the parameters to maintain operation at peak profitability.

Methodology

Historical operating data obtained from a High Pressure Acid Leach (HPAL) operation was used to develop A.I. models to optimize the process based on operating conditions, ore mineralogy, economic data and operating constraints.



Evaluation of results

For the six-month evaluation period, the A.I. models identified operating conditions that increased potential profit in approximately 42% of the total operating hours. The A.I. models were also able to identify operating parameters to bring adverse operating conditions to within their target limits in approximately 17% of the total operating hours. Further refinement of the model parameters, through continuous learning and optimizing the A.I. models is expected to improve performance of the models.

The Technologies Division of Sherritt is a recognized leader and pioneer in the development and application of pressure hydrometallurgy. In addition to supporting Sherritt's existing business units, the division provides metallurgical services, including test work, analytical services, engineering and commercial operations support to existing and emerging clients in the metals industry. We provide a suite of services to help take projects from the process and flowsheet development stage, to piloting and demonstration and onto commercialization. Sherritt has more than 60 years of experience in the development and commercialization of hydrometallurgical technologies for the recovery of non-ferrous and precious metals. More than 40 operating plants worldwide have successfully applied Sherritt's processing expertise.

NTWIST's artificial intelligence enabled platform is positioned to save industry millions of dollars through revolutionary process decision management. We enable high performance in industrial facilities by integrating facility control systems with artificial intelligence to drive throughput, reduce costs and maximize profit. This is achieved through leveraging data from existing infrastructure and control systems in industrial facilities to train NTWIST models that simulate the interaction between each process parameter.

NTWIST

4-028, 11421
Saskatchewan Drive,
Edmonton, Alberta
Canada T6G 2M9

T +1780 807 4023
E info@ntwist.com

Sherritt Technologies

8301 113 Street
Fort Saskatchewan, Alberta
Canada T8L 4K7

T +780 992 8000
F +780 992 8100
E info@sherritt-tech.com