

PROJECT TITLE - Microwaves in Mining... to "nuke" or not to "nuke"?

PROJECT OVERVIEW

Techno-economic evaluation and demonstration of integrated microwave technology in mining and mineral processing.

PROJECT DESCRIPTION

A literature review will provide a clear picture of the advances in MW technology applications in Mining as well as in other industrial applications and system development. A techno-economic evaluation will be done across the value chain from mining to tailings deposition on several promising applications and the one with the most promising value proposition will be selected for lab, mini pilot and large scale integrated demonstration.

PROJECT STATUS

U of T, Queens, Corem and Canmet have all done significant work. Technology has been under consideration for 30 years.

PARTICIPANTS

U of T, Queens, Corem, SGS, Teck, Newmont, Glencore-XPS, Engineering Firm, CMIC, Canmet

METHODOLOGY

Phase	Project Tasks	Timing (Q/Y)	Budget (\$\$)	Resources Required	Outputs
1	Phase 1: Literature Review	Q1/19	\$10k	U of T post doc.	Report & Communication to Team
1.1	Applications in Mining, Min Proc.				
1.2	Industrial applications outside mining				
1.3	Industrial Equip. manuf. (generators & applicators)				
2	Phase 2: Application Opport. (Value Prop.)	Q2/19	\$50k	Engineering Firm & Team	Report
2.1	Selective mining & breakage at face				
2.2	MW assisted communiton/liberation				
2.3	MW assisted sorting				
2.4	MW ore conditioning				
2.5	MW assisted drying				
2.6	Selection of most promising application (GO/NO GO)			Team	Communicate to partners
3	Phase 3: Selection of Candidate Ore & Lab Scale Application Demo				
3.1	Selection of most promising application	Q2/19	\$0	Team	
3.2	Candidate ore lab testing	Q3/19	\$10k	U of T/Queens/Corem/XPS	Report
3.3	Candidate ore mini pilot testing (10kW)	Q4/19	\$100k?	Corem	Report
4	Phase 4: Integrated Pilot Scale Demo.	Q1/20	\$1M?		
3.1	Purchase or design of large unit (power & tonnage)				
3.2	Identification of candidate demo site integrated				
3.3	Testing and results reporting				

ENVIRONMENTAL IMPACTS

Energy and water reduction potential

DOWNSTREAM IMPACTS

Positive effect on liberation

UPTAKE POTENTIAL AND SCALABILITY

Scalability and cost is a risk.

THE INNOVATION CASE

Commercial applications are non existent. It has been discussed for 30 years.

ECONOMIC AND/OR SOCIAL IMPACTS

Goal is to demonstrate significant CAPEX and OPEX savings.

HUMAN IMPACTS

Exposure to MW a concern.