**Project Overview**

<table>
<thead>
<tr>
<th>19th Century</th>
<th>20th Century</th>
<th>Today</th>
<th>Future</th>
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<tbody>
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<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
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**Benefits:**
- Multi-mode scalability to >1000 tph
- Seamless technology integration with bolt-on option
- Up to 70% energy reduction for various ores
- Compelling value proposition, impact on downstream processing & tailings
CanMicro Process

Mineralogy: Crushing

- Heating of value minerals
- Cracking

Crushing Treatment

- Microwave Treatment
  - $F_{80} = 150\text{mm}$

Microwave Sorting

- Sensor
- Actuator
- Reject
- Accept

Conventional Grinding Circuit

- $F_{80} = 150\text{mm}$

Result:

- Weakened ore particles
- $> 20\%$ mass rejection
- Better liberated and higher grade mill feed
- Coarser product
- Significantly decreased grinding energy
- Downstream benefits
Project Timeline

- Rapid development towards TRL 6 – Prototype Demonstration
Phase 1: Bench-Scale Assessment

• 50 kg minimum sample:

  - Fundamental Characterization
  - Microwave Heating Tests
  - Comminution Tests
  - Evaluation of Ore Sortability
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CanMicro
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Phase 1: Permittivity & Heating Tests

• Over 30 ores tested at the bench-scale to date
• Sample permittivity and heating curves (3 kW system) shown
Phase 1: Grindability Tests

• A number of ores show significant potential for grinding energy reduction
Phase 1: Sorting Tests

- Sorting algorithms developed for each ore based on heating patterns
- Significant mass rejection obtained based on mid-IR sorting alone
Phase 2: Microwave Testing
Future Work

Phase 3: Sorter Integration

Phase 4: Downstream Testing

- Automated sorting
- Multi-sensor
- Flotation
- Leaching
- Gravity Separation
- Tailings
CanMicro is the **ONLY** technology to combine microwave-assisted comminution & sorting → Potential energy savings of **up to 70%**:  
1. Reduced ore competency  
2. Increased product size  
3. Removal of waste before grinding

Phase 1: Ore Screening → Complete!  
Phase 2: High-power microwave testing → Underway  
Promising results in improved grindability & sortability  
Crush It! Challenge deadline: November 30\textsuperscript{Th}
Thank-you!