Plasma Expertise to provide a comprehensive technology development solution.

PyroGenesis is proud to have the team with the largest plasma expertise in the world. Working out from our Montreal-based manufacturing facility, our team offers innovative approaches to solve your problems in the most economical way possible.

PyroGenesis’ technology development services can be classified into 2 main categories:

- Process Development Services
- Custom Plasma Reactors

INDUSTRY SECTORS:
- Mining & Metallurgy
- Defence
- Environment
- Oil & Gas
- Advanced Materials

CAPABILITIES:
- Process Design & simulation
- Proof of concept testing
- 3D Modeling
- Custom Fabrication
- Pilot testing

If you have a technology development project, please contact us and we will be pleased to evaluate how we can help.

ONE OF THE LARGEST CONCENTRATION OF PLASMA EXPERTISE

PROCESS DEVELOPMENT TAILORED TO YOUR SPECIFIC NEEDS

ISO 9001:2008

FULL TURNKEY SOLUTIONS

PROVEN R&D EXPERTISE (ie. US NAVY)

ACADEMIC PARTNERSHIPS

Customers:
- HPQ Silicon Resources
- US Air Force
- US Navy
- Universities (ex. McGill University, Canada; Polytechnique Montreal, Canada)

For more information, please contact:

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PyroGenesis has been mandated by HPQ Silicon Resources to develop a technology to produce silicon metal directly from quartz. PyroGenesis developed the PUREVAP™ process to transform quartz into a solar grade silicon metal, in one-step, creating a simple, clean, and cheap alternate to conventional technologies.

**EXAMPLE OF A PROJECT: PUREVAP™ WITH HPQ SILICON RESOURCES**

<table>
<thead>
<tr>
<th>Project</th>
<th>Capacity (MT)</th>
<th>Capital Cost (USD)</th>
<th>Spot Price (USD/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Technology</td>
<td>~ 20,000</td>
<td>&gt; $1.5G</td>
<td>~ 17</td>
</tr>
<tr>
<td>PUREVAP™</td>
<td>~ $38-75M</td>
<td>~ $38-75M</td>
<td>~ 2</td>
</tr>
</tbody>
</table>

**PROJECT MILESTONES TO DATE:**

- Transformed low purity quartz (97.5%) into high purity silicon
- Produced 4N (99.99%) silicon from low purity quartz
- Removed aluminum, boron, calcium & phosphorous with consistently high efficiencies (between 67% and 97%)
- Quantity produced per batch during testing phase increased from less than 0.1 g to 8.8 g; nearly a hundredfold increase
- Reached 4N+ purity level of Silicon Metal (99.99+% Si) using 98.14% SiO₂ by adding a solid purifying agent into the feedstock

**CONTACT US TO DISCUSS YOUR PLASMA BASED PROJECT.**

*PyroGenesis Canada Inc. is a world-renowned high-tech company operating in the field of high temperature processing of materials and waste, which counts the US Navy and the US Air Force amongst its discerning client base.*

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