

TECHNOLOGY DEVELOPMENT

Plasma Expertise to provide a comprehensive technology development solution.

PyroGenesis is proud to have a team with one of 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 9001:2015

FULL TURNKEY SOLUTIONS

**PROVEN R&D EXPERTISE
(ie. US NAVY)**

ACADEMIC PARTNERSHIPS

Customers:

HPQ Silicon Resources

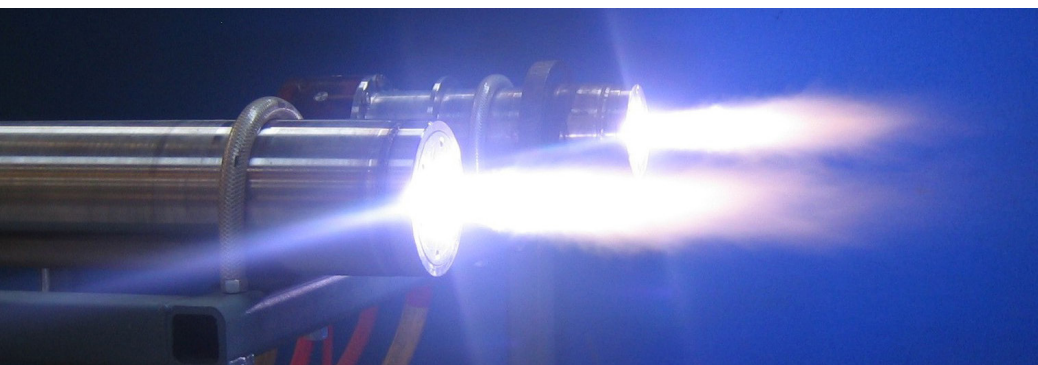
US Air Force

US Navy

**Universities
(ex. McGill University, Canada;
Polytechnique Montreal, Canada)**

For more information, please contact:

**Business Development Department
PyroGenesis Canada Inc.**
plasma@pyrogenesis.com
T. +1 (514) 937-0002
F. +1 (514) 937-5757





HIGH GRADE QUARTZ

TRANSFORMED
INTO



HIGH GRADE SILICON

APPLICATION



SOLAR PANELS

EXAMPLE OF A PROJECT: PUREVAP™ WITH HPQ SILICON RESOURCES

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.

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

| | Capacity (MT) | Capital Cost (USD) | Spot Price (USD/kg) |
|-------------------------|---------------|--------------------|---------------------|
| Conventional Technology | ~ 20,000 | > \$1.5G | ~ 17 |
| PUREVAP™ | | ~ \$38-75M | ~ 2 |

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.



© 2021, PYROGENESIS CANADA INC.

THE DRAWINGS AND INFORMATION DEPICTED HEREIN ARE PROPRIETARY TO PYROGENESIS CANADA INC. THEY MAY NOT BE COPIED, REPRODUCED, TRANSMITTED, DISCLOSED, SOLD, ALTERED OR OTHERWISE USED IN WHOLE OR IN PART IN ANY MANNER WHATSOEVER, INCLUDING AS BASIS FOR DESIGN, MANUFACTURE OR SALE OF PRODUCTS, WITHOUT PRIOR WRITTEN CONSENT FROM PYROGENESIS CANADA INC.