

## Raglan I - Hybrid Wind, Diesel and Storage Energy Generation in Canadian Arctic



The Raglan Mine is one of the largest independent industrial power grids in Arctic Canada. Before the project, the mine was entirely dependent on fossil fuel import. The project developed by TUGLIQ Energy joins wind, diesel and storage resources to decrease overall energy costs as well as diversify the energy production of the site.

Client - Glencore Raglan Mine

Commissioning Date – 2014

Budget total– \$22M

### Installed Solutions

- 3 MW Wind Turbine
- Flywheel to level-off any speed fluctuations and stabilize the strain and frequency of the autonomous grid
- Li-Ion batteries to support the grid
- Hydrogen loop comprised of an electrolyser, high pressure storage tanks and fuel cells
- Microcontroller
- Supervisory control and data acquisition (SCADA) for remote monitoring

Wind Power – 3MW

Flywheel - 200 kW / 1.5 kWh

Li-Ion Batteries - 200 kW / 250kWh

Hydrogen Fuel Cell - 200 kW / 4 MWh

Location – Québec, Canada

### Results

Environmental Excellence Award (awarded jointly with Glencore Raglan Mine), presented during the “Towards Sustainable Mining” annual gala of the Canadian Institute of Mining, Metallurgy and Petroleum in Vancouver, May 2016;

Award for “The Best application of renewable storage energy at a mining site”, presented at the “Annual World Energy and Mines Congress” in Toronto, October 2016;

“Project of the Year” Award, presented globally by HATCH for projects in which the company was involved, 2016;

“Wind power developer and operator of the year” awarded by the Quebec Wind Energy Association during the annual gala held at Matane, May 2016.



Reductions – 6 800 TCO<sub>2eq.</sub> /year

Diesel avoided – 2,1M litres per year