Raglan I: Hybrid Wind, Diesel and Storage Energy Generation

Arctic Canada

The RAGLAN I project represents a first of its kind autonomous industry scale microgrid project in Arctic Canada. TUGLIQ Energy is the owner and operator of the asset and has signed a 20-year Power Purchase agreement with Glencore RAGLAN Mine.

Prior to the project, the Raglan Mine grid was 100% diesel dependent. Tugliq's solution allowed the client to diversify their energy generation and benefit from long term energy cost reductions directly related to the price volatility of diesel and the high transport costs for fuel delivery to the remote location of the mine.

The project comprised of a 3 MW wind arctic rated wind turbine coupled with three energy storage technologies, namely a flywheel for rapid fluctuations, a hydrogen loop with electrolyser and fuel cells long term storage, and a Li-Ion battery system for spinning reserve and backup power. Lead by a top-of-the-art microgrid controller, the system is seamlessly integrated into the RAGLAN Mine diesel grid. In addition to a complex energy storage scheme addressing various needs from the grid, it features an innovative pile-mounted wind turbine foundation designed specifically for permafrost.

Awards

"Environmental Excellence Award" (awarded jointly with Glencore Raglan Mine), presented during the *Towards Sustainable Mining,* Canadian Institute of Mining, Metallurgy and Petroleum, Vancouver, May 2016

Award for "The Best application of renewable storage energy at a mining site", *Annual World Energy and Mines Congress*, 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

Client: Glencore Raglan Mine

Commissioning Date: 2014

Installation:
Wind Power: 3 MW
Flywheel: 200 kW / 1.5 kWh
Li-Ion Batteries: 200 kW / 250kWh
Hydrogen Fuel Cell: 200 kW / 4 MWh

Location: Quebec, Canada

Reductions: 6,800 $TCO_{2eq.}$ /year

Diesel avoided: 2.1M L/year