

Questionnaire

- a) **Current Situation (e.g. off-grid mining projects)**
 - a. **Project Load Profile**
 - i. *E.g. Minimum Load and Peak Load of the grid*
 - ii. *Graph*
 - b. **Sources of Power Generation on project site today**
 - i. *E.g. Generator Sets using Diesel, Propane, Wind, Solar PV etc.*
 - ii. *Performance Range and Controllability/Adjustability of Power Sources*
 - c. **Costs of power generation today**
- b) **Future Situation**
 - a. **What are the needs of off-grid mining projects?**
 - i. *Higher Grid Stability*
 - ii. *Higher Share from renewables in energy generation*
 - iii. *Reduced fuel consumption*
 - iv. *Supply of Balancing and Control Energy*
 - v. *Supply of Seconds Reserve, Minute Reserve*
 - b. **What energy storage solutions (types) are required or already in place?**
 - i. *Lead-acid batteries (e.g. from older plants)*
 - ii. *Sulfur batteries*
 - iii. *Lithium-ion batteries*
 - iv. *Redox flow batteries*
- c) **Market Situation/ Opportunity**
 - a. **# of mining projects of BC mining companies > 500kW**
 - i. *in Western Canada*
 - ii. *Globally*
 - b. **On diesel, on propane, other energy sources**
- d) **Mining Project Profile**
 - a. **Off-grid mining project**
 - b. **Performance range > 500kW and up to several MW**
 - c. **Accessible Renewable Energy Resources (Wind, Solar etc.)**

Service:

- d. **Support in Project Feasibility Assessment**
- e. **Support in Plant Design**
- f. **Supply of Components (e.g. Control-, Storage Technology)**
- g. **Complete Plant Delivery**
- h. **Plant Service and HR Training**

Topics

Clean Energy Technology, Wind Power, Solar PV Energy, Microgrid Technology, Energy Storage, Hybrid Power Generation Plants

End User:

Independent Power Producer
Off-Grid Communities
Mining, Islands

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Greentech Avenue Environmental Services Inc., Canada

Our Mission

'Greentech' aims to be a trusted leader in providing high quality clean energy products and services. Our mission is to protect the diversity of our environment and quality of life, now and for future generations. Our vision is that today's generation will hand over a more technologically advanced, bio diverse and livable Planet Earth to the next generation.

Our Strategy

We specialize in providing technical expertise and services in Clean Energy Generation Systems, Microgrid Control Technology and to design and supply advanced Hybrid Power Generation Plants. Our focus lies on the integration and harmonization of modern renewable energy systems and energy storage solutions with existing energy infrastructure processes and for the benefit of end-users seeking highest safety and performance. We also provide commissioning support, operator training and plant maintenance services.

Overview of Services

- **Project Development Support**
 - Project Feasibility, Technology Evaluation
 - Community Needs Assessment, Site and Resource Assessment, Stakeholder Engagement
 - Support in Regulatory Processes, Intermediation to Supplier, Project Management and Logistics, Communication with Safety Authorities, Applications for Grants and Subsidies etc.
 - Access to Complementary Technology Supplier
- **Installation and Service Support**
 - Selection of Subcontractors
 - Installation Support
 - Plant Commissioning Support
 - Technical Plant Service and Maintenance Support
 - HR and Operator Training



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Greentech Avenue Environmental Services Inc., Canada

KPMG Award: 'One of the TOP100 Infrastructure Projects in 2012'

'Best Practice' by Greentech Avenue Environmental Services Inc.



Greentech Avenue Environmental Services Inc., Vancouver

Service Offering:

- Technology 'Best Practice' Research, Technology Benchmarking
- Project Feasibility, Safety Advisory, Technology Supplier Validation
- Project Management:
 - Contractor, Project Financier, Sub-Contractor, Technology Supplier Coordination
- Technology Transfer:
 - Design, Customization, Harmonization Technical Standards, Sourcing
- Technology Installation:
 - Construction Equipment, Component Assembly, Installation, Testing
- Commissioning, Service and Maintenance Support

Project Facts

Design, Supply, Construction and Commissioning support of Double Membrane Gasholder Systems for the Fraser Richmond Soil & Fiber Biogas plant in Richmond, BC

Period of Performance: 2011-2015

In Operation since: August 2012

Achievements



Best Practice:

The 'Energy Garden', 2012
KPMG Award 'TOP 100 Infrastructure Projects 2012'

Achievements and Benefits:

Improved Plant Performance
In Time, In Budget
Highest Safety Standards
>30,000 operating hours
Cost savings for General Contractor

Founded: British Columbia, 2010

Offices: Vancouver and Calgary

Web: www.greentechavenue.com

Supply, Installation and Service of Energy Storage Systems to the 'Energy Garden'

Best Practice GTAES



Source: Greentech Avenue Environmental Services Inc., Vancouver

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