Decentralized Energy Solutions

The Catalyst for Your Energy Transition ™

A reliable, smart and green energy supply is a goal of many communities and industries across the globe. Decentralized energy solutions are a major pathway to achieve these goals—including net-zero emission targets—and SRC has provided expertise and technological solutions in this area for decades.

We offer feasibility, design, integrated manufacturing and installation services for clients looking to decentralize their energy solutions to increase reliability and decrease operational costs and their carbon footprint. These include hybrid power solutions with storage and renewable components that can form a smart grid/microgrid solution, whether on-grid or off-grid. SRC works with clients from the design stage to maintenance and training, and can grow the solution to introduce smart technologies, as needed.

SERVICES

- Feasibility reports to determine the best combination of decentralized energy generation options, including energy sources (or hybrid combinations, such as diesel, natural gas, propane) and storage options
- Resource assessments (wind and solar) to determine renewable generation options
- Smart and remote metering and control options to optimize load/supply mixes, reduce storage and generation capital requirements, and reduce demand charges
- Storage assessments
- Utility interconnection
- Microgrid design and development

APPLICATIONS

Hybrid Energy Solutions

SRC's **Hybrid Energy Container** (HEC) has a customizable combination of conventional and renewable generation sources together with energy storage. The system is more efficient, cost-effective and environmentally sustainable than traditional diesel generators for industrial sites, off-grid communities and disaster-affected areas.

The HEC is a specific decentralized energy solution that can include design, manufacturing, installation and monitoring by our team, or in collaboration with clients or other providers.

Depending on the application, the solution typically consists of a diesel generator, energy storage and renewable sources (e.g., solar, wind power) integrated in a proven and reliable containerized energy system that is easily installed. The system can be designed to withstand harsh climate and weather events, such as experienced in remote areas of northern Saskatchewan.

Benefits of SRC's HEC include:

- Significant diesel fuel savings
- Reduction in generator runtime and associated maintenance
- Voltage stability, energy and fuel metering, and automated controls

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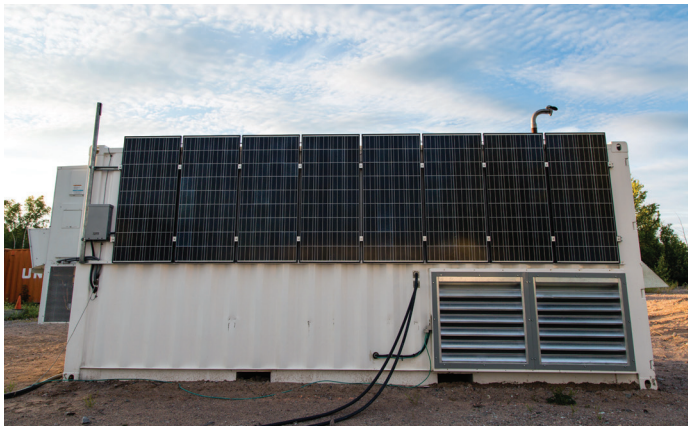
- Reduction in greenhouse gas emissions by employing renewable energy sources and optimizing generator efficiency
- Readily deployable using conventional transportation infrastructure
- Reliable operation in extreme climates
- Dependable power supply from multiple sources

SRC can customize these systems to meet specific site and client requirements. We support clients who want to develop custom-built units within their existing framework of expertise by collaborating on the design phase, facilitating manufacturing (or manufacturing it at SRC), coordinating or supervising installation and providing maintenance and/or training for your workforce.



Features of SRC's HEC

- System capacities range from 50 kW – 1 MW
- Climate-controlled, 20-foot modular container
- Easily integrated into existing infrastructure
- Insulated with its own heating, ventilation and air-conditioning system
- Online monitoring and control
- Input for multiple energy sources (e.g. solar, wind, grid)
- Integrated solar for automatic battery maintenance

Case Study:

Powering a Remediation Camp: SRC is remediating the former Gunnar Mine and Mill site in northern Saskatchewan where an operating camp was established to accommodate workers and contractors. The power needs for the camp were based on the requirements of the initial demolition phase of the remediation effort.

The camp no longer has a large workforce, and its two 500-kW generators are oversized for the current operation. Diesel fuel is a major operating expense for the camp. SRC conducted extensive energy monitoring of the camp to characterize the site's load and then designed a Hybrid Energy Container to maximize fuel savings over the life of the remediation effort and provide remote black start capability.

Renewable Smart Grid/Microgrid Solutions

SRC's smart grid/microgrid solutions provide real and practical opportunities that help industry transition to cleaner, renewable sources of energy, promote energy autonomy and reliability, and create opportunities for alternative sources of revenue and training/knowledge-building.

We can help develop feasibility studies and conceptual frameworks that meet a community's specific needs and environment, as well as facilitate the interaction with local utilities and connectivity issues.

We engage communities where they are at and work with them and other stakeholders to come up with shared objectives and develop holistic solutions.

Key Expertise

Ryan Jansen is a Senior Research Engineer in SRC's Process Development group and has worked in advanced energy systems at SRC for over a decade. He is a Professional Engineer with Permission to Consult in the area of smart grids. Ryan has experience in project management, as well as technical expertise in renewable energy systems, energy storage, remote monitoring systems, programming, smart grids and microgrids, electric vehicles, and district heating systems.

Erica Emery is a Senior Research Engineer in SRC's Process Development group. She has experience in gas-to-energy systems, process design and simulation, bench-top reactor operation (batch and continuous), technology assessment and validation, experimental design and project management.

Michael Sulatisky is a Research Emeritus with SRC's Process Development group. He has worked in the energy sector for over 50 years, is an inventor on five patents and has permission to consult in wind generation facilities, alternative fuelled vehicles and facilities, and energy conservation in buildings.