Microgrid Solutions
Worldwide Installations
# ABB Microgrids

## Market segments and drivers

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<th>Segments</th>
<th>Typical customers</th>
<th>Social</th>
<th>Economic</th>
<th>Environmental</th>
<th>Operational</th>
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<tbody>
<tr>
<td>Island utilities</td>
<td>(Local) utility, IPP*</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Remote communities</td>
<td>(Local) utility, IPP, Governmental development institution, development bank</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
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<tr>
<td>Industrial and commercial</td>
<td>Mining company, IPP, Oil &amp; Gas company, Datacenter, Hotels &amp; resorts, Food &amp; Beverage</td>
<td>✔</td>
<td>✔</td>
<td>(✓)</td>
<td>✔</td>
</tr>
<tr>
<td>Defense</td>
<td>Governmental defense institution</td>
<td>(✓)</td>
<td>(✓)</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Urban communities</td>
<td>(Local) utility, IPP</td>
<td>(✓)</td>
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<td>✔</td>
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<tr>
<td>Institutions and campuses</td>
<td>Private education institution, IPP, Government education institution</td>
<td>(✓)</td>
<td>✔</td>
<td>(✓)</td>
<td></td>
</tr>
</tbody>
</table>

* Independent Power Producer

✔: Main driver

(✓): Secondary driver

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Global References

How ABB Optimizes Renewable Integration
Island Utilities
Island utilities
Kodiak Island, PowerStore/Wind/Hydro/Diesel

Solution

The resulting microgrid system consists of:
- PowerStore Flywheel (2 MW/ 33 MWs)
- Wind (6 x 1.5 MW)
- Hydro (3 x 11 MW)
- Diesel (1 x 17.6 MW, 1 x 9 MW, 1 x 3.6 MW, 1 x 0.76 MW)

Customer Benefits

- Stabilizing - frequency regulation
- Provide frequency support for a new crane
- Help to manage the intermittencies from a 9 MW wind farm
- Reduced reliance on diesel generators

About the Project

Two PowerStores act in parallel in order to deliver optimal grid stabilization on Kodiak Island
Remote Communities
Remote communities
Marble Bar, PowerStore/PV/Diesel

Solution

The resulting microgrid system consists of:

- PowerStore Flywheel (500 kW)
- Microgrid Plus Control System
- Solar PV (1 x 300 kWp)
- Diesel (4 x 320 kW)

Customer Benefits

- Minimize diesel consumption - 405,000 liters of fuel saved annually
- Minimum environmental impact - 1,100 tons CO₂ avoided annually
- Reliable and stable power supply
- 60% of the day time electricity demand is generated by the PV plant

About the Project

Marble bar and Nullagine are the world `s first high penetration, solar photovoltaic diesel power stations
Remote communities
Nullagine, PowerStore/PV/Diesel

Solution

The resulting microgrid system consists of:
- PowerStore Flywheel (500 kW)
- Microgrid Plus Control System
- Solar PV (1 x 200 kWp)
- Diesel (3 x 320 kW)

Customer Benefits

- Minimize diesel consumption - 182,000 liters of fuel saved annually
- Minimum environmental impact - 1,100 tons CO₂ avoided annually
- Reliable and stable power supply
- 60% of the day time electricity demand is generated by the PV plant

About the Project

Marble bar and Nullagine are the world`s first high penetration, solar photovoltaic diesel power stations
Industrial and commercial sites
Industrial and commercial sites
Johannesburg, PowerStore/PV/Diesel

Solution
The resulting microgrid system consists of:
- PowerStore Battery (1 MW/380 kWh)
- Microgrid Plus Control System
- Solar PV (1 x 750 kWp)
- Diesel (2 x 600 kW)
- Remote Monitoring

Customer Benefits
- Stabilizing the grid for reliable and stable power supply
- Optimized renewable energy contribution to the facility
- Seamless transition from grid connection to islanding in case of an outage
- CO₂ reduction: over 1,000 tons/year
- Up to 100% renewable energy penetration

About the Project
The microgrid solution supplies the 96,000 sqm facility that houses ABB South Africa’s headquarters as well as manufacturing facilities with around 1,000 employees.
Urban communities
Urban communities
AusNet Services, PowerStore/Diesel

Solution
The resulting microgrid system consists of:
- PowerStore Battery (1 MW/1 MWh)
- Microgrid Plus Control System
- Diesel (1 x 1 MW)

Customer Benefits
- Active and reactive power support during high demand periods
- Transition into isolated/off-grid operation on command or in emergency cases without supply interruption
- Delay of power line investments
- Mobile and transportable

About the Project
First Embedded Generation system with Battery Grid Energy Storage for distribution network support in Australia

Project name
AusNet Services GESS
Location
Victoria, Australia
Customer
AusNet Services
Completion date
2014