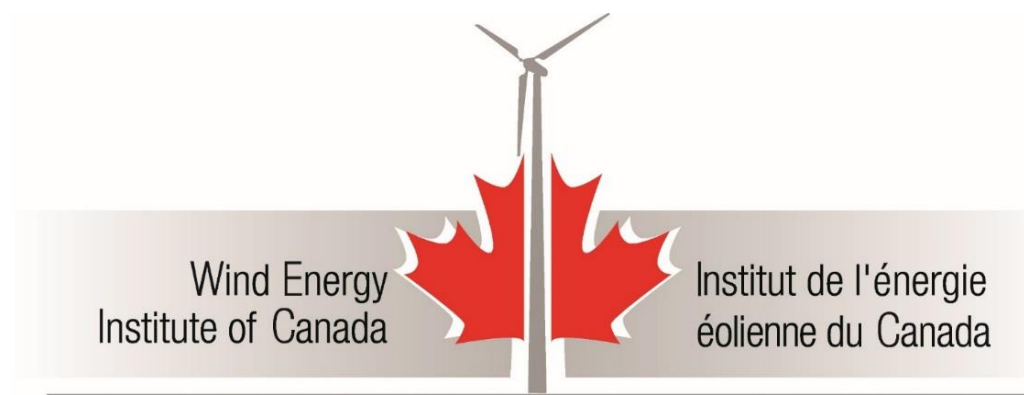


Wind Energy Institute of Canada



Leading the development of wind energy across Canada through research, testing, innovation, and collaboration.



The Wind Energy Institute of Canada (WEICan), located in North Cape, PE, has been leading the development of wind energy across Canada through technical testing and consultation; research, development, and demonstration; and outreach since its formation in 1981. As a national research facility and an independent wind farm, solar photovoltaic, and battery energy storage system operator, with strong industry ties, WEICan is well-positioned to lead research in renewable energy.

Generation Infrastructure Characteristics

Wind Park

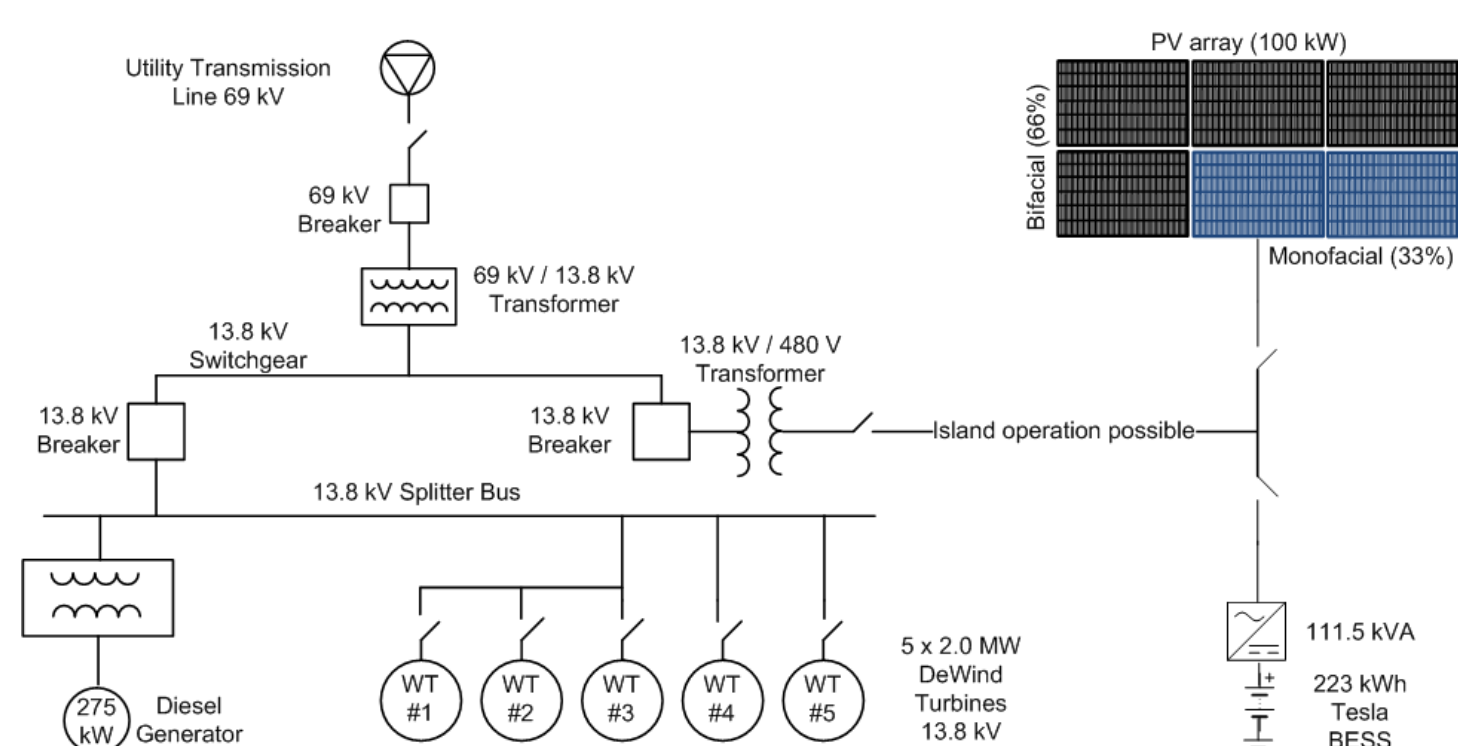
Wind Capacity	10 MW
No. of Wind Turbines	5
Turbine Model	DeWind D9.2
Rated Power	2 MW
Blade Diameter	92 m
Hub Height	80 m
Wind Speed Range	4 m/s to 25 m/s
Rated Wind Speed	10.5 m/s
Mean Wind Speed	8.9 m/s at 80 m
Drivetrain	Fixed speed synchronous generator coupled to the variable speed rotor through a hydraulic Voith WinDrive and a two-stage gearbox
Back Up Power for Ancillary Functions	275 kW diesel generator
Topography	10 m cliffs & 300° ocean exposure

Solar PV

PV Capacity	109 kW
PV Make	Jinko
PV Module model	JKM 72-cell
Number of Modules	187 (66%) Bifacial 85 (33%) Monofacial
Inverter	2 Sunny Tripower
Inverter Capacity	62.5 kW
Mounting	Fixed Structure
Tilt	30°
Azimuth	30°

Battery Energy Storage System

BESS Storage Capacity	223 kWh
BESS Storage Rating	111.5 kW
Battery Model	Tesla Energy
Temperature Range	-30°C to +27°C



WEICAN WIND R&D PARK



WEICAN SOLAR PV ARRAY



WEICAN BESS



CURRENT WEICAN RESEARCH PROJECTS

Renewable Energy Grid Integration

As the amount of non-synchronous renewable generators such as wind and photovoltaic increases on the electric grid, they can present challenges to its operation:

- Generation sources such as wind and solar are variable by nature, making their generation uncertain
- Wind and solar generators replace conventional power generators which traditionally provide ancillary services

WEICan is researching ways to overcome the perceived shortcomings of renewable energy through carrying out demonstrations with utilities and system operators. WEICan has seen that providing field data rather than using theoretical performance and cost assumptions sets WEICan apart from most other research groups and the data can be used to validate and inform theoretical studies from academic or utility partners.

Asset Management Research Activities

As wind farms age, owners question whether to invest to maintain assets, expand operations, or discontinue investments. Bankability, reliability, and long-term performance are critical issues for wind turbine investors, owners, operators, and manufacturers.

WEICan is interested in how factors such as complex terrain, high capacity factors, icing and severe weather, cold climate, and delayed maintenance cycles will impact service life and/or performance degradation.

Data, including SCADA, meteorology, maintenance logs and reports, borescope data, oil analysis, and condition monitoring systems are being used to enhance understanding of turbine component aging and improve wind farm operations and maintenance.

Current wind turbine asset management research at WEICan is focusing on

- Drive trains
- Lubricants
- Blade leading edge erosion

Contact

Marianne Rodgers, PhD
Scientific Director
(902)882-2746 Ext 207
Marianne.Rodgers@weican.ca

www.weican.ca

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