

# TechnoCentre éolien & WESNet: partners in the Canadian R&D efforts on cold climate

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Nos principaux partenaires

Partenaire de l'industrie éolienne  
Développement économique Canada Canada Economic Development

Canada

Québec

# TechnoCentre éolien ([www.eolien.qc.ca](http://www.eolien.qc.ca))

- Wind Energy TechnoCentre (TCE) is a not-for-profit organisation founded in 2000 whose mandate is to contribute to the development of a competitive industrial wind energy cluster in Québec
  - ✧ Applied research
  - ✧ Technical support to businesses
  - ✧ Economic developement
  - ✧ Communications & events

# TechnoCentre éolien

## TechnoCentre **éolien**

Wind Energy TechnoCentre

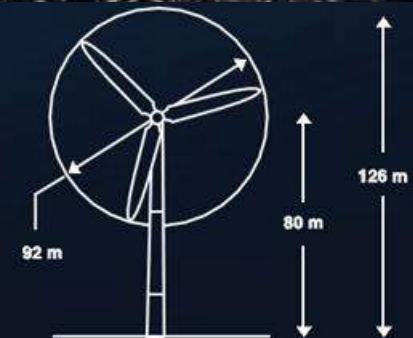
UNIVERSITIES	COLLEGES	GOUVERNEMENT	COMMUNITIES	BUSINESS
				<p><b>60 members</b></p> <ul style="list-style-type: none"> <li>▪ OEM (WECs)</li> <li>▪ Wind farms developers and operators</li> <li>▪ Components Manufacturers</li> <li>▪ Engineering and environmental services</li> <li>▪ Others</li> </ul>

# TCE's SNEEC R&D Windfarm

- Two 2.05 MW Repower MM92 wind turbines
- Located in Riviere-au-Renard, Québec, Canada
- Icing & complex terrain
- Commissioned in March 2010
- Research, development and technology transfer projects involving northern climates and complex terrain.



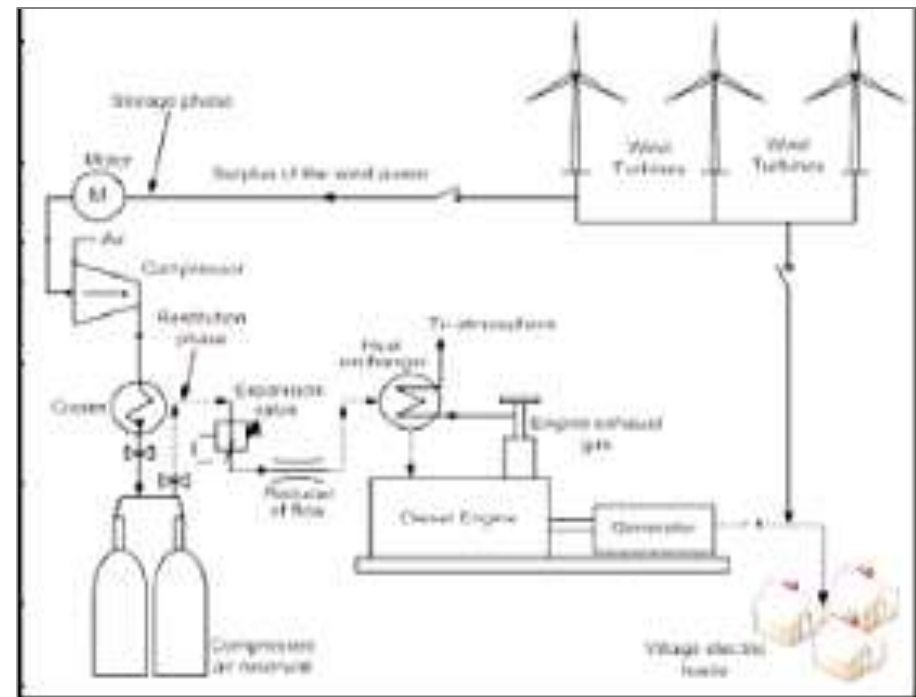
Description	Value
Number of wind turbines	2
Model	REpower MM92 CCV
Rated power / Wind turbine	2.05 MW
Frequency	60 Hz
Rotation speed	7.8 – 15 RPM
Start-up speed	3 m/s (10.8 km/h)
Shut-down speed	24 m/s (86.4 km/h)



IEC wind class: 2  
 Annual average wind speed: 7.9 m/s  
 Topography: Complex site with high turbulence, near the sea  
 Temperature: -30°C to +30°C  
 Ice conditions: Up to 40 mm of ice

# Upcoming wind-diesel project

- 1,6 million CAD
- 2012
- Coupling wind-diesel
- High penetration of wind energy
- Storage
  - Batteries
  - Compressed air



# WESNet ([www.wesnet.ca](http://www.wesnet.ca))



BC Gov.	UVic	NRCan	UofT	Helimax	McGill	FLHydro	UQAR
Anmore	UMan	CanWEA	UWO	TCE	Laval	WEICan	MUN
SaskP	Ryerson		ETS	EC	INRS	AHydro	UdeM
MHydro	Waterloo		EPT	HydroQC	UQAC	NBSO	UNB

# WESNet

## 17 projects in 4 Themes:

- **Theme 1: Wind Resource Assessment**
  - Wind resource assessment and forecasting in Canadian climate and geography
- **Theme 2: Wind Energy Extraction**
  - Wind energy extraction in cold climate, wind turbine and wind farm performance assessment
- **Theme 3: Wind Power Engineering**
  - Integration, control and protection of wind power in electrical grids, at the utility level and for distributed generation
- **Theme 4: Techno-Economic Optimization of Energy Systems**
  - Hybrid energy systems, simulation and optimization technologies to maximize the economic benefits for Canada

# WESNet

Focus on 7 projects with cold weather issues:

- Design of ice-free anemometers (Jean Ruel, Université Laval)
- Wind turbine composite materials for the Canadian context (Simon Joncas, ETS & Curran Crawford, University of Victoria)
- Ice accretion modelling (Adrian Ilinca, UQAR & Guy Fortin, UQAC)
- Wind tunnel investigations of icing impact on wind turbine blade profiles (Jean Perron & Guy Fortin, UQAC)
- Forecasting icing events (Robert Benoit, ETS)
- Icing event monitoring (Christian Masson, ETS)
- Atlas of icing events at high resolution (Christian Masson, ETS)



# Thank you!

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