

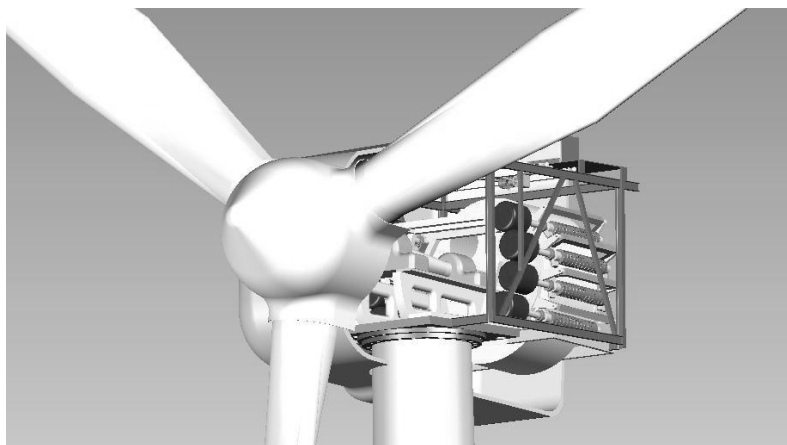
December 1, 2009

Incorporated in March 2005, CWind develops and commercializes a more reliable, cost effective drive train for large scale (2.0 MW to 7.5 MW) wind generation. The internationally patented¹ technology centers on a friction drive with multiple (250 kilowatt²) permanent magnet generators.

While CWind turbines look similar to conventional wind turbines, they are mechanically very different. Most turbines in the market today are variations of the three-stage planetary gearbox design first commercialized by Vestas in 1979. These traditional turbines have had limited commercial success and are plagued by gearbox failure and expensive maintenance costs as the turbine must be taken off line for all repairs.

Evidence has shown that when massive torque (due to wind turbulence or wind shear) is transmitted through planetary gearboxes that the gearbox suffers damage and/or failure due to bearing stresses and excessive loads. Drive train wear can also happen when the turbine is not in operation by chatter or fretting of the gearbox. Estimates to replace or repair a gearbox are as high as \$600,000US (including the cost of the external crane). On average a gearbox will be replaced twice during its 20 year design life.³

A new approach to turbine design was introduced in 1991, when Enercon entered the market with an operating prototype of a 1.5 MW gearless wind turbine. The design is a direct drive with one large permanent magnet generator. While the new design did overcome issues relating to wind turbulence and wind shear, it came with increased weight and an increased cost of energy (a 1.8 MW Enercon is 25% heavier than the Vestas 1.8MW). A commercial scale 4.5 MW Enercon wind turbine in Germany weighed in at 500 tonnes and cost approximately €45 million to construct. In addition, the stator represents the single point of failure, which would require the nacelle to be fully dismantled to make a repair. After the first five years of operation, maintenance costs double, making the cost of energy prohibitive.



CWind's turbine is different. In 2011, CWind will have an operating prototype of a friction drive 2.0 MW wind turbine. Similar to industry standard, the CWind turbine is a three-bladed horizontal axis wind turbine.

The three-bladed rotor attached to the main shaft is connected to a flywheel driving the friction wheels (tires), which operate multiple generators. The rotor and flywheel operate with the same inertia. The design is more reliable because it inherently limits the torque transmitted through the drive and incorporates the numerous key advantages including:

- No gearbox – no oil, gearbox bearings or gears to fail
- No single point of failure
- Reduced costs overall for manufacture, operations and maintenance
- Not reliant on conventional turbine supply chain for bearings, gears, generators or gearboxes
- Friction drive system built to absorb sudden wind gusts – energy is stored as momentum and recovered when gust passes
- It is impossible to overload drive train
- Multiple Generator Drive, (250 kilowatts) each operating at the most efficient point. Each generator only operates when there is sufficient wind, therefore energy yield is higher even when running below rated power
- Independent load paths giving continuous operation at part load while waiting for maintenance or replacement of component parts

¹ PCT/CA2004/002099 and PCT/CA2008/000082

² For 2.0 MW, the size of generators will increase ie: 350 KW as the rated power increases

³ Source: KTH University Report XR-EE-EEK-2006:009

- Distributed load paths allow operation up to 95% availability during faults as only the fault load path is isolated
- Distributed power system, low torques
- No external crane required. Ability to maintain, service and replace all drive system component parts using only the internal nacelle crane
- Full power conversion – grid friendly and variable speed
- Scalable to 7.5 MW

The design is much simpler than conventional turbines and scaling up of the power train is achieved by adding more generators to increase the rated power of the turbine. For example, the same drive mechanism used in the 2MW turbines with eight 250 KW power generating mechanisms can be used for the 5MW turbines by using a larger rotor and drive wheel and 20 power generating mechanisms. Alternatively the number of mechanisms can be reduced to 14 by increasing the rated power of the electrical generators to 350 KW from 250 KW.

CWind has met many strategic milestones, which began with third-party validation of the design through Hatch Engineering of Mississauga, Ontario and Garrad Hassan of the United Kingdom. MPR Associate Engineers out of Virginia, USA are known in 47 countries for “first-of-a-kind” engineering, and have assisted CWind in the design of the company’s 65 KW prototype and preliminary design of the friction drive (FD) 2.0 MW wind turbine.

The friction wind turbine prototype, in operation since 2007, is a proof of concept unit and a test bed for important data collection for the design and development of the 2.0 MW commercial scale unit. A comprehensive data acquisition system is used, capable of collecting real time data for approximately 100 key variables and signals. The prototype unit has proven that on an “apples to apples” comparison of a 65 KW gearbox driven turbine, the CWind unit collected 25% more energy per annum. The unit also demonstrated that on a gusty day, when traditional gearbox turbines would feather the blades out of the wind to avoid damage to the gearbox, the CWind design increased energy collection. The prototype also proved its key design feature, showing the tire mechanism would “slip” when overloaded, protecting the generating components of the nacelle.

With proven technology in hand, CWind began to focus on commercialization phase of its strategic plan. Intense capital requirements have long served as a barrier to entry to the wind power industry so CWind chose to align itself with strategic partners to subcontract the manufacture and assembly of the tower, nacelle and rotor components and focus its efforts on securing sales.

CWind secured a financial partner, ProPower and Energy, to provide the resources to complete the detailed designs of the FD 2.0 MW wind turbine; certification, manufacture, build and grid connect of the first three units. In return, ProPower and Energy received 25% ownership of CWind Inc.

Ontario will be the focus of CWind’s market entry and initial production, and will also serve as a platform for international growth opportunities. Not only will CWind look to increase manufacturing for international markets, the company will focus on expanding, continuing research and development and moving the FD technology to 5.0 MW and 7.5 MW.

In May, 2009 the Province of Ontario passed the Green Energy Act, which guarantees wind farm owners/operators a profitable return for the 20yr+ design life of their wind farm. The Ontario Power Authority authorized C\$0.135/ kWh to onshore projects, C\$0.144/kWh to community based projects with capacity ratings of 10 MW or less and offshore production receives C\$0.19/kWh. Local manufacturing content for Ontario wind farm projects will be 50% by January 1, 2012. ProPower and Energy have made application under this new program through the Feed in Tariff (FIT) application process for 6.0 MW’s in Clinton Ontario, Canada.

Pro Power and Energy incorporated their company with the mandate to explore business opportunities in the renewable energy sector. In addition to CWind, ProPower and Energy have invested in WindPro Manufacturing, a state-of-the-art greenfield tower fabrication facility in Port Hope, Ontario. The company is also negotiating with a blade manufacturing company for the license and build of a European blade in Ontario, Canada.

In November, 2009 Linamar Corporation, headquartered in Guelph Ontario, and CWind signed a terms and conditions agreement for the supply of the wind turbine nacelle, hub, pitch mechanism and nose cone. Linamar will lead the development through engineering, prototyping, low rate initial production, ramp-up and full production. The agreed production plan looks to produce 450, FD 2.0 MW product as noted above by 4th quarter 2014. Linamar, a \$2.3 billion company, is a world-class designer and diversified manufacturer of precision metallic components and systems for the automotive industry and mobile industrial markets. Linamar is a leading edge supplier in the power train, industrial, energy and consumer products industries.”