



# Ultimate Transmissions Design and Construct Wind Power CVT

60,000DFTV-CVT Transmission Performance Specifications

## General Description

The Transmission proposed is configured for incorporation between the output from the main gearbox of a wind Turbine and a synchronous generator. The CVT will allow a variation of rotor speed while outputting grid compliant frequencies.

When running in a 1:1 ratio its efficiency approaches 100%. It is anticipated that most of its operational life will be in or around this position. Its ratio spread ranges from 0.5 to 2 allowing for input RPM speeds to range from 750 to 3000 for a 50 Hz system

Transmission Performance Specifications	
Output power limit	16 MW
Input speed range	750 to 3000 or 900 to 3600 RPM
Output Speed	1,500 or 1,800 RPM
Input Torque Limit	60,000Nm
Design Life at torque input of 13,000Nm	350,000 hours
Mechanical efficiency	>99% at 1:1 ratio
Fluid Type	Idemitsu (TDF) Traction Fluid
Weight	800kgs.

## Duty Cycle and Life

The rated power of the transmission is generally classified as 2 MW although it is capable of through putting up to 16 MW when the RPM is running at 3,600 RPM and the input torque is around 42,000Nm.

The high degree of overrating is a side effect of the CVT being designed for almost infinite life at its most common rated power collection of 2MW (50Hz) or 2.4MW (60Hz). Although it is capable of transmitting very high torque, its life will be significantly reduced if it is subject to these torques for extended periods.

It is expected that any system taking advantage of a flexible tip speed ratio will allow over-speeding of the rotor so as to reduce the input torque in high winds which in turn will lower the maximum rating required of the generator, and allow some energy to be wasted in the rotor. When the wind speed is low the tip-speed or rotor RPM can follow its most efficient ratio.

## Design and Construct Offer

Ultimate Transmissions will manage the design and development of a transmission based on these general specifications and other particular specifications according to the following stages with payments made according to successful completion of each stage and in accordance with an agreed payment scheme.

1. Mobilization payment
2. Concept development and design mathematics
3. Working drawings of prototype
4. Parts drawings of prototype
5. Manufacture and procurement of all internal prototype parts
6. Manufacture and procurement of prototype casing
7. Assembly and test run of prototype
8. Full Testing of prototype.
9. Test report and recommendations
10. Full concept design of production transmission.
11. Full design of production transmission.
12. Parts design for production transmission.
13. Supervision of production.

An ongoing royalty will apply to all transmissions made according to the design or using the Double roller CVT. The royalty fee and terms will be negotiated on a case by case basis.



