



New World Generation Drive Train Technology

Keeping Wind Turbines Turning Reliably

CHALLENGE

MPR has assisted New World Generation (NWG) in the development of a new wind turbine drive train technology aimed at addressing outages and unreliable performance. The problems with wind turbines are due to damage to drive trains, often manifested as failed gearboxes. Other significant contributors to these failures also include torque excursions during operation and drive train wear when the WT is not in service.

SOLUTION

MPR designed and oversaw the fabrication of a prototype mechanical drive for a 65 kW WT drive train based on the NWG technology. The work included establishing multiple small generators to allow a wide range of electrical power production at relatively high efficiency. Each generator was driven by NWG's proprietary (and patent applied for) friction drive technology. The parking brake was directly coupled to the main rotor shaft.

RESULTS

The detailed design of the prototype was completed in less than three months in order to meet the demands of the development schedule. The prototype serves as a test-bed to address technical uncertainties in the development of a larger scale production wind turbine in the 1.5 to 2 MW range.

The NWG technology is a simple and reliable friction drive, which replaces the expensive and failure-prone gearbox in existing designs. The new design is more reliable because it inherently limits the torque transmitted through the drive such that values of torque and torque rate of change above pre-determined design levels are not achieved. In addition, the new design reduces the potential for drive train wear when the WT is not in service by preventing small motions of the blades from reaching the drive train. The successful implementation of this wind turbine technology produces lower cost electricity.

