

WindINERTIA™ Control

Introduction

The grid integration of wind turbine generators is critical to the performance of a wind installation. GE's patented WindINERTIA™ control is a new industry-leading wind turbine feature that provides 5–10% of additional power for large and short frequency deviations to support restoration of the grid frequency to its nominal value, enhancing grid reliability and operations.

Applicable Platforms

- 1.5 MW wind turbine generators with Mark VIe control system
- 2.5 MW wind turbine generator, available in 2010

Technical Description

GE's WindINERTIA™ control allows wind turbines to provide an inertial response for under-frequency events through a control system upgrade.

Short term under-frequency deviations require power generation assets to increase real power output, reducing frequency dips. Unlike other options for increasing the real power output of wind turbine generators, which can have a negative impact on annual energy production and/or increased costs, GE's WindINERTIA™ technology utilizes proprietary control algorithms to transform the mechanical inertia of the rotor into a temporary increase in electrical power output over a short period of time. The control system recognizes under-frequency events and utilizes active power controls to shape



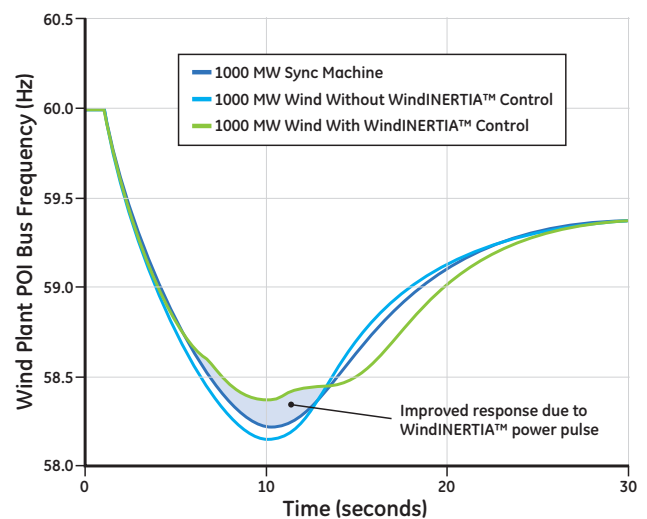
the power response of the turbine. The grid impact of this control is similar to that of conventional synchronous generation for large under-frequency events.

Features and Benefits

By utilizing the mechanical inertia of the rotor, GE has designed the WindINERTIA™ control's power pulse characteristics to provide a 5% to 10% increase in turbine power over a wide range of wind speeds. The duration of the power increase lasts several seconds and benefits the grid by allowing other non-wind power generation assets time to increase power production during large under-frequency events.

This cost-effective solution allows customers to meet grid requirements without additional hardware or adverse effects on turbine life, and without impacting annual energy production. In addition, the power pulse is designed to ensure that turbine mechanical loads are within the design limits and that turbine operability constraints are met.

Simulated system response following a trip of a large generator



For more information contact your GE Energy sales representative at 800-821-2222 or visit us on the web at ge-energy.com/wind.

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