

*Title:*

*Remote monitoring of in-service bolt tension*

*Authors:*

*Steve Lowry, Tomas Rosinski*

*Transmission Dynamics*

Abstract

In service monitoring of bolt tension can be useful to ensure safe operation of structures subjected to dynamic loading. The paper describes a novel approach for remote in-service bolt tension monitoring highlighting applications in Wind Turbines.

With the proposed technology each critical bolt is equipped with the self-contained, miniature wireless transmitter, which periodically reads and reports bolt tension without involvement of man power. Local wireless transceiver is used to collect bolt tension readings from any number of bolts and transmits the acquired data via internet or GSM network to a secure server. The system allows continuous monitoring of bolt tension and automatic report generation, and it can deploy an alarm notifying stakeholders via e-mail or SMS in case of a sudden loss of bolt tension below a predefined alarm level.

The system is supported with state of art instrumentation and data automation and is now available to the industry worldwide.