Current-Based Bearing Fault Dia

Drive Wind Turbin

UNIVERSITY OF Nebraska Lincoln | NEBRASKA CENTER FOR ENERGY SCIENCES RESEARCH

Xiang Gon
Departmen

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Introduction

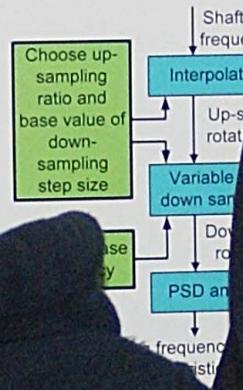
a significant por lts in wind

Bearing Fault Diagnosis

- The fundamental frequency $f_1(t)$ of a stator current sig
estimated by a phase lock loop. $f_r(t)$ is then calculated.
- $f_r(t)$ is processed by a 1P-invariant PSD method, which c
the variable characteristic frequencies of the wind turbine be
faults to a constant value in the PSD of the processed $f_r(t)$.
- An impulse detection method is developed for automatic
xtraction of fault signatures from the 1P-invaraint PSD spectrum
e estimated shaft rotating frequency $f_r(t)$ of an automatically
ontrolled and operated wind turbine generator.

$$P_x(f) = x(f)$$
$$P_W = x(f\text{-}W) + x(f\text{-}W\text{+}1) + \ldots + x(f\text{+}W)$$
$$R(f) = P_x(f) / P_W$$

- If $R(f)$ at a certain frequency point is
indicates that there is an impulse a



imental Results

wind tunnel. The testing bearing is locat
ne and the generator.