

Pitch accumulators' performance – Optimization of a simulation model

Background

The turbine pitch system includes, on its main components, hydraulic accumulators. Hydraulic accumulators play a a very important role in the turbine performance and also on assisting its emergency modes. It is mandatory to predict their behavior under different working conditions, such as, limit pre-charge pressure, extreme climate conditions, oil characteristics, working pressures, material properties and others.

Scope

The scope of the work is comprised in the following topics:

- Analyse experimental data from accumulators' tests performed at supplier level, that highlight it's transient behavior under different limit conditions and during normal operation.
- Check literature for different accumulator models that can be used to predict transient behavior under those conditions.
- Utilize simulation tools to verify their performance for the same operating conditions.
- Optimize and improve simulation models to reproduce their real performance – based in Matlab/Simulink model.

Keywords

Wind turbine pitch system, Hydraulic accumulators, Simulation models, Matlab, Simulink