



KTH Electrical Engineering

## EG2040 Wind Power Systems

### Assignment 3 – Power generation technology

*Deadline for full credits: Friday 23 March, 17.00*

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The assignments should be completed individually and the report containing all solutions should be submitted in the blue box marked EG2040, outside the student room at Teknikringen 33. If Matlab is used for completing the assignment the code should be included with the report.

Solutions to the assignments should be well motivated and explained in detail. All equations used should be written clearly and all variables clarified. Figures and tables should be properly scaled and have captions. Write your name and student number on the front page of the assignment.

The teaching assistant will be available to answer questions during the scheduled course assistance hours.

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#### Questions

- Name three different mechanical wind power control strategies and describe how they work.
- Explain how the relationship between the rotational speed and grid frequency is achieved in the following wind turbine types and how it affects the efficiency of the turbine.
  1. Fixed speed induction generator.
  2. Limited variable speed induction generator(Opti-Slip).
  3. Doubly-fed induction generator.
  4. Variable speed synchronous generator.