KTH Electrical Engineering

EG2040 Wind Power Systems
Assignment 3 – Power generation technology

Deadline for full credits: Tuesday 26 March, 17.00

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.

Questions

- Explain how a simple squirrel-cage induction generator works on maximum two A4-pages. Use sketches.

- Draw sketches of four different generator types (fixed speed generator with squirrel cage rotor, fixed speed generator with variable rotor resistance, doubly-fed induction generator, and direct drive generator). Label the different parts of the sketches and describe to which extent the rotor speed depends on the grid frequency.

- Explain the torque/speed characteristic of an induction generator. Indicate the range of operation in a sketch.

Please note

We do not want you to write long essays. Give brief explanations which you illustrate with sketches where this is helpful. Sketches can be drawn freehand.