Project Assignment

Due to December 3, 2025

Project Procedures and Rules

1) Select one project and carry out a study using simulation and other analytical techniques as appropriate.
2) I suggest that you carry out your simulations using the flux voltage formulation of the ac machine equations in per unit. However, if you have a reason for choosing the current variable formulation (in per unit), that will be acceptable as well. Choose a reference frame that is appropriate for your problem. Use an available simulation package (e.g., Matlab™), or develop your own direct numerical integration program.
3) You are not allowed to use prepared machine models that are available from packaged "block sets". You must program the differential equations yourself.
4) The simulation that you develop must be your own. You are free to talk to classmates regarding approach and simulation techniques, but you must do the coding yourself.
5) Do not select the same topic as your friend.
6) Your project report should be submitted by email a PDF copy to me. Please remember that a copy of your simulation code must be included in your report (appendix).
7) The submittal deadline stated above is real. Unless special extenuating circumstances arise, the standard late homework policy will be applied for all students.

Report Content and Format

The report should be in the form of a technical paper (8 pages maximum not counting the program listing) following the general guidelines of the IEEE (see file "Transactions-template-and-instructions-on-how-to-create-your-article.doc"). It is preferred that you use the two-column format required by IEEE. Your report should include:

1) an abstract summarizing your work;
2) an introduction describing the problem and the approach used in the analysis;
3) presentation of the results and/or any special problems or issues which arose in your work;
4) *some form of demonstration that the results are "reasonable" and/or "correct"*;
5) a "Summary and Conclusions" section;
6) listings of the program(s) used for simulation in an appendix.

Project Evaluation

Grading of the project reports will be based on a combination of criteria including the technical content of your report and the clarity of your communications in the paper. The degree to which your paper meets all of the required content and form requirements list above will one of the evaluation factors. In particular, it is important to find some way to instill confidence in your simulation results via closed-form analysis or some other means. In addition, the level of difficulty of the problem that you choose to investigate will also be taken into consideration. You are strongly encouraged to modify and expand the problem descriptions to yield the most interesting and insightful results concerning the dynamic behavior of ac machines. Displays of intellectual curiosity will be rewarded!

Important Advice

You are strongly encouraged to start your project as early as possible. Do not wait until the last few days to begin your work! The end of the semester is very busy for everyone, so please do not expect generous time extensions.