



## project 29:

# Testbed for Measurement and Control of Generator Power Oscillations



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**Sponsor:** SEL



## Objective Statement

- The aim of our senior design is to designate testbed for measurement and control of generator power oscillations. Disturbance on power systems such as faults, large variations in power generation or power consumption can cause oscillations in phase angle, frequency, voltage magnitude, which in turn combine to result in oscillations in real and reactive power generation.



# Design goals

- 1) Design a testbed
- 2) Make the transmission line look more professional
- 3) Collect the data at the boundary condition
- 4) Do further design to make the testbed fit outer equipment





# Product requirements

What do we need to measure?

- Terminal voltage and current
- Field voltage and current
- Torque and power
- Speed and frequency
- Load phase angle

Device Requirements

- Combining the lines to make the connection more professional
- Build a test bed to hold all the devices



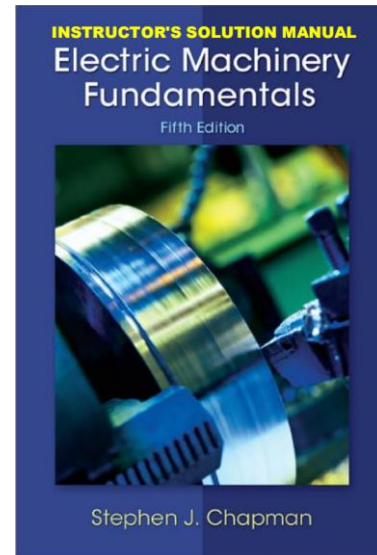
# Documentation of project learning

ECE 420

Electrical Machinery Fundamentals

CHAPTER 4

SYNCHRONOUS GENERATORS

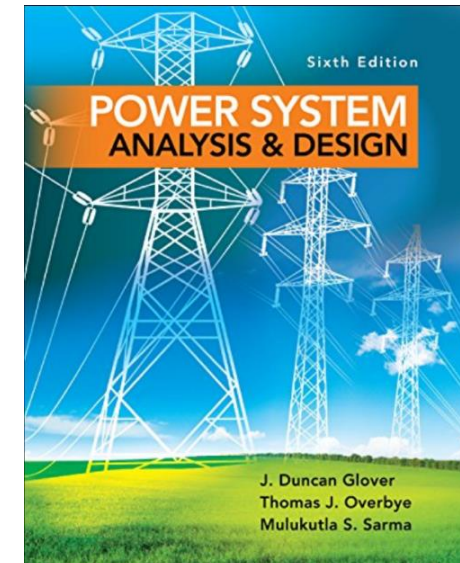


ECE 421

Power System Analysis and Design

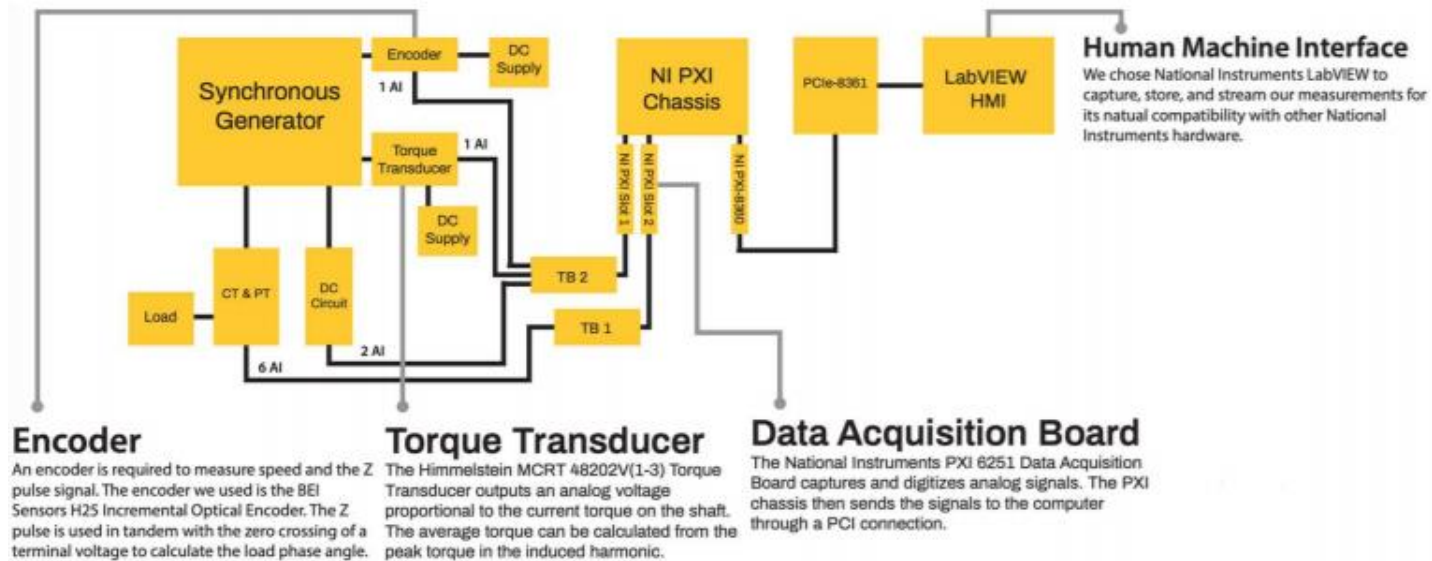
CHAPTER 11

MULTIMACHINE STABILITY





# Concept development to date





# Schedule for the project completion

## Fall Semester

Sep-Oct:

Review the basic knowledge

Nov-Dec:

Understand the last year's manual and check the current equipment

## Spring Semester

Jan-Feb: Design and product the testbed

Mar-Apr: Research on the boundary condition





# Project Budget

**Total estimate Budget: \$500**

## Aspects:

- 1) Buy some new wires which can fit all the equipment
- 2) Materials for conducting the testbed
- 3) Display board for the EXPO