



Company Information

Company Name	<i>Siemens Energy</i>	Date Submitted	<i>05/12/2022</i>
Project Title	<i>Design of a Low Cost Interrupted Displacement Measurement (SIEM_DISPLACE)</i>	Planned Starting Semester	<i>Fall 2022</i>

Senior Design Project Description

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills.

Discipline	Number	Discipline	Number
Mechanical	2	Electrical	1
Computer	1	Systems	

Company and Project Overview:

Siemens Energy Inc Charlotte campus manufactures and services steam turbines, generators, and gas turbines used both in the oil and gas industry, and to power the grid in the United States and throughout the world.

The project at hand is an excellent opportunity to brainstorm and develop a small electromechanical data acquisition system that may easily be deployed on the manufacturing floor. A well-executed project will be used and easily modified as needed for use by our Manufacturing Engineering team in the production process.

Project Requirements:

The objective is to develop and construct a system for capturing radial position data at discrete locations on a rotor shaft. The data measurement location must be triggered by specific features along the circumference of the rotor as it rotates in bearings. There must also be a mechanism to indicate that data acquisition has concluded after one full revolution. The data will consist of a single delimited file that may easily be read into Microsoft Excel for evaluation and analysis.



Expected Deliverables/Results:

- Delivery of system with included sensors to acquire data in delimited file
- Proof that system works
- Acquisition system that aligns with basic industrial standards and requires limited training to modify (example: ladder logic versus LabView programming)
- System diagram with program logic
- List of parts with manufacturers part numbers
- Radial measurement precision and accuracy +/- .001"
- Simple set of user instructions

Note: A simple solution that is easily adaptable is a better solution! Whether a purchased data acquisition system is used or an inexpensive PLC (Click PLCs for example are very inexpensive), Siemens Energy would like to use the baseline concept developed in this project to acquire future data with similar method. Your legacy will live!

Disposition of Deliverables at the End of the Project:

Students are graded based on their display and presentation of their team's work product. It is mandatory that they exhibit at the Expo, so if the work product was tested at the supporter's location, it must be returned to campus for the Expo. After the expo, the team and supporter should arrange the handover of the work product to the industry supporter. This handover must be concluded within 7 days of the Expo.

List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):

- Bring your enthusiasm!
- Ability to travel to the Siemens facility in Charlotte, mileage will be reimbursed per ISL purchasing procedures.