

## Senior Design Project Description

|                      |   |                                  |              |
|----------------------|---|----------------------------------|--------------|
| <b>Company Name</b>  | Siemens                                 | <b>Date Submitted</b>            | Nov 13, 2017 |
| <b>Project Title</b> | PDP Greenfield Approach<br>(SIEMENS_DR) | <b>Planned Starting Semester</b> | Spring 2018  |

### Personnel

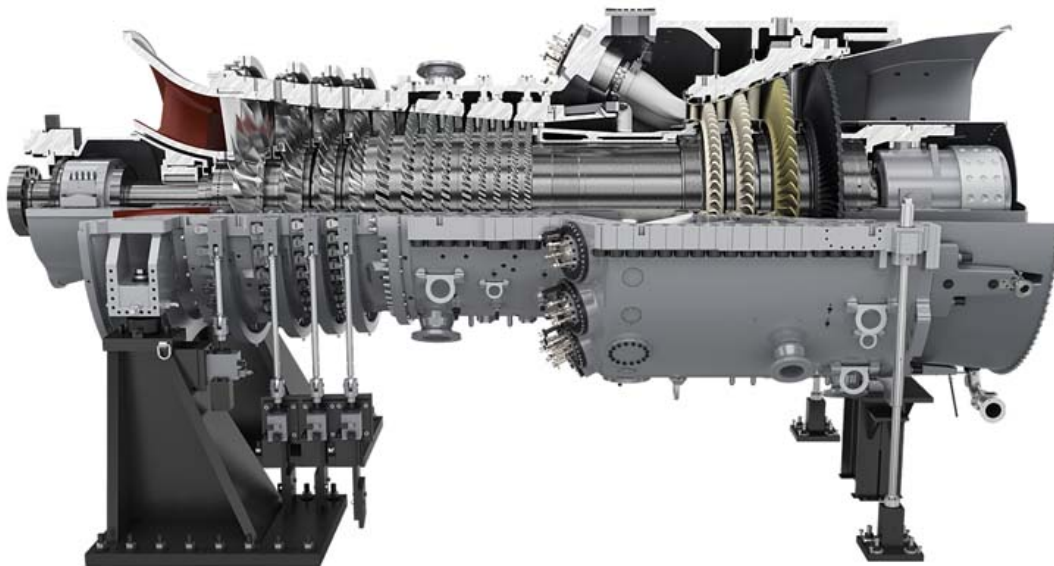
Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project. 250 hours are expected per person.

Complete the following table if this information is known, otherwise the Senior Design Committee will develop based on the project scope:

| <b>Discipline</b> | <b>Number</b> | <b>Discipline</b> | <b>Number</b> |
|-------------------|---------------|-------------------|---------------|
| Mechanical        |               | Electrical        |               |
| Computer          |               | Systems           | 5             |
| Other ( )         |               |                   |               |

### Project Overview:

One of the major business areas for Siemens is power generation using gas turbines. See the following example product:





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The design and manufacturing complexity required to develop a product like this is significant.

Product development is the lifeblood for technology companies. It is critical that technology companies have a design review process that is effective and carefully increases investment commensurate with technical progress that can have a business impact. While this process must be thorough, it must also be timely. In today's world, time to market is a major driver of success.

The objective of this project is to optimize this process and deliver a green field approach to how Siemens will perform its product development in the future. The background is that our current product development process is too slow to meet our customer's needs. Therefore we would like to reduce the amount of time it takes to complete the steps to develop a product, while reinforcing the mandatory elements of quality and risk management.

### **Project Requirements:**

Perform industry and academic research to determine the top 10 processes/methods of product development.

- The objective is to start with the essential elements and build from the ground up, a new and innovative way to a complete PDP that reduces time to market while preserving risk management.
- Research what others are doing in this type of industry or what others are doing in different industries that still could be applicable to Turbine/Generator product development. Modern out of the box thinking is highly encouraged.

Post research, the team would work with Siemens to further design 2-3 approaches that could be experimented with using a simulation tool (such as Arena) then in real practice. Then measure the experiment data to determine the KPI's of each of the new PDP approaches to support a down selection based on results.

The project team will document the current status process for product development in Siemens and compare and contrast the new models to the current baseline to define what the expected improvement will be.

### **Expected Deliverables/Results:**

- 3 product development process concepts (Format: Visio or Mindmap or other similar)
- Conduct experiments simulated in Arena
- Conduct experiments using data from actual R&D projects in Siemens.
- Provide an evaluation of the concepts and recommendation based on experiment results (be able to back up results)
- Also recommend the required KPI's for a product development process.

### **Disposition of Deliverables at the End of the Project:**

No hardware will be developed.

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



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- Simulation software capability