

Senior Design Project Description

Company Name	<i>PSI Controls</i>	Date Submitted	<i>12/1/20</i>
Project Title	<i>Design for a Small Parts Stocking and Replenishment System (PSI STOCK)</i>	Planned Starting Semester	Spring 2021

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		Electrical	
Computer		Systems	5
Other ()			

Company and Project Overview:

PSI Control Solutions was founded in 1961 with its roots in the electrical distribution business in Western Kentucky. We are a family owned business under the guidance of the third generation. We have been providing electrical solutions to the American Industry for over 50 years. With headquarters based in Charlotte, North Carolina, PSI Control Solutions operates as a private label manufacturer. We offer control panels, low and medium voltage starters, VFD panels, power-metering equipment, transfer switches and generator tap boxes for Original Equipment Manufacturers (OEM) within a wide variety of commercial and manufacturing industries. As a result of this concentration on the OEM markets, PSI Control Solutions continues to develop strong relationships with electrical component suppliers. Here are some examples of products made by PSI Control Solutions:



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Project Requirements:

Products like those shown in the picture are built at the companies Charlotte facility. There are many parts that are common to the product line, examples of these parts are fasteners (nuts, bolts, washers). These common parts are called “Shop Parts” with most of these parts residing in one location that is shown in the attached photo:



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Shop parts are not maintained in the company's MRP system. They are ordered whenever one of the users is taking parts and they run out. When this happens, an employee has to leave to go to a part supply store to purchase what is needed.

The objective of this project is to design a replenishment system that is more organized and signals when parts need to be ordered to avoid running out of stock. The goal is to eliminate the unplanned trips. The project scope will cover the physical material storage devices, the replenishment system algorithm and the process of how this will interface with the MRP system.

Expected Deliverables/Results:

- Redesigned material storage devices
- Design of an automatic replenishment system that can ensure stock-outs do not occur and unplanned trips are eliminated
- Return on Investment calculations
- Process to define how ordering will occur with the Purchasing system and how parts will be received and stored.
- Minimize working capital inventory
- System developed which will signal when stocking levels, order quantities, etc. need to be adjusted.



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Disposition of Deliverables at the End of the Project:

Hardware developed is the property of the Industry Supporter. The work product is displayed at the last Expo then immediately handed over to the supporter unless arrangements have been made to deliver at a future date.

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

- Interest in manufacturing logistics
- Travel to PSI Control Solutions Charlotte Facility and strict adherence to Covid protocols at site.
- SEGR 4114 is a required pre-requisite for this course.