



UNC CHARLOTTE

The WILLIAM STATES LEE COLLEGE of ENGINEERING

Senior Design Project Description

Company Name	General Steel Drum	Date Submitted	3/5/2018
Project Title	Cover Removal Station (STEEL_COVR)	Planned Starting Semester	Fall 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:

Discipline	Number	Discipline	Number
Mechanical	5	Electrical	1
Computer	1	Systems	
Other ()			

Company and Project Overview:

General Steel Drum is a Charlotte based company that manufactures steel drums for a variety of clients in the Eastern US. The operation is make to order and boasts the capability to take an order and begin shipping custom configured drums within 1-2 days. With this ability to react fast, GSD is able to avoid carrying finished goods inventory. GSD is part of Myers Container, a National company that provides containers for a variety of companies across the US. Myers has a strong commitment to sustainability and the have the ability to collect, re-condition or recycle everything they produce.



General Steel Drum has been producing 55-gallon new steel drums since 1979. Drums serve as

shipping containers for a variety of industries such as paint, chemical, food, and fragrance products. The Charlotte location is one of six facilities servicing mostly the southeast.

Project Requirements:

During the production of 55 gallon steel drums, the drum and covers are painted. After painting is complete and dry, the covers that have been crimped on, need to be removed. The drums with covers enter the work station on a roller conveyer as shown in the picture below:



When the drum enters the operation, the station equipment grabs the drum and keeps it stable during the cover removal. The tool shown in the picture is used to loosen the cover and then the cover is lifted off the drum:



UNC CHARLOTTE

The WILLIAM STATES LEE COLLEGE of ENGINEERING



The cover is then flipped over and placed on the conveyor belt:



The project intent is to produce a working automated machine that removes the cover from the drum and places the cover upside down on a belt conveyor. The current process is manual and needs to move to an automated station. The cover is crimped on. This requires the cover to be popped off, picked up, flipped, and placed on the next process belt. The unit must operate with a throughput of no less than 10 per minute and be fully automated.



UNC CHARLOTTE

The WILLIAM STATES LEE COLLEGE of ENGINEERING

Expected Deliverables/Results:

- Fully functioning station that meets requirements.
- Blue prints and electrical schematics
- PLC programing, if applicable.
- Company will supply additional materials if the Project budget is insufficient

Disposition of Deliverables at the End of the Project:

Hardware is to be handed over General Steel Drum at the end of the Spring Term.

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

- PLC Programing
- Travel as required to company site in Charlotte
- Design reviews at Company site