



Company Information

Company Name	<i>Aviation Metals</i>	Date Submitted	<i>11/8/2025</i>
Project Title	<i>Design of a Sheet Metal Tape Machine (AVIATION_TAPE)</i>	Planned Starting Semester	<i>Spring 2026</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	4-5	Electrical	1
Computer	1	Systems	

Company and Project Overview:

Aviation Metals is a metal distributor that supplies raw metals to the airline and aerospace industry such as sheet, plate, bar, tubing, extrusions, castings and forgings. During the processing of sheet metal, there is a machine operation that applies PVC tape to both sides of the sheet metal. The machine is old and Aviation Metals is seeking a replacement solution.

Project Requirements:

This is the current machine that needs to be replaced:



This is what the sheet metal looks like after it has had the pvc tape applied:



**INDUSTRIAL SOLUTIONS
LABORATORY**



The replacement sheet metal taping machine would consist of a roller table which feeds sheet metal material through two rubber rollers that apply PVC tape to both sides of the metal sheet.

The design must incorporate the following:

- 1) Machine turns on automatically once the material is close to the rollers
- 2) An auto-cutter that cuts the taped sheet after it is pulled through the rollers
- 3) The height of the machine will be such that it can accommodate use of their current sawhorses.
- 4) Safety features so the operator cannot get cut or have a body part inadvertently pulled into the machine.
- 5) Some type of alignment system integrated so sheets and the tape line up correctly
- 6) Safety kill switch
- 7) Adjustable rollers so that the machine can accommodate different size thicknesses
- 8) Lockable wheels
- 9) Can be lifted and moved with a forklift without damaging the machine
- 10) Runs on 110v power
- 11) Accommodate 48" wide sheets

Expected Deliverables/Results:



- Implement design changes and verify at ISL lab
- Verify the system in operation at Aviation metals
- Full drawing package
- Operations and maintenance manual

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):

- Interest in Machine design and integration
- Ability to travel to Aviation Metals Charlotte location as required