



Company Information

Company Name	<i>Steffes</i>	Date Submitted	<i>11/14/22</i>
Project Title	<i>Weld and Assembly Process Improvement of Electric Skid Steer (STEFFES_WELD)</i>	Planned Starting Semester	<i>Spring 2023</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	Electrical	
Computer		Systems	2

Company and Project Overview:

Steffes is a diversified steel manufacturer that designs and builds products for the energy and oil and gas industry. Some Steffes products are shown below:





INDUSTRIAL SOLUTIONS LABORATORY



Steffes also provides contract manufacturing services for OEM's (Original Equipment Manufacturers). Some Steffes partners include:



Steffes employs 450+ in 4 manufacturing facilities in North Dakota and has recently expanded to Shelby, NC. Steffes provides design, fabrication, welding, powder coating, and assembly services.

Project Requirements:

Steffes is currently involved in the pilot build stage of an electric skid steer. The project would include an analysis of the pilot weld and assembly processes. The team would be expected to deliver layout options to maximize product flow and to provide improved designs of weld fixture and assembly lifting devices to improve efficiency, while maintaining proper ergonomics, and ensuring repeatability.

Expected Deliverables/Results:

- Detailed presentation of work cell layout using 2D (AutoCAD) model. Cell layout to be



implemented after presentation completed.

- Weld Fixture designs (solid models-Solidworks preferred)
- Assembly Lifting Devices and material handling devices/fixtures Designed (solid models-Solidworks preferred)

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):

- Students would be required to travel to the Steffes, Shelby NC facility to observe the pilot assembly and weld processes
- This product is manufactured by Steffes for an OEM. Students may be required to sign an NDA with the OEM.