

**Company Information**

<b>Company Name</b>	<i>WEBER</i>	<b>Date Submitted</b>	<i>4/22/2021</i>
<b>Project Title</b>	<i>Design of a Non-Destructive feed brake for Screw delivery</i> <b>(WEBER BRAKE)</b>	<b>Planned Starting Semester</b>	<i>Fall 2021</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:

<b>Discipline</b>	<b>Number</b>	<b>Discipline</b>	<b>Number</b>
Mechanical	4	Electrical	0
Computer	0	Systems	
Other ( )	0		

**Company and Project Overview:**

Since 1956, the WEBER Group has been designing and building various equipment solutions for tough and demanding application needs in the assembly business. We have demonstrated our creativity and motivation which has continuously kept our standards high. For our customers, this means custom designed and engineered systems of the highest possible quality. Today, we continue to push for better, more innovative ways, and frequently we come up with solutions that our competitors have yet to even consider. From the start WEBER has been developing, manufacturing and selling “Technology that connects”.

WEBER has a variety of products used for screwdriving, insertion, feeding and control systems that work in a wide variety of assembly and human-robot collaboration work cells. Here are some product examples:




UNC CHARLOTTE

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Industrial Solutions Laboratory



This project will deal with a design modification to a feeder bowl/spindle product combination.

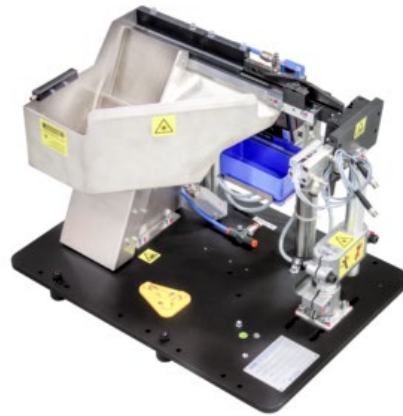
	<p>This project is partially supported by a grant from the NC Manufacturing Extension partnership, an organization that helps to support business and job growth for NC companies. To learn more about the NC MEP, click on this link: <a href="https://www.ncmep.org/">https://www.ncmep.org/</a>.</p>
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**Project Requirements:**

For this project we are looking to have a feed brake in between our feeder (shown below as the ZEL series) and our spindles (shown below as our SER/SEB series). The purpose of the feed brake is to slow down parts that are being transported from the feeder to the spindle through a flexible hose. When the parts enter the spindle at a high velocity it can cause damage to our machine components, damage to the customer's part that is being fed, or can cause us to have to make changes to the sequence of operations of our spindle, which slows down our cycle time.

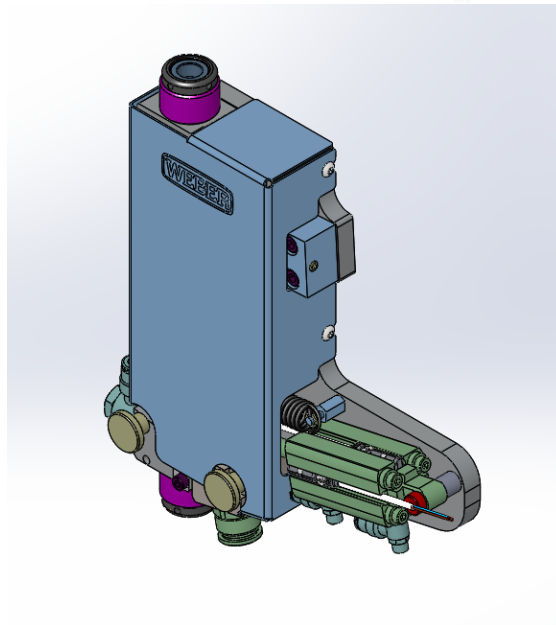


[Fixtured Screwdrivers SER / SEB](#)



[Step feeder ZEL](#)

We have a current brake design that we will share with the students and we will show them the shortcomings of this system. We want a new approach to this, not just a revision of the current design.



Thus, the objective of the project will be to design a non-destructive braking device that can be placed inline between the WEBER ZEL series feeder and the SER series spindle. This device should be able to reduce the velocity of a screw or pin that is being fed to a point where damage will not occur to the SER series feed head or to the customer screw/part.

**Expected Deliverables/Results:**

- Functional feed brake prototype
- Drawings of feed brake prototype
- Machine analysis of feed brake prototype
- Testing results (velocity reduction) for given samples (4 sample screws/parts will be provided)

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

The prototype, test fixtures and all intellectual property will be delivered to WEBER at the completion of the project.

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

- Machine analysis
- Machine design
- Travel to Industry Supporters site as required.