



Company Information

Company Name	<i>Windsor Windows and Doors</i>	Date Submitted	<i>05/01/2025</i>
Project Title	<i>Design of a Powered Weatherstrip Feeding Device (WINDSOR_FEED)</i>	Planned Starting Semester	<i>Fall 2025</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:

About Windsor Windows & Doors

Established in 1946, Windsor Windows & Doors manufactures and markets Pinnacle wood windows and patio doors, Next Dimension vinyl windows and patio doors, Legend cellular PVC windows and Revive pocket replacement windows. Windsor is owned by Woodgrain Millwork, which is the largest U.S. manufacturer of prefinished mouldings and interior pine doors. Windsor operates its divisional headquarters in West Des Moines, IA, and has an additional manufacturing facility in Monroe, NC. In their total commitment to customers, Windsor promises quality, service, responsiveness and value. For more information, visit www.windsorwindows.com.

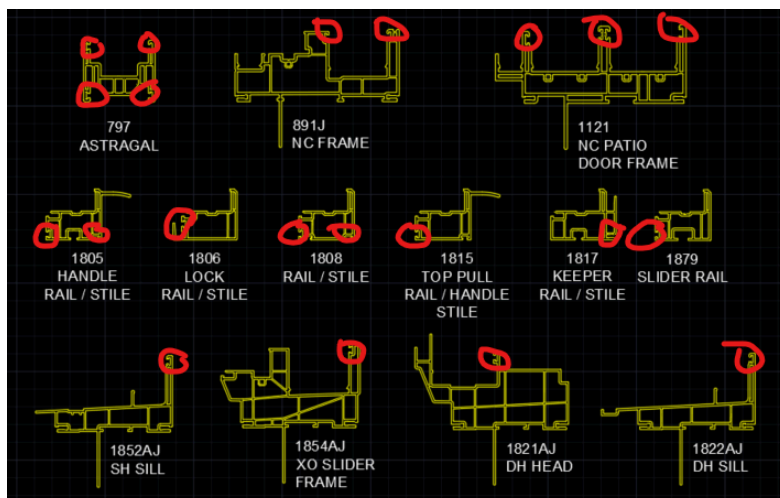
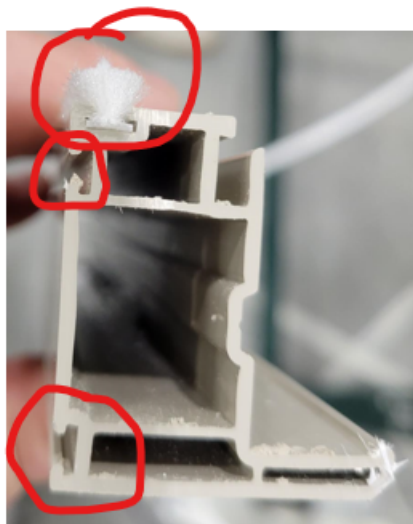


**INDUSTRIAL SOLUTIONS
LABORATORY**

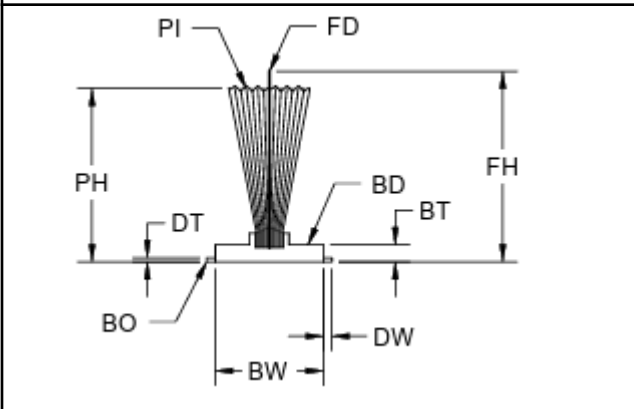


Project Requirements:

Windsor has installed a new production area dedicated to vinyl Windows and Doors. Throughout this product assembly there are numerous parts that need weatherstrip installed in lineal form. Currently, we have fixed machine that will assist in installing the weatherstrip however this machine requires perfect alignment of the weatherstrip to a kerf (groove) in the part. Most weatherstrip is installed by hand. Due to the amount of window parts that need weatherstrip installed, this is a very tedious and labor-intensive process. This project would be to develop a handheld weatherstrip feeder that can be used for different shapes of parts. Weatherstrip comes on a roll with 1000' LF; lineal plastic components are between 14-16' long.



Red circles denote kerf locations where weatherstrip will be installed.

	Weatherstrip on a reel
	Cross section of weatherstrip, showing rigid base plate

The handheld device will be fed from the weatherstrip reel and force the weatherstripping in the kerf until it reaches the end of the lineal

Project Requirements:

Design a weatherstrip feeder that can assist production employees in feeding weatherstrip into various lineal components.

- Handheld and portable
- Speed control preferred
- Needs to be powerful enough to pull the weatherstrip off the roll and push it through the “T-slots” on the window profiles.
- Must be free of pinch points and hazards for the operator

Expected Deliverables/Results:



- Technical Drawings for mechanical, pneumatic, and electrical systems
- Functioning handheld device
- Wear parts life cycle estimations

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. It is also a mandatory part of this Program that the Industry supporter attend the 2 expos to grade their team's performance. 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
- Ability to travel to Windsor's Monroe location to survey the operation and to conduct on-site testing starting in March 2026.