

**Project Title:** “Tierod” to “Tierod Nut” Assembly Machine

**Team Members:** Lane Harrison  
Leanne Temple  
Josh Topel

**Faculty Advisor:** Dr. Younis

**Area:** Mechanical Engineering

**Sponsored by:** PHD Inc.

PHD Inc, located in Fort Wayne, Indiana, is a leading manufacturer in automation actuators, utilized for the optimization of manufacturing processes across various industries. For this project PHD desires to automate their tie rod assembly process. These tie rod nut assemblies are currently assembled by hand, which is a slow and tedious process that requires more time and money. Current assembly times run roughly three seconds per tie rod nut assembly. PHD has requested that the tie rod nut assembly process be automated with a primary objective being a reduced cycle time for each assembly. It is also necessary for safety purposes to include an E-stop button that will immediately stop the machine.

The project objective is to design and produce a tabletop assembly machine that can produce a tie rod nut assembly at a rate of one assembly per second with no part damage. The budget maximum is \$2,500 which necessitates a simple and condensed machine that effectively accomplishes the above objective. Additionally, it is preferable for the machine to be mobile and easily transferred by two individuals from one station to another.