

Project Title: [Wedge Alignment Gauge](#)

Team Members: Anthon Anker

Evan Butler

Mitchell Dupuis

Faculty Advisor: Dr. Zhuming Bi

Area: [Mechanical Engineering](#)

Sponsor: [PHD Inc.](#)

PHD, Inc. is a manufacturer that is within the automation sector. They engineer, manufacture, and distribute products globally from their Fort Wayne Facility. One of these products is the GRK Series Gripper which uses a wedge alignment system that ensures each gripper arm is stable while in use. During the process of production, the main body of the gripper is inserted into a clamp that allows the assembler to compress the springs that hold these wedges in place. After the wedges are inserted, the main body is taken out of the clamp, locking the wedges into position. Recently, there has been an increase of premature field failures due to wedge misalignment during assembly. As a result, their engineers came to the senior design team to create a solution that will improve quality and reduce replacement cost. The objective of the project is to design and produce a gauge that will measure the alignment of the assembly to ensure the gripper body is kept within specified tolerances. The gauge will indicate whether the wedge placement must be corrected or if the gripper assembly meets the guidelines of PHD products. The solution must be easy to incorporate into the current assembly process and for new employees to understand.

The design and development budget for the project is \$500. The budget will cover all the costs associated with prototyping and the final product. Any 3-D printing or machining performed at Purdue University Fort Wayne will not utilize the allocated budget.