Philips - Ultrasound Handle Closing Tool

Overview
In the last stage of assembly of ultrasound handles, Philips uses a closing tool to hold components together while an RTV silicone cure, bonding all of the pieces. The current tool has a number of design flaws which result in failed parts, wasted time, and money. These design flaws included an uneven distribution of pressure when closing, wearing out of the screws and frame, and discomfort for the tool operator.

Objectives
The team was tasked with re-designing this closing tool in order to resolve the issues associated with the old design. The team strove to develop a final model that would close a handle in accordance with Philips’ quality standards and would easily be integrated into the production line.

Approach
- First met with sponsor to gain an initial understanding of the project
- Visited Philips site to talk with lead users of the tool and Philips engineers to gather customer needs
- Used an AHP matrix to determine which customer needs had priority
- Assigned a metric and target specification to each customer need
- Conducted brainstorming session to develop initial prototype ideas
- Selected two design concepts (toggle-lever, air bladder) to prototype and built CAD models for both
- Built and tested both design concepts. After discussing with Philips engineers, decided to move forward with the air bladder design.
- Over a series of weeks developed multiple iterations of the air bladder design.
- Tested final design and determined that tool met Philips’ criterion for successful closing

Outcomes
- The sponsor will save an estimate of $41,000 as a result of this project
- Handle closing time were reduced by 90% as a result of this project
- The new design will extend closing tool life
- Ultrasound handles closed with this tool will experience fewer defects
- The new design is more ergonomic for the operator
- The new design is compatible with any handle in Philips Ultrasound’s production line