

Pacemaker Flash Removal Process



From left to right: Trayton Pescosolido, Jack Zupfer, Adam Thompson, and Julia Guptail

PROJECT SUMMARY:

The EMPOWER Leadless Pacemaker is a small pacemaker that is implanted directly into the heart, without the need for significantly invasive surgery. It treats patients with irregular heartbeats by delivering electrical shocks to the heart. Each EMPOWER Leadless Pacemaker has 4 hooks, called talons, to secure the device to the heart. These talons are attached to the rest of the device with a hard plastic called epoxy. Sometimes too much epoxy is applied. This excess material is called flash. The flash must be removed for the device to safely be implanted in a human heart. Builders, the Boston Scientific workers who perform flash removal, do so by scraping the flash with a piece of plastic shaped like a sharp pencil. Gripping this small pencil like device, and applying a lot of force, for a long time, is ergonomically harsh on the builders and their hands. We have been tasked with creating a process to remove flash in a way that is ergonomically friendly for Boston Scientific Builders. This is made more difficult because of the pacemaker's small size, with it being around the size of a quarter.

DESIGN GOAL:

The goal of our project is to develop a high-level prototype for a device / system that can remove flash from the EMPOWER Leadless Pacemaker in a way that is ergonomically friendly to all Builders.



Size comparison of quarter and pacemaker

Our solution should allow the builders to effectively remove flash, without introducing any new safety risks or compromising device performance. This improves Builder worker safety, while ensuring a sustainable manufacturing process for Boston Scientific as EMPOWER production increases.

Boston Scientific

TEAM 23

INDUSTRY REPRESENTATIVES

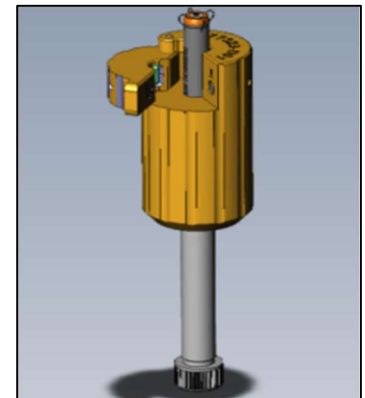
Tina Marie Suzzio
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DESIGN CONSTRAINTS:

- The prototype shall remove flash so that it is not visible under magnification and meets approval standards for medical use.
- The prototype shall reduce ergonomic strain on Builders.
- The process prototype shall be ESD-safe and meet cleanroom standards.



CAD model of holder prototype