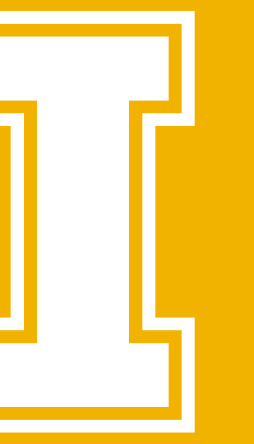


POP N' LOCK ROBOTIC ARM

JESSE EBERT, LEVI GALLEGOS, NICK LEE, JUSTIN WICK



OBJECTIVE

- Quick Release Robotic Arm Joint
- Industrial Applications
 - Lightweight
 - High Accuracy

BACKGROUND

Current Robotic Arms are:

- Beneficial for Industrial Applications
- Becoming More Common in Assembly
- Task Specific

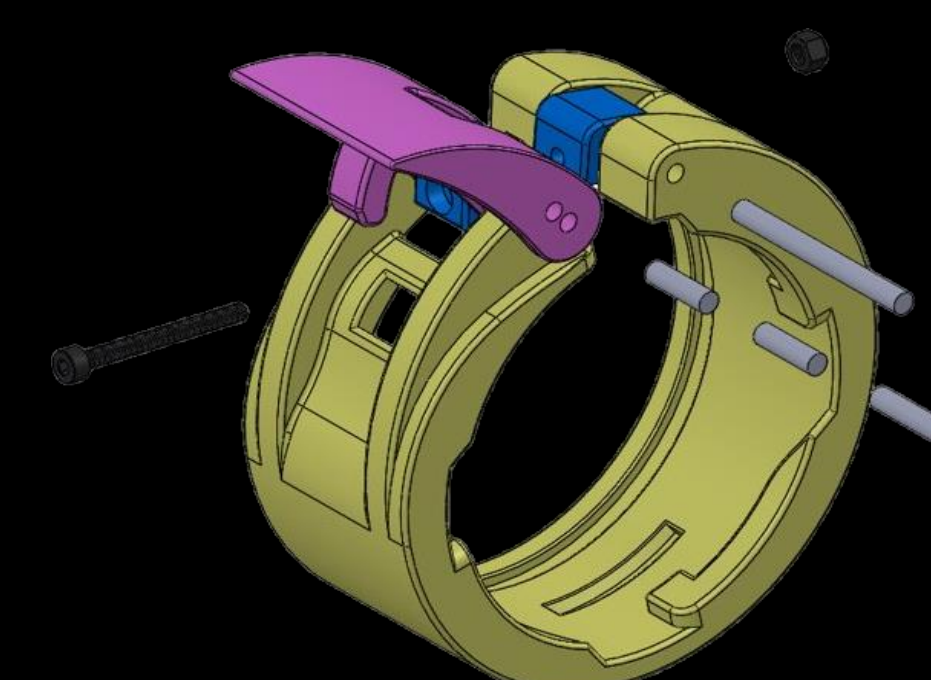
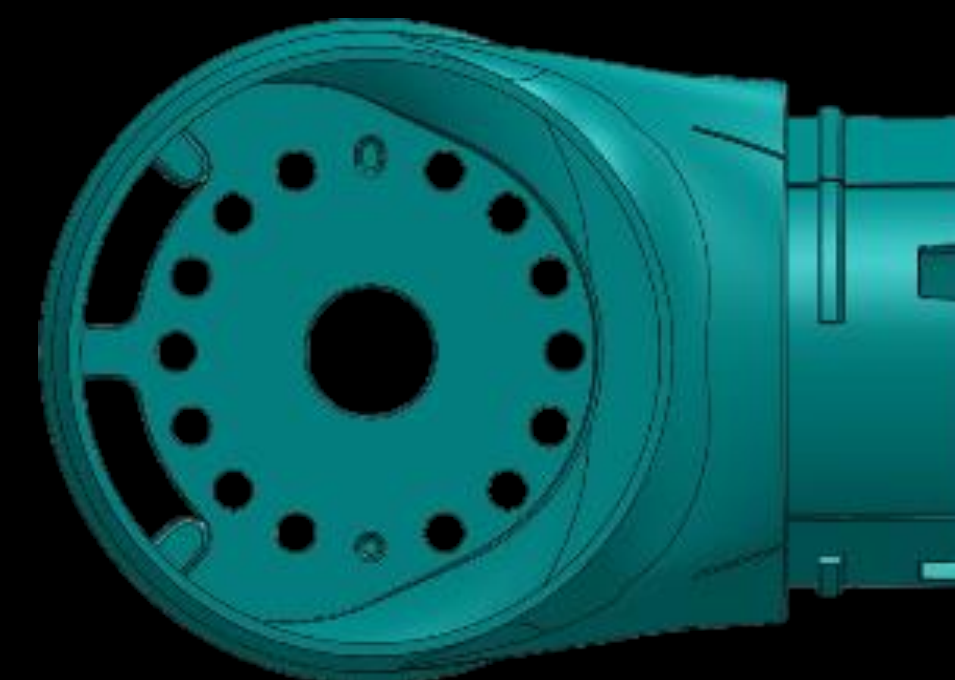
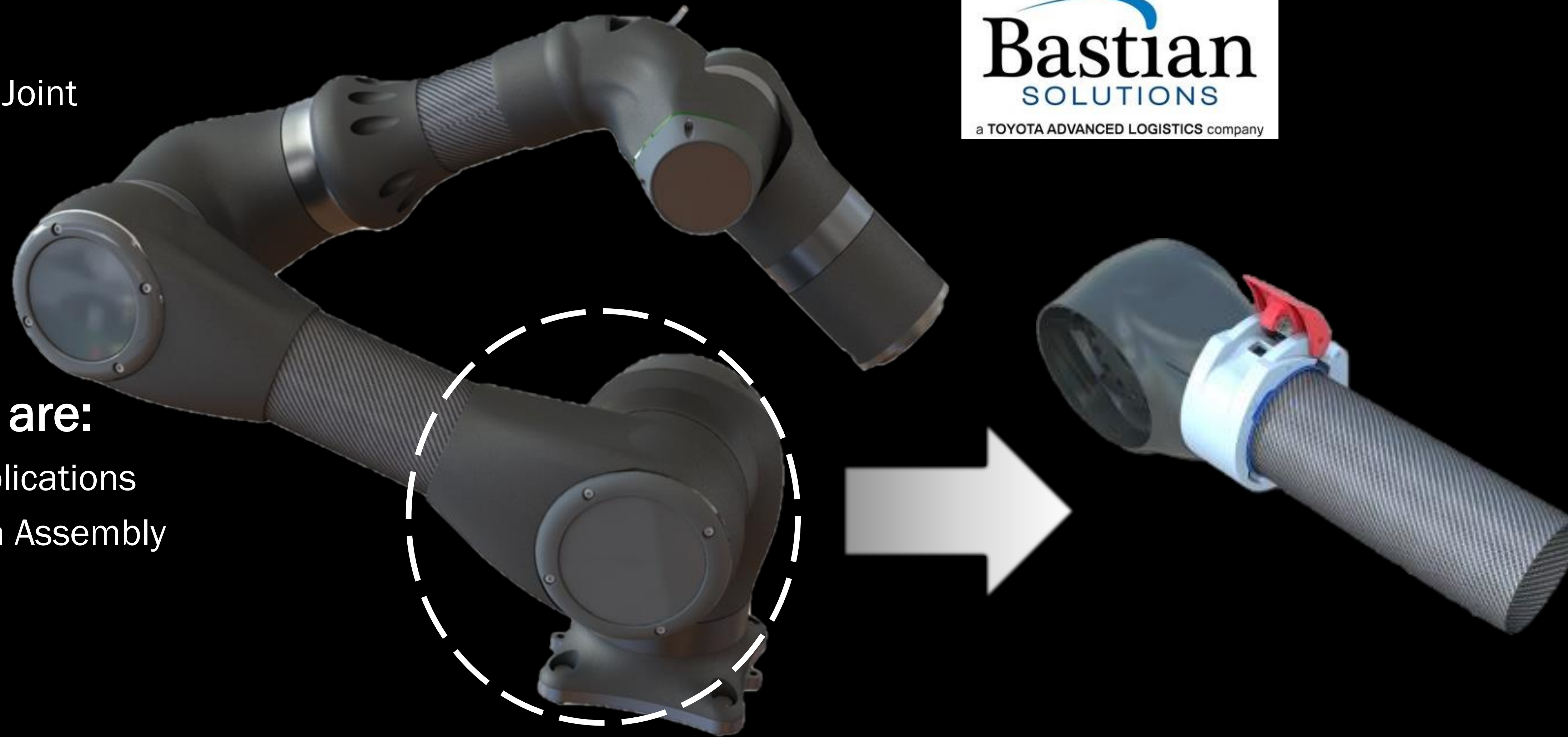
This Project Will:

- Be Adaptable and Versatile
- Be A Cost-Effective Solution
- Be The First on the Market

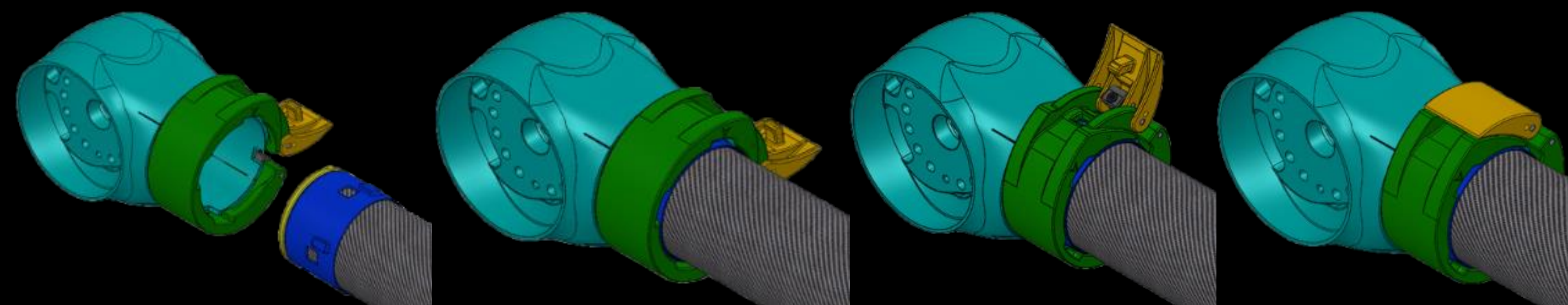
PRODUCT REQUIREMENTS

- No Tools Needed
- Static Deflection Equal or Better than Current Design
- Locating Tolerances
 - Angular - 0.5°
 - Positional - 2mm
- Minimal Additional Cost
- Attach in 90-degree increments
- Internal Electrical Connectors
- FEA Analysis
- Physical Prototype Testing
- Delivery of Finished Product

Sponsored By:



OPERATION

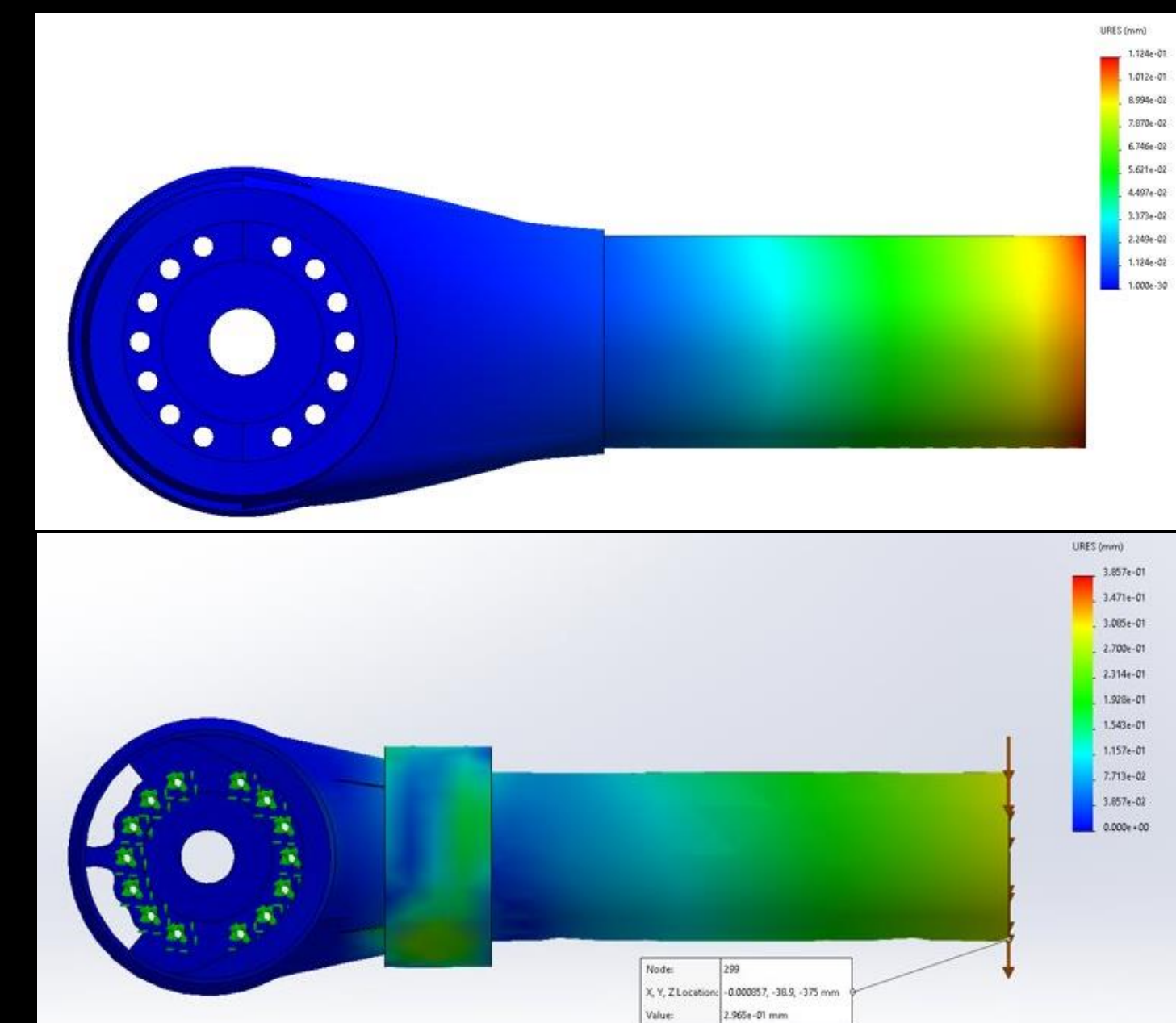


PHYSICAL TESTING



Joint Head	X-Displacement (in)	Y-Displacement (in)	Angle (Degrees)
Original	0.014	0.044	0.267
Modified	0.006	0.044	0.300

FINITE ELEMENT ANALYSIS



KEY DESIGN FEATURES

- Easy to Use
- Friction and passive locking
- Sturdy and Minimal Deflection
- Fully 3D printed
- Similar Cost

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