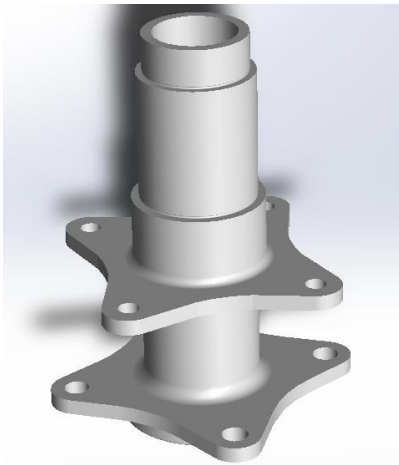


# Front Spindle



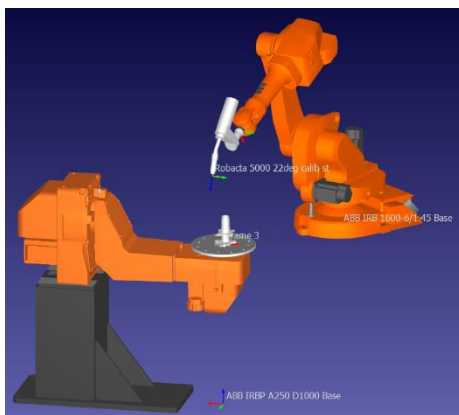
**CAD model**



**Printed part**



**Machined part**



**Station model**



**Finished part**

**Advantages of WAAM over Conventional machining:**

- WAAM material removal savings vs. Machining: **87%**
- Milling time reduction: **70%**

**TECHNICAL INFORMATION**

**Machine:** ABB IRB 1600 + Fronius TPS 4000 + IRBP A positioner

**Dimensions:**  
D = 120 mm H = 160 mm

**Wire:** ER70S-6, Ø 1.2 mm

**Deposition Time:** 5.9 h

**Deposited Mass:** 2.5 kg

**Application:** Automotive (car) front spindle

**BENEFITS OF WAAM:**

- Cost savings
- Material savings
- Fast production rates
- Capability of printing complex designs

**Alternatives to Milling process WAAM**

- High deposition rates, flexible and short lead time to produce near net-shaped complex components.
- Repair, reverse engineering, prototype & topology optimization.
- Reduction in chip volume and milling time