

Use Case: Industrialization of a Gas Turbine Main Swirler

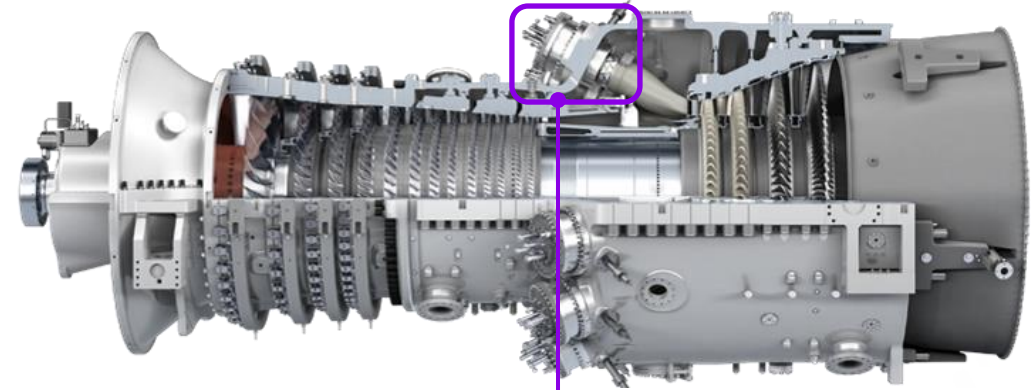


Part description

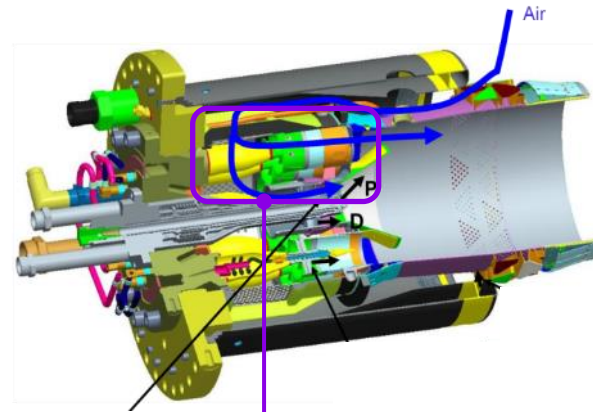
- Advanced can annular combustion system of Siemens Energy SGT5/6-8000H with up to 580 MW CC power and over 61% efficiency
- Up to **128 pieces per turbine** mounted in the can annular combustion chambers
- Primary function: **mixing of fuel gas** with compressed air
- **Complex conventional manufacturing procedure** (cast / machine / weld)
- Critical component with **long lead time**

SGT5/6-8000H

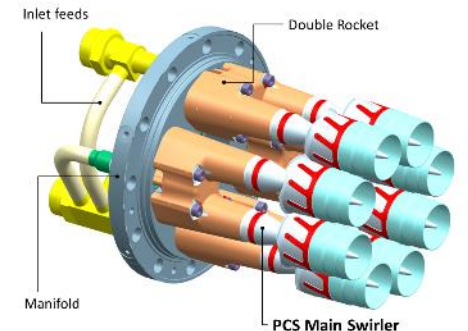
SIEMENS
ENERGY



PCS Combustor



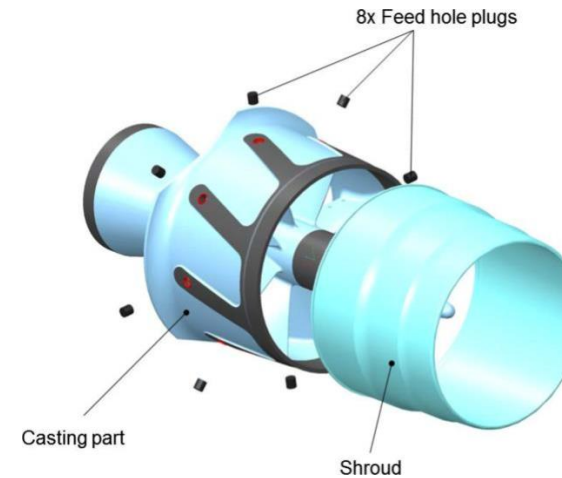
PCS Main Swirler



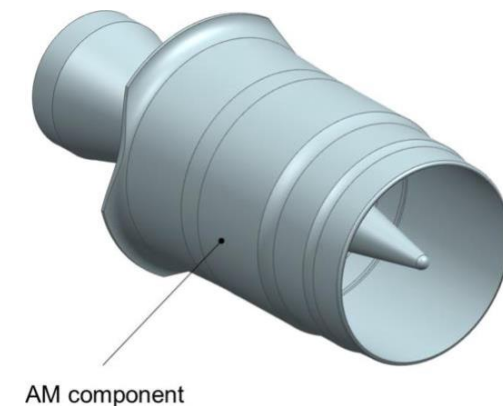
Project tasks

- **Industrialize AM** by learn out production issues and **reduce production costs**
- **Full redesign** of the part for AM to print as **one single piece**
- **Qualify part** for commercial operation
- **Same or lower price** per part to achieve positive business case
- **Reduce lead time** by 20%
- Develop & certify **processes for serial production of >1000 pieces /year**

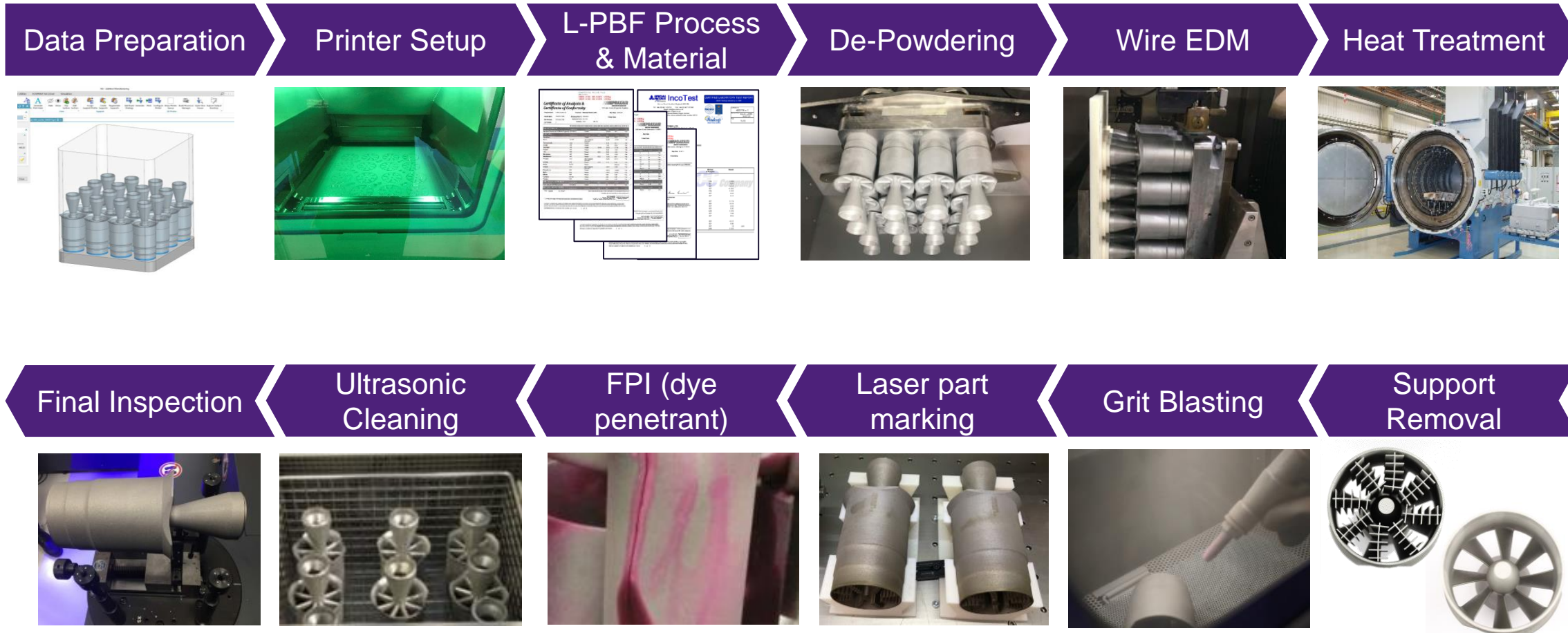
From conventional components...



... to a fully integrated AM part



Serial production: 12 process steps defined to ensure highest quality and full traceability of each part



Results

Design for AM

- Printing as **one single part**
- **Minimized supports**, removal w/o tools
- **Post AM processing steps reduced by 80%**

Positive business case

- **Function specific printing parameters:**
33%-build-time reduction
- **Customized build plate** to maximize number of parts /plate

Repeatability and Quality

- **Rigorous qualification process** for all process steps developed and released

Serial production



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Materials Solutions
A Siemens Energy Business



Final build plate of 16 parts including full quality documentation

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