

Impact of Additive Manufacturing on Gas Turbines



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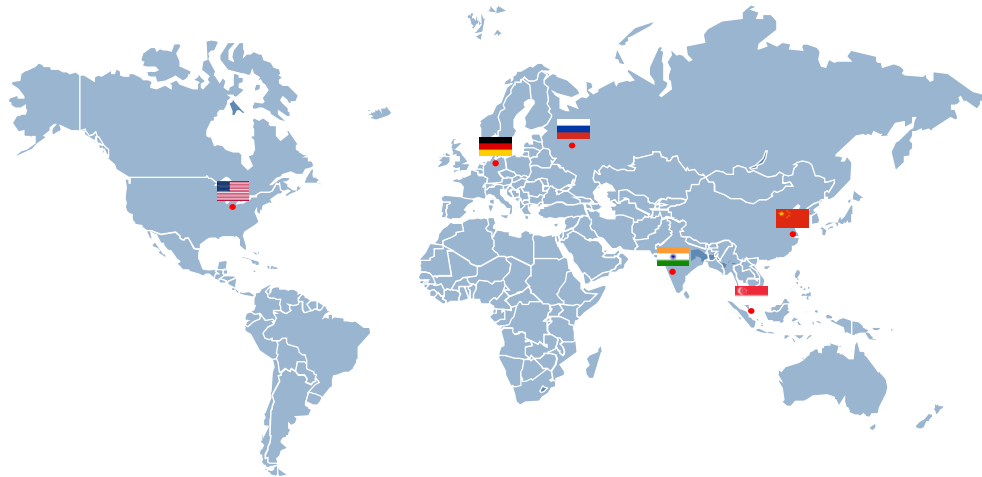
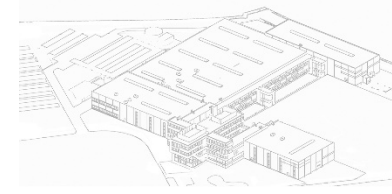
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○ Agenda

- Introduction
- Technical Feasibility
- Economics



SLM Solutions Worldwide



SLM Machines Overview

Large System

SLM 500



Highest Performance for Large Volume Series Production

Build envelope:

500 x 280 x 365 mm

Laser:

**Twin (2x 400W or 2x 700W) fiber laser
Quad (4x 400W or 4x 700W) fiber laser**

Build rate:

up to 171 cm³/h^(a)

Mid Size

SLM 280 2.0



Standard for Scalable Production and Development

Build envelope:

280 x 280 x 365 mm

Laser:

**Single (1x 400W or 1x 700W) fiber laser
Twin (2x 400W or 2x 700W) fiber laser**

Build rate:

up to 55 cm³/h^(a)

Compact Size

SLM 125



Production and Laboratory

Build envelope:

125 x 125 x 125 mm

Laser:

Single (1x 400W) fiber laser

Build rate:

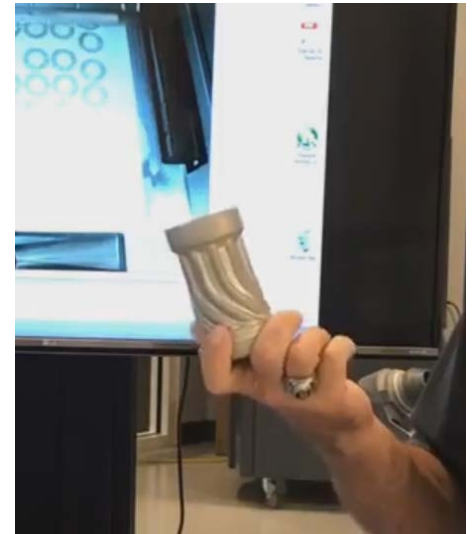
up to 25 cm³/h^(a)

(a) Depending on material and build part geometry

○ SLM Solutions: Metal AM for Industrial Part Production



○ Technical Feasibility: Established



Images: Airbus, Relativity, GE Power

SLM Solutions Group AG company presentation

○ Challenges for Turbines

...that an equipment OEM needs to deal with...

- Size of Machines
- Build Rate of Machines
- Competitive Materials

○ Machine Size Challenge



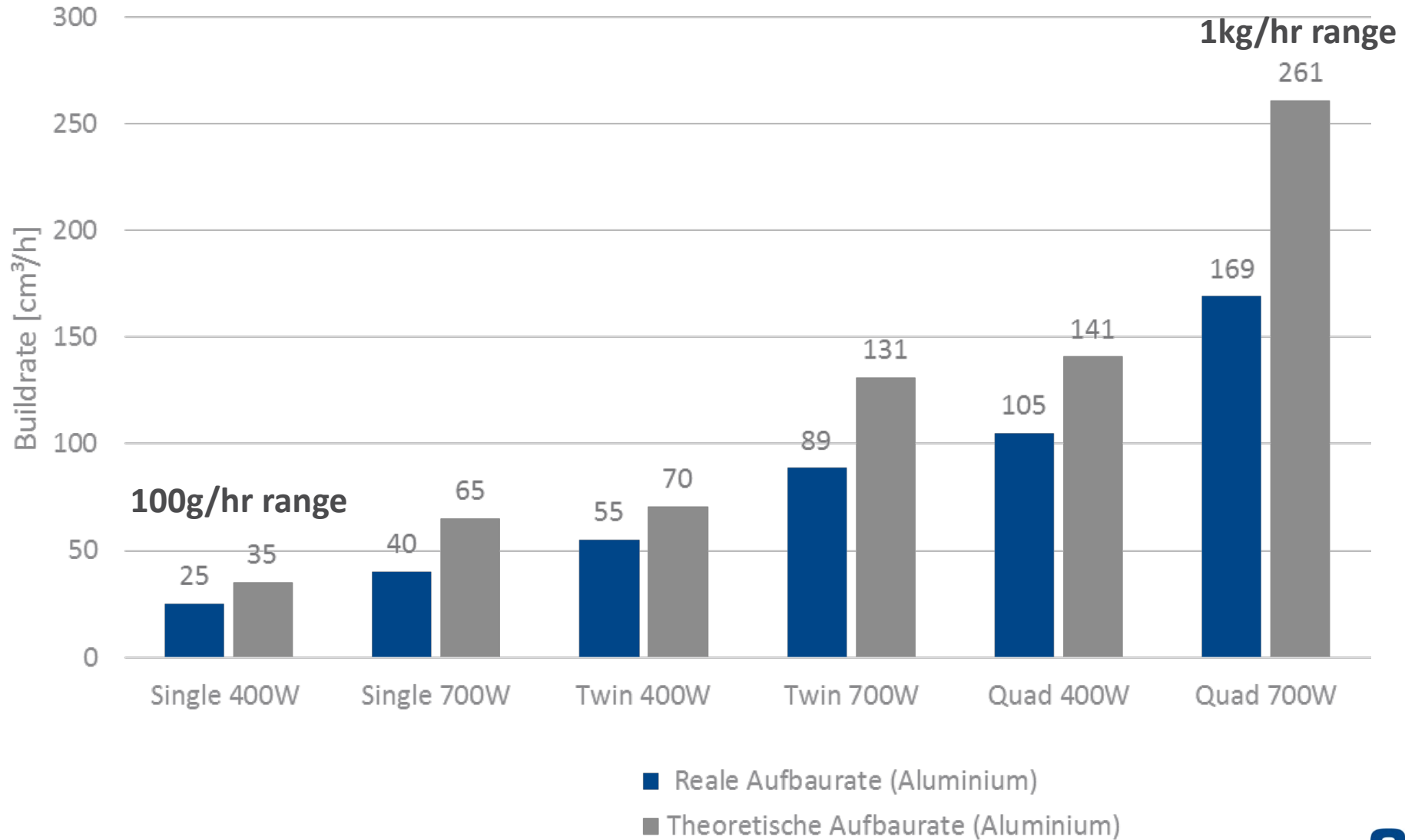
SLM800

500 x 280 x 800 mm

~1kg/hr

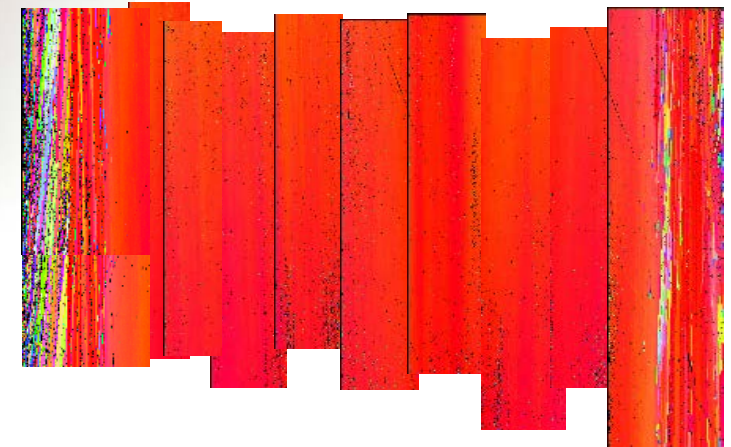
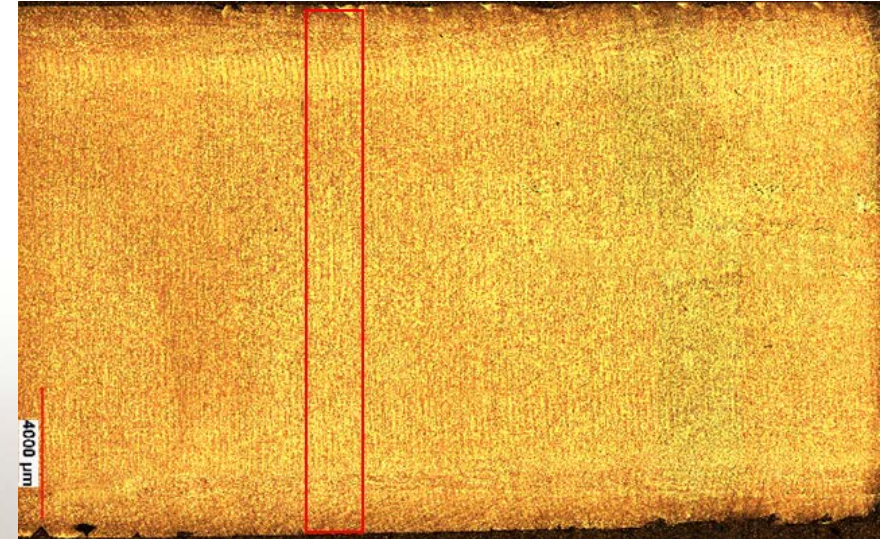
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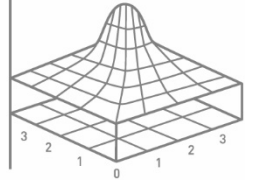
○ Build Rate Challenge



○ Materials Challenge

- New superalloys with >IN718 performance
- Single-Crystal Ni-base superalloys
- New high fatigue-strength aluminum alloys





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