

Selective Laser Melting, the solution for future logistics processes?



A presentation by

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SLM Solutions Group AG

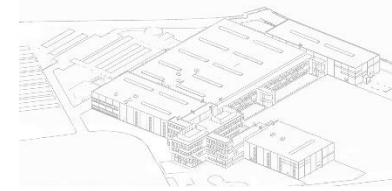
Roggenhorster Str. 9c

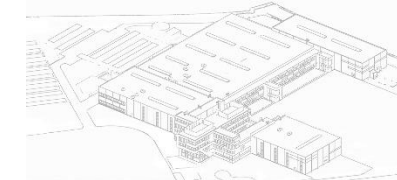
23556 Lübeck

Germany

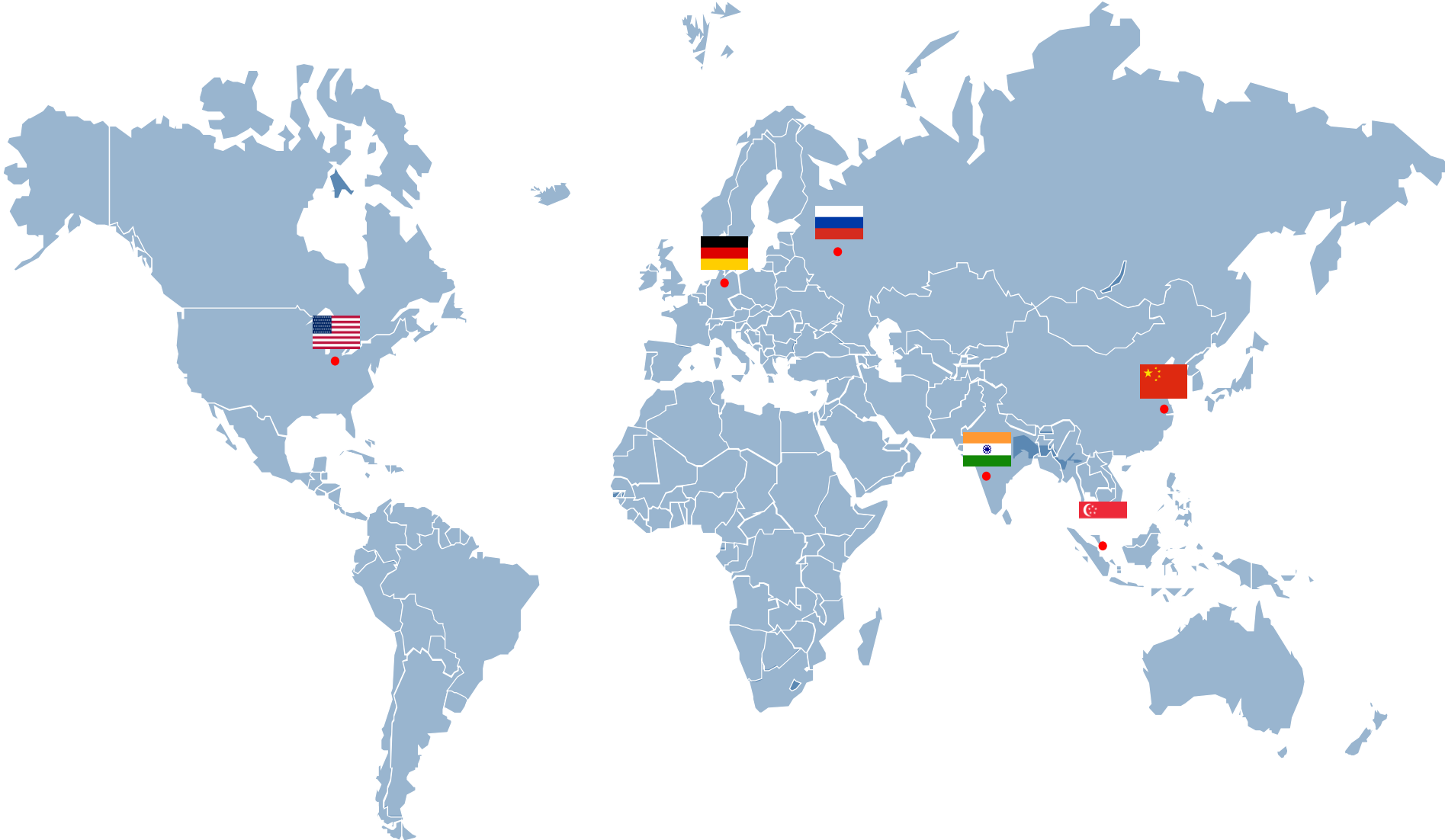
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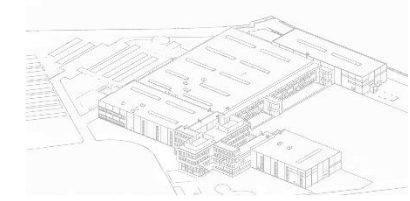
Lübeck | 53°52'N, 10°42'O, MEZ





SLM Solutions worldwide

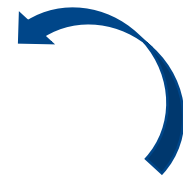
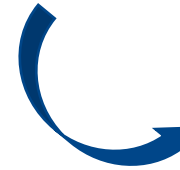


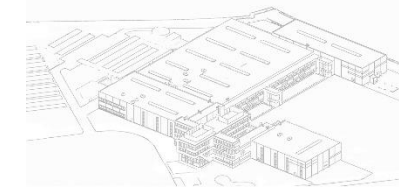


Provider of integrated system solutions

One partner for your success in AM

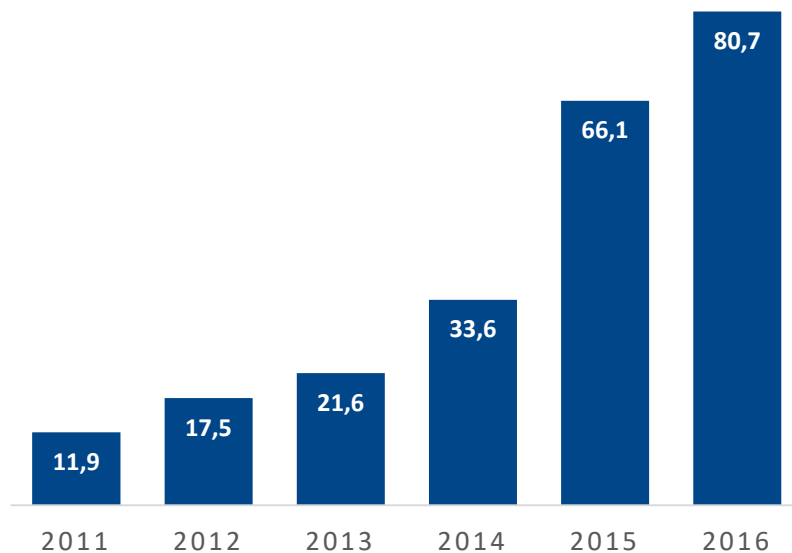
- Direct access to broad SLM know how and machine technology
- Deep machine and process understanding
- Skilled technical staff for customer support
- Customer specific consulting and parameter optimization
- Assistance for implementation of new materials
- Guarantee: Extended Quality Assurance



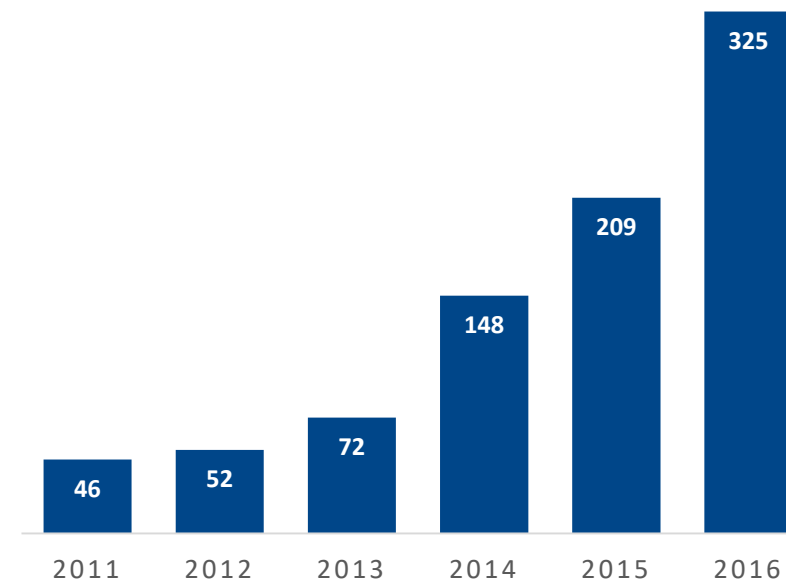


Profitable corporate growth

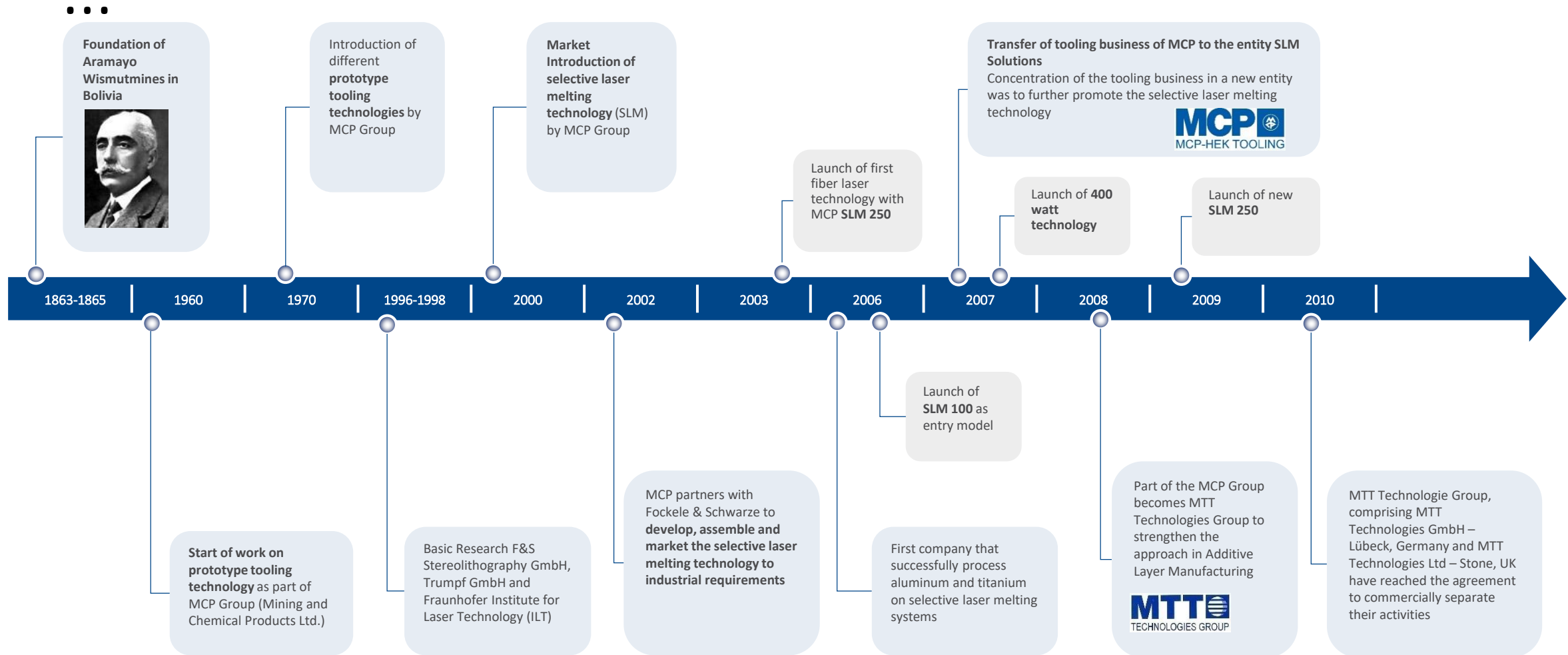
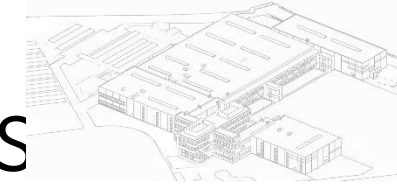
Revenue (EUR million)

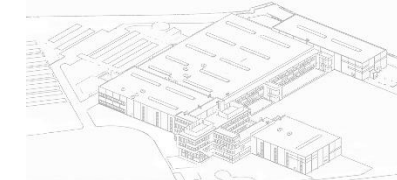


Employees

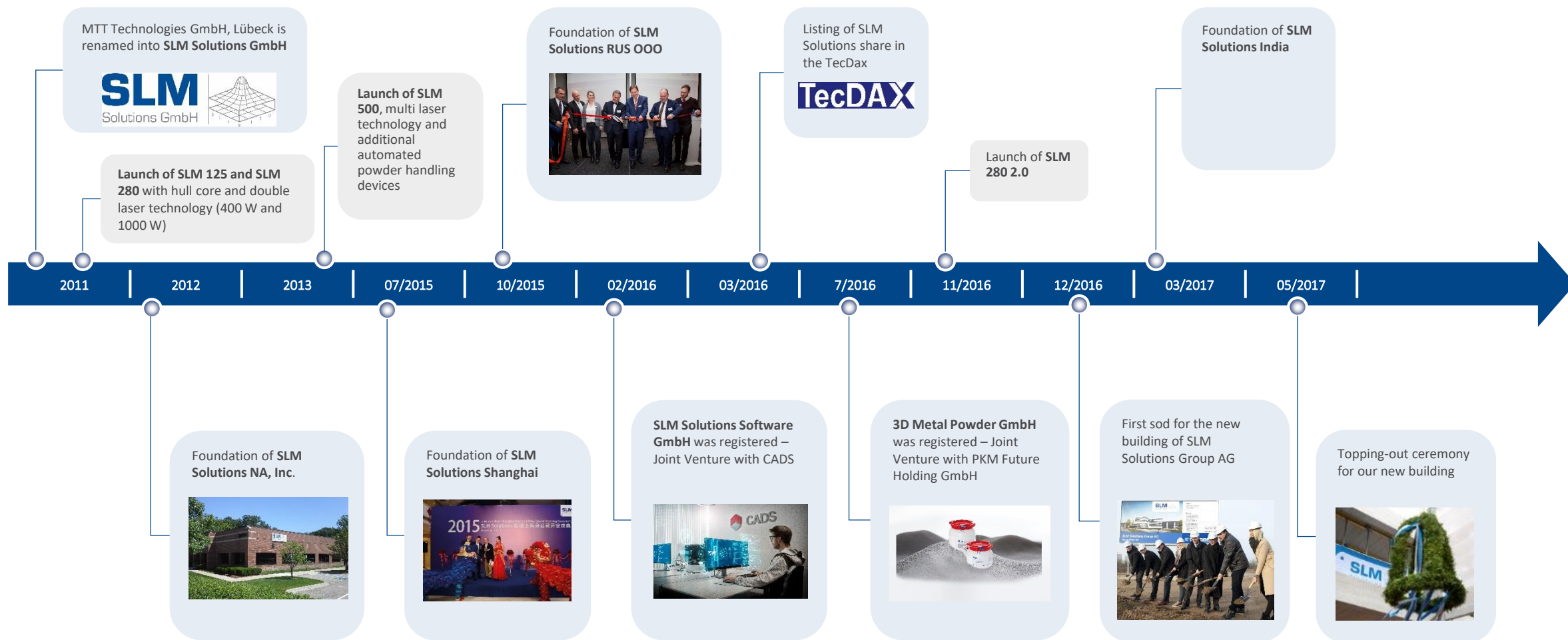


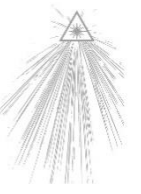
SLM Solutions Group AG and its predecess



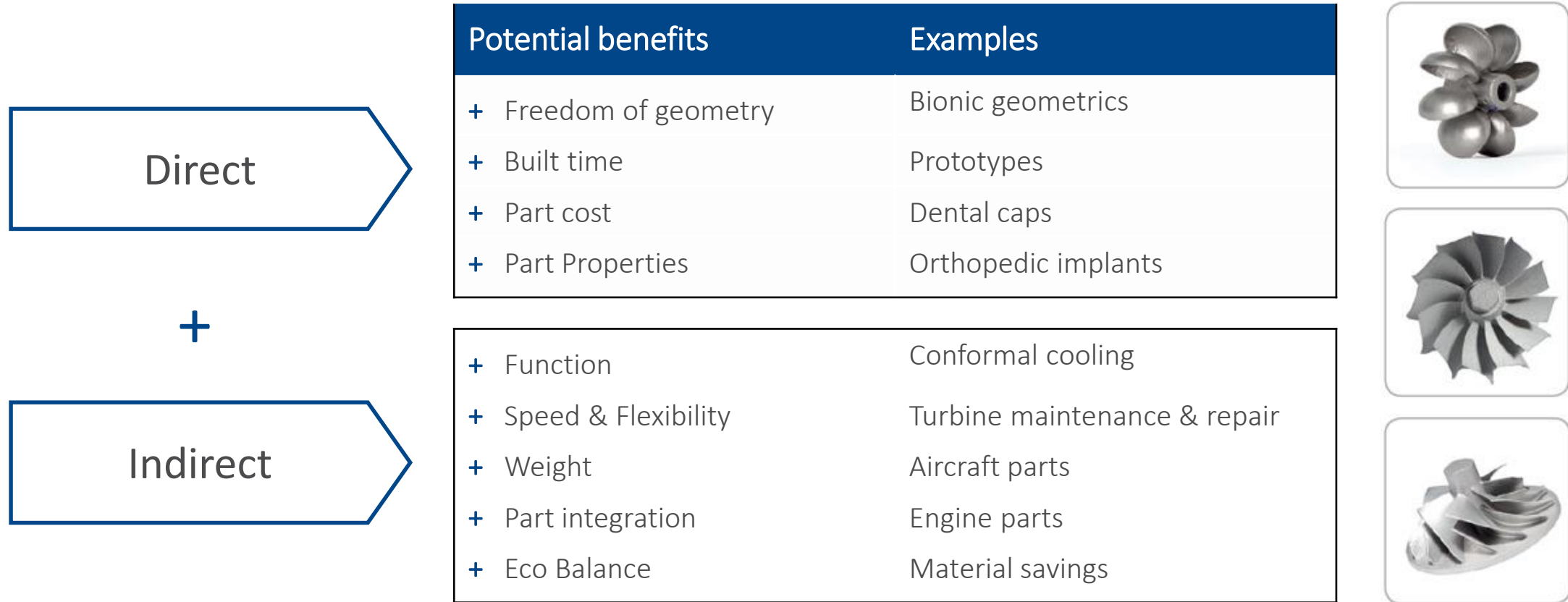


... have a history of innovation



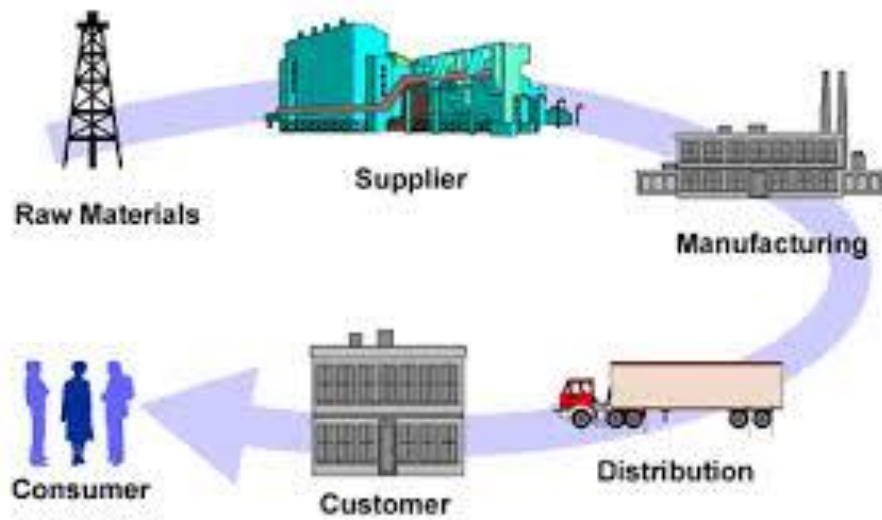


Advantages of SLM Technology



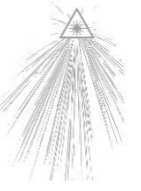
Direct cost benefits currently only for complex parts and small lots

Present transport szenarios.....

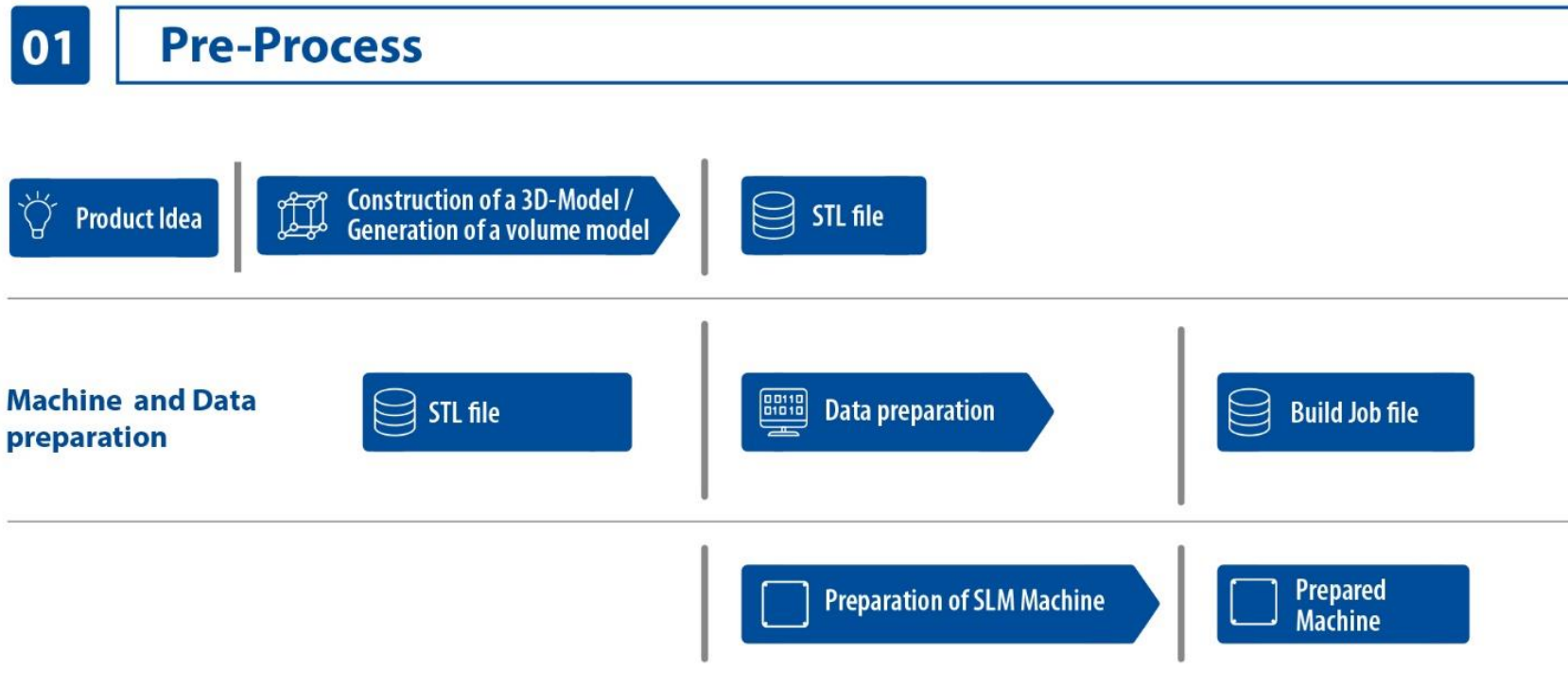


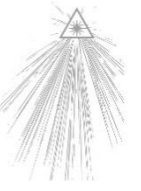
Future logistics processes ?



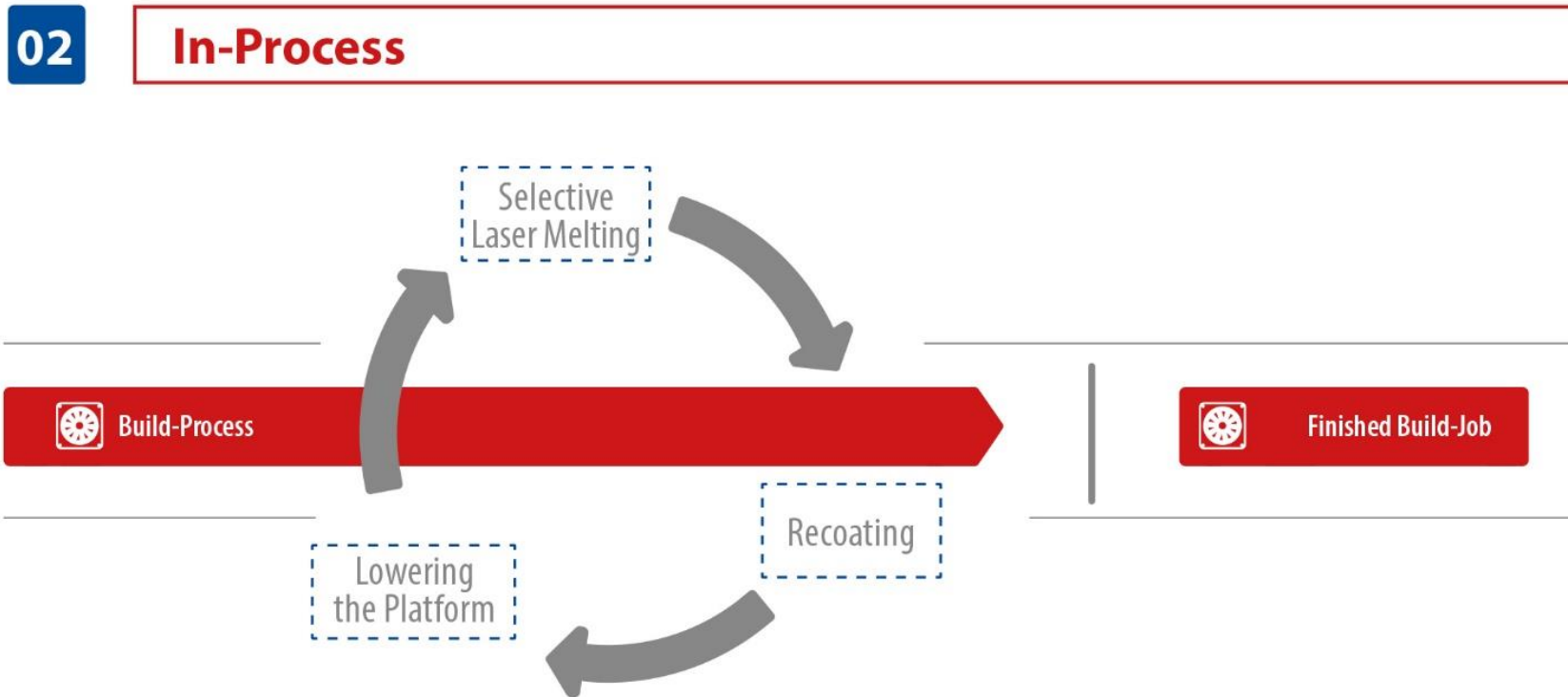


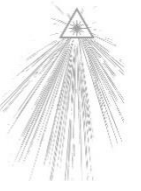
SLM Process Chain for Metal Additive Manufacturing



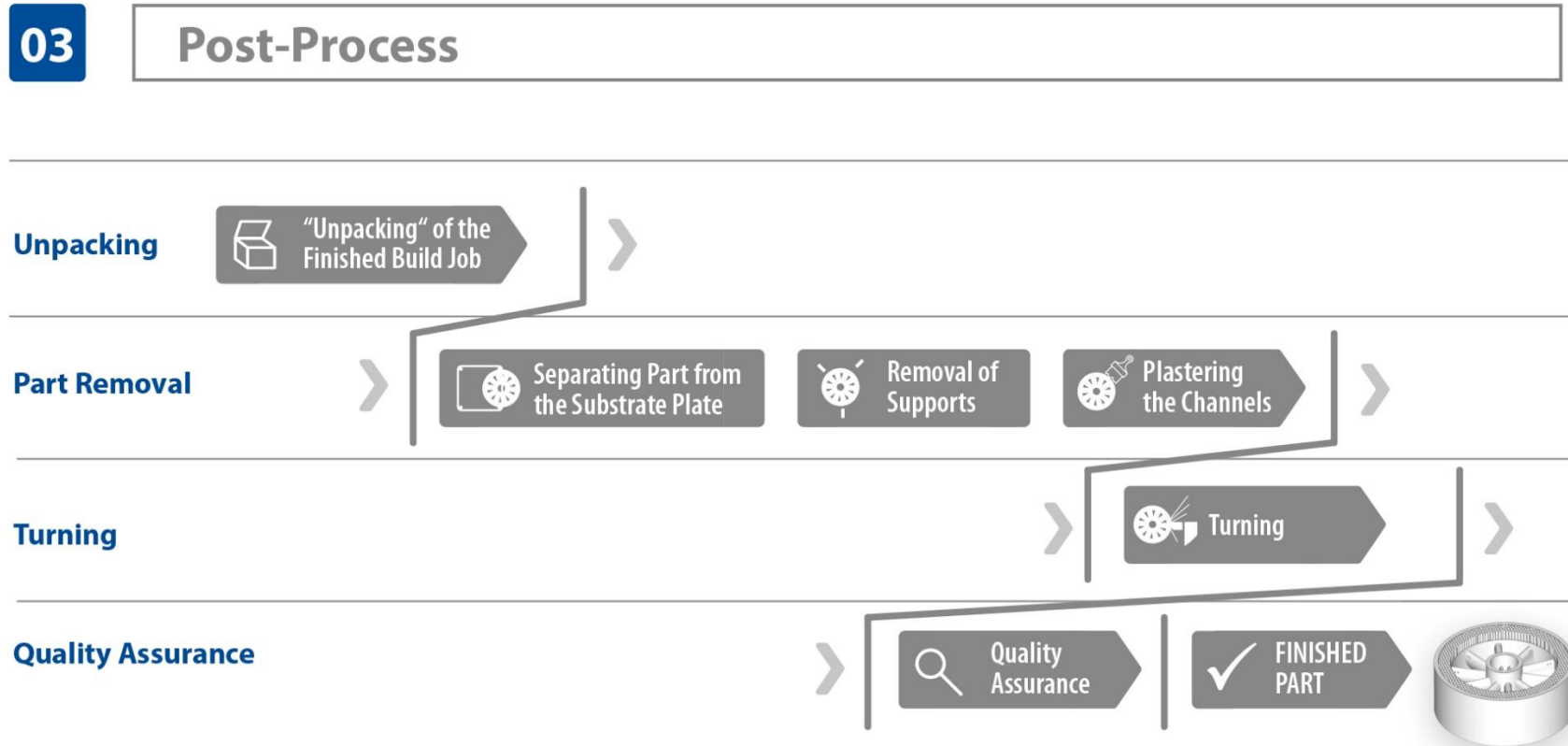


SLM Process Chain for Metal Additive Manufacturing





SLM Process Chain for Metal Additive Manufacturing

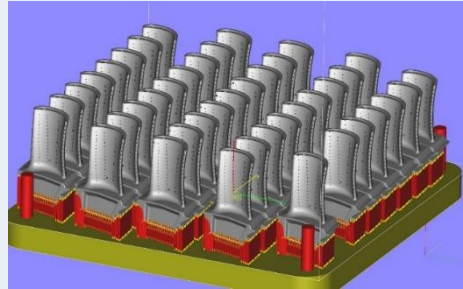


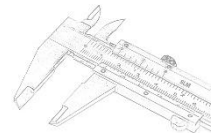
Demo Turbine Blade Inc 718

Material:	Inc 718
Height:	75 mm
Volume:	22.772 ccm
Weight:	187g
Industry:	Energy
Aerospace	

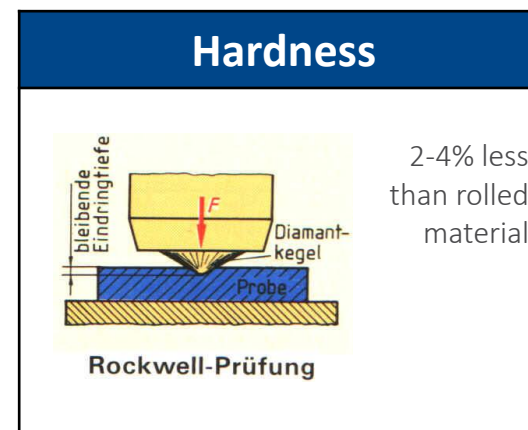
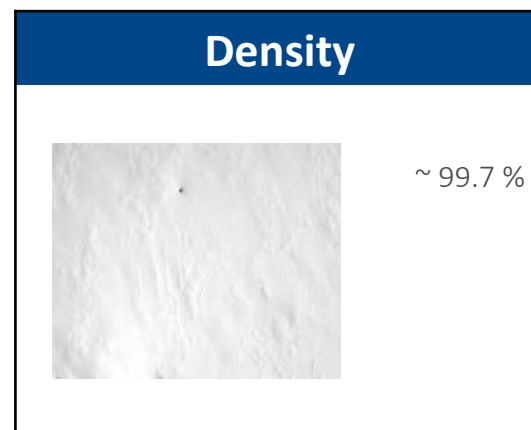
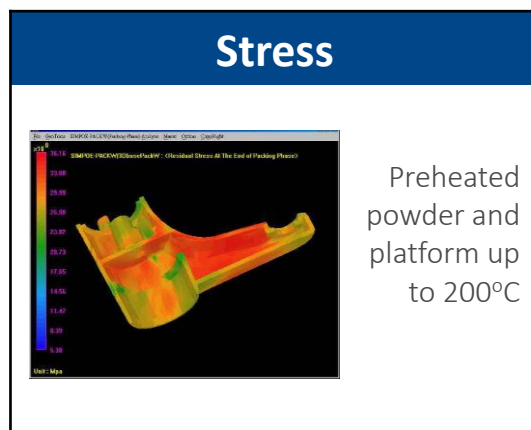
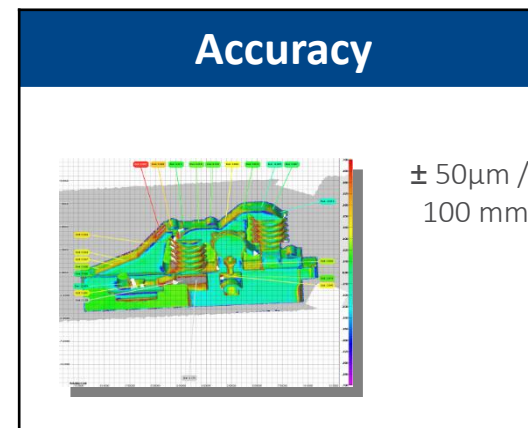
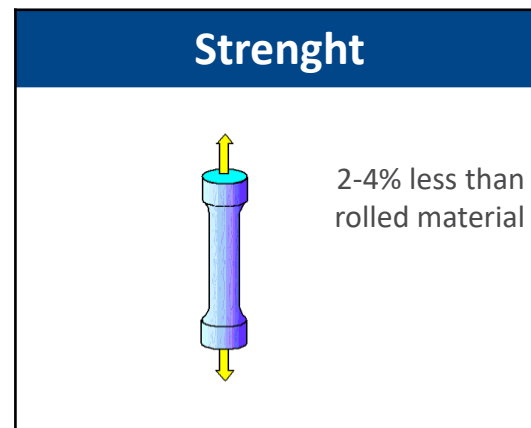
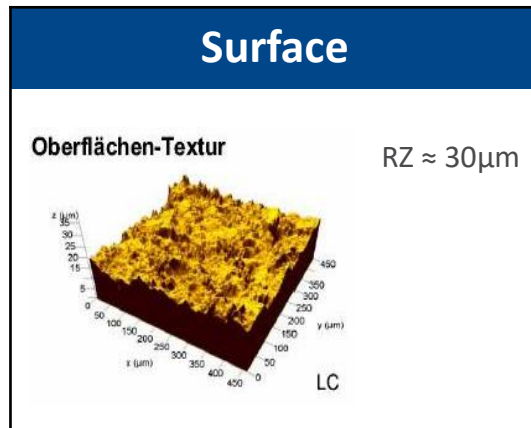


Comparison of Demo Turbine Blade Inc 718

Data	SLM 280 Single 400W	SLM 280 Twin 400W	SLM 500 Quad 400W
			
Parts/Job	43	43	78
Time (h)	77:42	41:50	41:28
Job cost (€)	3.192 €	2.098 €	3.469 €
Part build time (min)	109	59	32
Part cost (€)	74,23 €	48,81 €	44,47 €
Build Rate (cm³/h)	12,6	21,8	42,9



Important Material and Part Properties



Same high quality results compared to conventional manufacturing

Energy: High Pressure Reactor

■ Application

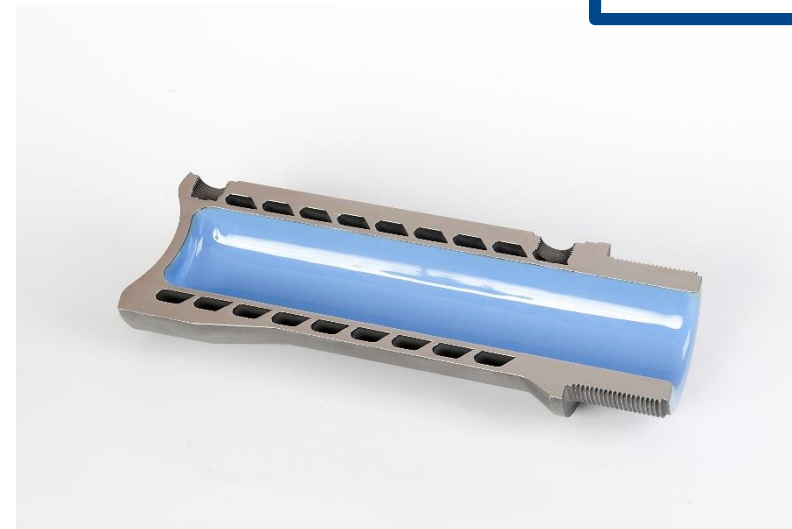
- High pressure reactor
- Test pressure: -1 to +300 bar
- Test temperature: -60 °C to + 230 °C

■ Build Job Data

- SLM 280 Twin
- Material: Inconel 718
- Fullload 3 parts
- Buildtime: 3d1h15min
- Weight 4.72kg

■ Benefits of SLM Process

- Integrated temperature channel without support structure
- min. wall thickness for fast reaction time



Aerospace: Gooseneck Bracket

- **Application**

- Kruger Flap Actuation Mechanism
- Research Project: FP7 AFLONEXT EU program
- Objectives: reduce weight, drag, noise

- **Build Job Data**

- SLM 280 Twin, 2 pcs/job
- Build Time: 48h 27m
- Material: Ti6Al4V

- **Benefits of SLM Process**

- Enabler for new topology optimized design



Automotive: Gear Housing

- **Application**

- Gear Housing
- Objective: Weight optimization

- **Build Job Data**

- SLM 500 Quad, 2 pcs/job
- Build Time: 3d 10h 56 min
- Material: AlSi10Mg

- **Benefits of SLM Process**

- Weight Optimization of 30 %



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Tooling: SLM-Forge-Brid

- **Application**

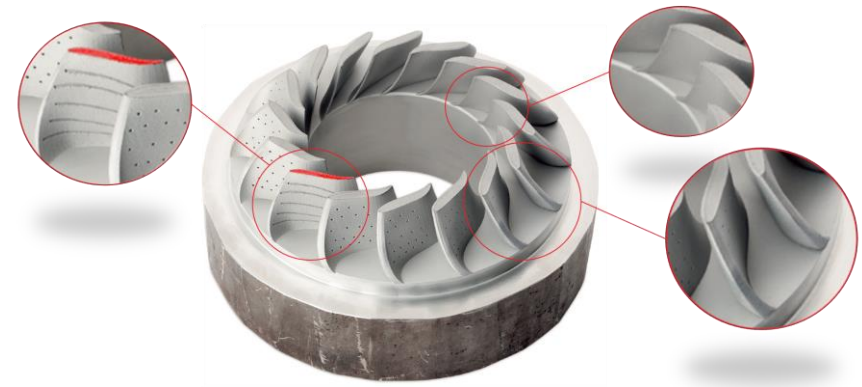
- Gear Housing
- Objective: Weight optimization

- **Build Job Data**

- SLM 500 Quad, 2 pcs/job
- Build Time: 3d 10h 56 min
- Material: AlSi10Mg

- **Benefits of SLM Process**

- Weight Optimization of 30 %



Medical & Dental: RPD Framework

- **Application**

- RPD Framework
- Removable Partial Denture

- **Build Job Data**

- SLM 125
- Material: CoCr
- 20 μ m

- **Benefits of SLM Process**

- Precision
- Mass Customization
- Productivity Advantages
- Cost Advantages

