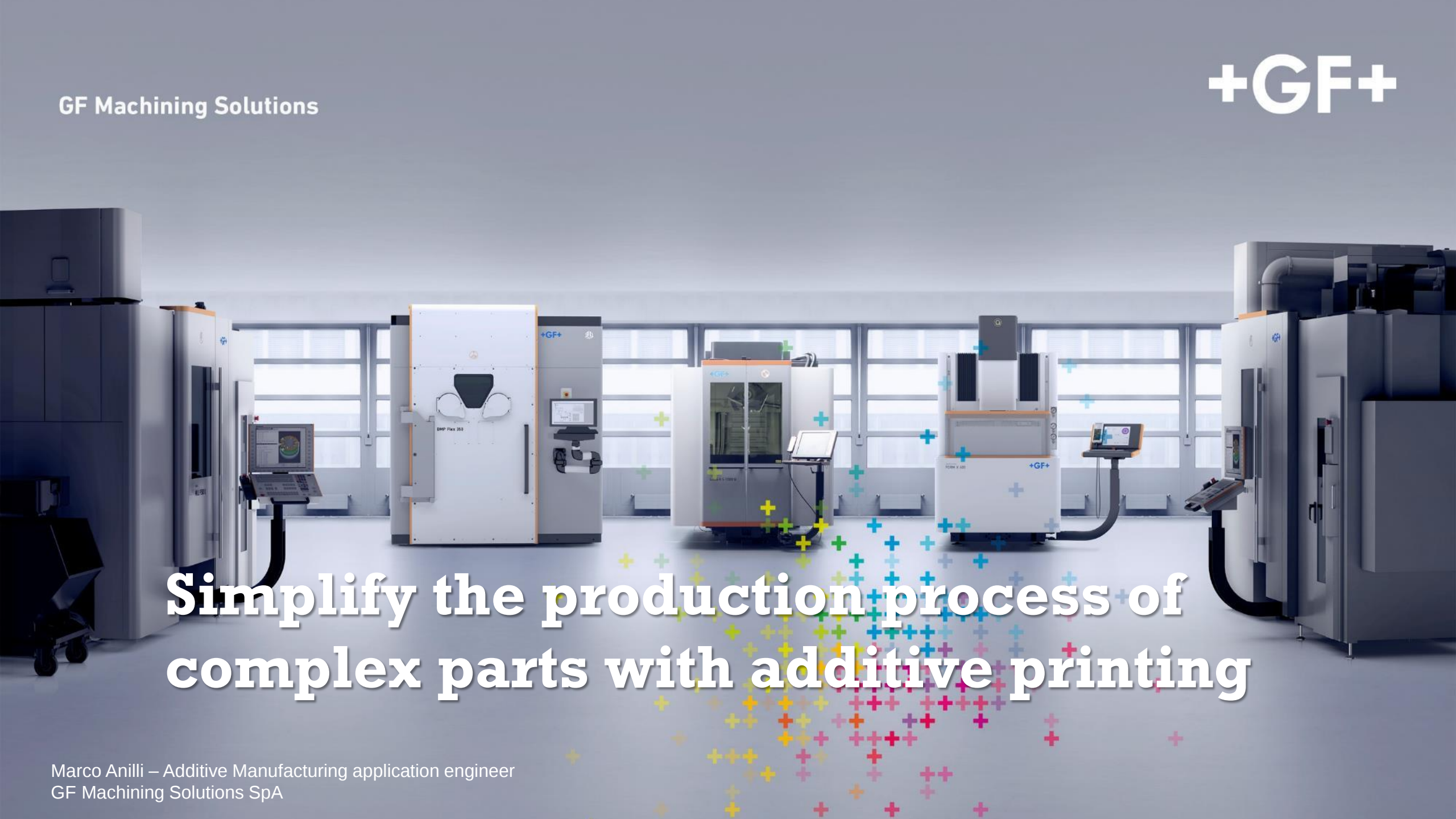




Simplify the production process of complex parts with additive printing

Georg Fischer AG

Three Divisions



Unique Technology Portfolio

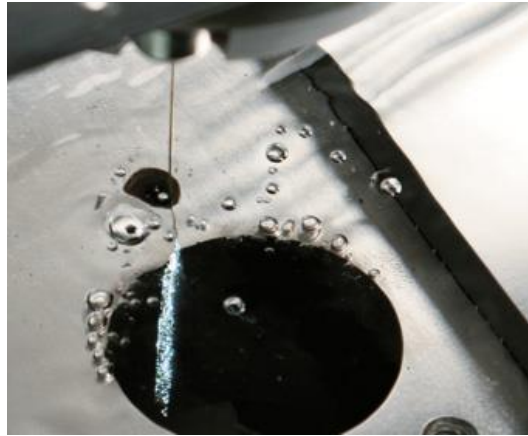
GF Machining Solutions

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Milling



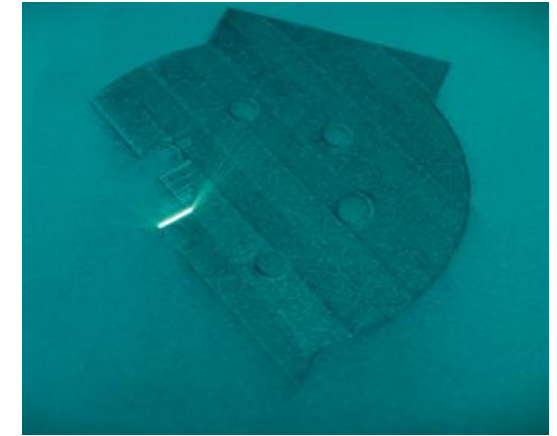
EDM



Laser



Metal AM



Micromachining



Spindles



Tooling and Automation



Digital Transformation



Our complete offer

The metal AM workflow



GF Machining Solutions Italy

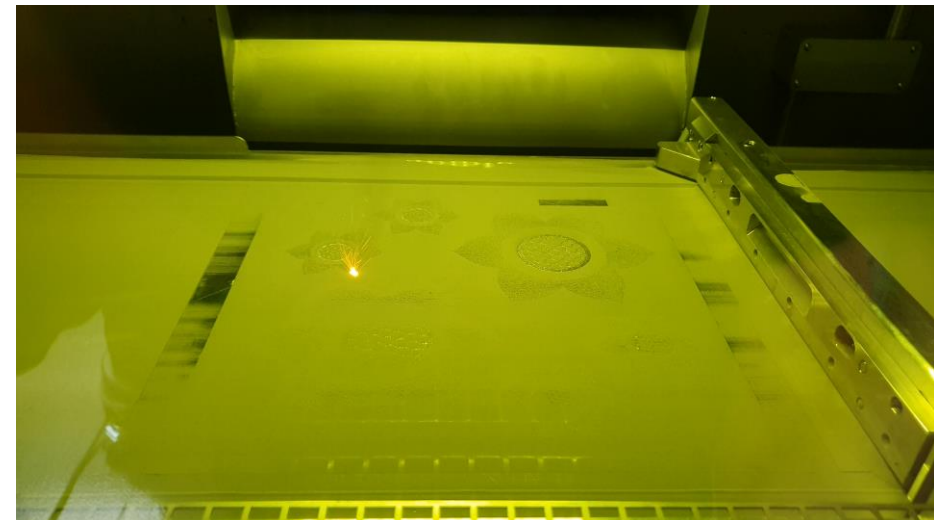


New headquarters in Agrate Brianza

- Open in January 2020
- 100 seats conference room, meeting rooms, common areas
- Competence center - 450 m² show room
 - Training room
 - 7 machines installed and operating
 - Additive Manufacturing area



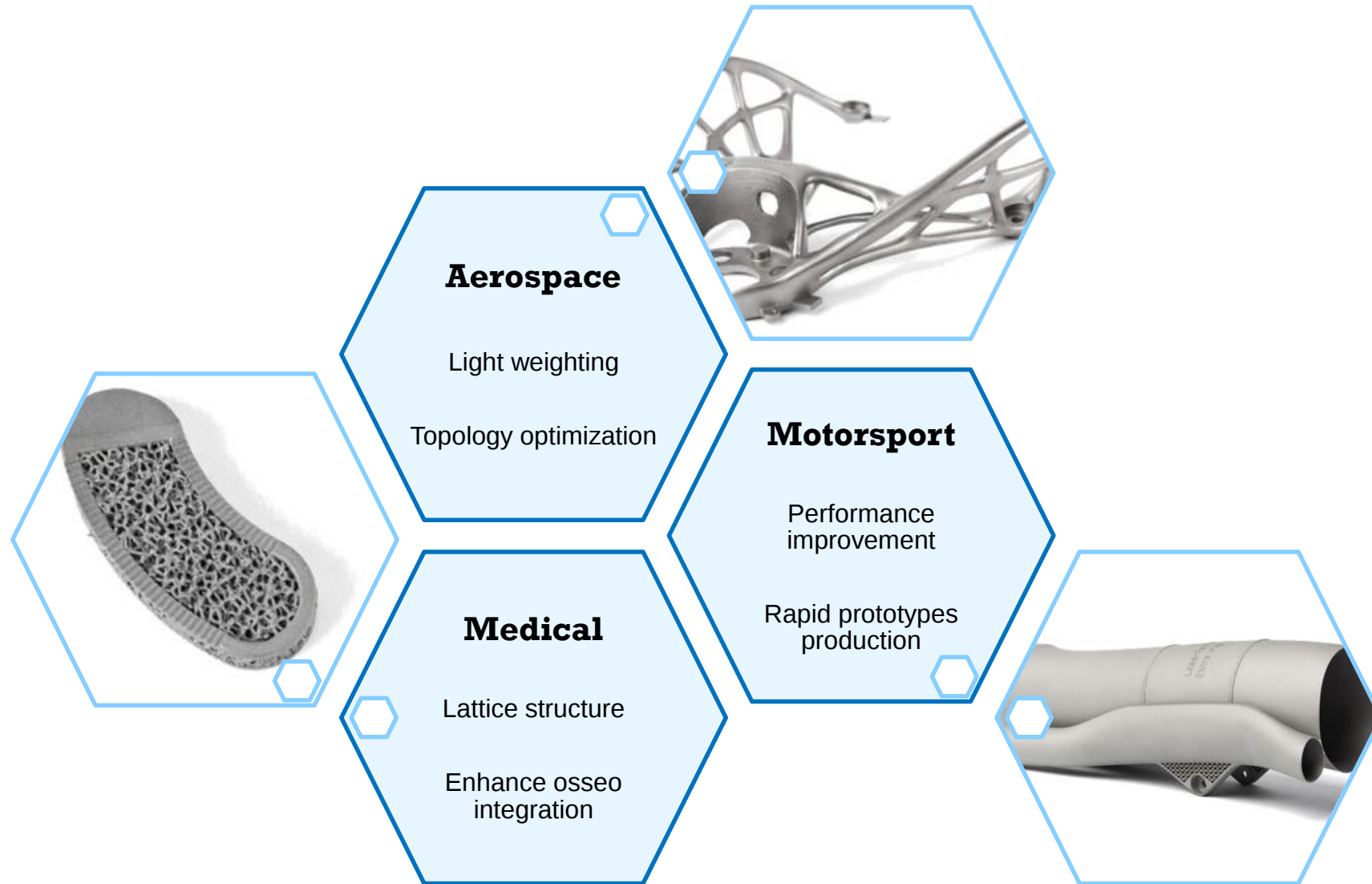
- DMP Flex 350 complete system
- Multi technology demo part
 - Additive Manufacturing
 - Milling
 - Laser Texturing
 - EDM



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AM in general industry

Well established AM users



What about "General industry"?

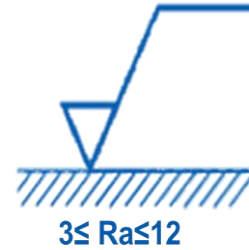


- No single application "fits all"
- Often a lack of knowledge to **identify the potential**
- Real analysis is required to **demonstrate the added value**

Common "Fears"



Time-consuming process



Poor surface quality & need for supports

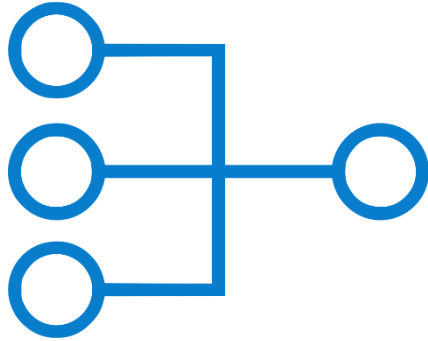


Limited amount of materials



High production cost

Key advantages of LPBF



Assembly consolidation



Lead time reduction



Performance



Digital and unmanned
production



Lower level of expertise
for machine operations

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Success Story

Customer Background

Arnold Umformtechnik GmbH



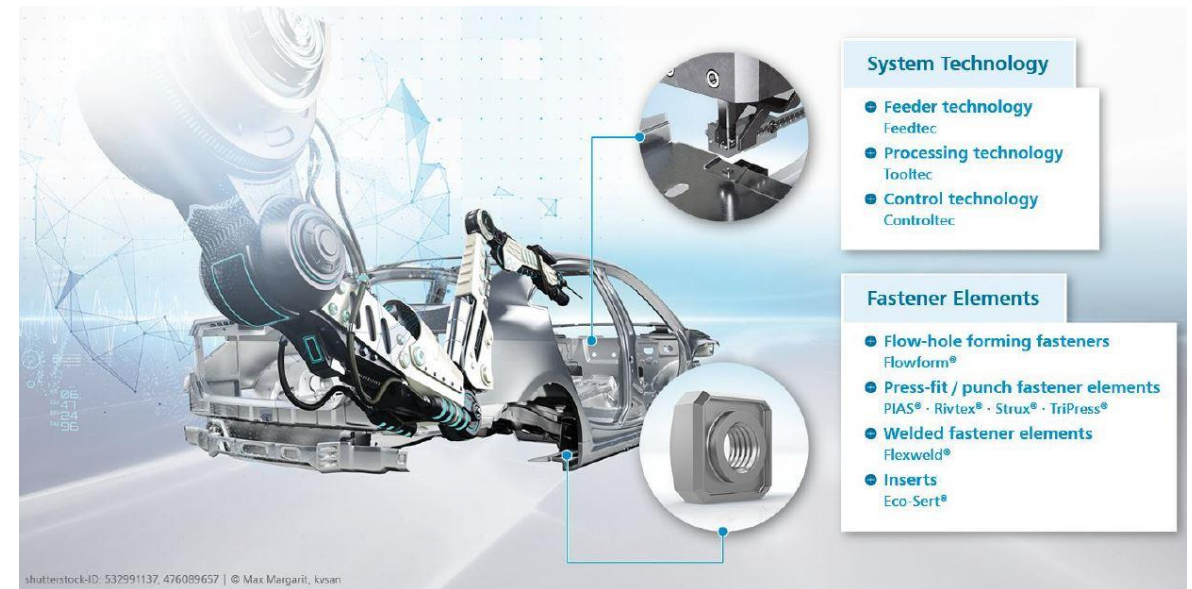
Developer and manufacturer of **innovative fastening solutions** for Automotive



- Founded in 1898, 1325 employees today
- Member of Würth Group since 1994
- 6 billions parts per year: **mass production**

Why investing in Additive Manufacturing?

- Not just screws, but complete solutions
- Fast supply of parts for their machines
- 1 **DMP Flex 350** machine sold

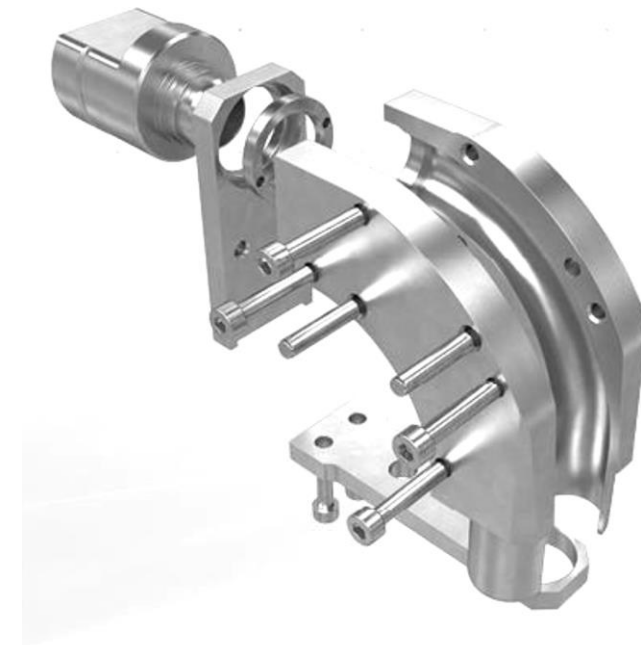
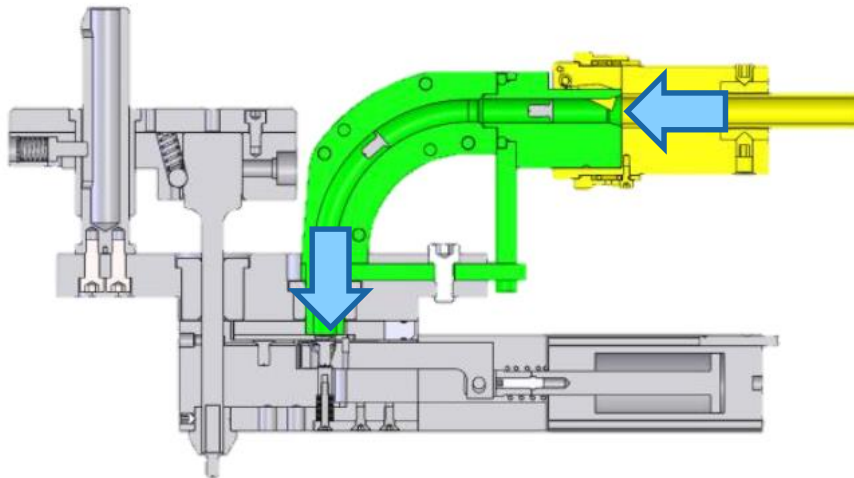


Application

Screw dispenser



- Receives screws and conveys them to the assembly area after a 90° curve
- 6 milled parts
- Final assembly with 8 screws
- **Precision** needed just in the **entrance-exit holes**
- Accuracy in **assembly** makes it **very expensive**



AM benefits

Why Additive Manufacturing?



- 6 screwed parts
- Milling and assembly
- Costly precise machining
- **Lead time:** 6-8 weeks



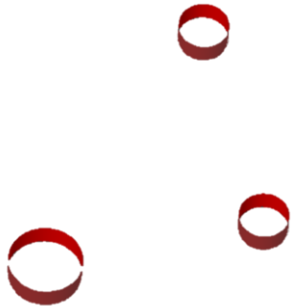
- Single production step on DMP Flex 350
- **Lead time:** 1 week
- < 50% final **cost per part**
- **Eliminate** assembly steps and required accuracy
- Re-designed for additive manufacturing

Do not copy-paste!

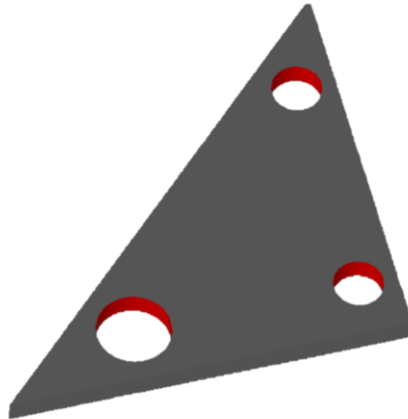
Re-design parts for Additive Manufacturing



*Most often replacing, one for one, a milled or turned part by a printed one will only make it **more expensive and less accurate!***



Function to be fulfilled



Conventional approach



AM approach

AM benefits

Extending AM benefits to other parts



Feeding device



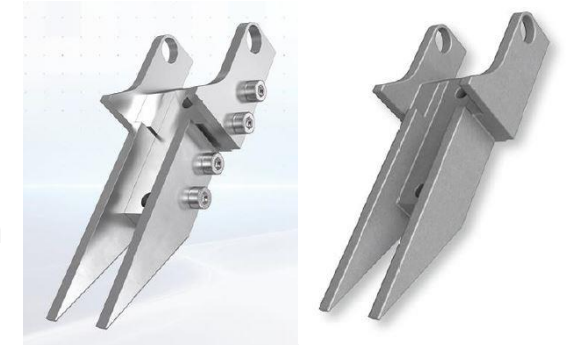
- 4 parts and high precision assembly
- ✓ Lead time reduction: 6 to 1 week
- ✓ No assembly – cost reduction

Self-piercing nut



- Under development
- ✓ Time to market reduction
- ✓ "Delivery overnight"

Gripper



Conclusions

AM in general industry

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Long production **lead times**



Several and expensive manufacturing and **assembly** steps



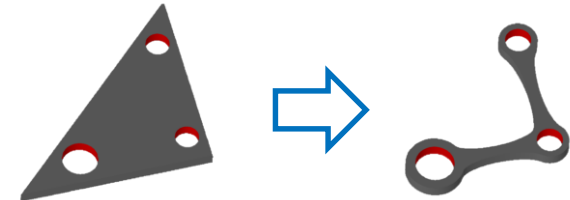
Need for **fast product changes**



Need for **fast delivery time**



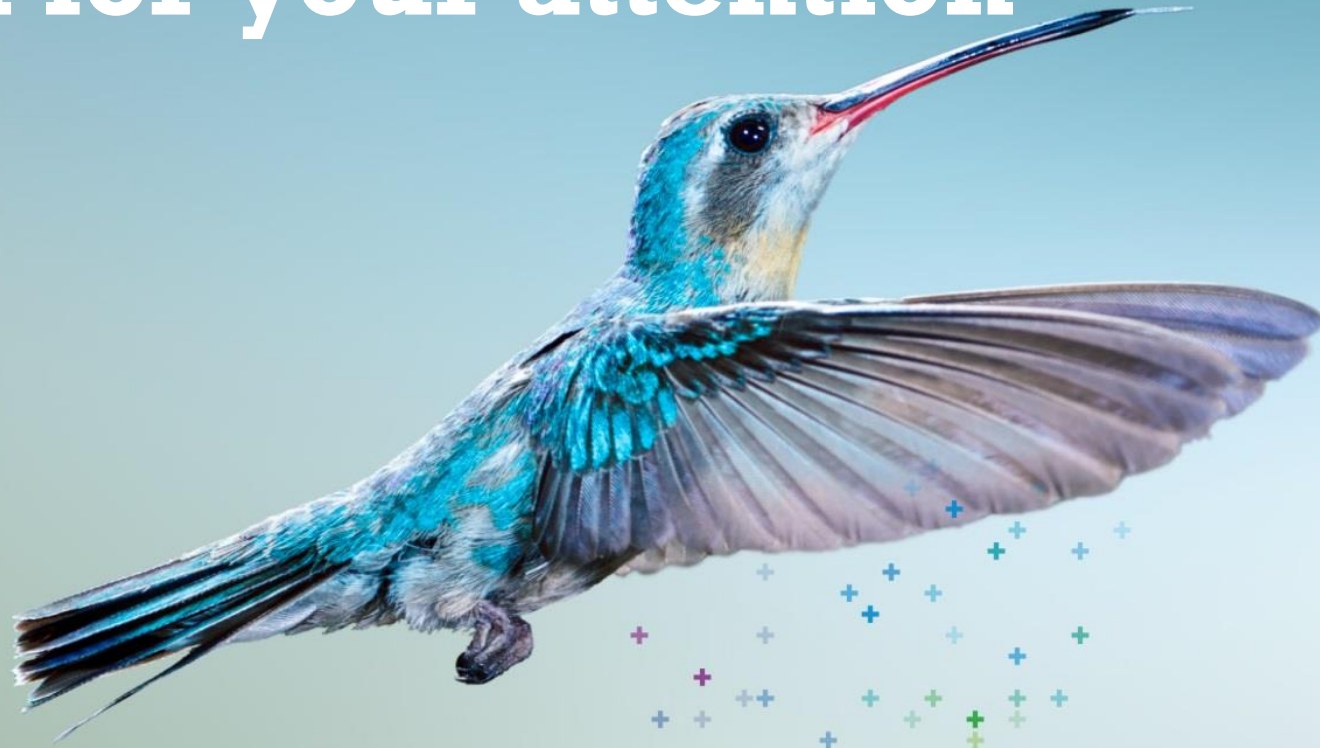
Re-designing a component increases the AM benefits



Real **analysis** to verify the **added value**

Thank you for your attention

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GF Machining Solutions

Passion for Precision