

# Amrop Industrial Practice

## 3D Printing

Is Germany in Need  
of a Re-boot?

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**Amrop**

Leaders For What's Next

# 3D Printing

## Is Germany in Need of a Re-boot?

3D printing of plastic parts has been an established mass production technique for some time now. Yet when it comes to *metal* components, and 3D additive production in particular, uptake is still in its infancy.

Experts are split into two camps. While one camp sees the advent of the technique as quasi inevitable, the other is biding its time.

One reason for the slow uptake is that it still takes much longer to manufacture metal parts by *additive* processes (building up in layers by depositing material) than by *subtractive* ones (where material is removed).

Nevertheless, the use of metal products will only increase in the coming years. A number of German companies such as Mapal and CFK have started to quietly - and profitably - market metal devices manufactured by additive series production.

### **The possibilities are dazzling**

3D Selective Laser Sintering (SLS) is one additive technique - using heat to compact and form a solid mass of material by liquefying it. The machine tool industry is using the process in a series of impressive innovations: from sophisticated medical implants, to precision drills with an inbuilt coolant feed, to the hydraulic chucks which clamp machine tools. Their joints, unlike those of their 'brazed' predecessors, are created without using filler metal.

The advantages seem obvious. Not only does it reduce the heavy wastage generated by subtractive technologies, additive manufacturing offers far greater design freedom and keener efficiencies. Where, in the past, 50 or more conventional machine tools were needed in a manufacturing process, the future could see

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a reduction to a single laser sintering system. Moreover, machine manufacturers predict that additive manufacturing processes such as selective laser sintering and laser deposition welding will speed up by a factor of 10 in the next few years.

### **But there's a ghost in the machine**

Despite Germany's pioneering role in developing 3D additive production techniques, and their adoption by the country's larger players, top management in many of the companies who supply those organizations is still concerned about the risks associated with these new technologies. They are potentially losing sight of major opportunities to earn money and secure competitiveness for the future.

Nor are the skeptics convinced by the machine manufacturers' predictions of faster processes.

As a result, a spirit of reluctance now haunts Germany's supply chain, a nation that only three years ago was considered to be the 3D printing nation of the future. The shift was recently lamented at a congress in Düsseldorf: *Inside 3D Printing*. If German companies fail to exploit the technology's opportunities, Chinese and Australian manufacturers in particular will be quick to take the lead, it was reported.

### **Additive leadership, layer by layer**

How can reluctant players overcome their skepticism and become active adopters and innovators?

"The answer starts at the top – with owners, as well as supervisory and advisory boards," says Ulrich Beckendorff, Managing Partner in Amrop's Düsseldorf office. "As in so many domains, it is all about entrepreneurship and vision. Self-imposed technological inertia is the antithesis of both – and the riskiest barrier to progress."

Yet it has never been more important for companies to acquire critical additive manufacturing capabilities, he stresses.

"Owners and supervisory bodies need to understand that this technology has the potential to fundamentally boost industrial production and redefine the rules of the business.

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In addition, supervisory and advisory boards must seek executives who not only understand the *potential* of additive manufacturing, but also equip their company to *exploit* it.”

The challenge, therefore, is to find the *leaders for what's next* - senior executives who possess strategic agility, strong innovative capabilities, and the ability to confidently handle uncertainty and ambiguity. In a risk averse environment, they need to manage daily operations while pursuing a clear and courageous vision of the future. It is no longer enough to only focus on one or the other.

“If leaders want to promote an innovation culture throughout the company, they must have the courage to take a calculated risk with additive manufacturing technology,” Ulrich Beckendorff concludes. “Those who are entrusted with driving the technological shift need to decide and act without having a complete picture of the future - to deal with risks in a situation in which the facts are not yet clear.”

For German manufacturing companies to play a role in the production world of tomorrow, they need to improve not only their technology but, above all, their organization and culture.

To gain real traction, the transformation needs a surge of momentum. It is high time for a re-boot. We set out five steps below.

### 3D Printing: 5 Steps to Re-Boot

1. Bring external leadership know-how into the company, incrementally establish internal expertise
2. Reduce internal resistance by building a clear business case (with high, medium and low risk scenarios)
3. Decide, focus and set priorities
4. Plan and implement a long-term strategy for an integrated production system based on additive manufacturing
5. Develop, retain and promote additive manufacturing specialists, to prepare the organization for this new process.

#### Motivate and inspire at every step.

This is especially true in the ever more complex processing industry, where product manufacturing increasingly resembles a network of simultaneous engineering projects involving customers, competitors, and suppliers.

## About Amrop

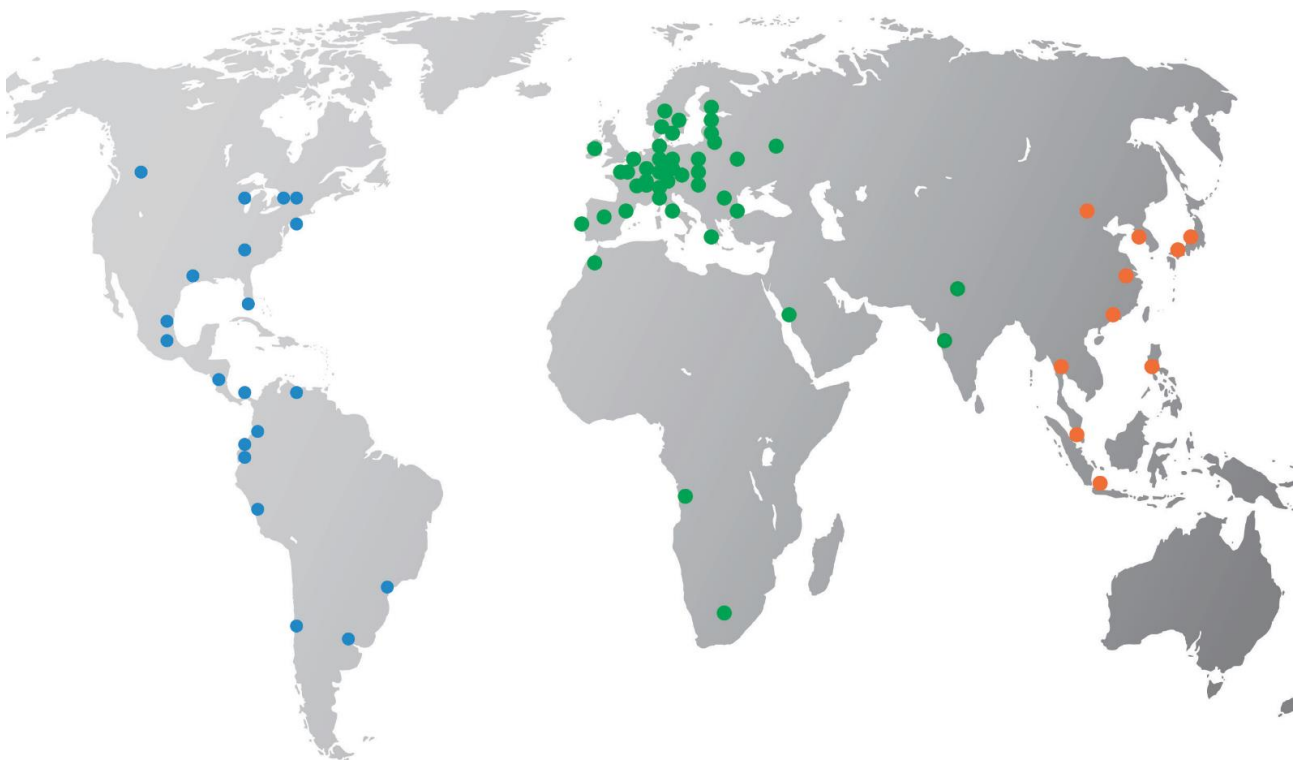
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**Automotive:** OEM (Manufacturers), OES (1<sup>st</sup> and 2<sup>nd</sup> tier suppliers, specialists), Distribution (importers, wholesale, retail, OEM and independent), and Services (consulting, engineering, IT, marketing etc).

**Industrial:** basic materials (steel and aluminum, plastics) to agricultural machines, machine tools, packaging, plant and engineering, aerospace, marine and power generation, and beyond.







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