

# What's **NEXT** in Manufacturing

THE FUTURE OF MAKING THINGS

## EXECUTIVE BITE

# ADDITIVE MANUFACTURING

The future of making things is here, and it is complex. Engineering leaders are under constant and growing pressure to find more innovative solutions for increasingly demanding customers in the context of an extremely competitive global market.

Successful manufacturers are looking for ways to create competitive separation through innovation and accelerating new product development.

Additive manufacturing provides manufacturers with wide-ranging design freedom by reducing constraints previously imposed by manufacturing capabilities.

## WHAT IS ADDITIVE MANUFACTURING?

Additive manufacturing is a collective term for a range of technologies by which an object is constructed layer by layer. It can be considered the industrial version of 3D printing, and utilizes a wide (and growing) range of manufacturing materials from polymers to metals.

## HOW IS ADDITIVE MANUFACTURING BEING USED?

Additive manufacturing is turning traditional manufacturing economics on its head. In many cases, additive manufacturing is providing options when traditional manufacturing techniques and processes were limited by complexity and/or customization requirements.

Additive manufacturing is particularly powerful for:

- Production of custom or unique products
- Products with complex internal geometry
- Simplification of assembly process with fewer parts required
- Lower volumes, even single units
- Short lead times
- Production on demand

## WHAT BENEFITS DOES ADDITIVE MANUFACTURING PROVIDE?

Additive manufacturing has evolved from an efficient means of prototyping and is now a supplement to conventional manufacturing techniques and in some cases is the only way to fabricate low volume or complex products.



**COMPLETE  
DESIGN FREEDOM**



**MINIMUM  
BATCH OF ONE**



**MANUFACTURE  
ANYWHERE**



**MINIMISE  
WASTE**

Business value is derived from the delivery of better products, produced more quickly and at lower overall cost. As additive manufacturing techniques improve, and the range of printable industrial materials expands, benefits to business will continue to increase.

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# ADDITIVE MANUFACTURING

## ADDING ADDITIVE MANUFACTURING TO YOUR BUSINESS

Most businesses are understandably nervous about revolutionary changes to existing practices, including manufacturing. But the rise of additive manufacturing is unstoppable, and those businesses that adopt it will enjoy increasing competitive advantages. Further, by its nature additive manufacturing reduces barriers to entry so many established industries and businesses will see a new breed of competitors emerge to challenge the status quo.

There are some iterative steps that you can take to introduce additive manufacturing into your business to start seeing the benefits and to prepare your business for a wider adoption of this important aspect of the future of making things.

### 1 RAPID PROTOTYPING

Reduce the high cost of traditional prototypes and invest in internal capability to produce prototypes (rather than outsource to third parties) to increase expertise.

### 2 ENGINEERING CAPABILITIES

Creativity is unshackled by the capabilities of additive manufacturing and engineers will need access to better tools and technologies such as generative design to take full advantage.

### 3 PRODUCTION APPLICATION

Increasing the value from the introduction of additive manufacturing comes with its use in production. Manufacturers may choose to start with low volume products and/or spare parts production.

### 4 FINDING SCALE

The ultimate goal is to integrate additive manufacturing into core production operations to achieve true scale and optimal efficiency. To get here, a manufacturer will need integrated systems from design through to production to maximize benefits.

Source: CIMdata eBook: Additive Manufacturing, Making it real

## TAKE ACTION NOW TO TRANSFORM YOUR BUSINESS WITH ADDITIVE MANUFACTURING

Make sure you are a disruptor and not one of the businesses that will be disrupted by additive manufacturing. Companies large and small can take the following steps to get prepared:

- Learn how the capabilities and economics of additive manufacturing differ from traditional manufacturing
- Consider the competitive opportunities and threats created by the growth of additive manufacturing
- Understand the “upside-down” economics of additive manufacturing
- Develop a strategic plan to take the next step in implementing additive manufacturing
- Identify knowledge gaps and engage with experts to close those gaps
- Develop and reinforce new organizational capabilities

Source: CIMdata eBook: Additive Manufacturing, Making it real

Learn more about **additive manufacturing** to help you lead your business into the future of making things. Visit [www.autodesk.com/engineeringleadership](http://www.autodesk.com/engineeringleadership)