PROTIQ
A Phoenix Contact Company



TRAINING AND WORKSHOPS

UNDERSTANDING 3D PRINTING TOGETHER

We show you and your team how additive manufacturing works – so that together we can take your parts further.

since 2010
experience in additive manufacturing

Hands-on
from our own production in plastic and metal

tailored
to your team and your parts

on site
at your premises or with us in Blomberg

SHARING KNOWLEDGE

Good 3D-printed parts are not created at the machine – they start with the design. That is why we share our know-how with you and your colleagues.

We have been manufacturing additively since 2010 – in plastic and metal, from prototypes to series production. We pass this knowledge on: we show you how the processes work, what they can do and what matters in design. This enables you to design your prototypes ideally for 3D printing, adapt products in a targeted way and discover new potential together with us.



WHAT YOU GAIN

Parts that suit the process

You design from the outset so that 3D printing can play to its strengths.

Identifying potential

You can see for yourself which parts and projects are suitable for additive manufacturing.

A common language

Coordination becomes easier when everyone involved knows the processes.

Fewer detours

Knowing the limits of the processes means fewer iterations on the way to the right part.

HOW WE WORK TOGETHER

Every training starts with a conversation. We tailor content, format and procedure entirely to your company, your team and your applications.

1

Getting to know you and listening

We talk about your products, projects and goals – and about where you stand with additive manufacturing.

2

Selecting parts and projects

Together we look at which of your parts and projects are suitable for 3D printing.

3

Understanding additive manufacturing

We show you how the processes work, which materials are available and what matters in design.

4

Designing and adapting

With this knowledge, you design your prototypes ideally for 3D printing and adapt products in a targeted way.

5

Discovering potential together

We manufacture your parts, develop ideas further with you and find new applications together.

WHAT WE SHOW YOU

We put the topics together to suit your team and your parts – for newcomers as well as experienced users who want to delve deeper into manufacturing processes and material properties.

Fundamentals of additive manufacturing

History, terminology and industrial use of the most important 3D printing processes.

Processes and materials

Laser sintering, laser melting and stereolithography – with their materials and limits.

Design for 3D printing

Design guidelines, function integration and the right preparation of your 3D data.

Part selection and redesign

Which parts from your portfolio benefit – and how to adapt them for 3D printing.

Computer-aided optimization

Topology optimization, lightweight design and simulation for higher-performance parts and tools.

Quality management

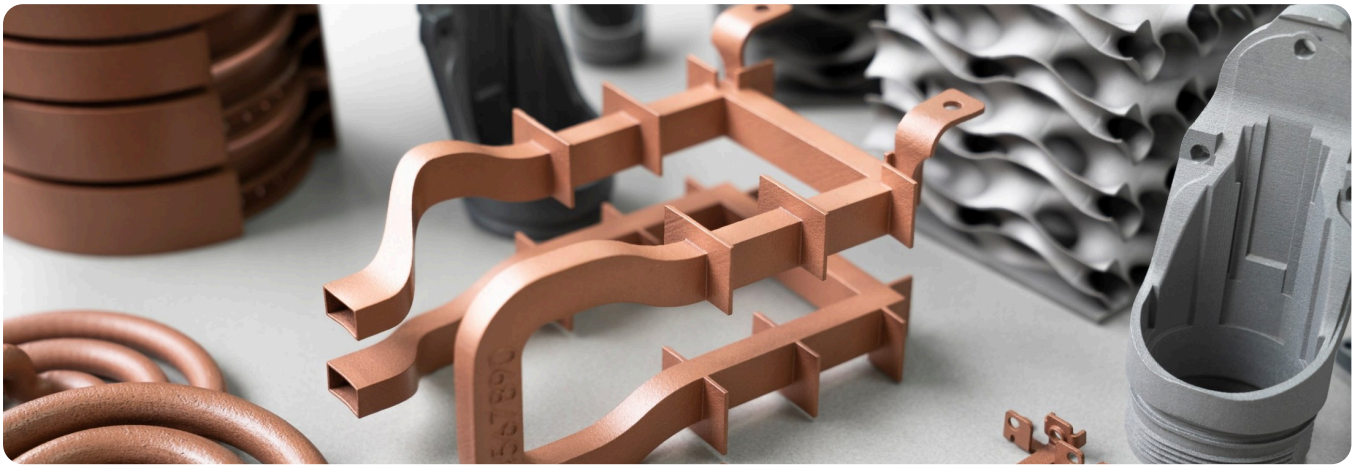
How quality is assured and documented in additive manufacturing.

Hands-on: the process chain

From part preparation and the build job to finishing – using concrete examples.

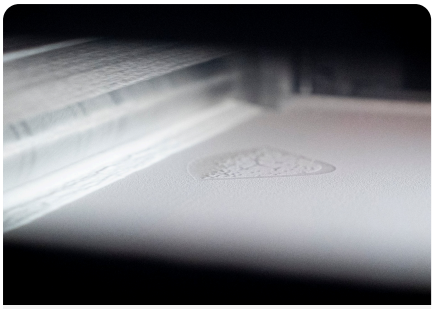
Your application

We work on your own parts and questions.



UNDERSTANDING THE PROCESSES

Not all 3D printing is the same. Each process has its own strengths, materials and rules. We explain the processes we use in our own production every day – straight from practice.



Selective laser sintering

Robust plastic parts with great design freedom.

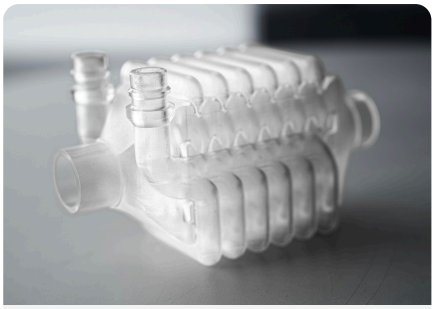
- Process principle and process chain
- Plastics and their properties
- Data preparation and build job layout
- Build process and post-processing



Selective laser melting

Dense, resilient metal parts – including internal channels.

- Process principle and process chain
- Metals, material and part properties
- Data preparation and build job layout
- Build process and process control



Stereolithography

Highly detailed prototypes and master models made of resins.

- Process overview
- Resins and their properties
- Machine technology
- Vacuum casting and printed injection mold inserts



And beyond

On request, we provide an overview of further processes and current developments – including what suppliers on the PROTIQ Marketplace manufacture.

DESIGN AND OPTIMIZATION

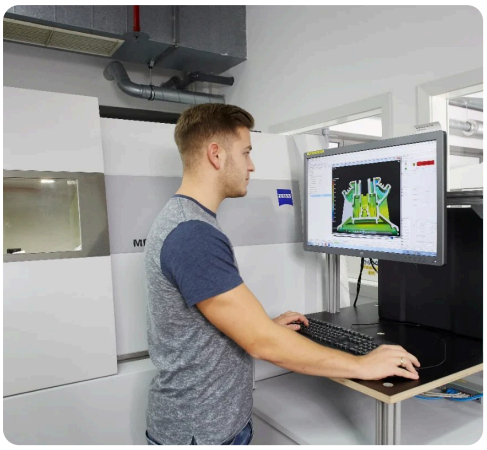
In 3D printing, design follows function, not the tool. We show you how to use this freedom – and what to keep in mind.



Part selection and redesign

Together with you, we analyze parts from your own production.

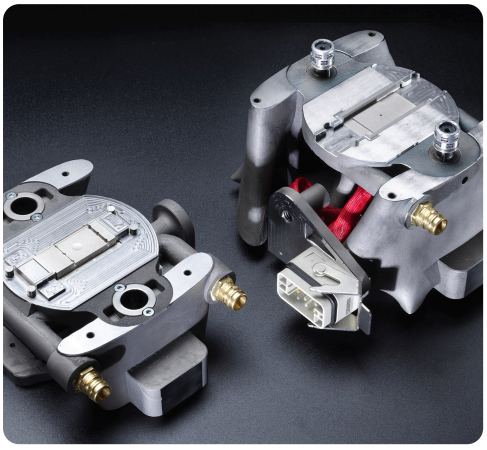
- Potential analysis of your product portfolio
- Optimization potential for 3D printing
- Cost-effectiveness analysis



Design for 3D printing

From design for manufacturing to design for function.

- Design guidelines of the processes
- Function integration
- Data preparation and CAD software



Computer-aided optimization

Simulation and optimization make parts and tools more powerful.

- Topology optimization and lightweight design
- Design verification
- Magnetic field optimization of inductors

HANDS-ON PRACTICE

You learn the most from real parts. That is why we show additive manufacturing as practically as possible – with exhibits, at the machine and with your own parts.



Hands-on: the process chain

Step by step, you experience how a part is created in 3D printing.

- Part preparation and build job creation
- Machine operation
- Post-processing and finishing



Quality in additive manufacturing

As an ISO 9001 certified company, we share our own experience.

- Requirements for quality management systems
- Definition of measuring points
- Quality monitoring and error prevention

WHAT PARTICIPANTS SAY

"The great potential of 3D printing technology was demonstrated in an extremely understandable way. We also gained instructive insights into the various manufacturing technologies and machines."

Marcel Töws, Test and Process Engineer, Hesse GmbH

"Our training at PROTIQ was very instructive and gave us an extremely detailed insight into the technology, the areas of application and the enormous potential of additive manufacturing."

Torge Franke, Head of Product Management, SARTORIUS Werkzeuge GmbH & Co. KG

LET'S TALK

Tell us about your parts, projects and team. We will put together the right program for you.

Who our training is for

Design and development | Product management | Purchasing | Production and quality | Newcomers | Experienced users



At your site or ours

We come to your company – or you visit us in Blomberg and take a look at our production.

Request training

Write to us at **service@protiq.com** with the subject "Training" or call us: **+49 5235 34 38 00**.

This brochure and more to download

Information material in the **download area**, technical articles at **protiq.com/downloads**.

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