PROTIQ
A Phoenix Contact Company



SERIES PRODUCTION AND PROJECT MANAGEMENT

SERIES AND PROJECTS

From small batches to complex projects –
additively manufactured, tested and from a single source

from 1 part
cost-effective, without moulds

ISO 9001
certified quality management

Test lab
on site, with documentation on request

1 partner
for production, procurement and project

ADDITIVE SERIES PRODUCTION

For a long time, 3D printing stood mainly for prototypes. Today we also manufacture series parts additively – in plastic and metal, in tested quality.

Without a mould, there are no tooling costs and no lead times for toolmaking. Parts are produced directly from your 3D data – cost-effective from a single part and available for reorder at any time.



Tested quality
Certified processes and ISO 9001 quality management

No mould required
No tooling investment, no lead time for toolmaking

From batch size 1
Cost-effective from single parts to ongoing series

WHEN ADDITIVE SERIES PAY OFF

- **Small and medium series**
  Quantities for which a dedicated mould does not pay off.
- **Variants and customised parts**
  Each variant is just another 3D file – without an additional tool.
- **Complex parts with integrated functions**
  Several parts become one, including internal channels and structures.
- **Ramp-up and bridging**
  Supply parts while the series tool is still being made.
- **Low-runners and spare parts**
  Produce on demand instead of keeping parts in stock.

ADDITIVE OR CONVENTIONAL?

Additive manufacturing and injection moulding or die casting complement each other. Which route is more economical depends mainly on quantity, complexity and the need for changes.

	Injection moulding and die casting	Additive manufacturing
Tooling	Mould required	Not required – parts are made directly from the 3D file
Start of production	Only after toolmaking	Directly after order receipt
Economical for	Large quantities	Single parts, small and medium series, variants
Design changes	Tool must be modified	At any time in the 3D model, even between two call-offs
Geometry	Demouldability dictates the shape	Almost unrestricted, including internal structures
Unit price	Drops significantly at high volumes	Remains almost constant across quantities

WHICH ROUTE FOR WHICH QUANTITY?

1 TO 50 PARTS

Directly in 3D printing

Manufacture parts directly additively – without tooling, even with high complexity.

50 TO 2,000 PARTS

Printed tool inserts

Injection moulding with additively manufactured inserts – quickly available and easy to modify.

FROM 2,000 PARTS

Conventional tool

Optionally with conformally cooled 3D-printed inserts for shorter cycle times.

Guide values for orientation: the limits depend on part, material and complexity. The more complex the part, the longer 3D printing pays off.

For large quantities of simple parts, injection moulding remains the more economical solution. You can find it on the PROTIQ Marketplace, too.

BENEFITS FOR YOUR SERIES

From batch size 1
Cost-effective from a single part, with no minimum quantities due to tooling costs.

Flexible changes
Improvements go straight into the 3D model, even between two call-offs.

Digital inventory
Your 3D data is the warehouse: reorder at any time, without stock.

Design freedom
Integrate functions, combine assemblies, save weight.

Resource-efficient
Only the material the part really needs is used.

Reproducible quality
Defined processes and tests ensure consistent parts.

TYPICAL APPLICATIONS



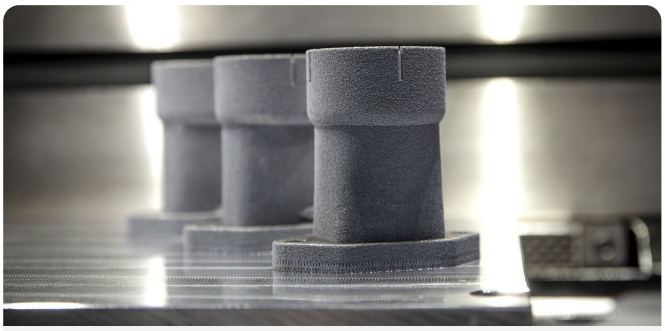
Pre-series and pilot runs
Test and approve parts in series quality before a tool is built.



Variants and special parts
Customer-specific versions without building a tool for each one.



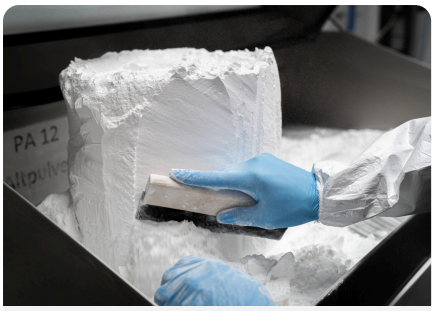
Functional parts
Gears, brackets and housings – robust and in consistent quality.



Spare parts on demand
Reproduce them even years later – directly from the stored 3D data.

PROCESSES AND MATERIALS

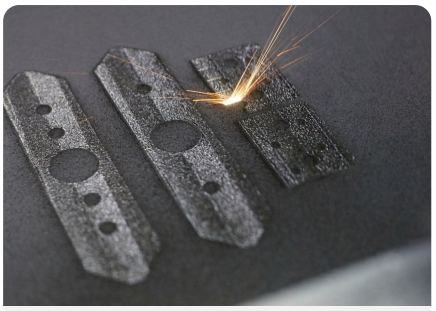
In Blomberg we manufacture series parts in plastic and metal. Which process fits depends on the application, quantity and requirements – and we advise you on it.



Laser sintering (SLS)

Robust plastic parts without support structures. Many parts per build volume make the process ideal for series.

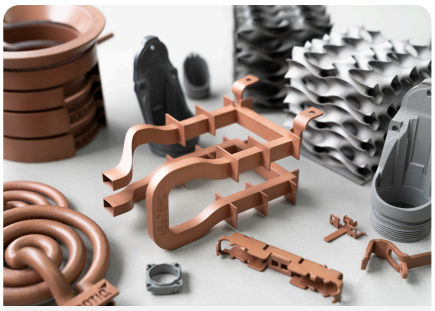
PA 12 · PA 11 · PA 11 ESD



Laser melting (SLM)

Dense, robust metal parts, including internal channels and lattice structures.

Aluminium · Steel



Special materials

Our speciality: materials that only few process additively – Zamak 5 without a die-casting tool, copper with high conductivity, and brass.

Zamak 5 · Copper · Brass

Post-processing as required

From the “as built” part to the ready-to-install component: we define the post-processing together with you, for example:

Blasting · Vibratory finishing · Dyeing · Threads · Machining · Assembly

over 40 providers

over 160 materials

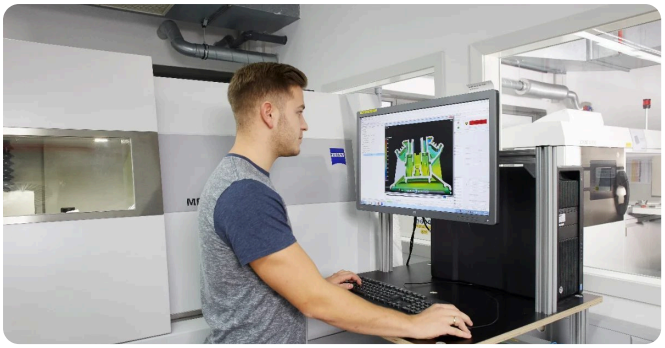
over 12 processes

More choice via the PROTIQ Marketplace

You will find further processes and materials from the providers on the PROTIQ Marketplace – PROTIQ is one of them. You compare the offers and choose who manufactures.

QUALITY YOU CAN MEASURE

For series parts, we define quality assurance together with you – before series start and throughout production. The tests are based on the requirements and the application of your part.





TEST METHODS

Part density	Archimedes' principle, based on DIN EN ISO 3369
Hardness	Vickers to DIN EN ISO 6507, Shore to DIN EN ISO 868
Tensile strength	Tensile test to DIN EN ISO 6892 (metal) and DIN EN ISO 527 (plastic)
Surface roughness	To DIN EN ISO 4287
Dimensional accuracy	Computed tomography and fringe projection
Microstructure	Micrographs

- Testing by trained staff in a qualified on-site lab
- Test specimens are built in the same build job as your parts
- Documentation on request, e.g. as inspection certificate 3.1



"What matters is aligning test methods such as density, hardness or roughness measurements specifically with the part requirements and the field of application. Especially for functional parts and series applications, standardised tests and clean documentation create the necessary comparability."

Artjom Dsuban, PROTIQ GmbH

YOUR PATH TO SERIES PRODUCTION

Every series is different. That is why we start by clarifying together what your part needs to do – and use this to prepare a quote that matches your requirements exactly.

1

Define requirements

Application, quantity, material and part properties: with our experts, you plan your series correctly from the start.

2

Specify tolerances and post-processing

We agree which tolerances apply and how the part is post-processed.

3

Select test methods

You decide which tests take place before series start and during production.

4

Individual quote

On this basis, you receive a quote tailored to your series.

5

Produce the series

We manufacture in defined quality – on request also in recurring call-offs.



TWO ROUTES TO A SERIES QUOTE

Whether you order directly or prefer to discuss your requirements with us: you will find both routes on the PROTIQ Marketplace.

YOU KNOW YOUR REQUIREMENTS

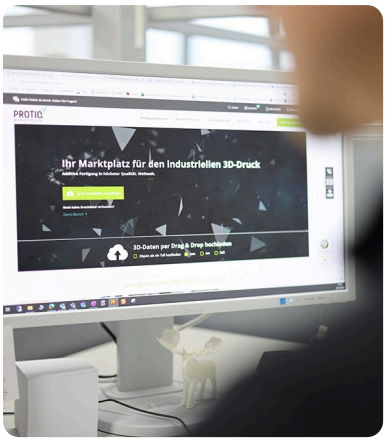
Order directly

Upload 3D data, choose process, material and quantity, compare offers and order.

YOU WANT TO CLARIFY DETAILS

Series and project inquiry

You describe your project, we review the inquiry, clarify open points with you and prepare an individual quote.



See volume pricing instantly

Upload your 3D data and compare prices for different quantities and providers.

Binding quote as PDF

Generate a binding quote directly for your internal approval.

Save and share the cart

Put parts together and pass the cart on to colleagues or purchasing.

Reorder at any time

Your 3D data is all it takes: parts can be reordered at any time.

PROTIQ Purchase: one supplier for everything

You order from different providers but have only one supplier: PROTIQ. Ideal when approving new suppliers is laborious or purchasing wants to bundle orders.

1 **Configure part**

2 **Select PROTIQ Purchase**

3 **Production by the provider**

4 **Invoice from PROTIQ**

Selectable per order, no subscription. PROTIQ is your contact, including for complaints – and parts from PROTIQ and other providers come in one order with one invoice.

COMPLEX PROJECTS FROM A SINGLE SOURCE

Some projects need more than a manufactured part: several processes, purchased parts, assembly and testing. Our project management brings it all together – you have one contact instead of many suppliers.



Personal support

A dedicated contact accompanies your project from inquiry to delivery.

Procurement

We organise production – at PROTIQ or with suitable providers.

Purchased parts

We also source standard parts and other components for you.

Assembly

On request, we assemble modules ready for installation.

Quality assurance

Tests and documentation according to your requirements.

Scheduling and logistics

We keep an eye on deadlines and deliver when and where you need it.

HOW WE SUPPORT YOUR PROJECT

1. **Inquiry and initial meeting**
2. **Concept and quote**
3. **Procurement and production**
4. **Assembly and testing**
5. **Delivery and support**



Your benefits

- **One contact** for all questions about your project
- **One order, one invoice** instead of many individual suppliers
- **Less coordination effort** for design, purchasing and logistics
- **Transparency** on status, costs and deadlines
- **Flexible** you decide which tasks we take on

YOUR SERIES WITH PROTIQ

Tell us about your part or project. Together we will find the right route to series production.

Industrial DNA

As a Phoenix Contact company, we know the demands of series production.

Production and platform

Our own production in Blomberg and the PROTIQ Marketplace from a single source.

Materials expertise

Experience with special materials such as Zamak 5, copper and brass.

Security

ISO 9001, servers in Germany, data protection under the GDPR.



Request a series or project

Use the series and project inquiry on the PROTIQ Marketplace, write to us at **service@protiq.com** or call us: **+49 5235 34 38 00**.

This brochure and more to download

Information material in the **download area**, technical articles on quality assurance, Zamak 5 and the PROTIQ Marketplace at **protiq.com/downloads**.

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