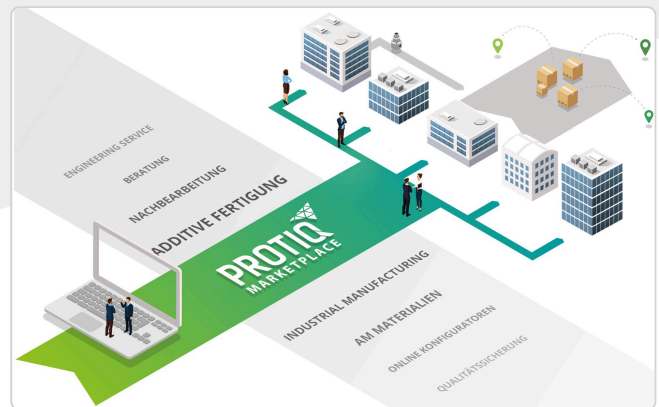


Choosing the Best Option

(A technical article from 2024, author: Max Wissing, Technology Manager Additive Manufacturing, ProtIQ GmbH, Blomberg)

There are now several online platforms that offer the additive manufacturing of components. One of the best known is the ProtIQ Marketplace, which stands out for its transparency and additional features – including a wide range of manufacturing processes and materials – to provide users with the best possible offer.



Additive manufacturing technology, also known as 3D printing, is already being integrated into production processes in numerous industries. Thanks to developments in recent years, the process and material portfolio of 3D printing opens up many options, so that in addition to classic prototype manufacturing, direct series production is also possible. Industrial 3D printing processes can be used, for example, to additively manufacture high-strength metal components, series products made of plastic, and components made of high-purity technical ceramics or quartz glass. What all 3D printing processes have in common is that the components are built up layer by layer without the need for a mold. This fundamentally distinguishes the technology from classic industrial manufacturing processes such as CNC milling and turning, forming, or casting. The layer-by-layer build-up allows components to be produced directly from 3D CAD data and also scores with a high degree of design freedom in the production of complex geometries.

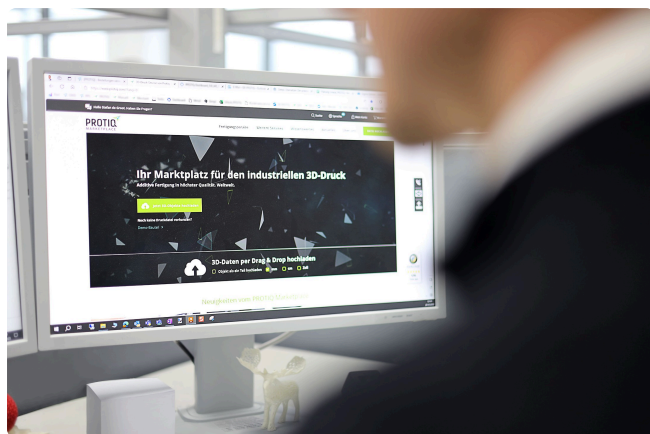
Significant Differences Between 3D Printing Processes

For the user, additive manufacturing fits seamlessly into the existing processing portfolio and complements it with its unique properties and advantages. At the same time, the various 3D printing processes differ considerably. In terms of their characteristics and the materials

▼ From the fully digitalized process chain through to ordering, users can take full advantage of the benefits of fast and customized additive manufacturing. As a result, only a few days pass from uploading the 3D data to delivery of the components.

they can process, the processes are distinguished from one another by the type of material build-up and the material used. Furthermore, the cost-effectiveness of the respective production process plays a major role. Of course, additive manufacturing must always be viewed and evaluated in the context of classic manufacturing processes. Only if an individual application is economically more advantageous with additive manufacturing processes than with other production methods will this option be chosen.

However, the possibilities of 3D printing technology, the advantages of the respective processes, and the limitations to be taken into account often differ from one another. At the same time, additive manufacturing continues to evolve dynamically, opening up new options and potential every year. Because of the high pace of innovation, it is becoming increasingly difficult for users to keep track and to assess and fully exploit new potential. This is where online platforms such as the ProtIQ Marketplace offer support. They provide users and production service providers with an interface in the field of industrial 3D printing and bring the players together in one place.



▼ In addition to a broad selection of different additive and classic manufacturing processes, the ProtIQ Marketplace offers users additional advantages. As a result, the online platform provides expertise, particularly for industrial customers.

Valuable Information on New Developments

The ProtIQ Marketplace bundles the services of more than 40 selected industrial manufacturing service providers for 3D printing and classic manufacturing processes. ProtIQ GmbH itself also acts as a service provider on the platform, with its extensive production capacities and in-depth process know-how. This gives users access to a wide range of additive manufacturing technologies that a single company could not cover on its own. The marketplace provides valuable information on optimal material and process selection and makes ongoing innovations accessible through the broad range of services offered by the 3D printing service providers.

The ProtIQ Marketplace offering includes both established, widely used industrial manufacturing processes – such as selective laser sintering (SLS), selective laser melting (SLM), and stereolithography (SLA) – and innovative new developments. The new processes and materials offer numerous advantages, but initially tend to serve niche markets and are not yet widely known. For example, the Micro-SLM process and Lithography Metal Manufacturing (LMM) enable the production of highly detailed, delicate stainless steel and precious metal components. Innovative material developments in metal laser melting make it possible to process pure copper or the series material Zamak 5 (zinc).

Innovations in the resin-based stereolithography process are applied in Hot Lithography and Carbon Digital Light Synthesis (CLIP). Resin-based processes have so far been known for high precision but brittle material properties. These new developments now also enable the production of tough and resilient compo-

nents, optionally with ESD-compliant or flame-retardant properties, in injection-molding quality.

Interactive Material Database with Intelligent Filter and Sorting Functions

To determine the right material and the right process for their application, users can access an interactive material database on the ProtIQ Marketplace. This tool supports decision-making with intelligent filter and sorting functions and also provides detailed information on the respective processes and materials. Immediately after uploading their 3D component data, users receive automated pricing information so that they can compare the various processes, materials, and manufacturing service providers. An instant, quantity-dependent comparison of the production processes helps with the final order placement. In addition, the customer has the option of posting more complex projects, series production runs, or inquiries for larger quantities on the marketplace as part of a project tender. After a self-selected deadline has expired, the customer can then choose from the best offers submitted and place the order.

The online marketplace is specifically geared to the quality requirements and needs of industrial users. Unlike similar platforms, the focus is particularly on transparency and data security. The component data uploaded to www.protiq.com is stored on the company's own servers in Germany, and users retain full control over which service provider is awarded the order and given access to the data.

Realistic Visualization of Uploaded Components

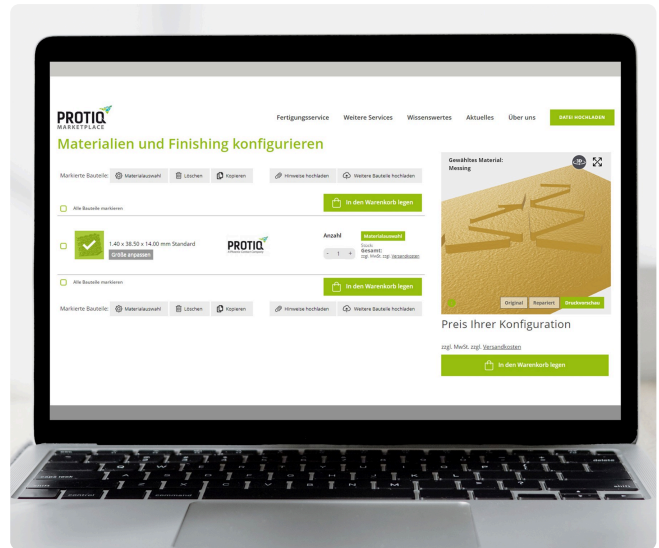
In addition to the fully digitalized process chain for quotation and ordering, the online platform offers users further advantages and support. Recurring components such as copper coils, gears, or ICS housing covers, for example, can be created by users themselves in interactive product configurators and adapted to individual requirements. A newly developed component visualization sets the ProtIQ Marketplace apart from other online service providers. With this feature, the uploaded 3D components are displayed interactively and realistically. This allows users to get an impression in real time of what their products will look like with different materials and manufacturing processes.

Ordering directly via the online platform takes only a few minutes. To meet the requirements of large industrial users with established purchasing processes, ProtIQ



- ▼ Specially developed 3D configurators allow selected components to be designed directly online using a series of individual parameters and sliders. The 3D components created can be saved as a project in the user account or ordered directly online.

also offers the option of a custom-programmed API interface or ordering via proven e-procurement providers such as Meplato or SAP-Ariba. Furthermore, the company stands out with expert personal consulting, which means that special requirements and framework conditions for the potential additive manufacturing of the respective components can also be clarified.



- ▼ An innovative component visualization displays the component texture and color for the selected 3D printing process. This makes it possible to get an impression of the additively manufactured appearance even before ordering.

Further information:

www.protiq.com