

# 3D printing supports a clean energy supply

How can additively manufactured components support decarbonization and secure the energy supply of our society at the same time? As part of the initiative "Industrialization of Digital Engineering and Additive manufacturing" – IDEA for short – Siemens Energy and TRUMPF, as one of 15 project partners, have been jointly advancing the industrialization of additive manufacturing for several years. Now Siemens Energy has successfully integrated the TruPrint 5000 in an advanced additive process chain. The 3D printer's 500 °C preheating option enables the company to efficiently manufacture components for climate-friendly gas turbines from high-temperature alloys.



## Siemens Energy

[www.siemens-energy.com](http://www.siemens-energy.com)

Siemens Energy is one of the world's leading companies in energy technology. The company works with its customers and partners on the energy systems of the future and thus contributes to the transition to a more sustainable world. With its portfolio of products, solutions and services, Siemens Energy covers nearly everything along the energy value chain – from power generation and transmission to storage. The portfolio includes conventional and renewable energy technology, such as gas and steam turbines, hydrogen-powered hybrid plants, generators and transformers.

*Siemens Energy ist eine durch die Siemens AG lizenzierte Marke.*

### INDUSTRY

Energy  
technology

### NUMBER OF EMPLOYEES

More than  
90,000

### LOCATION

Berlin (Germany)

### TRUMPF PRODUCTS

■ TruPrint 5000 with 500 °C preheating  
option

### APPLICATIONS

■ Additive manufacturing

## Challenges

Supplying society with affordable energy in a reliable and environmentally friendly way: that is Siemens Energy's challenge and goal. The company produces hot gas components for gas turbines from high-temperature alloys. As project partners of IDEA (Industrialization of Digital Engineering and Additive manufacturing), Siemens Energy and TRUMPF are advancing the digital process chain of additive manufacturing. In terms of decarbonization, additive manufacturing offers new opportunities for gas turbine production.



"500 °C preheating ensures that we can produce our components cost-effectively with the required quality."

**JULIUS SCHURB**

PROJECT LEAD IDEA AT SIEMENS ENERGY

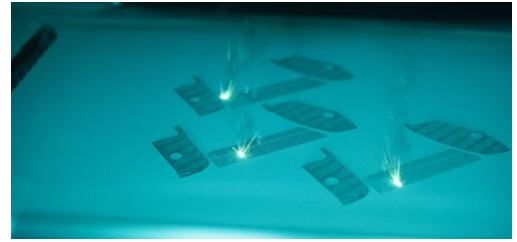
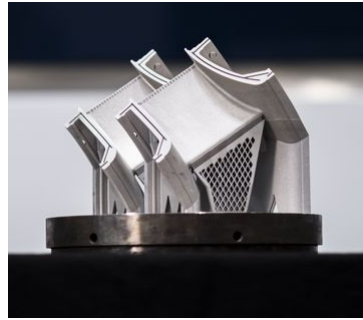


## Solutions

Siemens Energy uses additive manufacturing as supplemental technology to manufacture components and part constructions that are difficult to manufacture conventionally. The technology helps the company develop and bring products on the market more quickly. At the same time, the new manufacturing method helps push the boundaries of current product design. New component designs, for example, mean less fuel is needed to produce the same amount of energy – a key contribution to decarbonizing our planet. In addition, additive manufacturing optimizes cash flow, as additive parts can be manufactured on demand, thus helping to reduce inventory.

## Implementation

The TruPrint 5000 3D printer is a perfect fit for Siemens Energy's industry requirements. With the 500 °C preheating option, even the demanding high-temperature alloys used in the manufacture of gas turbines can be processed in a reproducible manner. The hot build cylinder with printed component is removed from the machine and placed in the inert cooling station; the machine simply continues working on the next job in the meantime. After cooling, the component is depowdered in the depowdering station; the remaining powder can then be sieved again under shielding gas. This decoupling of parts and material handling, based on the interchangeable cylinders, means that manufacturing is not only cost-effective and efficient, but also conserves resources at the same time. Siemens Energy and TRUMPF have shown how the TruPrint 5000 can be integrated in an industrial 3D printing process chain for high-temperature alloys – including digital data linking out of the office and back, performed by the machine.



## Forecast

After the project reaches completion, Siemens Energy and TRUMPF expect to present a fully integrated, digital additive production line that is scalable and can be easily transferred to other companies and industries. "We've reached the turning point where we're not just saying that 3D printing is for building prototypes. We will additively manufacture more and more conventional products – it will be the 'new normal'", said Julius Schurb, project leader of IDEA at Siemens Energy. A high machine runtime – made possible by TRUMPF's exchangeable cylinder principle – is the key to efficient additive production lines of the future.

## Find out more about our products



### TruPrint 5000

Maximize productivity when manufacturing 3D printed parts in series production! The TruPrint 5000 ensures this is an easy and reliable process. Thanks to features like the 500 °C preheating and the multilaser with three 500-watt lasers, you can easily produce top-quality components, even when working in demanding industrial applications.



[Zum Produkt](#)



### 500°C preheating option: Right first time

With the TruPrint 5000 and the 500 °C preheating option, you can print components made of Ti64, H11 or H13 in high quality and cost-efficiently – with no rejects or material waste.



[Zum Produkt](#)



### TruPrint monitoring

Are you interested in producing even more efficiently? Using TRUMPF's intelligent monitoring solutions, you can monitor and analyze the LMF process of the TruPrint machines with ease.



[Zum Produkt](#)

