

Case Study

Classic Cadillac Eldorado Control Box Cover



Legacy part production at
Rolf Lenk Werkzeug- und Maschinenbau GmbH

Current Situation

Classic machine experience leads to high-tech, modern solutions

Rolf Lenk Werkzeug- und Maschinenbau GmbH is a German machining shop with experience in traditional CNC machining processes. In 2013 they used this experience to expand into additive manufacturing with the purchase of their first selective laser melting machine to produce prototypes and parts in small series. One such small series was the control box cover for a 1967 model Cadillac Eldorado. The spare parts were requested because no blueprints exist for this legacy component. It would be prohibitively expensive to create tooling for this request, thus metal additive manufacturing provided the opportunity to bring the Cadillac back to life.



Fig. 1
Additive Manufacturing using SLM®280 and SLM®500 machines at Rolf Lenk

Innovations with Selective Laser Melting

Industry solutions and new business ideas through additive manufacturing

Lenk developed its own method specially for such cases. First, the damaged part is completely scanned using a 3D scanner. The recorded data are then transferred into a CAD drawing and converted into the original state using a remodeling process. The preparations required for the control box cover amounted to 21 hours. With the design file completed, the additive manufacturing process on the SLM® machine commenced. Using two parallel lasers for the reproduction of the 2.32kg part in ALSi10Mg, the SLM®280 required 42 hours. The final processing of the part required an additional 13 hours. In total, 75 hours were necessary to create the first spare part. The effort for the next identical components was further reduced to 55 hours.

Gregor Sodeikat, managing director at Rolf Lenk Werkzeug- und Maschinenbau GmbH, cannot imagine his company without the innovative process: "As a classic medium-sized company we are always

open to new technologies. Therefore, we were immediately enthusiastic when we got to know additive manufacturing as latest metalworking technology. The SLM® technology gives us the opportunity to address new customer segments, to optimize and develop new products. Now our company can meet many customer expectations; we are well-positioned, future-oriented and fit for the next generation."

This major breakthrough in the efficient production of legacy components is not relevant only to the classic car market. Many industry branches face similar problems, as they are no longer able to use proven machines in their fleets because spare parts are no longer available. This new solution approach gives rise to the hope to be able to manufacture required spare parts in 100% of the time.

3D-Printing Success Story

MANUFACTURING OPTIMIZATION

reducing complete manufacturing time to 55 hours



EFFICIENT PRODUCTION OF LEGACY PARTS

without drawings or expensive tooling

Part Data

Designation:	Cover for the control box of a Cadillac Eldorado
Industry:	Automotive Industry / Tooling
Material:	AlSi10Mg
Layer Thickness:	50 µm
Build Time:	1d 18h (full load, 1 piece)
Machine:	SLM®280 Twin

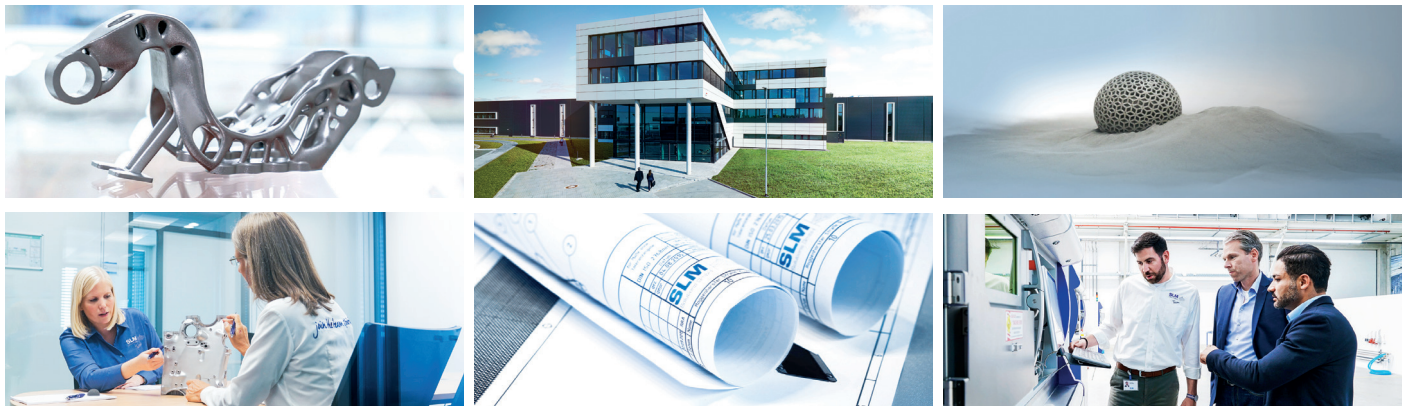


SLM®280

SLM Solutions - Technology Pioneers, Innovation Leaders

SLM Solutions helped invent the laser powder bed fusion process, was the first to offer multi-laser systems and all selective laser melting machines offer patented quality, safety and productivity features. Taking a vested interest in customers' long-term success in metal additive manufacturing, SLM Solutions' experts work with customers at each stage of the process to provide support and knowledge-sharing that elevate use of the technology and ensure customers' return on investment is maximized. Optimal paired with SLM Solutions' software, powder and quality assurance products, the SLM® technology opens new geometric freedoms that can enable lightweight construction, integrate internal cooling channels or decrease time to market.

A publicly traded company, SLM Solutions Group AG focuses exclusively on metal additive manufacturing and is headquartered in Germany with offices in China, France, India, Italy, Russia, Singapore and the United States and a network of global sales partners.



Rolf Lenk Werkzeug- und Maschinenbau GmbH

Rolf Lenk Werkzeug- und Maschinenbau GmbH is a family-run manufacturer typical of the German "Mittelstand" with 25 employees and three apprentices. The management attaches great importance to the in-house training of the junior staff.

The service manufacturer from Ahrensburg near Hamburg, Germany, is specialized in the manufacturing of tools, machines and components for small and medium enterprises from various industries. Due to the high quality and precision Lenk has achieved an excellent reputation and has become a well-known supplier for many high-grade industries. In most cases, products are manufactured to customer specifications. If required, the company also supports its clients with construction and technical drawings.

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