



CUSTOMER STORY

EEM AG

SLS creates a new potential for design
in medical technology



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«We quickly recognised the potential of SLS technology while developing our products: Rapid production of prototypes and nearly unlimited shaping of components.»



Relaxation in an inclined position: Whether made from walnut for use at home or with a smooth surface for medically-certified applications, the grow chair is available in three versions: grow private, grow medical and grow office.



The spinal discs between each vertebra refill with fluid during treatment on the grow chair.

Laser sintering technology enables medical technology designers to print plastic objects for feasibility studies within a very short time. The functional prototypes largely have the same properties as injection-moulded parts. EEM AG goes one step further: It manages a balancing act between the production of prototypes and small series.

„The spine is the key to health“ – Cyrill Aemisegger, responsible for development, technology and production at EEM AG, reminds us of this 2000-year old quote by Hippocrates: „That’s where we start.“ The young company manufactures various health-promoting products under the ‘grow concept’ brand that enhance well-being and performance at home, in therapy or at work. In addition to a sound system with soothing music and relaxing, scented aromas, EEM’s flagship is its developed and patented special chair, which – using an innovative process – relaxes the back within 10 to 20 minutes.

Special chairs for extension therapy

It’s evident that this is like selling water in the desert. Back pain is one of the most important causes of inability to work. In Germany, for example, nearly one in three adults has back complaints often or constantly. In total, these conditions are responsible for around a quarter of all sick leaves. However, the number of unreported cases is high, and other ailments can also be caused by an unhealthy posture. These may include eye complaints, arthritis, foot pain or sleeping disorders. One remedy is the so-called extension therapy, which takes place on specifically developed and automatically adjustable relief chairs. Cyrill Aemisegger explains: „Instead of taking painkillers, the grow chairs tackle the health problem at its roots.“

Daily strain causes our spines to shrink by up to three centimetres in the course of the day, depending on physical activity. The treatment on the grow chair ensures that the spine expands again – with positive side effects that promote the body’s regeneration: The nerves are calmed down and stress is reduced. „It makes a short break feel like a brief holiday,“ says Cyrill Aemisegger. And the feedback he receives is extremely positive: Several hundred grow chairs have already proven themselves in use.



Cyrill Aemisegger: „Thanks to SLS technology, we promptly achieve physical results and can thus accelerate our development processes.“



Designed as intended, visually and haptically flawless: The 3D-printed holder for the remote control attached to the grow chair.



The quick release system of the neck support demonstrates the essence of laser sintering: The design of the two moveable parts printed inside each other would not be possible with either a conventional manufacturing system or any other affordable 3D printing process.



Design and functions of the grow chair were influenced by the SLS technology. Cyrill Aemisegger: „Since using the Sintratec S1, we have been designing in a much more function-oriented way“.

More than 20 printed parts per chair

In order to be able to produce components with any geometry as directly as possible, EEM has been using selective laser sintering (SLS) technology since the development of the three grow chair models began. A total of more than 20 functional objects per relief chair is now produced using the 3D printing process. In the models produced to date, the 3D-printed components do not serve as placeholders for injection-moulded parts for the future mass production, but are fully functional. They have largely the same mechanical and visual properties. In addition to 16 mobile protective covers, the electronic protective socket, the holder for the remote control and the clever quick-release system for the exchangeable headrest are laser-sintered.

FFF and SLA did not meet the requirements

When Cyrill Aemisegger, a trained polymechanic, studied the various 3D printing techniques in more detail, he noticed that he had high demands. For him, FFF (Fused Filament Fabrication) technology was out of the question due to the support structures. „The post-processing involved would have been too costly for me,“ explains the development manager. Even the SLA process (stereolithography) did not meet his requirements. This was especially the case because parts printed in this way would not be mechanically stable enough and would have to be reworked at great expense. And because a high-end SLS system is simply too expensive for a small business like EEM, he quickly came across the affordable Sintratec S1. „Thanks to SLS technology, we achieve immediate results and can thus accelerate our development processes,“ says the technology manager.

Exemplary essence of SLS

Selective laser sintering offers designers and engineers fascinating „process-specific“ possibilities that allow for completely new designs. An example of this is the quick-release system of the headrest, which impresses with its small but subtle ingenuity: The design of the two moveable parts printed inside each other would not be possible with either a conventional manufacturing system or any other affordable 3D printing system. The advantage of this design: With the mounted spring, the locking function is also elegantly provided. „Thanks to SLS technology, we can implement more complex designs and build them precisely for their function,“ continues Cyrill Aemisegger.

The use of the Sintratec S1 has had a significant impact on EEM's engineering. „Since using the Sintratec S1, we have been designing in a much more function-oriented way,“ sums up Cyrill Aemisegger. „The Sintratec S1 is used day and night in our production and it is hard to imagine working without it.“

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