

STÜKEN MEANS MORE COST-EFFECTIVENESS

Deep-drawn standard housings for dental implants by STÜKEN MEDICAL ensure savings in costs, time, production capacity, and carbon footprint.



Deep-drawn standard components for dental implant packaging

Millions of people worldwide rely on permanent dental implants. The screws used are made of titanium due to its excellent biocompatibility and are often packaged in titanium components to maintain cleanliness. The production of this packaging was previously labor-intensive: the metallic sleeve was manufactured as a machined part. Machining processes consume significant material and production capacity on expensive equipment. STÜKEN MEDICAL developed a more cost-effective solution using deep-drawn standard titanium packaging.

Challenge

A European pilot customer previously manufactured packaging for their dental implants in-house – as machined parts. Machining processes use significantly more material than deep drawing. This leads to substantial costs, especially with a material such as titanium. Additionally, the costly machines intended for producing the actual product were unnecessarily tied up in packaging production.

Another challenge: every person and tooth is unique, necessitating a wide range of implant lengths and diameters, and thus various packaging sizes.

The third challenge was the material itself. Dental implants are made from titanium due to its high biocompatibility. For regulatory reasons, our customer also chose titanium for the packaging to ensure no foreign material comes into contact with the implant. However, cold forming titanium is known to be difficult. Forming the material across multiple stages and creating complex geometries was economically unfeasible due to extreme tool stress.

Solution

Thanks to extensive research and development, STÜKEN MEDICAL has perfected a process that allows titanium to be deep-drawn through a large number of stages. High-precision titanium components with complex geometries can be efficiently, quickly, and sustainably produced at STÜKEN MEDICAL using deep-drawing technology.

To meet the requirement for different lengths and diameters, a design comprising two deep-drawn parts that are pressed together to form the titanium packaging was developed in collaboration with the customer. With this modular system, STÜKEN MEDICAL currently offers 13 different sizes for dental implant packaging.



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The ability to produce titanium components quickly, cost-effectively, and in large quantities was the foundation for the project's success. Close collaboration with the customer, including the involvement of local STÜKEN representatives, was another key factor. Converting machined parts to deep-drawn parts is a core competency of STÜKEN, as is solution-oriented thinking. The approach of creating a two-part assembly reflects our extensive experience in both semi- and fully-automated component assembly.

Additionally, STÜKEN MEDICAL's in-house finishing capabilities played an essential role. Validated cleaning and cleanroom packaging, passivation, and assembly services are just a few examples.

Your Benefits

A summary of the benefits:

- » Cost-effective solution for titanium implant packaging
- » Various dimensions available for different implant lengths and diameters
- » Optimal protection for the implant
- » Savings in costs, time, and production capacity
- » Option for assembly and packaging in Class 7 cleanroom – GMP Class C
- » Sustainable solution that reduces the carbon footprint by up to 70% compared to conventional products
- » Automated production certified to ISO 13485
- » Quality "Made in Germany"

From machined part to deep-drawn part: A change worth making

In this project, the cost-effectiveness of STÜKEN's deep-drawing technology proved successful. The ability to efficiently deep-draw titanium, the jointly developed modular solution, the option for cleanroom packaging, and ISO 13485-certified manufacturing convinced the customer to transition from machined parts to deep-drawn parts.

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