

Customised workpiece holders for cleaning procedures in medical engineering



The workpiece holders were designed to hold 24 stents in a vertical position. The rods are held in place by the double rounds in the lid. (Photo: Metallform)

Whether you are producing medical instruments or manufacturing implants – cleaning is an indispensable step. Customised workpiece holders not only enable safe and efficient cleaning processes, they also simplify handling and logistics, thereby contributing to greater productivity and cost-effectiveness.

It's not just the process technology, chemistry and length of treatment that determine

just how clean, dry and flawless implants and medical products come out of the cleaning process during and after manufacturing - the cleaning basket is also an important factor. In order to achieve a high level of cleanliness, product protection and cost-effectiveness, various medical engineering companies use individually designed workpiece holders from Metallform Wächter GmbH.

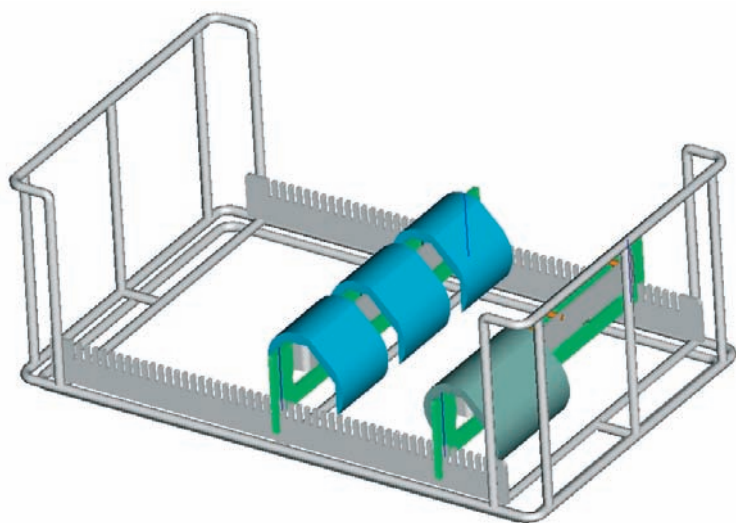
Cleaning and transporting stents

When developing workpiece holders for a stent manufacturer, work focused on minimising manual changeover procedures between the individual production steps, achieving high cleaning quality and preventing damage. In order to meet these requirements, the Bretten-based company designed workpiece holders that held the stents (which vary in length between 20 and 150 mm with a diameter of 5 to 20 mm) vertically on 2 mm thick metal rod holders. The number of rods per workpiece

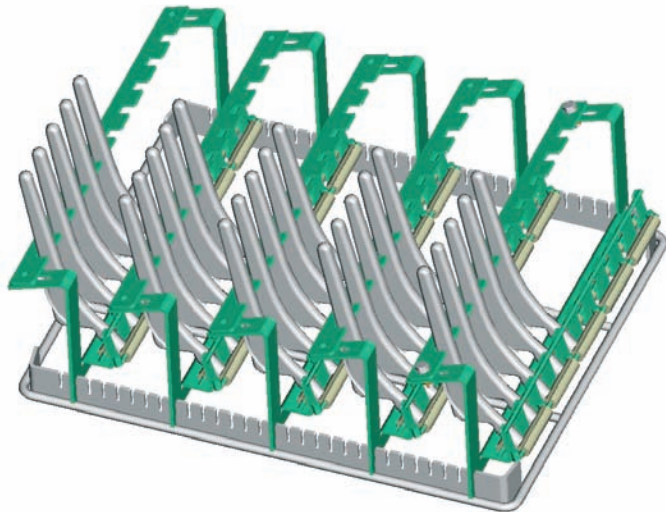
holder was tailored to the optimal batch size for the workflow. Two of these workpiece holders can be fitted into a frame for cleaning and transport. The stents are prevented from rising to the surface when the basket is lowered into the cleaning tank by a specially designed lid which fixes the top end of the rods between two round wires. To enable documentation to be attached to the workpiece holder for each batch, the lid is fitted with a document holder.

A workpiece holder system for surgical implants

Cleaning the various components of different surgical implants efficiently and safely, and transporting them through the manufacturing process requires a highly flexible workpiece holder system. And it was one of these very systems that the implant manufacturer requested from Metallform. What's more, it was to be tailored to the dimensions of the washer work chamber and minimise manual parts handling. In answer to this challenge, Metallform developed an outer frame with prongs and parts-specific inserts which can be fastened onto the prongs without the need for tools. In arranging the inserts to fit the specific workpieces, it was particularly important to the manufacturer that fast fitting was guaranteed and the parts were held securely. A further challenge faced by the Metallform design engineers was designing the contact points. They needed to be as small as possible and certain areas of the parts were not to be touched at all. This precise positioning ensures that each individual workpiece is cleaned reliably and that the cleaning fluid runs off just as it should. This offers two advantages.

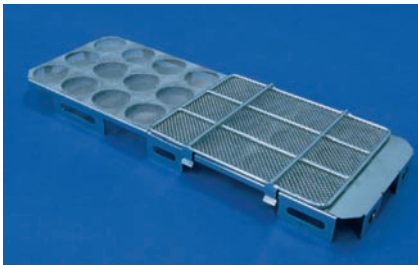


The flexible workpiece holder system for cleaning surgical implants consists of a base frame with laser-cut prongs, onto which part inserts designed for specific workpieces can be fixed. (Photo: Metallform)



The interchangeable part inserts have a plastic coating. This prevents damage to the implant parts caused by metal-on-metal contact. (Photo: Metallform)

Firstly, no marks are left on the parts, plus the drying time is shortened. In order to protect the sensitive components from damage caused by metal-on-metal contact, the interchangeable inserts have a HALAR coating. If the range of parts is expanded or changed, all that the workpiece holder system needs is new inserts which can be fitted into the existing base frames.



In terms of dimensions and design, the workpiece holder for the denture components was tailored exactly to the requirements of the robot handling system. (Photo: Metallform)

Opened out for handling, folded together for cleaning

In the factory of a high-quality denture manufacturer, the workpieces produced specifically for each customer are handled by a robotic system. In order to prevent the dentures from being mixed up, the individual components were picked by the robot from workpiece holders with different sized compartments for further processing.

When a new cleaning system was purchased as a result of altered requirements, the workpiece holders had to be redesigned. One essential specification was that they had to have the same dimensions and design as the old workpiece holders. This was no easy task, as the charge dimension of the cleaning system is considerably smaller due to the overall throughput. Metallform solved the problem



In order to comply with the charge dimension of the cleaning system, the workpiece holder has a hinge mechanism. A clip-on lid prevents the parts from falling out. (Photo: Metallform)

using a hinged workpiece holder system. During manufacturing, the different parts for a denture can be placed in one compartment. When all the compartments are occupied, a clip-on lid is fastened to the workpiece holder with lateral spring clips. The lid is designed so that even the smallest of parts cannot fall out. The workpiece holder can then be folded together for the cleaning process.

Fine mesh for filigree parts

Not all workpieces require specifically designed workpiece holders, even in medical engineering. Parts such as pins or screws can easily be cleaned in bulk material baskets. One manufacturer even commissioned Metallform to produce cleaning baskets for surgical needles. To prevent the filigree parts from slipping through the mesh, the baskets were made with an extremely fine wire fabric with a mesh width of just 0.18 mm.

The benefits of stainless steel rounds

At Metallform, workpiece holders and bulk material baskets are produced from stainless steel rounds with an electrolytic polished surface as standard. The high-quality, long-life material is suitable for all cleaning media and prevents return contamination from the basket to the component as well as contamination of the tanks due to corrosion and zinc separation. In the cleaning process, the use of rounds enables the cleaning medium to rinse the parts well from all angles. The material has excellent draining properties, thereby minimising dirt and media transportation, plus the round wire reduces the contact surfaces. But our workpiece holders not only offer uncompromising quality in terms of the design and material, but also in finishing.

All connections on the rounds are fully welded so there are no sharp edges, corners or wire ends that could cause injury.

Contact: Metallform Wächter GmbH

D-75004 Bretten
www.metallform.de