

BOLLHOFF*Joining together!*

High-speed tack-setting optimises collector installation

...the innovative hot water solution.

Success Story

The industry

Solar

The aim

Joining solar collector frames with one-sided accessibility

The solution

High-speed joining
Hand tool RIVTAC Portable

Benefits

- Joining without pre-punching in case of one-sided accessibility
- High-strength joining
- Reduction of weight by optimised frame design
- Good visual appearance of the joint points

As the result of a successful public private partnership, for the first time, RIVTAC® was realised in general industry at solar collector manufacturer CLAGE. Tack-setting is an innovative joining process: safe joints can be achieved even in case of one-sided accessibility – without pre-punching.

About our customer CLAGE

The production of energy-efficient instantaneous water heaters is the core business of CLAGE. As a specialist in economic production of hot water, the use of renewable energies is also a topic of great importance.

The CLAGE GmbH company in Lüneburg, Germany, was able to develop a high-class flat plate collector with a particularly high yield from the transformation of solar energy. At only 32.5 kg, this collector is a prime example of lightweight design. The innovative lightweight geometry combined with perfect material usage resulted in this trend-setting product development.

The point of departure

The aluminium collector frame is joined in the very last production step after complete assembly. High-strength joining of the reduced-weight frame is of decisive importance in this step. To avoid structural deficiencies, a one-part joining frame is absolutely necessary. This design results in a one-sided accessibility of the frame which was one of the main challenges for both development teams.

Other joining processes, such as self-pierce riveting, are therefore not an option.

Pre-punching required for direct screw-fitting would produce unfavourable chips and losses of strength.



"The use of RIVTAC® is of great advantage for the assembly and at the same time produces an 'indestructible' joint. Our requirements are thus perfectly fulfilled."

Jakob Meierle, Project Manager Solar
degreed engineer



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Picture 1
Positioning RIVTAC® Portable



Picture 2
Triggering the joining process



Picture 3
Evaluation of joint points

The solution with Böllhoff

The corner joints of the solar collectors are carried out with the new RIVTAC® technology. At high speed, the pneumatic RIVTAC® Portable hand tool sets a total of 8 joint points – 2 on each corner – at one-sided accessibility. Thanks to a large base and a low interfering contour of the work head, this tool variant allows optimal handling.

Using it is easy: The component is inserted into a special assembly table. Positioned at a special positioning device, the worker triggers the joining process. The tack hits the components at high speed and penetrates the aluminium frame profile. It joins the corners at high strength. From the outside, the visually appealing tack head remains visible.

The joining speed can be controlled via adjustable pressure. The resulting joined corners are perfectly compatible with the employed adhesive technology. The tacks fix the frame in position so that the sealing silicone is not stressed anymore. The long life of the collector represents one of the main product features of CLAGE collectors. When fastening collector corners of one-sided accessibility, RIVTAC® proves to be the perfect solution thanks to safe and reproducible, good joint quality. A high assembly efficiency is achieved in the production process: The collector frame is joined without pretreatment (pre-punching is not necessary).

"The RIVTAC® technology has essentially shortened the realisation of our project."

Jakob Meierle, Project Manager Solar, degreed engineer

About Böllhoff

Böllhoff – a family-run enterprise – an international group specialising in fastening and assembly technology – a strategic partner for innovative industries like e.g. the solar or automotive industry. As an international service provider with own production and development Böllhoff ist one of the leading suppliers of fastening, assembly and systems technology. Together with our customers, we always strive to be a step ahead and together with you we develop individual fastening solutions.

About RIVTAC®

"Innovative ability and customer orientation have become crucial competitive factors," knows Dr. Torsten Draht, project manager at the Research & Development department of the Böllhoff Group. The youngest offspring of the future-oriented product range is called RIVTAC® and is a type of high-speed tack-setting. In the innovative mechanical joining process, a nail-like auxiliary joining part is accelerated to high speed and driven into the not pre-punched joining parts. The pointed tack displaces the material without forming punchings.

Böllhoff Group

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