

PRESS RELEASE

ZELTWANGER optimizes the production of fin heat exchangers

New adaptive lubrication unit for fin forming machines

Tübingen, February 2025. **ZELTWANGER Thermomanagement GmbH & Co. KG, a company within the ZELTWANGER Group based in Tübingen, manufactures, among other things, fin forming machines for the production of heat exchanger fins. A key process in this production is the lubrication of the raw material to extend the lifespan of the forming rollers. To optimize this step, the Tübingen-based company has developed a retrofittable stand-alone lubrication unit.**

Fin heat exchangers are used in numerous technical systems, such as building heating systems, air conditioning units, and production plants across various industries. Additional key applications include vehicles, such as front radiators, air conditioning systems, and increasingly, cooling systems for drive batteries. Due to the high production volumes, the automotive sector remains a core market for heat exchanger experts. Aluminum has become the material of choice in this field, typically processed as coil stock. High-performance fin forming machines use specialized rolling tools (fin form rolls) to create the characteristic wavy contours of the fins. The band speed can reach up to 6.5 m/s. To ensure a long lifespan for the rollers, a layer of lubricating oil is applied. However, since the fins are later brazed during assembly, this oil must be completely removed after forming. This is achieved by evaporation, necessitating the use of a special evaporative oil.

Wladimir Leimann, Business Unit Manager at ZELTWANGER Thermomanagement, emphasizes: "Our new lubrication unit applies only as much oil as absolutely necessary. We refer to this as minimum quantity lubrication. This ensures the quality of the brazed joints. We also opted for a stand-alone solution that can be integrated into any existing fin forming machine. Therefore, our technology is accessible to all manufacturers of heat exchanger fins."

The concept of ZELTWANGER and its advantages in detail: Two adjustable atomizing nozzles spray the coil material from both sides. The experts from Tübingen adjust the nozzles precisely to the existing oil (viscosity, density). This means that the user is provided with a pre-adjusted system. The lubrication unit also automatically adjusts the spray width and oil quantity based on the stored coil width and the current speed to ensure uniform coating, support optimal brazing results, and maintain efficient oil consumption.

Regarding oil supply, the user has complete flexibility. The unit can be filled manually using a funnel, via an electric drum pump with a drip-free quick coupling, or through an existing plant pipeline. In all cases, refilling can be done during production without the need to stop the machine. A key advantage: no pressurized tank is required, as the oil is transported by a mechanical pump. Consequently, no oil mist is generated that would require extraction. This keeps the workspace clean and eliminates additional costs. Furthermore, any minimal overspray is captured by a filter and remains within

the circulation system. The bottom line is that oil consumption is reduced by up to 70%. The same applies to material consumption.

The flexibility of the lubrication unit extends even further. It is not only suitable for aluminum and its specific requirements but can also be used for materials such as stainless steel or copper. The relevant parameters can be easily adjusted via the HMI (Human-Machine Interface). Additionally, integration into tube seaming or tube welding machines is also possible.

Footage/visual material

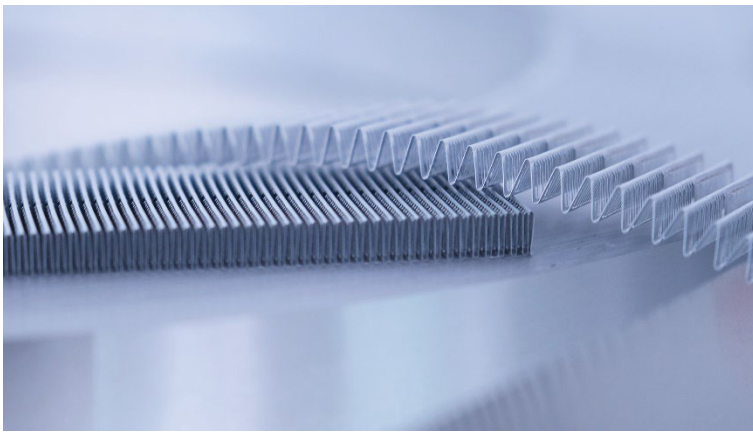


Figure 1: Example of heat exchanger fins

Caption: The base material for heat exchanger fins is coil sheet metal. During the forming process on fin forming machines, complex structures with large surface areas are created to efficiently transfer or absorb heat. Image: ZELTWANGER

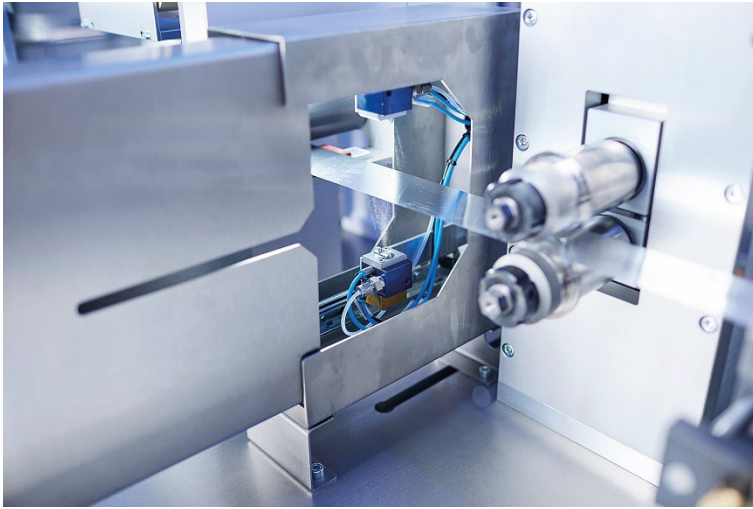


Figure 2: Lubrication unit

Caption: ZELTWANGER's new lubrication unit sprays the metal strip with a precisely controlled amount of oil before the forming process. The unit is highly versatile and is available as a retrofittable stand-alone solution. Image: ZELTWANGER

About ZELTWANGER

ZELTWANGER was founded in 1982 in Dußlingen near Tübingen as a manufacturer of machine components. Today, the company consists of eight companies organized under a holding structure, with its headquarters in Tübingen. Additional locations include the Czech Republic, the USA, and China. The company employs approximately 470 people worldwide. The Group's revenues reached around 81 million EUR in 2023.

ZELTWANGER currently focuses on three core business areas: contract manufacturing, leak testing, and thermal management. In all these fields, ZELTWANGER is recognized as a leading provider. A key element of the company's philosophy is fostering trustworthy partnerships and driving sustainable innovation together with its clients and partners.

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