

wieland

Thermal Management Expo Conference

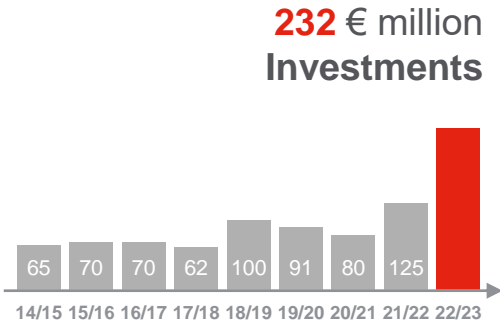
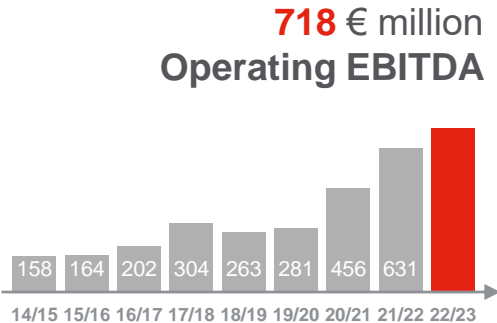
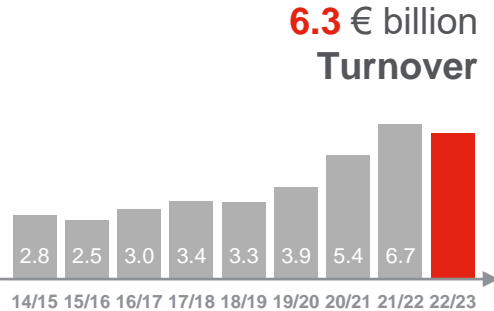
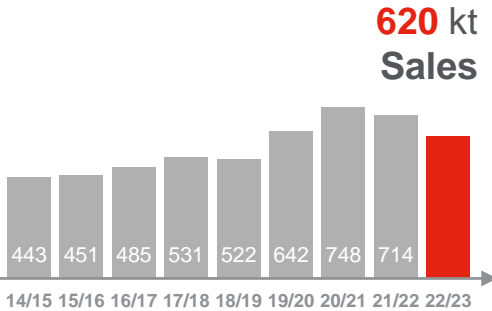
Stuttgart: December 4, 2024





Our success story in numbers for more than 200 years

Since its foundation in 1820, Wieland has been a family-owned company with a long-term shareholder focus. Our company has evolved from an art and bell foundry to a leading global supplier of high-quality copper alloy products and innovative solutions.





Broad product portfolio to meet market needs – significant potential for Data Center

Strip & sheet



Rods, wires & tubes



High performance tubes & heat transfer solutions



Slide bearings & system components





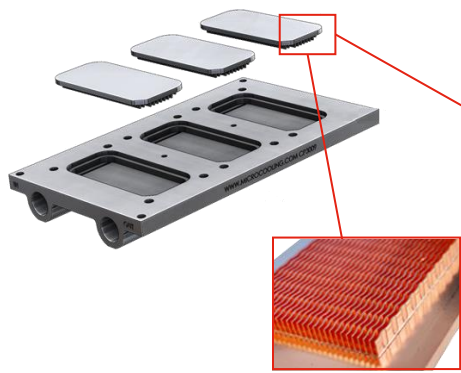
Global technology incubator: Liquid Cooling Solutions

Deep Heat transfer knowledge: Supporting wide range of solutions
Industrialization: Manufacturing at scale for risk free supply on a global basis

USP

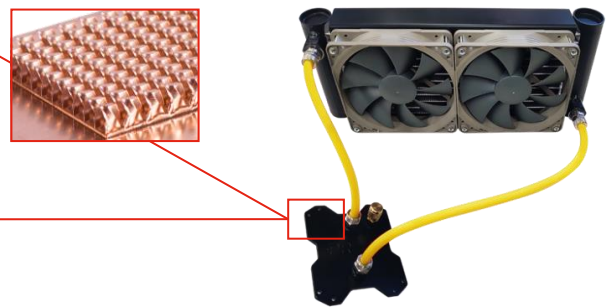
Single-Phase Cold Plate

- 30% less thermal resistance
- 5x less pressure drop
- Thermal resistance 0.075 K/W



2-Phase Cold Plate

- Performance up 200% of the processor
- No pump needed: Thermosyphon principle
- Lowest thermal resistance of 0.023 K/W at 700W (Nvidia 4090)
- Heat-reuse opportunity



Technologies:

- Base Plate via MDT or Skiving for high density heat transfer and scalable production
- Integrated Supply-Chain for Aluminum & Copper
- Friction Stir Welding or Laser Welding for automated production processes
- CMM Testing for best-in-class quality
- Simulations via design software "ThermalS"

Manufacturing Footprint:

- Cold Plate: Italy (R&D HQ), USA, China
- 2PIC: Germany (R&D HQ), USA
- Capillary tubes: USA
- Spray evaporator: Italy, USA, China

Single-Phase Immersion Cooling

2-Phase Immersion Cooling

- Cooling power up to 20x higher than air with 97% less energy consumption
- Significant space reduction possible
- PUE* 1.01 with closed loop system
- Mobile system with cooling capacity that can exceed 600 kW



Wieland's investment –

Dedicated team to support providers:

- Design for manufacture
- Product optimization via modular approach
- De-bottleneck client design teams
- R&D collaboration
- (Conditional) joint IP primary ownership for client

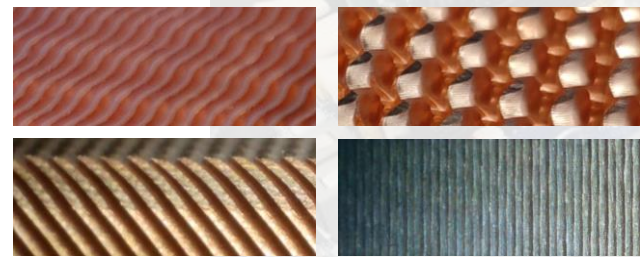


Enabling Liquid Cooling in Data Centers at scale: Cold Plates

Manufacturing per clients needs

-  Design for Manufacturing
-  Automatization
-  Integrated Supply Chain
-  From cradle to cradle

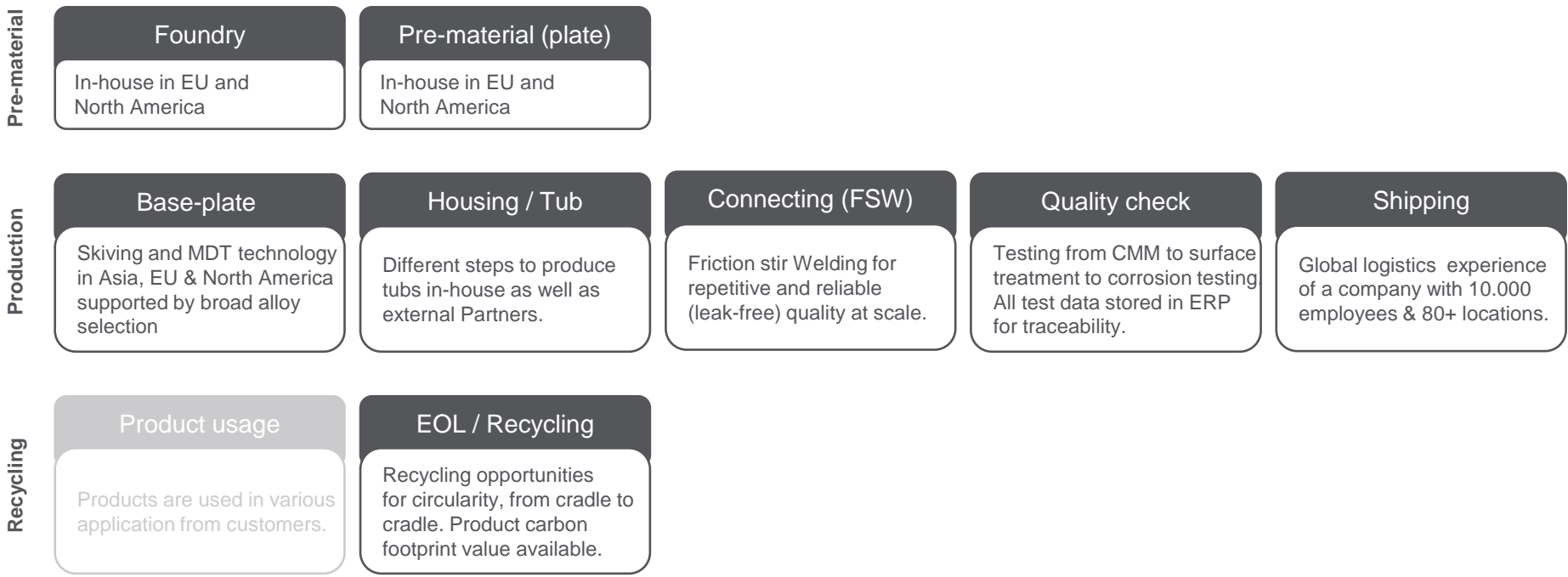
Different manufacturing capabilities for mass production needed





Cold Plates: Serving the whole product life cycle inhouse

Wieland is offering an integrated supply chain by focusing on control and reliability across sourcing to foundry to manufacturing to EOL recycling translating to minimal disruptions, risk mitigation and quality centricity.



wieland

Creating value for generations.