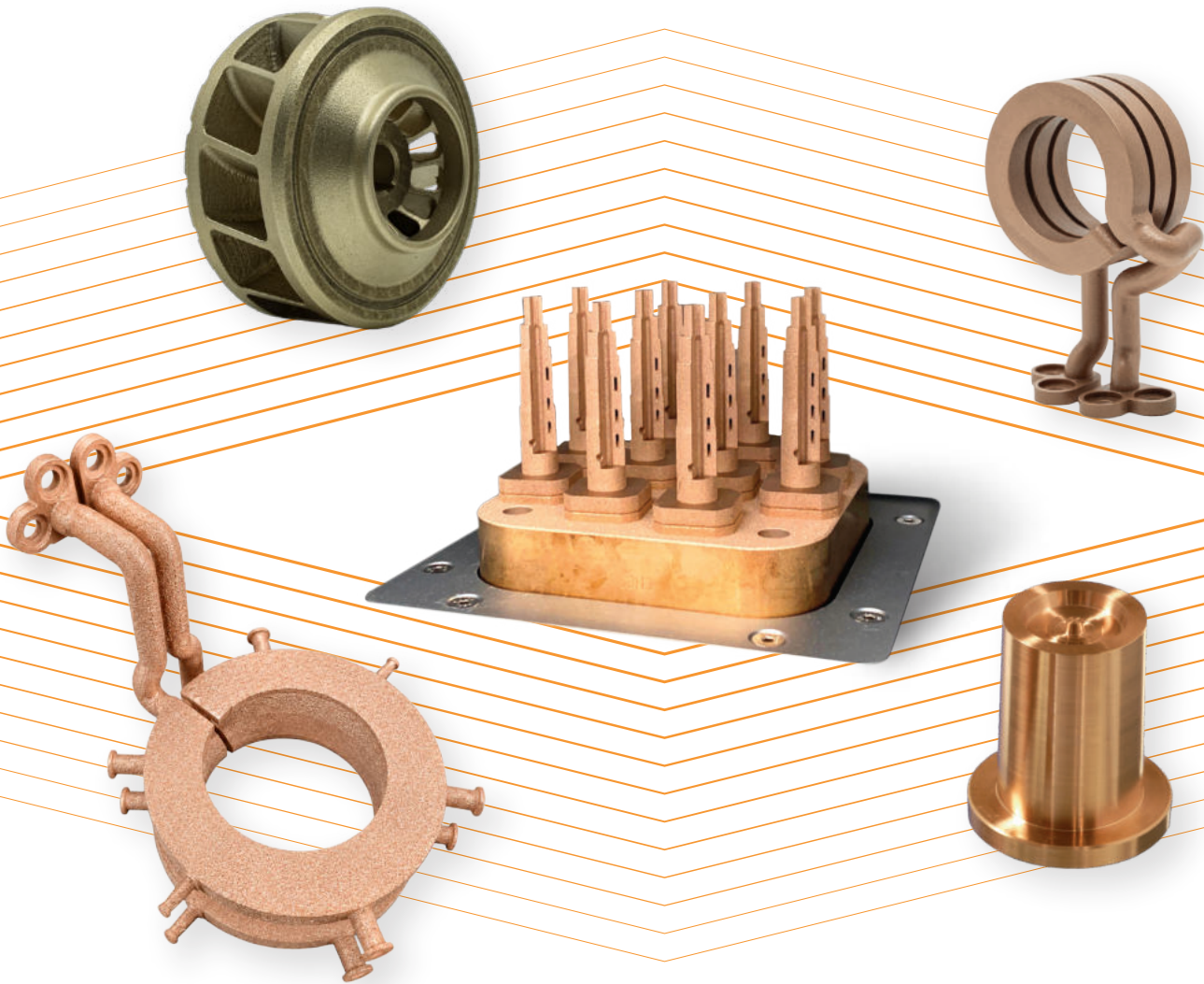




WWW.AMPCOMETAL.COM

HIGH PERFORMANCE **AMPCO** ALLOYS AND ADDITIVE MANUFACTURING PBF-LB



**PBF-LB cutting edge technology & AMPCO
Alloys are a perfect fit**

Excellence in Engineered **Alloys**

AMPCOLOY® AND 3D-METAL-PRINTING FOR PLASTIC INJECTION MOLDS

3D-printed inserts made of AMPCOLOY® combine high thermal conductivity with cooling close to the contour in the mold

The cycle time of an injection process is determined by the efficiency of the cooling (injection/demolding temperature).

The quicker the heat can be dissipated, the quicker the part can be demolded.

Besides the high thermal conductivity of the alloys used in the cavity area of the mold, the cooling close to the contour is an important element to reduce the cycle time.

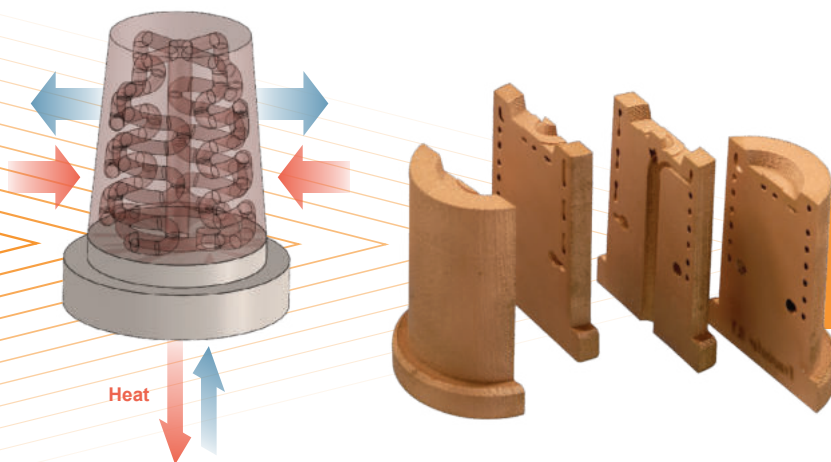
Reduction of the cycle time up to

40%

due to a combination of both technologies



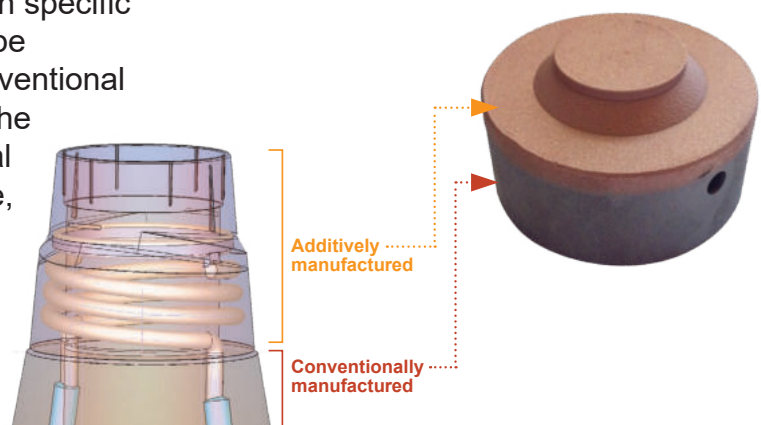
Picture: SLM



PBF-LB extends design freedom to internal mold features

Hybrid manufacturing of mold inserts with conformal cooling

Conformal cooling is often only required in specific zones of the mold. Inserts can therefore be produced in a hybrid way, combining conventional and additive manufacturing. This allows the use of a copper alloy in the cooling-critical zone alongside adapted steels elsewhere, reducing material and processing costs while maintaining thermal performance where it matters most.



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UNLIMITED POSSIBILITIES IN ALL AREAS OF APPLICATION

Inductor for hardening or brazing

The virtually unlimited design freedom offered by 3D printing opens up unprecedented possibilities for designers. This allows inductors to be manufactured monolithically, thereby eliminating disruptive solder joints. AMPCOLOY® 972 is particularly well-suited for printing inductors due to its good mechanical strength and, when combined with a heat treatment optimized for the application, its high electrical conductivity of 52–53 MS/m (90% IACS).

We provide support with our design and manufacturing expertise for the structural design of inductors and cooling channels.



From hand made to monolithic printed once with highest performance wall thickness down to 0,6 mm

Heat exchanger for various application

The performance of a heat exchanger, which transfers thermal energy from one medium to another, depends primarily on the thermal conductivity of the material involved in the heat transfer, from which the heat exchanger is manufactured. In addition to thermal conductivity, however, geometric factors must also be taken into account. The more intricate the heat exchanger can be manufactured, the more efficient it will be. Particularly suitable alloys are AMPCOLOY® 972 or AMPCOLOY® 89.

Very fine structures due to optimized printing and post-process



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AMPCO® 18 For marine & Pump impellers

Aluminum bronzes have been widely used for years in marine applications and offshore facilities due to their outstanding mechanical properties and corrosion resistance in seawater. Their low magnetic permeability is particularly advantageous, for example, in minesweepers or submarines. These properties make aluminum bronzes ideal for applications such as pump impellers, valve seats, and other heavily loaded marine components.

Due to their excellent tribological properties, these alloys are also well-established in bearing applications.

Components that were previously manufactured using conventional methods can be reimaged through 3D printing and optimized topologically or through bionic structures.

- Outstanding corrosion resistance in seawater
- Hight tensile strength (above 750 MPa)
- Very good ductility
- Excellent cavitation & erosion resistance
- Non-magnetic and fatigue resistance
- Suitable for marine, offshore & energy systems



Alloy	Rp0.2 (MPa)	Rm (MPa)	A5 (%)	Hardness HBW	Electrical Conductivity (MS/m)
AMPCOLOY® 972	246	348	26	116	51
AMPCOLOY® 940	592	679	21	242	24
AMPCOLOY® 89	570	700	17	236	41
AMPCOLOY® 83	1026	1138	4	393	18

Alloy	Rp0.2 (MPa)	Rm (MPa)	A5 (%)	Hardness HBW
AMPCO® 18	424	764	19	211

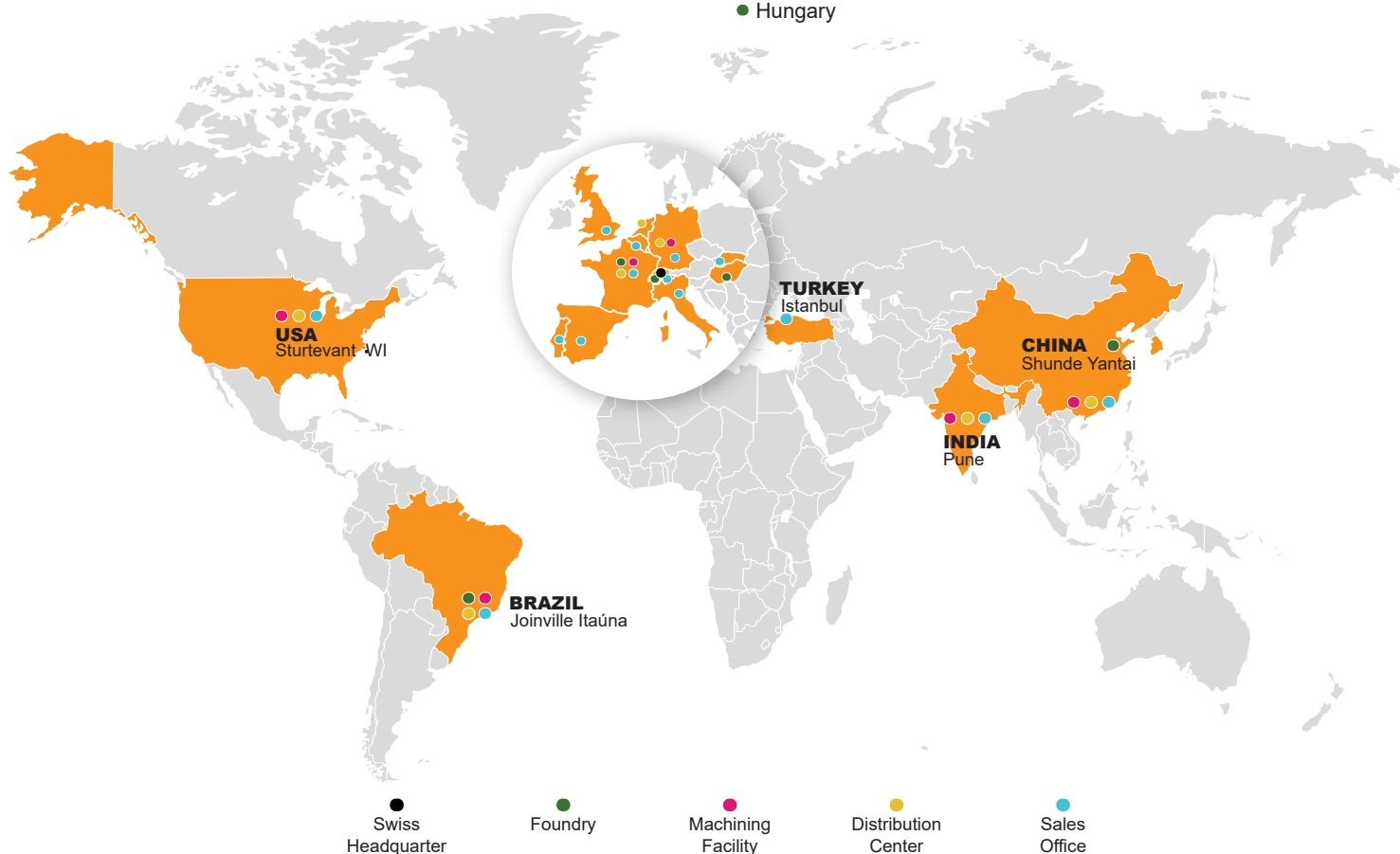
Nominal values shown in the tables above stand for Heat-treatment: Best Compromise

We offer different customized heat-treatment strategies



Excellence in Engineered **Alloys**

- UK ●
- Benelux ●
- Portugal ●
- Netherlands ●
- Austria ●
- Switzerland HQ ●
- France ●
- Germany ●
- Italy ●
- Spain ●
- Slovakia ●
- Hungary ●



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