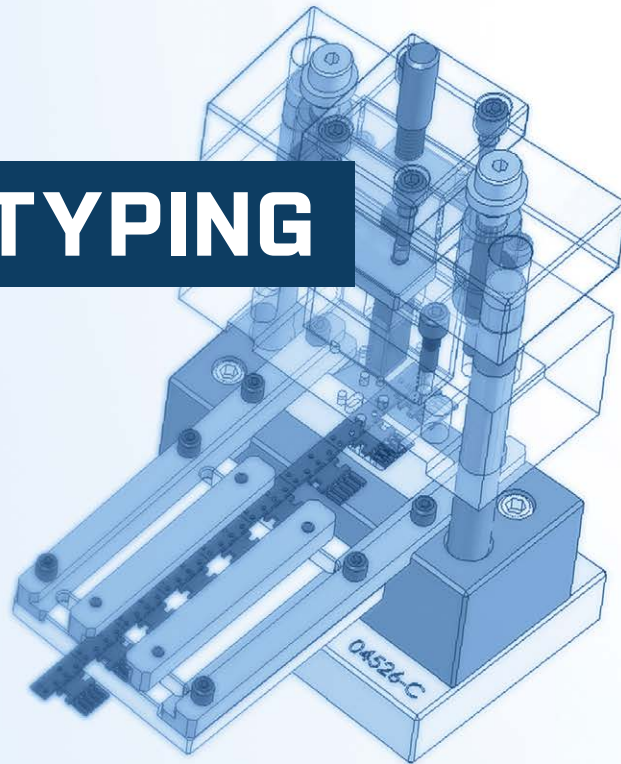
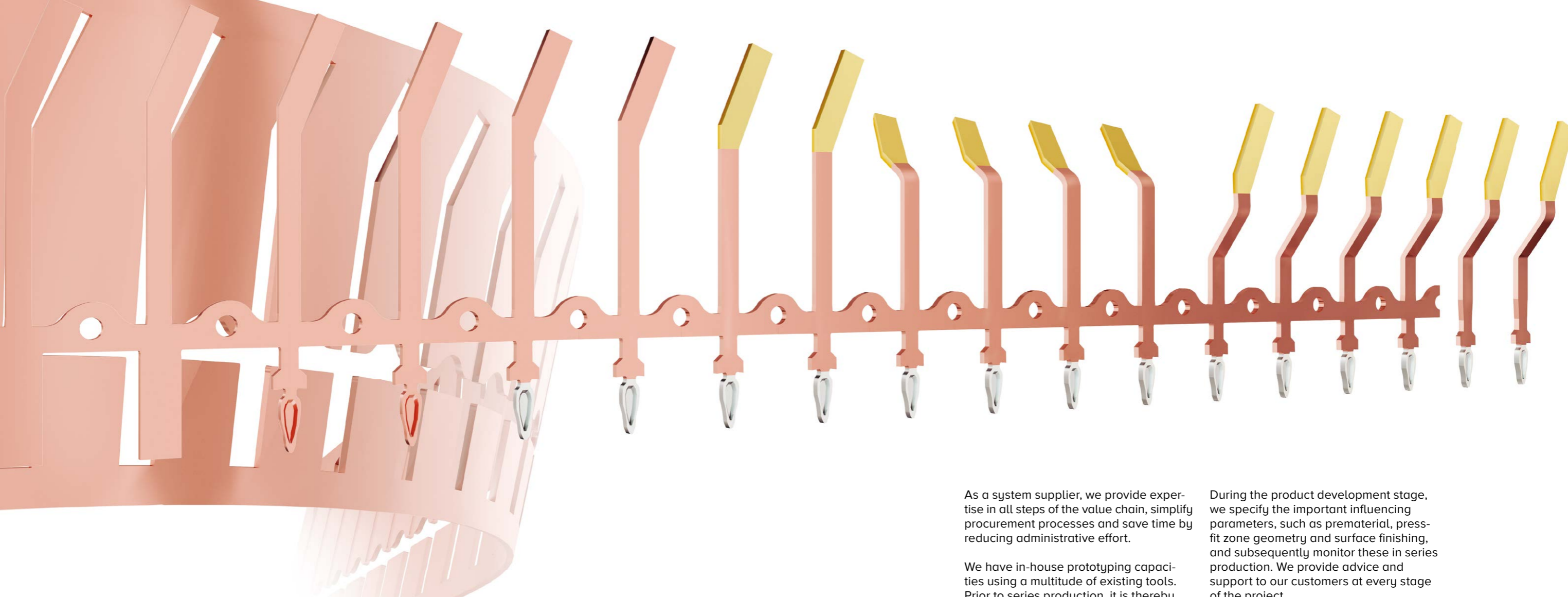


DIEHL
Metal Applications

PROTOTYPING





IN-HOUSE PROTOTYPING

Diehl Metal Applications (DMA) provides a comprehensive technology portfolio with Schempp+Decker press-fit zones. Organized as a one-stop shop, we offer products and services directly from one source. We produce both innovative piece parts as well as custom-made complete solutions, from initial prototypes to start of series production.

As a system supplier, we provide expertise in all steps of the value chain, simplify procurement processes and save time by reducing administrative effort.

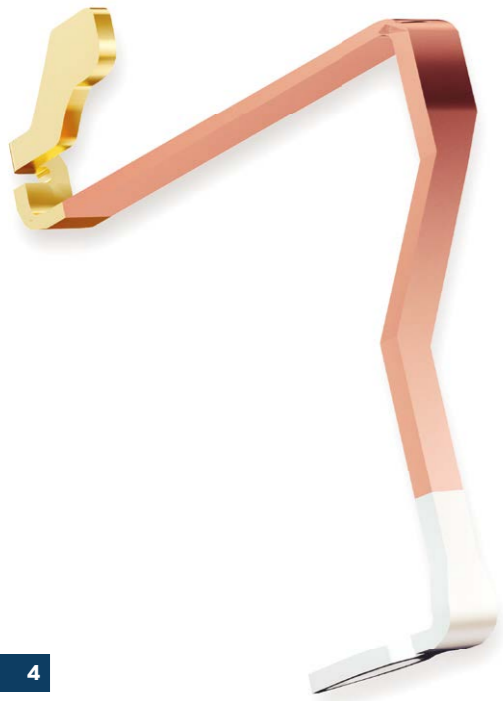
We have in-house prototyping capacities using a multitude of existing tools. Prior to series production, it is thereby possible to produce sample parts with Schempp+Decker press-fit zones under near-series conditions and to align them to the special requirements of our customers.

During the product development stage, we specify the important influencing parameters, such as prematerial, press-fit zone geometry and surface finishing, and subsequently monitor these in series production. We provide advice and support to our customers at every stage of the project.

In our test laboratory, we can check and validate the important characteristic values according to DIN EN 60352-5. To do this, a range of testing and measuring equipment is available. The use of test or series printed circuit boards for determining and adjusting press-fit-zone parameters is possible.

FROM PROTOTYPE TO PRE-PRODUCTION

In all phases of product development, professional contact partners are available. We offer a high manufacturing depth by using existing tools for stamping, embossing press-fit zones, separating, bending as well as (selective) plating.

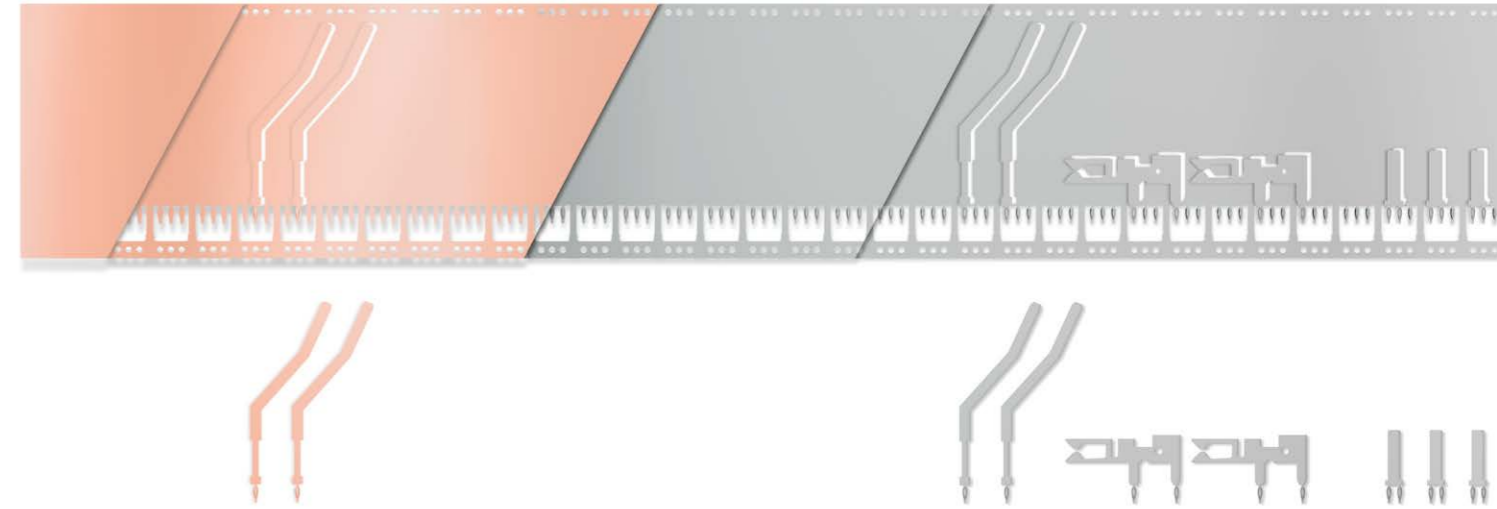


MANUFACTURING & DESIGN

For prototyping components with press-fit zones, tools are available for single stroke as well as for stamping machines.

The manufacturing of Schempp+Decker press-fit zones in the prototype tool is comparable to series production.

Alternatively, laser or waterjet cutting technology may be used for customer-specific design of the part geometry.



LEAD TIMES & BATCH SIZES

The lead time depends on part complexity and order volume.

From experience, lead times are between 3 and 12 weeks.

Standard batch sizes during laser or waterjet cutting and, if required, with press-fit zone: $\leq 2,000$ pcs.

Standard batch sizes as pre-stamped strip: $\geq 5,000$ pcs.

ADDITIVE MANUFACTURING (IN-HOUSE)

Procedure: Fused Deposition Modeling (FDM)

Mode material: ABSultra in 9 colors

Layer thickness: 0.254 mm or 0.178 mm (0.01 in. or 0.007 in.)

Build size: 203 x 203 x 305 mm (8 x 8 x 12 in.)

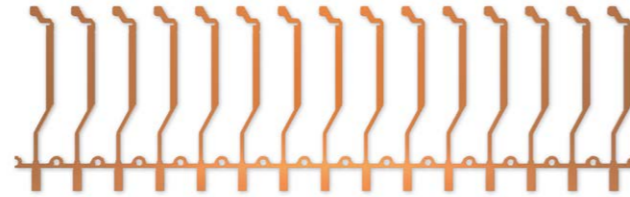
Advantage: Direct modeling from 3D data record

OUR PORTFOLIO

LASER / WATERJET CUTTING

Custom-made contact design with support of certified partners and excellent expertise:

- Standard: CuSn6, CuNiSi alloys
- Endless, as strip or as piece part
- High precision & filigree contours

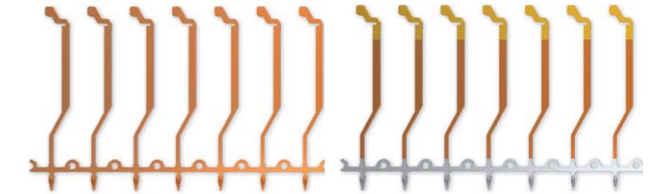


Laser-cut contact strip made of CuSn6

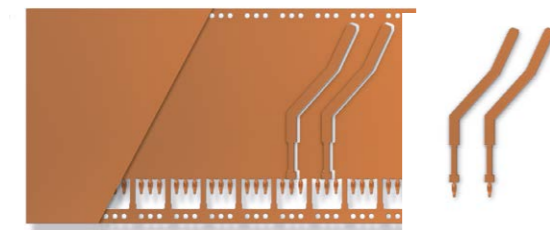
PLATING TECHNOLOGY

In-house state-of-the-art electroplating facilities as a basis for customized solutions and close-to-series finishing:

- Reel-to-reel plating (from 5,000 pcs.)
- Piece part plating
- Strip plating
- Plating in sample plating baths with series portfolio
- Entire surface or selective plating



Selectively plated laser strip (Ni/Au or Ni/SnPb)

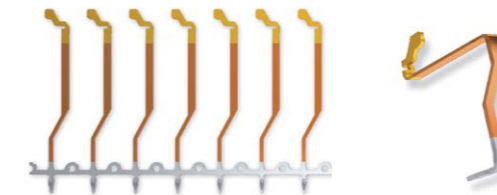


Unplated strip material CuSn6 becomes pre-stamped strip with press-fit zone

PRE-STAMPING REEL / STAMPING

Press-fit zones and, if required, the connector, welding or IDC geometries are pre-stamped on strip material under close-to-series production conditions on modern stamping machines

- Small series from 5,000 pcs.
- In-house tool design
- High-performance machinery (15 to 250 tons pressing force)
- Piece part production or in series
- Material thickness: 0.05 to 4 mm
- Ideal cutting surface



Bent four times at 90°

SEPARATING / BENDING

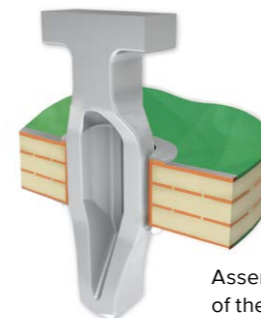
Bringing parts into form:

- Separating from endless strip material or from a piece of strip
- One or multiple bendings on piece parts possible

PRESS-FIT ZONES

In-house production of press-fit geometry:

- Gas-tight with good conductivity
- In-house press-fit zone know-how
- Implementation as pre-stamped strip with series tools
- Alternative implementation using close-to-series tools

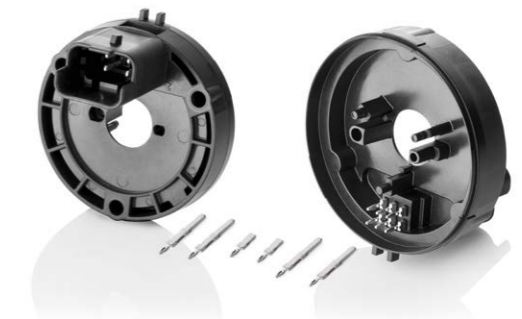


Assembly position of the press-fit zone

METAL-PLASTIC COMPOUND SYSTEMS

Overmolding of samples inhouse:

- Additive Manufacturing per FDM
- Sample toolmaking in DMA rack
- Tool design as 3D model
- Moldflow® analyses
- Vertical molding, rotary table vertical molding and horizontal machines with closing forces of 40 to 200 tons are available
- Use of plastics such as PA, PBT, PPS, PEI, LCP, PEEK, or similar



LED housing with overmolded press-fit zone contacts

Your Contact Partner:

Sales Office Berlin

Phone +49 30 84784-438

E-mail: sales-berlin@diehl.com

www.diehl.com/metall