

# University of Stuttgart

## Institute for Forming Technology (IFU)

### About this organisation

#### Machine translation

This organisation has been machine-translated based on data provided in German.

The IFU Stuttgart has been one of the manufacturing technology institutes at the University of Stuttgart since it was founded in 1958. Since then, numerous research projects and development work in sheet metal and solid forming have been carried out in the laboratories and on the premises. The IFU is a member of the Stuttgart Production Technology Centre PZS, which pools the strengths of the nine production technology institutes at the university and creates synergies.

The research lines at IFU are divided into 5 strands: sheet metal forming & cutting processes, bulk metal forming, material characterisation & modelling, forming processes and process control/ machine learning/ digitalisation in forming technology. The IFU has been researching and developing new processes for the efficient and resource-saving production of formed components for decades. This always involves an overarching consideration of material characterisation, simulation, development/ design/production of tools, experimental testing and usable prototypes. The continuous research of materials (& concepts), the development of new methods and processes will also be used in the future in functional lightweight construction in large series format.

Holzgartenstraße 17  
70174 Stuttgart  
Baden-Württemberg  
Germany  
[www.ifu.uni-stuttgart.de](http://www.ifu.uni-stuttgart.de)



#### Organisation type

University or higher education institution

#### Sectors



#### Employees

10 up to 49

#### Turnover

n/a

#### Funding

## About this organisation

|                           |                                                                                                                                             |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Main areas covered</b> | Forming technology research                                                                                                                 |
| <b>Infrastructure</b>     | Presses for solid forming, Presses for sheet metal forming, Presses for hydroforming, Automatic punching presses, Material characterisation |
| <b>Certifications</b>     |                                                                                                                                             |
| <b>Keywords</b>           | Sheet metal forming, Solid forming, Thixosmithing, Simulation, Prototypes                                                                   |
| <b>Memberships</b>        | PZS, WGP, AGU, EFB, GCFG                                                                                                                    |

## Overview of lightweighting expertise

### Machine translation

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|                                                                                                                                           | Research | Development | Manufacturing & Supply |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|------------------------|
| <b>Offer</b>                                                                                                                              |          |             |                        |
| <b>Products</b><br>Parts and components, Semi-finished parts, Materials, Tools and moulds                                                 | ✓        | ✓           | ✓                      |
| <b>Services &amp; consulting</b><br>Consulting, Testing and trials, Engineering, Prototyping, Validation, Simulation, Technology transfer | ✓        | ✓           | ✓                      |

## Overview of lightweighting expertise

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|                                                                                                                                                                    | Research | Development | Manufacturing<br>& Supply |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|---------------------------|
| <b>Field of technology</b>                                                                                                                                         |          |             |                           |
| <b>Design &amp; layout</b><br>Lightweight manufacturing, Lightweight construction concepts                                                                         | ✓        | ✓           |                           |
| <b>Functional integration</b><br>Actuator technology, Sensor technology                                                                                            | ✓        | ✓           |                           |
| <b>Measuring and testing technology</b><br>Component and part analysis, Visual analysis (e.g. microscopy, metallography), Materials analysis, Destructive analysis | ✓        | ✓           |                           |
| <b>Modelling and simulation</b><br>Crash behaviour, Loads & stress, Optimisation, Processes, Materials                                                             | ✓        | ✓           |                           |
| <i>Plant construction &amp; automation</i>                                                                                                                         |          |             |                           |
| <i>Recycling technologies</i>                                                                                                                                      |          |             |                           |

## Overview of lightweighting expertise

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|                                                                                                                                                                     | Research | Development | Manufacturing<br>& Supply |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|---------------------------|
| <b>Manufacturing process</b>                                                                                                                                        |          |             |                           |
| <i>Additive manufacturing</i>                                                                                                                                       |          |             |                           |
| <i>Coating (surface engineering)</i>                                                                                                                                |          |             |                           |
| <i>Fibre composite technology</i>                                                                                                                                   |          |             |                           |
| <b>Forming</b><br>Bending, Impact extrusion, Compression moulding, Forging, Stretch forming, Deep-drawing, Fluid active media based forming, Others (Thixosmithing) | ✓        | ✓           | ✓                         |
| <b>Joining</b><br>Hybrid joining                                                                                                                                    | ✓        | ✓           |                           |
| <b>Material property alteration</b><br>Heat treatment                                                                                                               |          | ✓           | ✓                         |
| <i>Primary forming</i>                                                                                                                                              |          |             |                           |
| <b>Processing and separating</b><br>Turning, Milling, Shearing/punching                                                                                             | ✓        | ✓           | ✓                         |
| <i>Textile technology</i>                                                                                                                                           |          |             |                           |

## Overview of lightweighting expertise

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|                                                             | Research | Development | Manufacturing<br>& Supply |
|-------------------------------------------------------------|----------|-------------|---------------------------|
| <b>Material</b>                                             |          |             |                           |
| <i>Biogenic materials</i>                                   |          |             |                           |
| <i>Cellular materials (foam materials)</i>                  |          |             |                           |
| <b>Composites</b>                                           |          |             |                           |
| Metal-ceramic composite                                     | ✓        |             |                           |
| <i>Fibres</i>                                               |          |             |                           |
| <b>Functional materials</b>                                 |          |             |                           |
| Shape memory materials                                      | ✓        | ✓           |                           |
| <b>Metals</b>                                               |          |             |                           |
| Aluminium, Intermetallic alloys, Magnesium, Steel, Titanium | ✓        | ✓           |                           |
| <i>Plastics</i>                                             |          |             |                           |
| <i>Structural ceramics</i>                                  |          |             |                           |
| <i>(Technical) textiles</i>                                 |          |             |                           |

## Contacts

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## Contacts

Mr Prof. Dr.-Ing. Mathias Liewald, MBA

*Director*

[mail@ifu.uni-stuttgart.de](mailto:mail@ifu.uni-stuttgart.de)