

Forster System-Montage-Technik

We make movement lighter

Company presentation & introduction

2023





01

INTRODUCTION

WE INTRODUCE OURSELVES

In the almost two decades of its history, **Forster System-Montage-Technik GmbH** has developed into an **expert** in the field of fiber-reinforced plastics, the reconditioning of system components and in the field of assembly.

01 INTRODUCTION

ORIGIN AND DEVELOPMENT OF THE SMT



1907

Foundation of the company **MROSE**
as a cloth factory

1987

New foundation of the company **MROSE**
as technical trade - industrial supplies

2005

Growth in mind:

- » DIN ISO 9001
- » participation Stanzwerk GÜSCHU GmbH
- » Q1 Supplier to DB AG
- » C-parts management
- » electronic consignment stock
- » e-Procurement
- » founding member of will
(Lausitz Economic Initiative)

1900

1972

Nationalization

1990

Reprivatization

2006

foundation of
Forster System-Montage-Service GmbH

2013

Structure:

- » DIN ISO 9001
- » bonding certification DIN 6701 A1 – A3
(including certified bonding room)
- » welding certification DIN EN 15085-2 CL4
- » center for metal processing
- » center for plastics processing
- » warehouse

2023

01 INTRODUCTION

ORIGIN AND DEVELOPMENT OF THE SMT



MROSE today

Full equipment supplier

- » industrial supplier (online & on-site)
- » Germany-wide sales engineers
- » 80.000 articles on 10.000 m² storage area

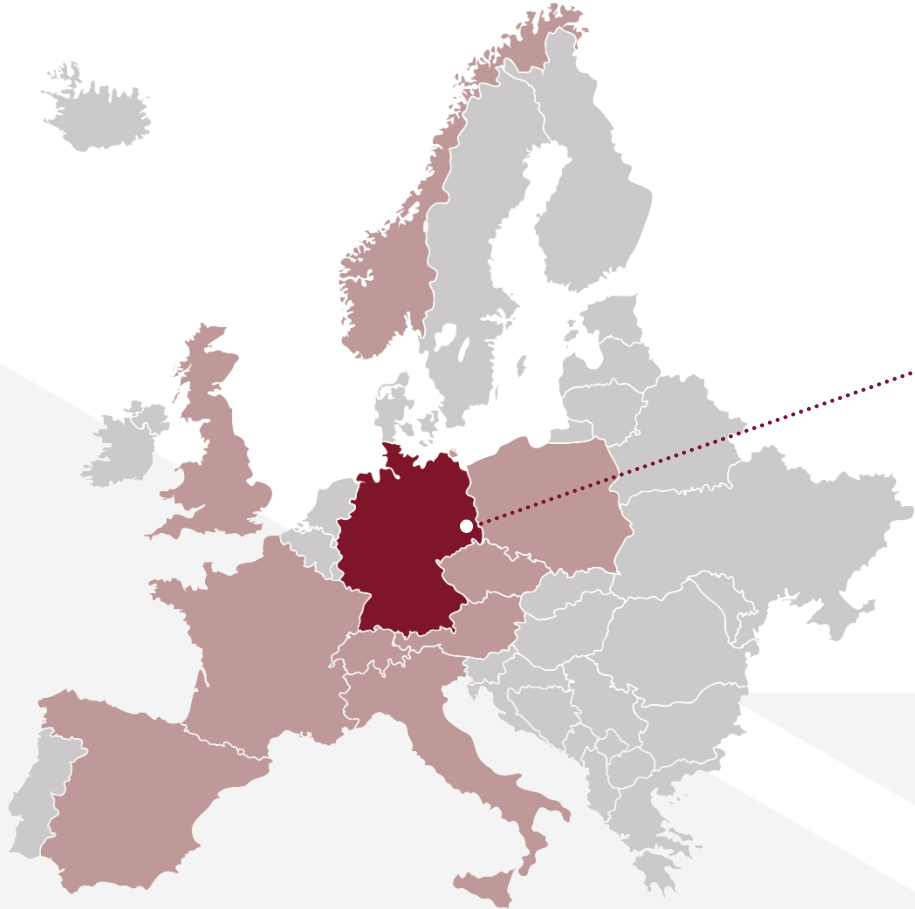
SMT today

Service provider / Producer / Service

- » engineering services
- » **FRP manufacturing; lightweight construction**
- » adhesive bonding company
- » reconditioning of components
- » **assembly at customer site**



- primary customer market (95% sales)
- customers/cooperations



„As SMT, we base our success on solutions for our customers. To this end, we continuously invest in our research & development and the qualification of our employees “

Managing Director SMT, Mathias Senftleben

17 years of experience in rail transport

- » maintenance/redesign of floors in over 450 rail vehicles
- » high speed, regional, commuter rail, tramway



~ 105
employees



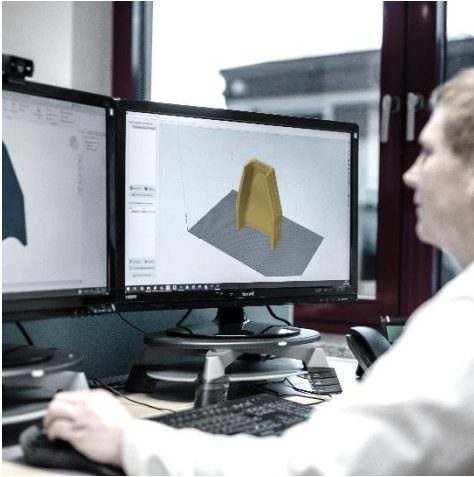
~ 179%
sales growth
(5 years)

01 INTRODUCTION

RANGE OF SERVICES - BUSINESS UNITS



Engineering/Development



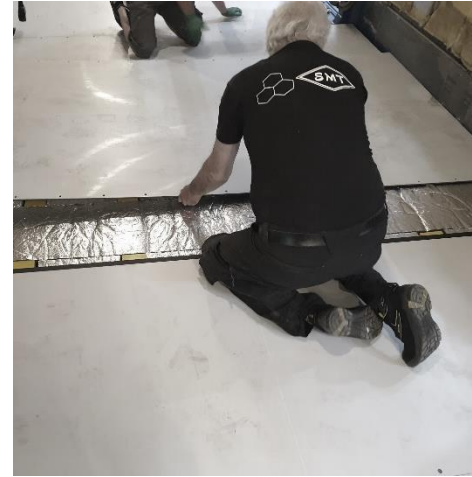
- » technology development
- » customized product development
- » prototype construction
- » function integration
- » design/testing
- » long-term cooperation

Manufacturing



- Lightweight construction with FRP**
- sandwich, laminate
 - » individual parts, series
 - » interior, exterior, floor
 - » vacuum infusion, RTM, ...

Mounting



- » **Disassembly and assembly services**
- » laying of elastic and textile floor coverings
- » customization of wood and FRP materials

Service



- Reconditioning of System components**
- Maintenance, refurbishment
- » electr., mechan., pneumat., hydraul. assemblies (pressure test)



Bonding

- design, surface conditioning • joining • sealing, coating

3D-manufacturing

- demonstrators, feasibility analysis • toolmaking, finished parts • assembly aids • GULLIVER 3D

milling

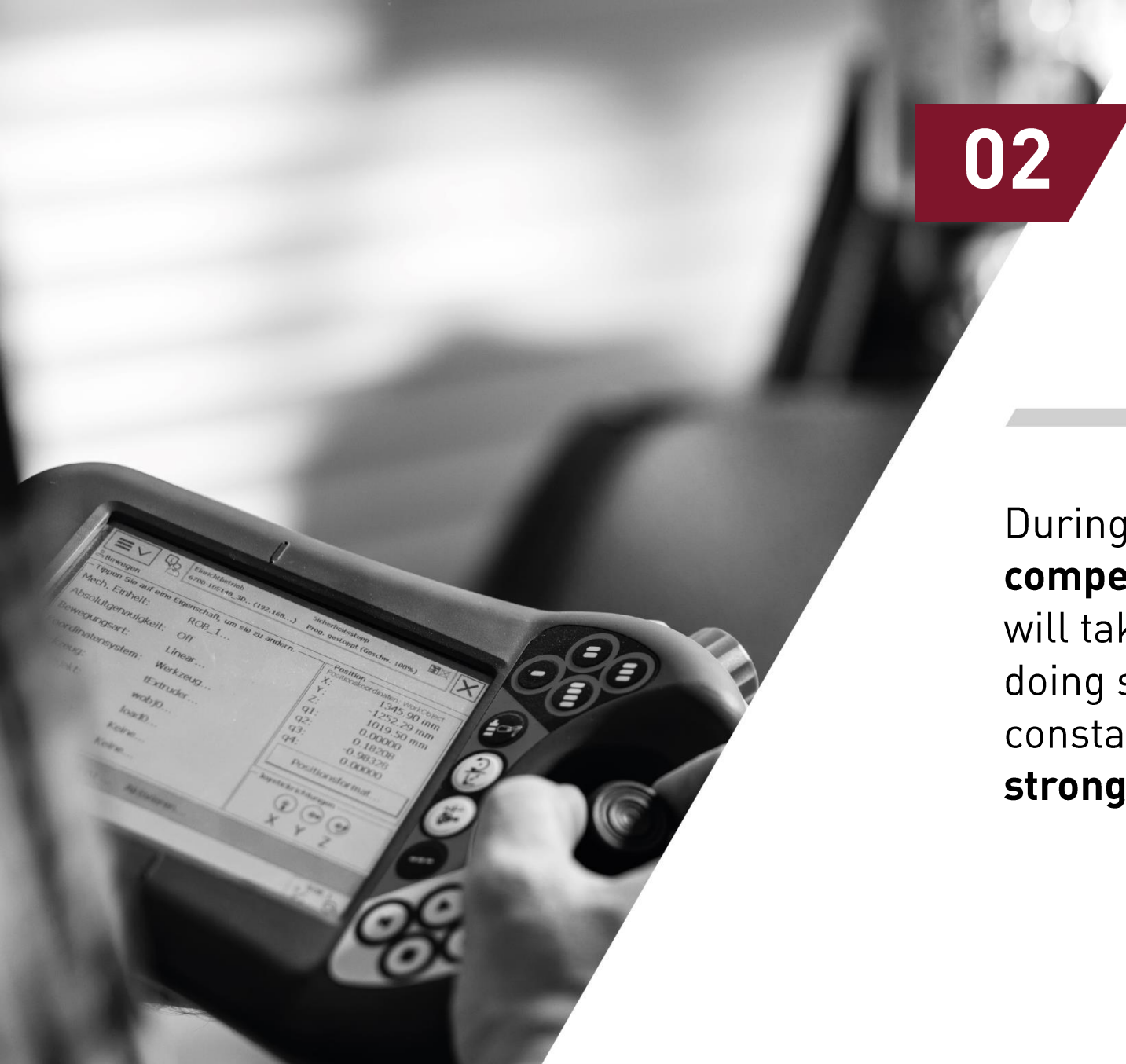
- CNC 5 axis milling machine • GRP, wood, plastic, aluminum • construction • contract manufacturing

02

ENGINEERING/DEVELOPMENT

EXPERTS IN THEIR FIELD

During the duration of **your projects**, a **competent team** of engineers and specialists will take care of a successful outcome. In doing so, our **many years of experience** and a constant work on the pulse of time are a **strong ally** for you.





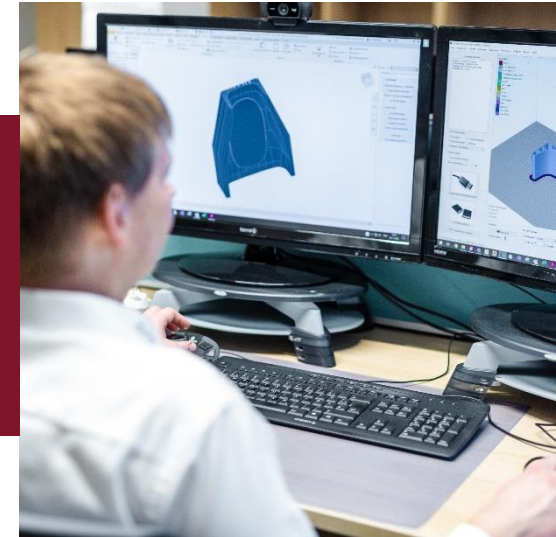
Professional measurement technology

- » our products are put through their paces on highly sensitive measuring equipment
- » ensuring the customer-specific requirements



Experienced engineers

- » qualified engineers work on the projects with many years of know-how
- » trained for a wide spectrum from CAD applications to project management



Qualified bonding specialists

- » our bonding engineers always work according to the current specifications
- » work under the highest standards for a long life of the bonding performed



03

COMPONENT MANUFACTURING

FROM PLANNING TO ASSEMBLY

Depending on the application and requirements, **SMT composites** are manufactured using a wide variety of fiber composite processing technologies (e.g. hot pressing, vacuum infusion, RTM-Light). This is also done by machine control and offers a very high process reliability.

Common standard solution

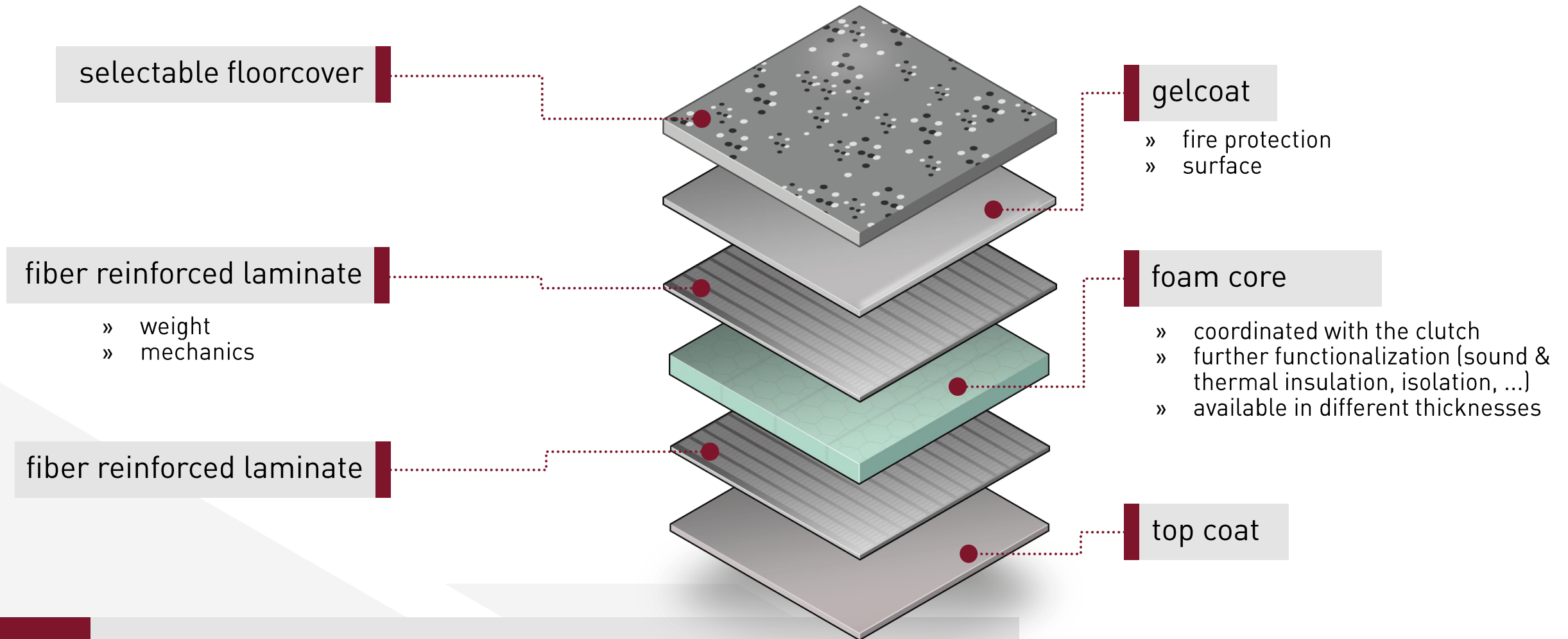


- » plywood
- » high weight
- » moisture damage

SMT - GRP - lightweight sandwich



- » GRP face sheets + foam core
- » up to **50% lower weight** than plywood, with the same stiffness
- » fire protection requirements according to DIN EN 45545
- » moisture resistant
- » optional integration of a heating system
- » among others in application: ICE3 Redesign, ET423, VT612, tram

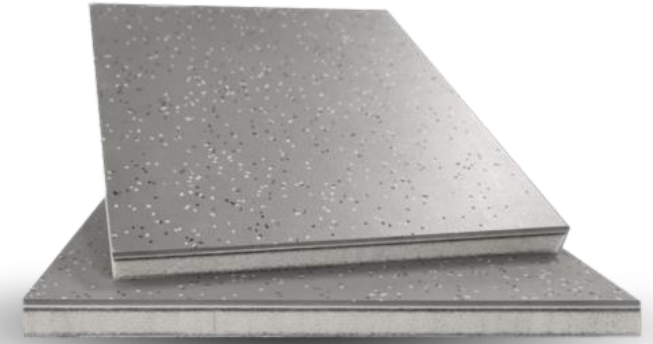


The material, structure and process determines the properties

SMT provides a wide range of components

Cost reduction

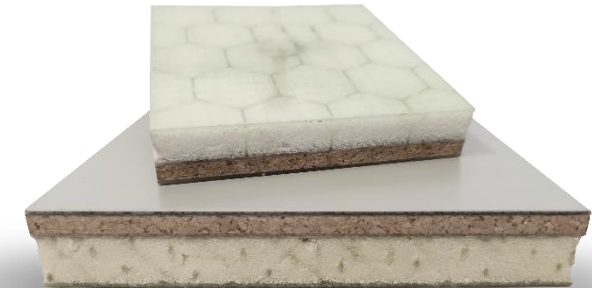
- » mass reduction = energy cost reduction
- » usable for higher passenger numbers/broader comfort offer
- » extension of maintenance intervals/life cycle



Cost optimized panel

Designed for the application

- » design (revision fasteners)
- » fire protection integration
- » function integration (heating, sensor technology)



Customized panel



excellent properties

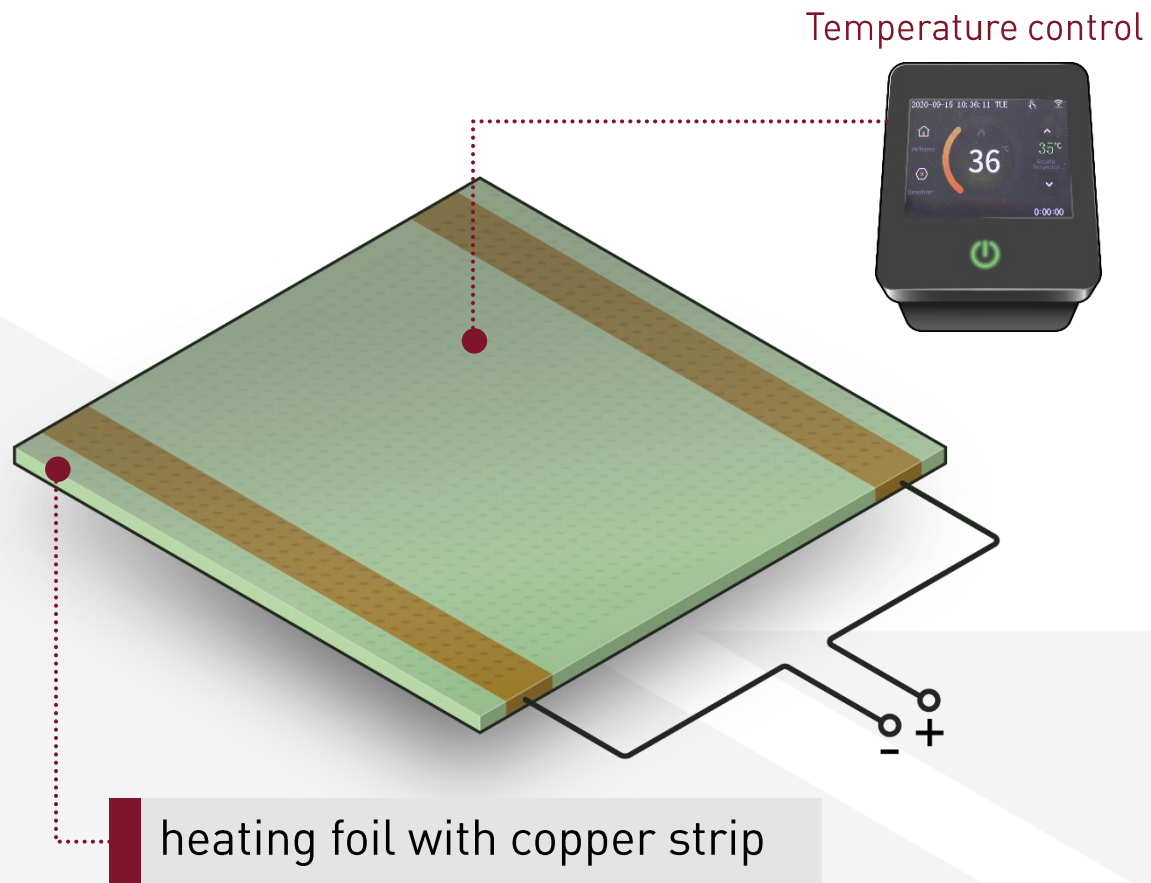
- mechanical properties/durability
- moisture resistance
- media resistance
- thermal insulation
- acoustic insulation
- electrical insulator

03 COMPONENT MANUFACTURING

FUNCTION INTEGRATION: HEATED FLOOR PANELS

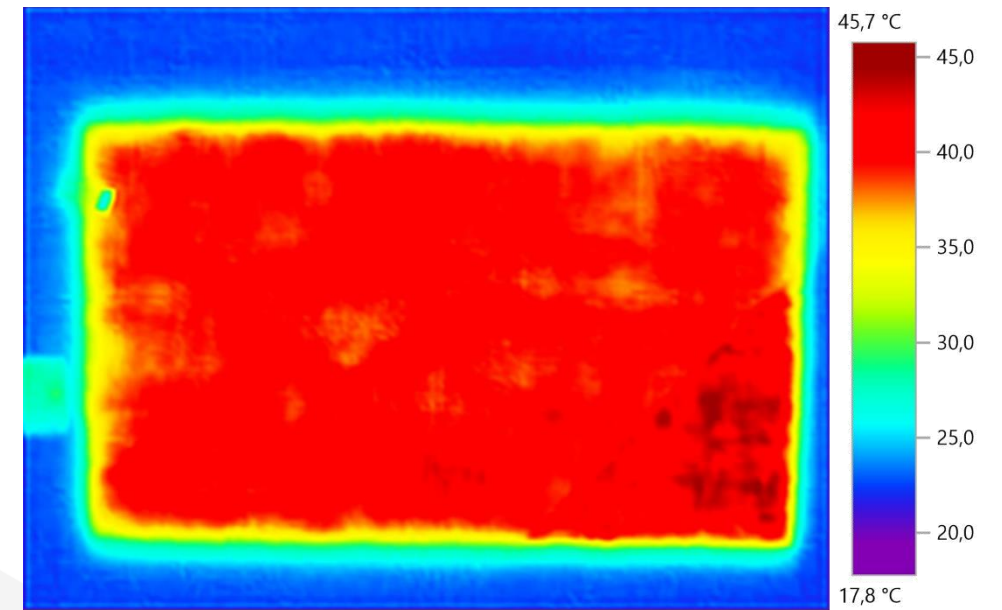


- » integrating a heating foil into the sandwich structure
- » adjustable by temperature control
- » there are no thermal bridges in the panel (almost no heat loss)



Technical data

- » surface heating power: approx. 500 W/m² (adj.)
- » voltage: 230 V
- » current: 1,1 A
- » homog. Temperature field: approx. 38°C (regulated)
- » max. Temperature: approx. 70°C (unregulated)



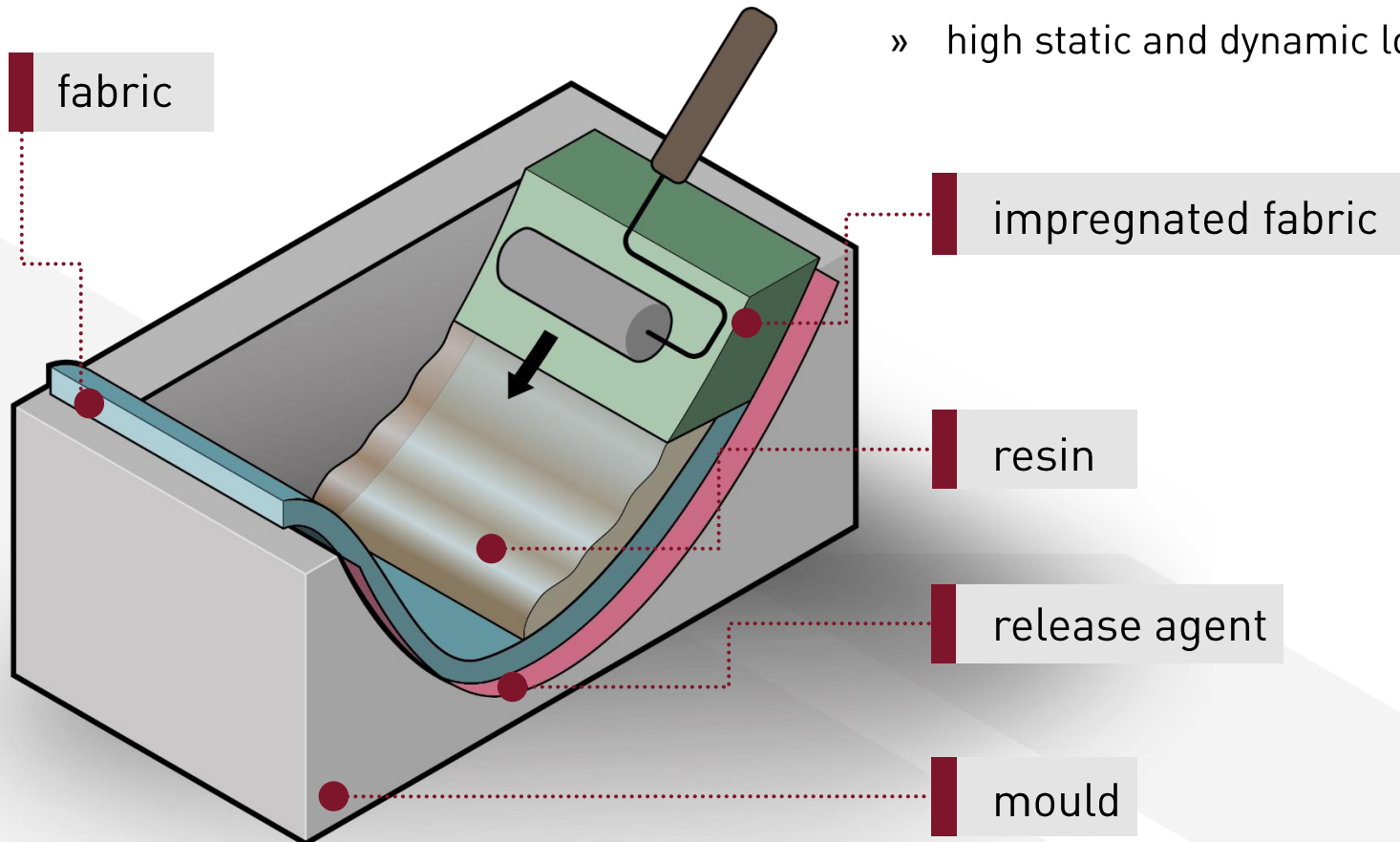
thermal image of the heated sandwich plate

Matrix systems and fiber materials to meet requirements

- » polyester, epoxy, vinyl ester resins
- » glass, aramid, carbon fibers (unidirectional, multiaxial)

Chemical, mechanical, fire protection properties

- » high static and dynamic load capacity, gelcoat selection

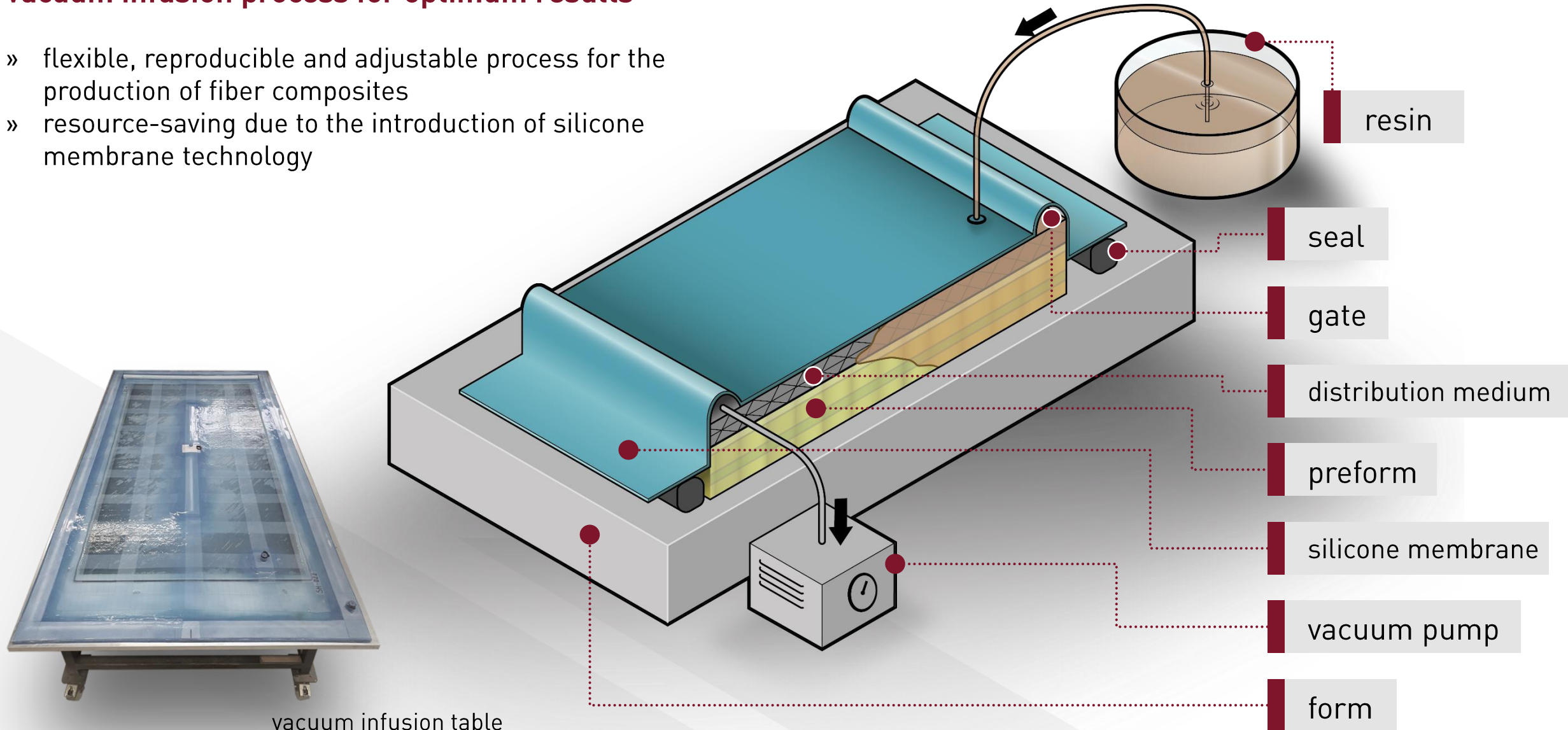


Undercuts, different wall thicknesses in the component possible

- » three-dimensional, complex, freely formable
- » large components
- » low material costs

Vacuum infusion process for optimum results

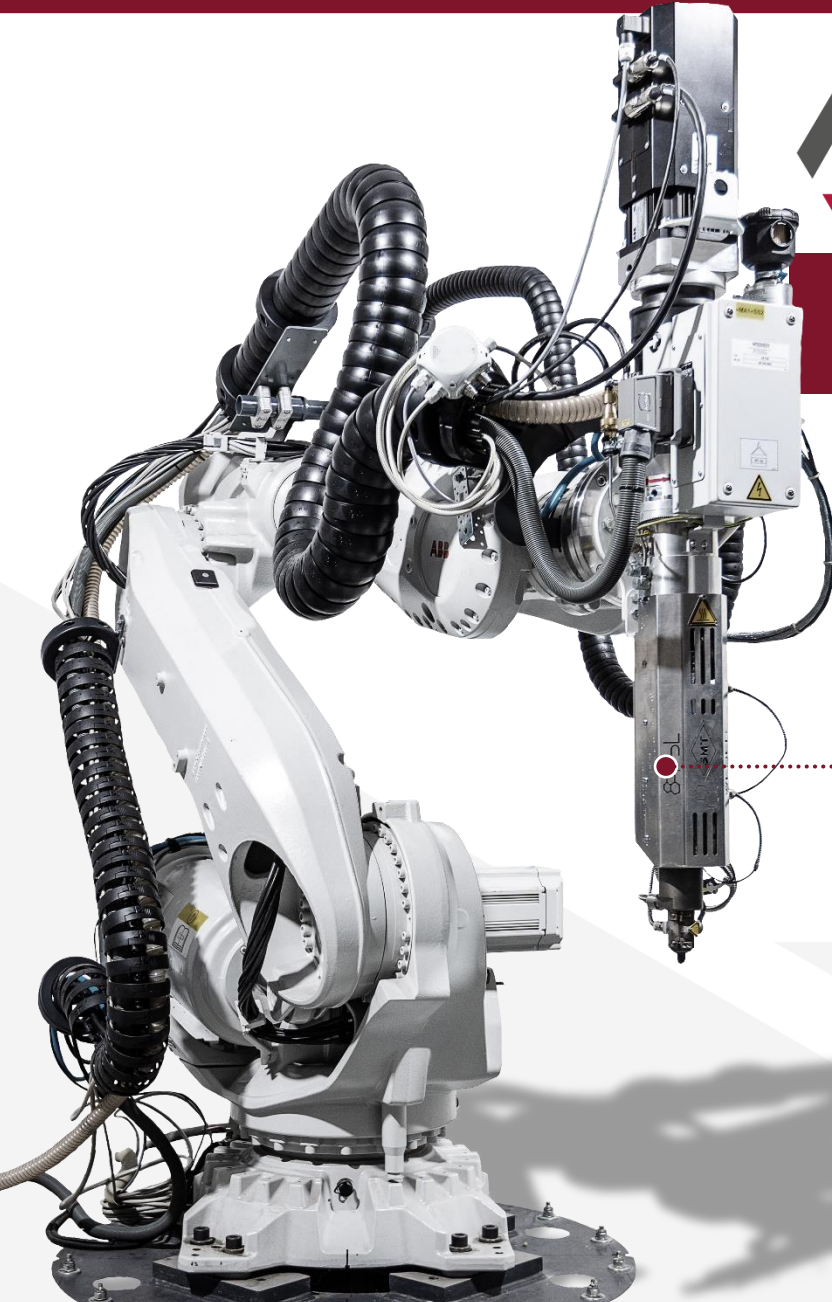
- » flexible, reproducible and adjustable process for the production of fiber composites
- » resource-saving due to the introduction of silicone membrane technology





Complex 3D printing in new dimensions

- » component sizes up to 1.2 m x 2.0 m x 1.4 m
- » industrial robot with very high feed rate up to 180 m/min (3 m/s)
- » competence in engineering & manufacturing
- » twinform® technology: speed through parallel printing
- » 5D system with milling process: option for subsequent metal-cutting post-processing
- » industrial robot with extruder & milling spindle
- » in-house development in software & hardware
- » innovation projects with science and international networks





04

MOUNTING

FIRST HAND INSTALLATION

Our trained **professionals** will assist you on site with the **proper installation** of all products.

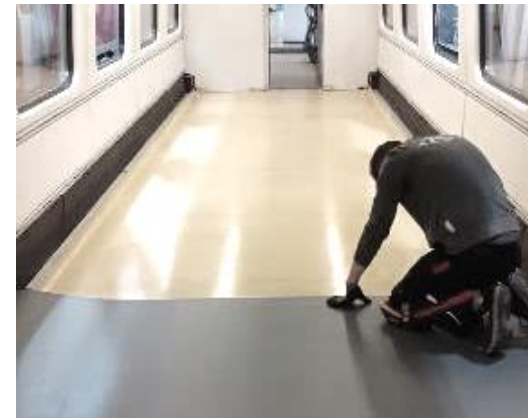
Cleaning/Pretreatment



Application adhesive tape



Order flooring



Grouting



Assembly on site



- » with qualified personnel
- » besides the floor (substructure, slabs, covering,) also:
 - » gluing A1 (DIN 6701), S1 (DIN 2304)
 - » interior (not painting)
 - » dismantling
 - » waterproofing, roof joints



defective entrance material plywood



removal of old material



Installation of composite floor



curing adhesive joints



A strong team with expertise:

- » approx. 40 fitters in operation
- » on site and available for you



05

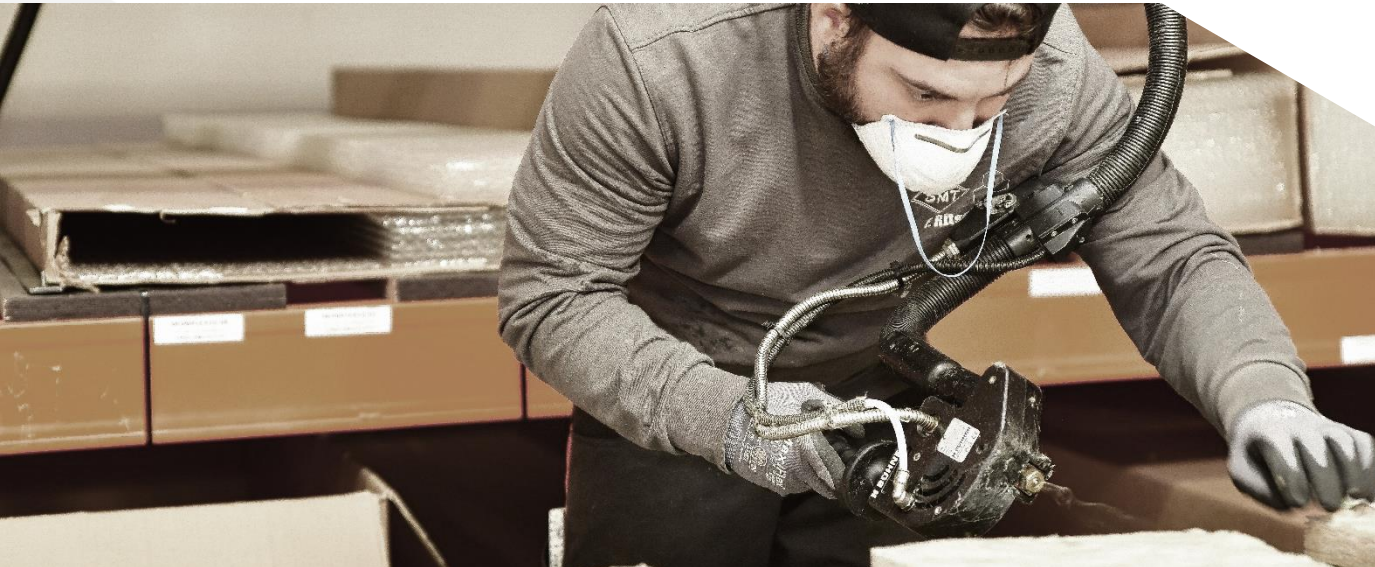
SERVICE

RECONDITIONING OF SYSTEM COMPONENTS

Replacing damaged or defective components can incur considerable costs for you. We take care of refurbishing parts and system components, **saving you money** in the process.

From old to new

- » maintenance, reconditioning, assembly
- » restoration of function of damaged or defective parts and system components
- » electrical, mechanical, pneumatic, hydraulic assemblies (pressure testing)
- » optical reconditioning
- » single part up to series reconditioning
- » individual spare parts production
- » wide range of experience





**Thank you
for your
attention**



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