



1 (Robot-assisted) unit for accelerated curing using microwaves.

2 Heating spots.

## ACCELERATED CURING OF ADHESIVES USING MICROWAVES

Joining technologies play a key role whenever a variety of material combinations are used, for example in vehicle manufacture. It is often impossible to create an integral joint between different materials, so mechanical or adhesive joining techniques must often be applied. In particular the plastic bodywork of a vehicle can only be joined to the metal frame using screws or adhesives. However, the cycle time for mounting plastic paneling onto the frame is so short that adhesives cannot be used without additional mechanical fixation. This means that the significant advantages of adhesive techniques, such as the compensation of tolerance, and flexibility of design and assembly, cannot be exploited.

Microwave technology provides an acceptable solution: adhesives can be rapidly heated and therefore activated. Depending on the adhesive used, the curing time is reduced to a matter of seconds. Microwaves can be applied from outside the processing unit through a dielectric window. For this purpose microwave antenna systems have been developed to apply the microwaves reliably and safely. The technique is particularly suitable for the joining of non-metals, such as glass and plastics, to other non-metals or to metallic components.

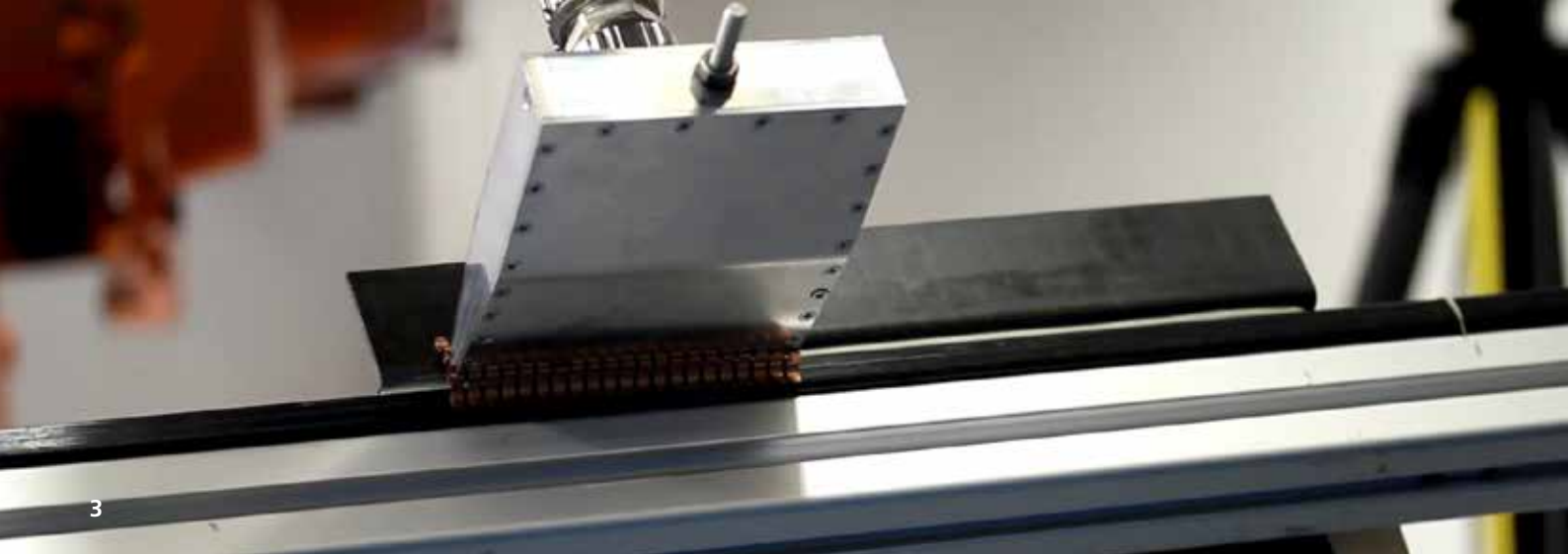
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### Laboratory facilities and equipment

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- Magnetron heads with a compact construction for integration into portals and robots
- Dielectric measurement processes to determine dielectric properties
- Microwave technology for characterization of the adhesion process
- Autotuner for automatic adjustment
- Portals for process development
- Optical thermal sensors for temperature measurement

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### Our offer

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- Investigation of the suitability of different adhesives for an accelerated microwave curing process
- Modification of the adhesive to increase microwave absorption
- Development of suitable microwave antennas for application
- Process development

### 3 Microwave antennas.