

## Application example

**Metal springs for mattresses**

PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SCREENING

**Task**

The steel springs for spring mattresses are to be welded into nonwoven pockets made from polypropylene in an automated machine. The system must be capable of flexible production according to the size of the mattresses. The nonwoven fabric needs to enclose the steel springs reliably so that they are held in the correct position without metallic contact.

**Solution**

20 kHz ultrasonic components with a power of up to 3600 W are used to enclose the springs. Sonotrodes of different lengths are required for longitudinal and transverse welding in order to wrap the steel springs. The joining surfaces of the titanium sonotrodes, some of which are over 300 mm wide, have a special seam structure. The process uses pneumatic actuator units with piezoelectric quality converters from the SE series as well as MAG generators which provide stable amplitude and power.

**Configuration advantages**

The FEM-optimised sonotrodes, which are made from a wear-resistant titanium alloy, ensure homogeneous welding quality across the entire width. The modular design of the ultrasonic components enables flexible integration in special systems. The MAG generators are monitored by a system-side PLC controller. Further key advantages include the space-saving installation of the MAG generators "module on module", optimised for control cabinets with a depth of 300 mm, as well as a diverse range of bus connection options. Configuration and diagnostics are carried out via USB interfaces.



The application was produced with 20 kHz ultrasonic welding components (AC1900 actuator, MAG generator, SE converter and titanium sonotrode), integrated in a special system.