

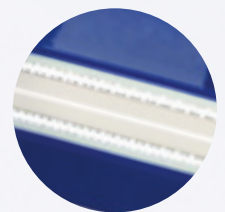
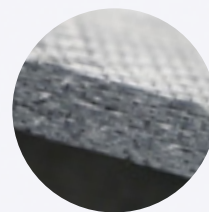
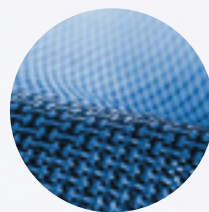


**WEBER  
ULTRASONICS**



# COMPOSITE CUTTING

**RESONANT ULTRASONIC SYSTEMS FOR  
EFFICIENT MACHINING, CUTTING AND  
SAWING OF LIGHTWEIGHT MATERIALS**



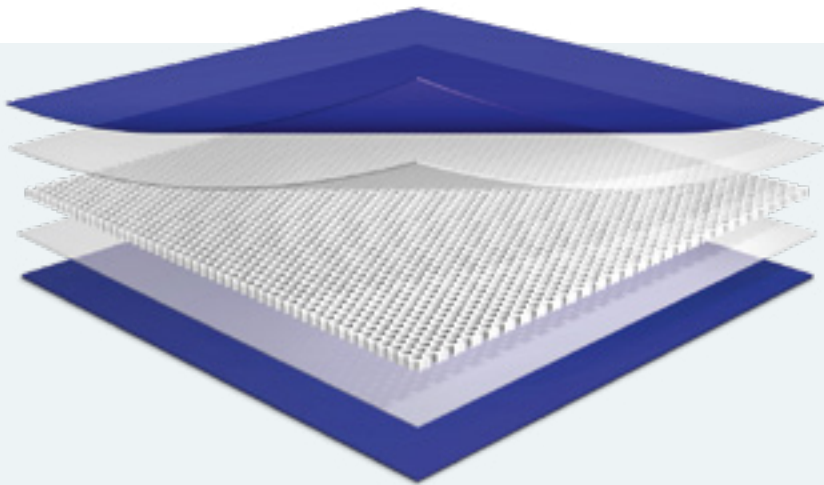
# HIGHER PRODUCTIVITY, FLEXIBILITY AND EFFICIENCY

## RESONANT TOOL SYSTEMS SEPARATE LIGHTWEIGHT MATERIALS EFFICIENTLY AND RELIABLY

Lightweight materials are a driver of innovation for numerous sectors including the automotive industry, the aerospace sector, medical technology as well as mechanical and plant engineering. The use of alternative materials such as fibre-reinforced plastics, composite materials and stacks with cores made of foam or honeycomb structures requires new machining solutions. This where our ultrasound-supported tool systems such as SonoTrans enable optimally adapted and efficient processes.

### BETTER PERFORMANCE WITH RESONANT SYSTEMS

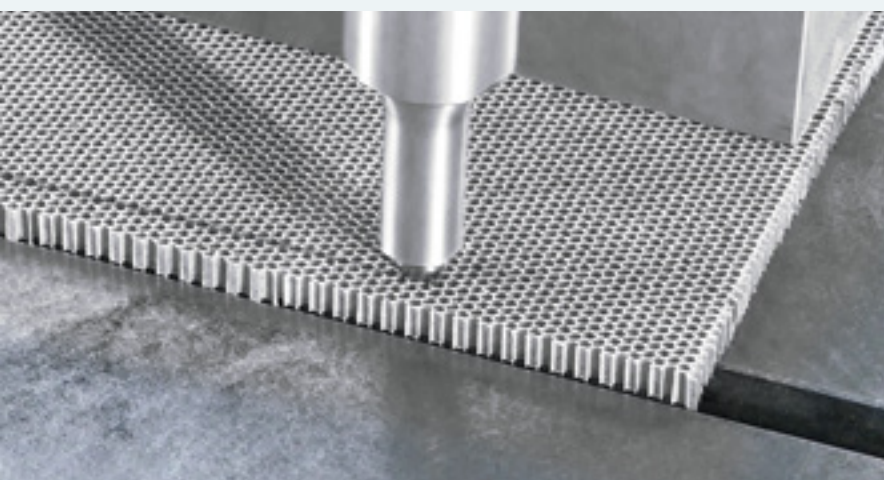
By using ultrasound, movement amplitudes in the range of only a few micrometers are generated at the tool blade. This reduces process forces. With conventional, non-resonant systems, however, this effect is very small as only approximately five per cent of the energy employed is converted into oscillation, with the rest turning into heat. The resonant systems of Weber Ultrasonics are a wholly different proposition. The ultrasonic frequency and the oscillation mode are determined on the basis of the tool properties and the system is operated with this resonant frequency. As a result of this optimal matching the degree of efficiency of the ultrasonic support increases to up to 95 per cent and the process forces are significantly reduced.



### OVERVIEW OF MATERIALS

#### FIBRE-REINFORCED PLASTICS (GFRP, CFRP)

- > **COMPLEX COMPOSITE MATERIALS**
- > **COMPOSITE MATERIALS WITH STACKS**  
Honeycomb or foam structures
- > **BRITTLE LIGHTWEIGHT MATERIALS**
- > **SMC (SHEET MOULDING COMPOUND)**
- > **PREPREGS**



### INNOVATION DRIVER IN LIGHTWEIGHT TECHNOLOGY

In many sectors the future belongs to lightweight materials with their many innovative properties. These often brittle and challenging materials can be successfully and efficiently cut and machined with ultrasonic solutions from Weber Ultrasonics.

The SonoTrans system  
cuts honeycomb  
cardboards

# FOR MACHINE TOOLS AND INDUSTRIAL ROBOTS

SonoTrans system with  
quick-change module  
for use in robots

## ADVANTAGES AT A GLANCE

- > Flexibility through quick-change modules and standardised HSK mounting fixtures
- > Quick tool change
- > Longer tool lives
- > Higher precision
- > More cost-effective manufacturing processes
- > Higher material removal rate and material throughput
- > Use in industrial robots

## FASTER AND MORE SUSTAINABLE

The hybrid process achieves higher material removal rates, a higher material throughput and reduced machine times even when working with lightweight materials that are difficult to machine. At the same time the tool load is reduced while the service life increases. The result is cost savings and a more cost-effective machining process. What's more, thanks to the HSK 63 mounting fixture the SonoTrans system can be easily and economically integrated into every machine tool.

## COST-EFFICIENT AND FLEXIBLE

The greater precision that can be achieved during machining enables the manufacturing of more filigree work pieces using portal systems as well as the use of industrial robots as a cost-effective and flexible alternative for implementing an automated manufacturing process. The manufacturing tolerances realised by robots are in the comparable accuracy range of conventional machine tools. In this way the essential advantages of robot machining such as flexibility and process integration can be utilised in manufacturing complex tooling geometries or larger work-pieces for the automotive industry, aerospace sector and energy technology.



**2 kW**  
POWER OUTPUT



**90-95 %**  
EFFICIENCY



**20-35 kHz**  
FREQUENCY SPECTRUM



**77/105 mm**  
CUTTING DEPTH

# PERFECT COMBINATION

## THE SONOTRANS SYSTEM AND THE HS2 GENERATOR

Individually configured to match your material cutting requirements, the Sonic Digital HS2 generator for industrial installations impresses with its space-saving installation on the long or narrow side, high efficiency and compatibility with other system components. PROFINET or PROFIBUS interfaces facilitate easy integration into control processes and remote maintenance.

**The HS2 ultrasonic generator supplies the optimal frequency and power for the precise cuts of the SonoTrans system.**



**1**  
SonoTrans system with quick-change module in robot systems



**2**  
SonoTrans system with HSK mounting fixture for machine tools



**3**  
Sonic Digital HS2 ultrasonic cutting generator



AUTOMOTIVE



MECHANICAL AND  
PLANTENGINEERING



AEROSPACE



ENVIRONMENTAL  
TECHNOLOGIES



MEDICAL  
TECHNOLOGY

# INTO THE FUTURE WITH ULTRASOUND

A WEALTH OF EXPERTISE AT YOUR SIDE

## FUTURE-ORIENTED INDUSTRIES BENEFIT

Companies that employ modern lightweight technologies for developing and manufacturing their products benefit from the high-performance SonoTrans system from Weber Ultrasonics.

Our innovative ultrasonic technology enables processes to be designed more precisely and more efficiently. With our profound industry expertise we are the strong partner at your side in all your endeavours. For industry and plant manufacturers, Weber Ultrasonics is the development partner with in-depth ultrasound expertise. Moreover, we are continually expanding the range of applications for ultrasound in manufacturing by conducting extensive research in cooperation with our customers.

## QUALITY MADE IN GERMANY

We offer technology and service from a single source: with certified quality, developed and manufactured in state-of-the-art production facilities in Germany. Our portfolio comprises ultrasonic components such as generators or sonotrodes, as well as complete, turnkey systems with integrated quality control and individual additional functions.

Concise customer training courses and unique customer service with ultra-fast spare part delivery round off the portfolio. Simply get in touch when you are facing great challenges in machining complex materials – we will support you with innovative manufacturing procedures and new technological processes.

▶ See for yourself! Watch our video “Cutting composite materials using ultrasound” online at [www.weber-ultrasonics.com](http://www.weber-ultrasonics.com) or on YouTube.



**WEBER  
ULTRASONICS**

Im Hinteracker 7  
76307 Karlsbad, Germany  
T +49 (0)7248 9207-0 F +49 (0)7248 9207-11  
mail@weber-ultrasonics.com  
**weber-ultrasonics.com**