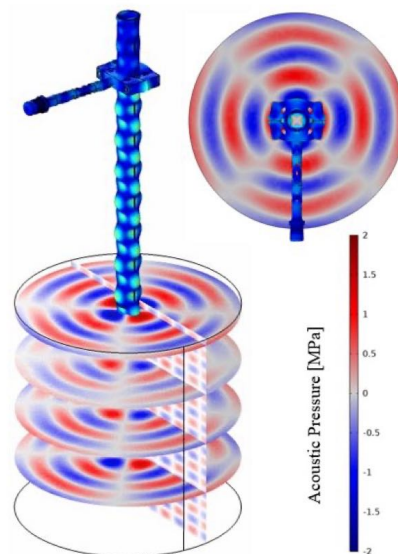
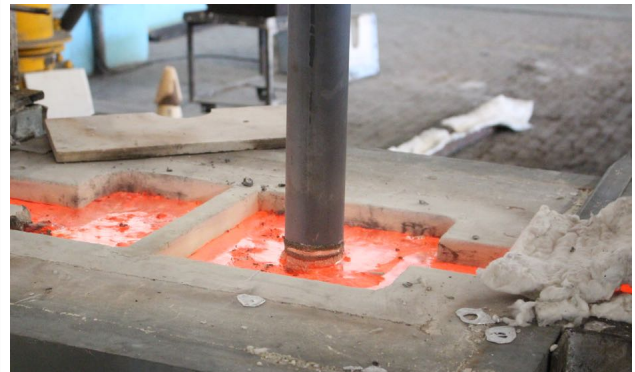


MMM Open Sialon Tube Sonication Kit for Aluminum Melt Treatment



The MMM Sonication Kit provides a complete solution for applying ultrasonic treatment to aluminum melts in laboratories, foundries, and cast houses. This all-inclusive package contains the necessary components, software, and operator training to get your MMM Ultrasonic unit operational on-site.

Key Features / Scope of Supply:

- Proprietary MMM Technology: Utilizes Multi-frequency, Multi-mode, Modulated signal processing (exclusive to MPI).
- Pre-Assembled Core: Transducer and Sialon sonotrode tube arrive assembled, ready for installation. A bolted connection into the Teflon spacers (s. Figure 1, 4).
- Application-Specific Flexibility: The transducer holder/manipulator is **not included** in the scope of supply to allow for customization of your unique sonication setup. Standardization is currently impractical due to varying customer specific use cases (s. Figure 3).
- Full Support: Includes software and remote training during 3 months for successful operation.
- Robust Design: Transducer assembly weight: 15kg.

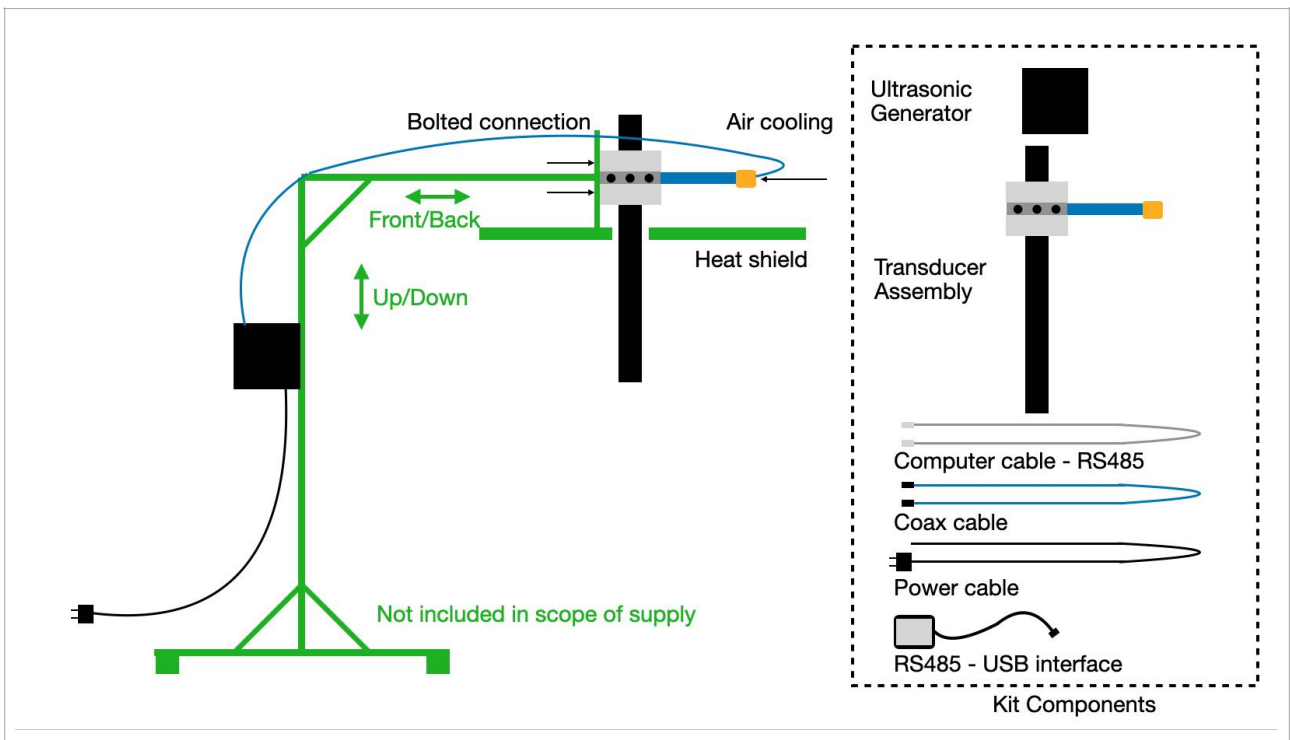


Fig. 1 - Concept Sketch of customer built holder/manipulator (“green”) and the MPI components

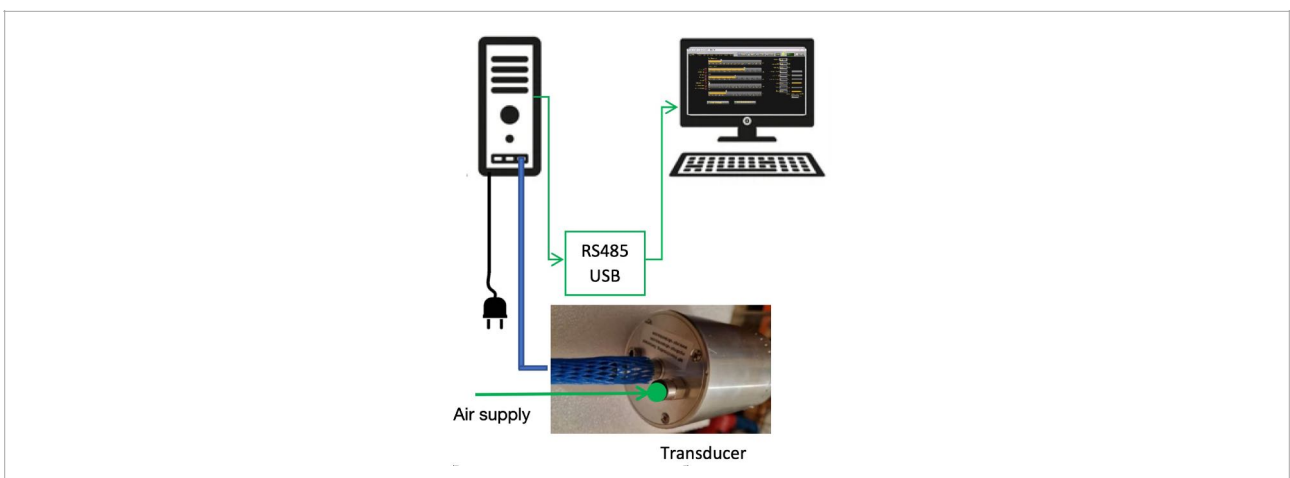


Fig. 2 - Generator - Transducer - Computer connection

Component lists - Scope of Supply

- 1) Ultrasonic generator
- 2) Power cable - 2m
- 3) Transducer assembly: consisting of Titanium waveguide, Sialon Tube (Sonotrode), clamps, teflon spacers, sheet cover, bolts, nuts (s. Figure 4)
- 4) RS 485 computer cable
- 5) RS 485 / USB interface
- 6) Coax cable - 3m

Air supply

The transducer and the sonotrode clamps must be air cooled with 4-6 bar during operation. The connection is on the backside of the transducer.

Heat protection

The Sialon sonotrode tube operates immersed in molten aluminum at approximately 700 °C.

Critical: The transducer and the sonotrode clamps must be shielded from this heat and radiation, as prolonged exposure to temperatures exceeding 45 °C could jeopardise operation. Similarly, the coaxial cable connecting the transducer to the generator and the air supply tubing require protection from elevated temperatures.

It is essential to incorporate proper heat protection, e.g. in the form of a heat shield, into the holder/manipulator design and to insulate all cables and tubing.

Generator specs

Frequency	SONOROD 2000 20 kHz	
Operating voltage	230 V +/- 15%	
Input current	8 A	
Effective power output	1,500 W	
Maximum output	2,000 W	
Fuse protection	10 A	
Dimension casing (mm)	WxHxD: 125x371x252	Weight: 6 kg
Operating temperature range	-10 to +40 °C	Protection class: IP20, IEC 60 529, EN 60 525

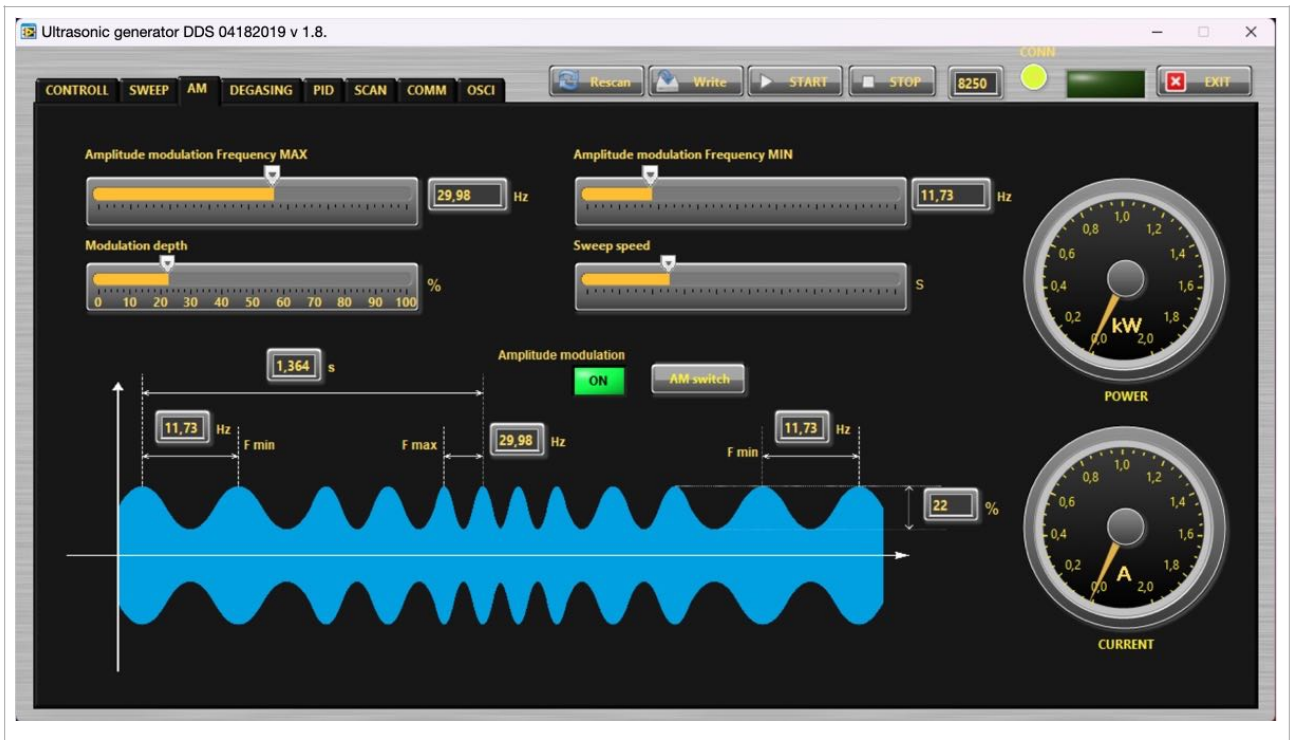


Fig. 5 - Generator software window

An Installation Manual, Assembly and Operating Instructions are included in the offer

Remote Control

Remote control via AnyDesk software enables remote system operation, training and diagnostics.

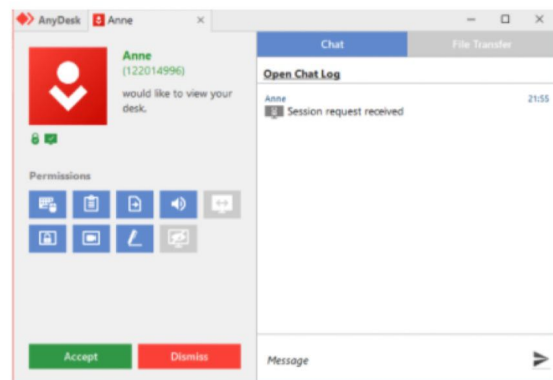


Fig. 6 - AnyDesk Software