**Portable PEENING tool (designed and produced by MPI)**

**Specification, advantages and properties:**

1. MPI peening tool has 2 times higher, initial oscillating amplitude of ultrasonic transducer, compared to any other peening tool produced worldwide (meaning hammering, penetration impact depth can be very high and strong). It also has and stronger pulsing momentum (at least two times), than anybody else.
2. MPI’s peening operating regime is frequency-modulated what has advantages regarding faster and stronger stress relief (compared to competitors).
3. MPI peening presents Single-piston peening concept based on the patent applications:

a) European Patent Application: EP 1 060 798 A1. Unidirectional single piston ultrasonic transducer. Applicant: Prokic Miodrag, MP Interconsulting, 8.06.1999 – 20.12.2000

b) European Patent Application (related to MMM technology): EP 1 238 715 A1

Multifrequency ultrasonic structural actuator

Applicant: Prokic Miodrag, MP Interconsulting, 5.03.2001 – 11.09.2002

Single-piston agitation is penetrating much deeper than double-piston concepts of all other peening tools from competitors.

1. MPI Peening generator keeps frequency and power control during peening in heavy duty conditions what is very difficult for standard ultrasonic generators.
2. Operating life: almost unlimited. Apparatus is very robust and almost indestructible, compared to competitors. Applicable in very long continuous operating regimes (it has forced air-cooling for very long and heavy duty operations).
3. Modular design concept, with easy replaceable hammering pins, and handy for manual operations.
4. Can be applied with robotic arm.
5. Rated watt consumption 400-600W.
6. Operation ultrasonic frequency 20 kHz (higher frequencies also available).
7. Bias current 7A.
8. Oscillation amplitude of wave guide edge 25-30 μm.
9. Treatment speed in manual mode 0,3 - 0,7 m/min.
10. Overall dimensions of manual tool 455x180x75 mm.
11. Manual tool’s weight 3,5 kg
12. Tool’s axial clamping force 20-40 N.
13. Cooling air input.
14. Single pin and multi-pin heads.
15. Needle diameter 2 to 5 mm

Ultrasonic generator:

1. Output voltage 600-1200 V
2. Main supply voltage 230V 50/60 Hz
3. Operational frequency range 17.5 - 21 KHz

Comment: We could combine mechanical or ultrasonic peening tool with electromagnetic field, stress relief coil, for active demagnetization and magnetic shocking in order to maximize stress relief effects. This will help us to create our new, very original patent (united ultrasonic and electromagnetic peening).