

# MMM Atomizing Technology

## Liquid Atomizing Applications

Main Web Site: <http://www.mpi-ultrasonics.com>

Download Server: <http://mastersonic.com>

Email: [mpi@bluewin.ch](mailto:mpi@bluewin.ch)

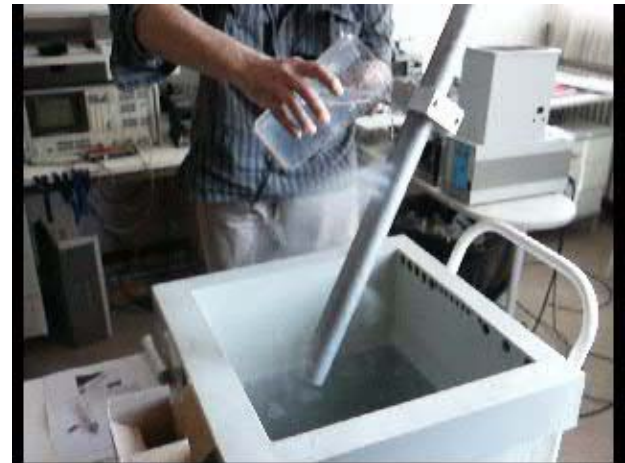
# Applications

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- Industrial fluids atomizers & gas mixing (air conditioning, semiconductor technologies...)
- Water & fuel atomizers
- Liquid alloys atomizers & solder atomizers
- Incineration of waste and dangerous liquids by atomizing
- Large volume humidifiers & dust removal
- Air and water filtering, purification, decontamination & sterilization (nuclear, included)
- Micro-encapsulation, coating, surface impregnation
- Food and Pharmaceutical applications (surface decontamination)
- Electrochemistry & Sonochemistry process integration (nano technologies)



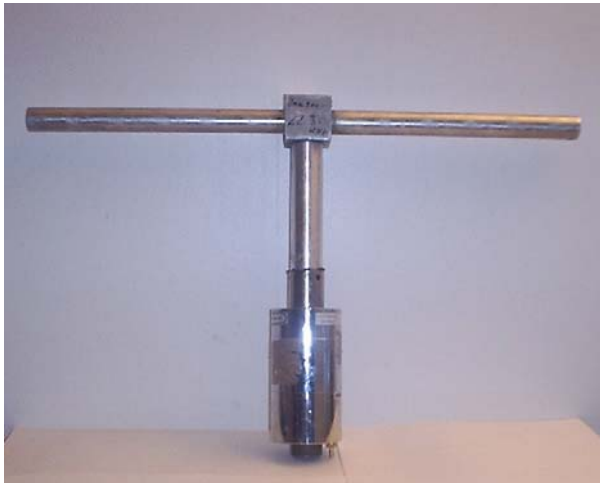
# Clamp-On Tubular Atomizers in Action

(movie files)



# T-Tube Atomizers in Action

(movie files)



# Vibrating Wire & Plates in Action

(movie files)



# Piston Sonotrode Atomizer in Action

(movie files)





# Liquid Metal Atomizing in Action

**Very High  
Atomizing  
Temperature**



Movie file

**Sonotrode  
water-cooled  
internally**



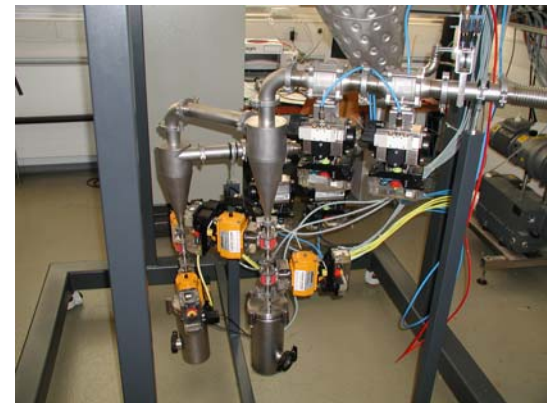
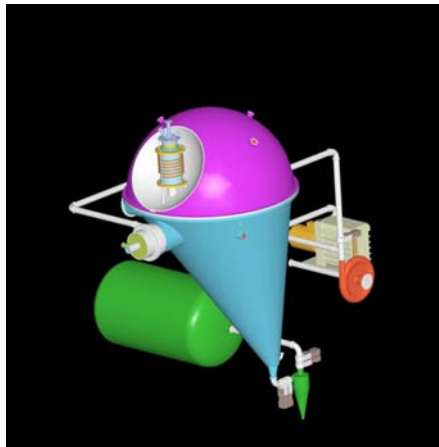
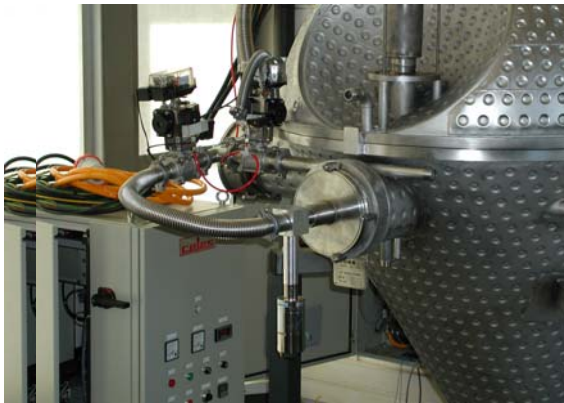
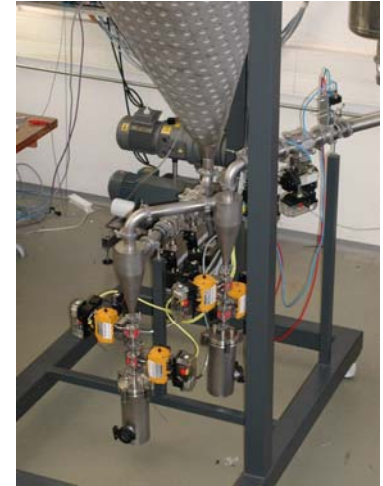
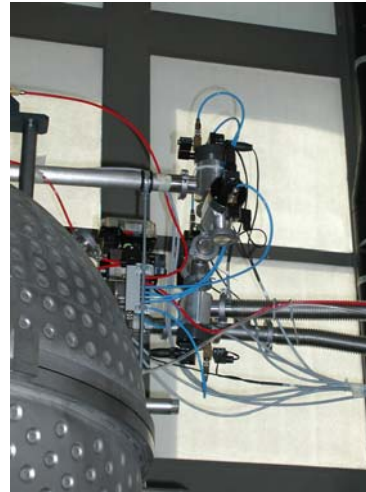
# Rotating Sonotrode Atomizers in Action

(movie files)



High and Low temperature applications

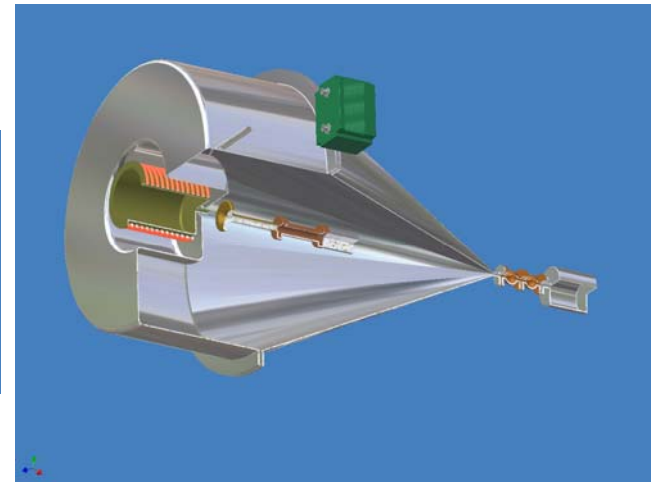
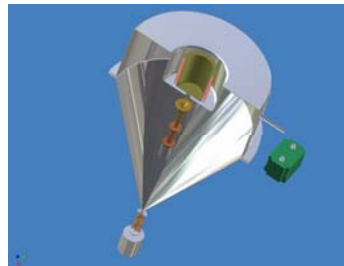
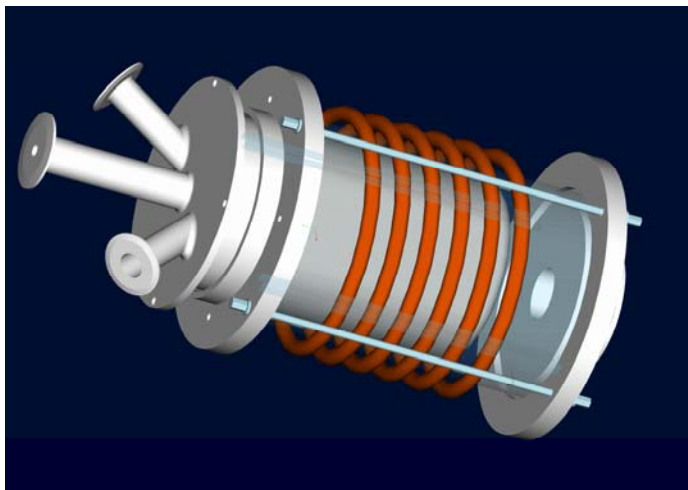
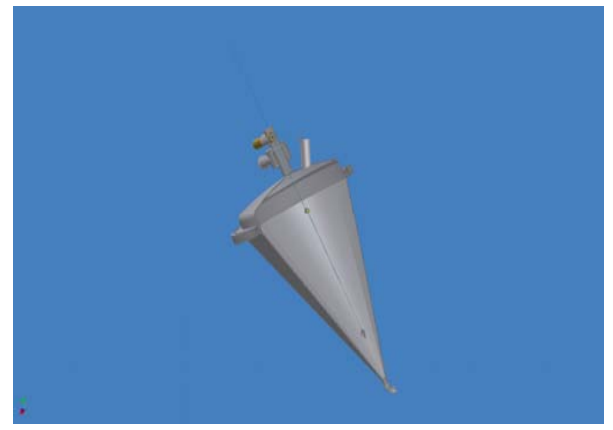
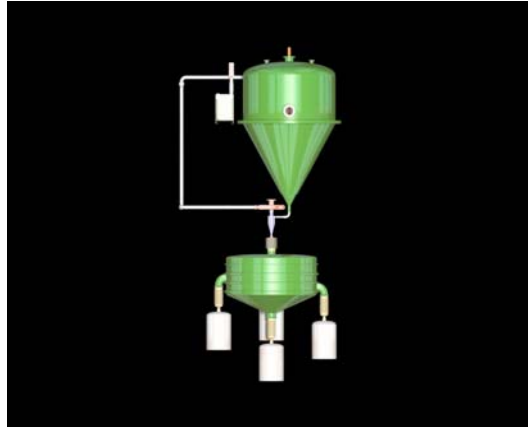
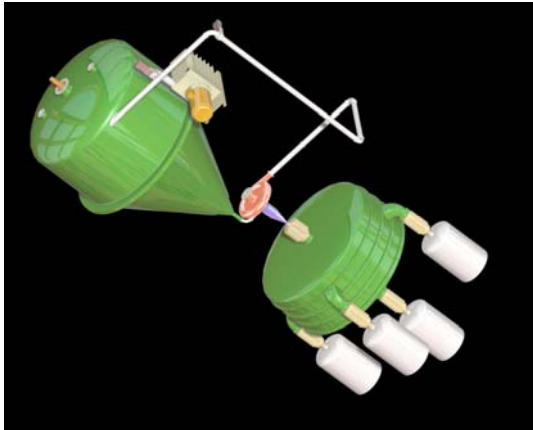
# Atomizing Technology





# Atomizing Chamber

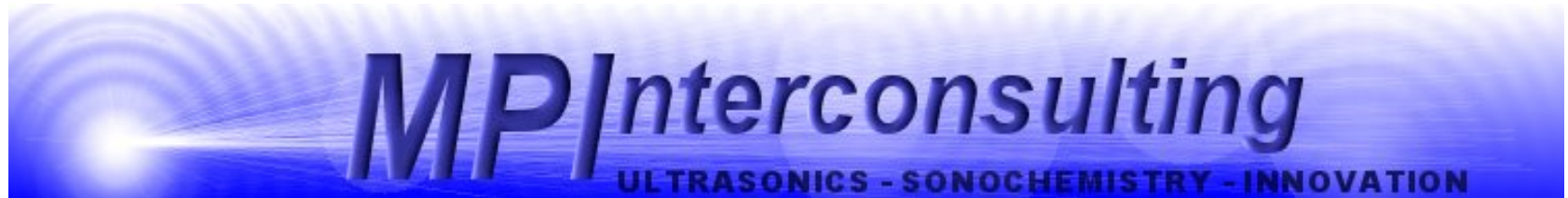
with integrated induction-heating oven





# Liquids Incineration

- The most interesting for liquid incineration is our tubular clamp technology. In its simplest form we are using specially designed clamps to fit over standard stainless steel or titanium pipes. In a more complex form we would machine a tubular shaped sonotrode from a solid block to give greater durability to the system. In either case these pipes either internally or externally become the radiating elements that make contact with the material under treatment. In an incineration application we have envisioned that the liquid material would be feed through the interior of the pipe where it is atomized and mixed with pressurized air. Attached are video files of two systems that demonstrate atomizing using our flexible Pipe-Clamp Technology.
- One concept is to use these ultrasonic components to help incinerate waste motor oils, industrial oils, organic and mineral oils. Very dirty and used lubricants, oils and greasy materials, charged with different solid particles can be ultrasonically transformed (atomized) into a spray phase, mixed at the same time with other liquids and gasses and very efficiently incinerated. The burning process in a spray phase is extremely efficient.
- The benefit is to eliminate liquid waste materials while producing heat energy for electricity or hot water applications in an environmentally-clean way. In the case of atomizing waste oils we propose to infuse the oil with water (and if necessary with certain amount of other, easy flammable fluid) and atomize the oil/water mixture. Such a mixture would offer much better burning efficiency since presence of water, between 10% and 20%, in many cases is stimulating oil and other fuels incineration and increasing flame temperature. If liquids to be incinerated are charged with foreign particles and have uncontrollable density traditional methods of using nozzles and pumps for spray production will not work well because nozzles would become blocked by the presence of hard particles. When using ultrasonic atomizers, such problems are completely irrelevant, meaning that almost any dirty and charged liquid can be atomized (or firstly reconditioned, mixed ultrasonically with other liquids, in order to get optimal viscosity, density and flammability, and then atomized and incinerated).
- A second concept is to efficiently incinerate non-flammable waste and dangerous liquids with ultrasonic stimulation. By transforming any dangerous liquid into spray phase, ultrasonically, and mixing it at the same time with a convenient flammable gas or flammable liquid spray the result should be a very efficient incineration.
- Our expertise is ultrasonic system components and we look to our industrial partners to bring the required expertise to make complete systems. Although we clearly understand the conceptual system elements it is important for you to understand that many of these new projects require a development phase where we can test and optimize our ultrasonic equipment and our clients can test and optimize the other system elements.



**EXTREMELY LARGE FLOW  
RATE ATOMIZING:  $\leq 1000^{\circ}\text{C}$**

**Solder Alloys Atomizing  
Brazing Alloys Atomizing  
Liquids Atomizing**

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# MMM, Multifrequency and Wideband Tubular Atomizing

Movie Files: Click over the movie-frame area and play the movie



Solder powders production: Type 3, 4 and 5

Atomizing of all kind of liquids and liquid metals until 1000°C

Flow rate in the range of 500 liters or much more / per hour

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