MUST MODULAR ULTRASONIC TRANSDUCER

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PRESENTATION

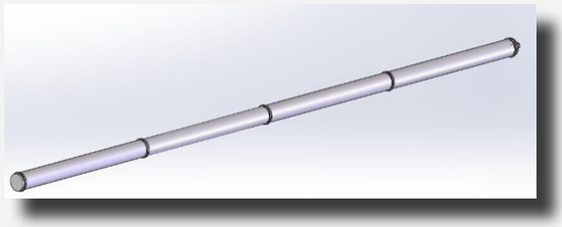
Cedrat Technologies used its knowledge and expertise on ultrasound (US) transducer technology to optimize the design of the conventional US Langevin transducer in order to get modularity and extend the cavitation generating surface.

The result of this development of a new kind of transducer so called the modular ultrasonic transducer (MUST), patent pending, improves the potential of classical tubular transducer:

-Length of transducer over 2 meters and up to 5 meters.

-Uniform generation of ultrasound along the transducer with less attenuation.

Each MUST module is 75cm long and up to 7 modules can be stacked to produce cavitation inside a tank 5 meters wide.



■ Fig1: Modular Ultrasonic Transducer (MUST) with 4 modules, 3 meters long

ADVANTAGES

Modular UltraSonic Transducer (MUST) offers advantages over traditional ultrasonic transducer:

-Longer sonotrode with up to 5 meters length. (see Fig1)

-Bigger surface of cavitation generation. (See Fig2 for the general size of both MUST and conventional UST)

-Uniformity of the treatment improved. (See Fig3 on page 2)

-Better efficiency of the electro-acoustic conversion.

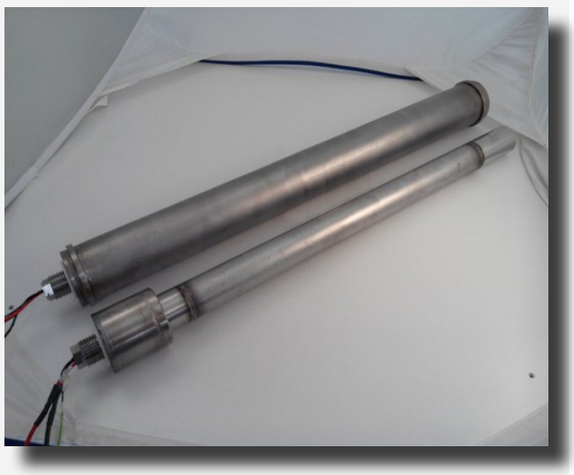
These advantages lead to the following benefits for users:

-Wider tank possible for any treatment with simple interfaces.

-Speed of treatment can be increased due to the bigger surface of cavitation generation.

-Optimization of the number of transducers and no need to stagger them in order to get a uniform treatment.

-Less power consumption for the same treatment performances.



■ Fig2: Photo of both modular (MUST) [top] and conventional UST [bottom]

APPLICATIONS

The new MUST product can be used in various field of application like Sonochemistry, Ultrasonic cleaning, Homogenization, Extraction, etc.

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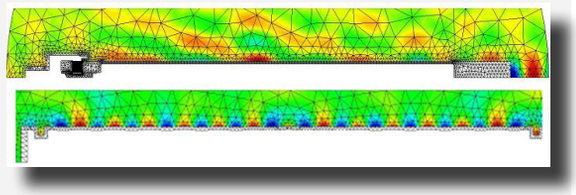
PERFORMANCES

The following performances have been obtained in Cedrat Technologies lab facility:

PROPERTIES OF THE TRANSDUCER	UNIT	NOMINAL VALUES
		Preliminary Data
Displacement along the transducer	(µm)	2.8
Resonant frequency	(Hz)	27'600
Electromechanical coupling	(%)	32
Capacity	(nF)	14.1
Impedance under water	(Ω)	45
Maximal output power	(W)	3'000
Weight	(kg)	6.8
Active diameter	(mm)	76
Module active length	(mm)	748
Total length of transducer with module stacking	(m)	Up to 5
Emitting surface/module	(m^2)	0.357

Remarks: Theses performances have been obtained with the first module prototype. For specific requirement in frequency, length, diameter, power, it's possible to develop a customized module and/or module stack.



■ Fig3: Intensity of the pressure generated by a traditional [top] and modular (MUST) [bottom] transducer of similar dimensions.

For more information, please contact:

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