

What's the Ultrasonic Cleaning

2004.08.11

UL - Tech



What is Ultrasonic ?

1. Division of Sound Waves

- Ultra low frequency : under 20Hz
- Audible frequency : 20Hz - 20KHz
- Ultrasonic frequency : above 15KHz

2. Definition of Ultrasonics

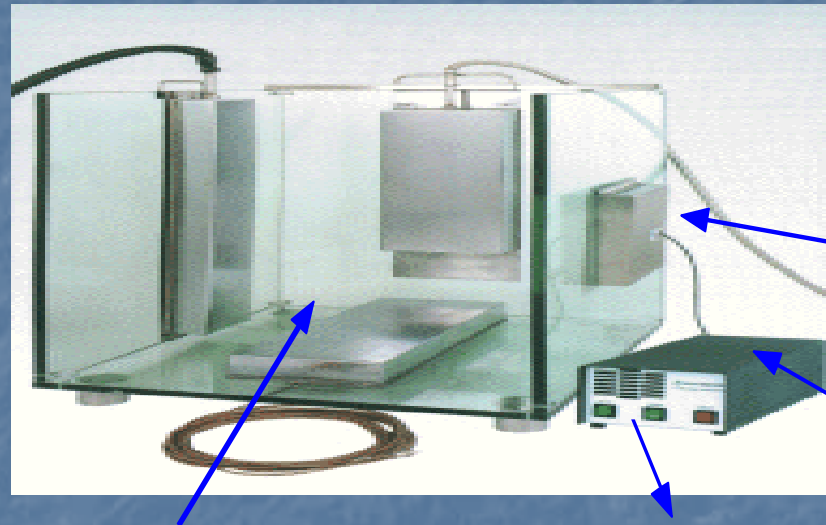
- 1) Ultrasonics is the science of sound waves above the limits of human audibility.
- 2) It is not our aim to try to hear the ultrasound by human ear but it is our scheme to grasp the property of the ultrasound. Because by making use of the property of ultrasound it is possible to find out the physical changes of an object and to apply them to calculation.

3. Applicable fields of Ultrasonics

- 1) Communicating application
Aquatic sonar, fish - detector, flaw detector, breath detector, a liquid level gauge viscometer, medical stethoscope and etc.,
- 2) Mechanical application
Cleaning equipment, dusting equipment, a sprayer (a vaporizer, a pulverizer, an aerograph, a spray dryer, a nebulizer, an atomizer, etc.,) drying machine processing machines treating machines by ultrasonics etc.,

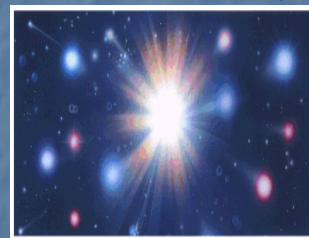
Ultrasonic Cleaning System

As the ultrasonic signal is transmitted to the water, the powerful cavitation aspects take place and they will enhance the cleaning effect

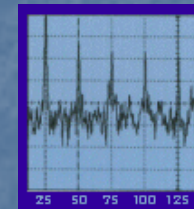


Mechanical vibration
Transducer pack

Ultrasonic
generator

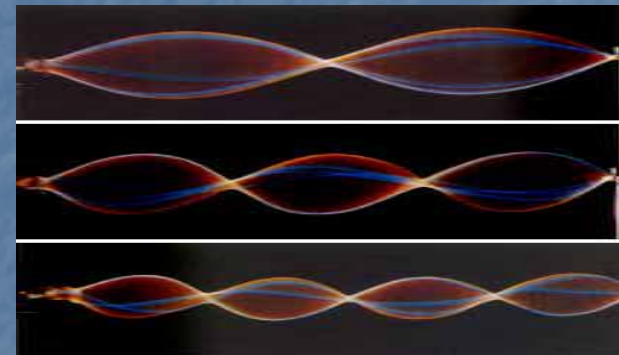
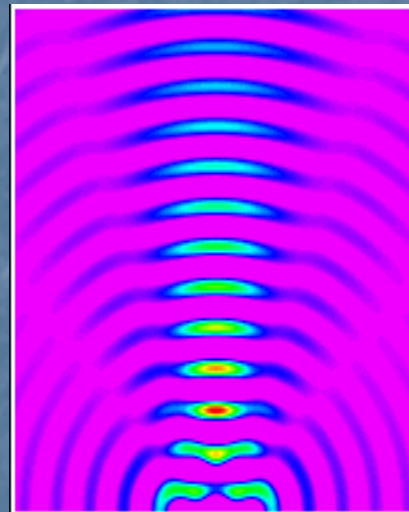
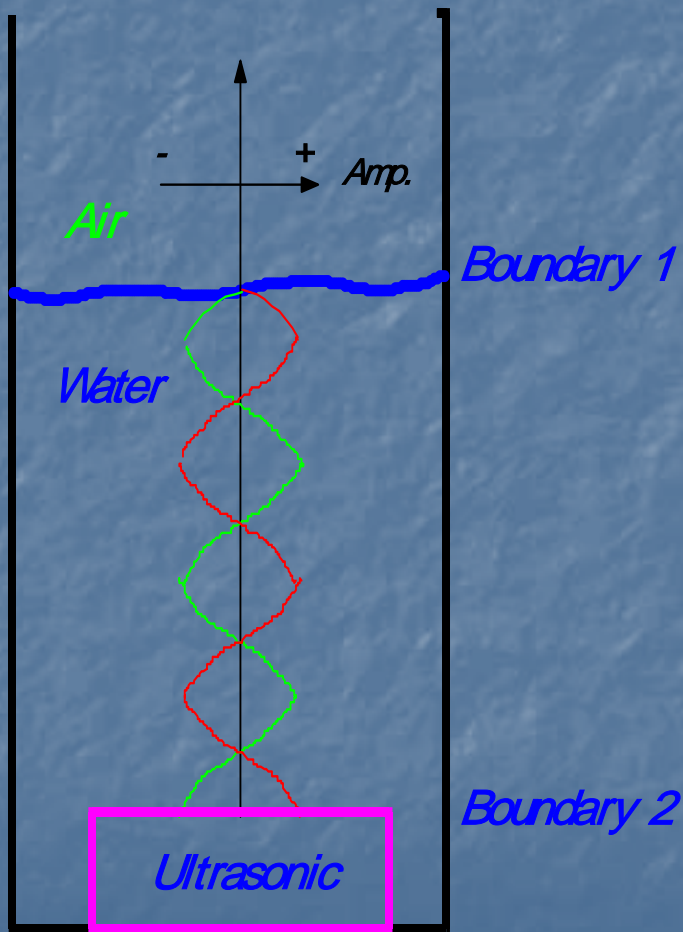


Cavitation

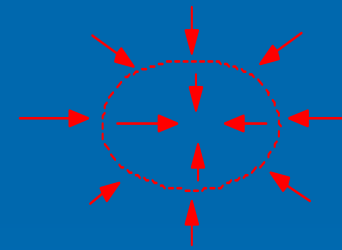
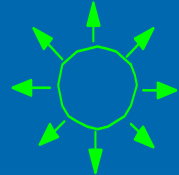
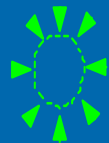
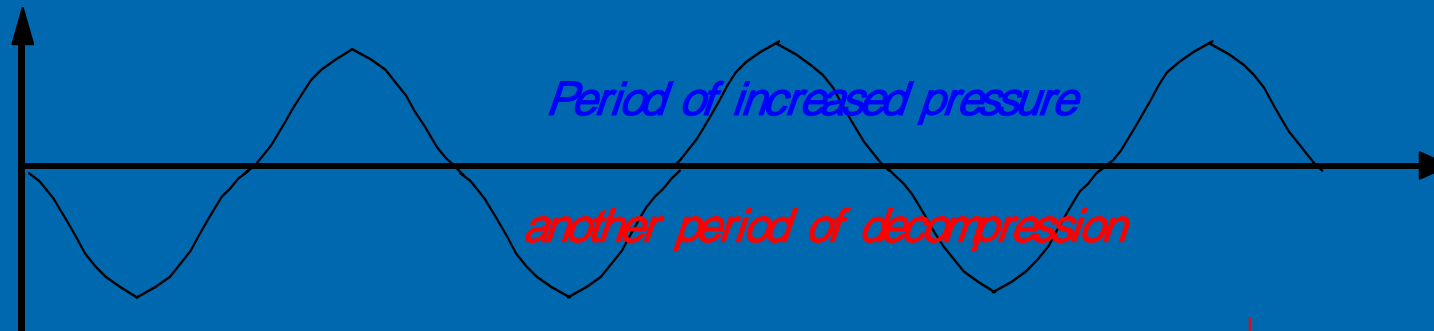


Electric Signal

Acoustic Impedance & Standing Wave



Cavitation



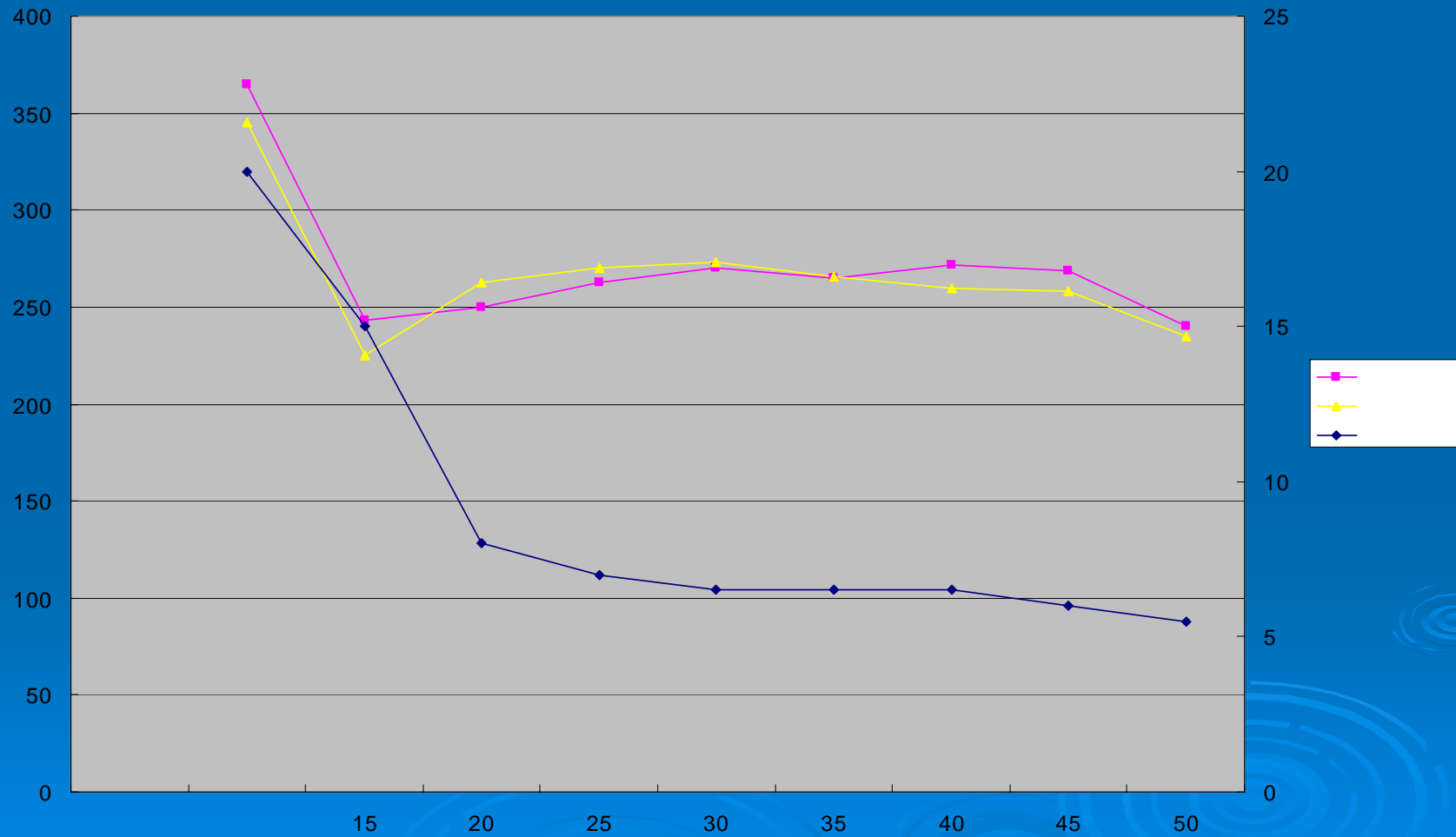
Occurrence of
cavitation core

Repetition of
contraction & expansion

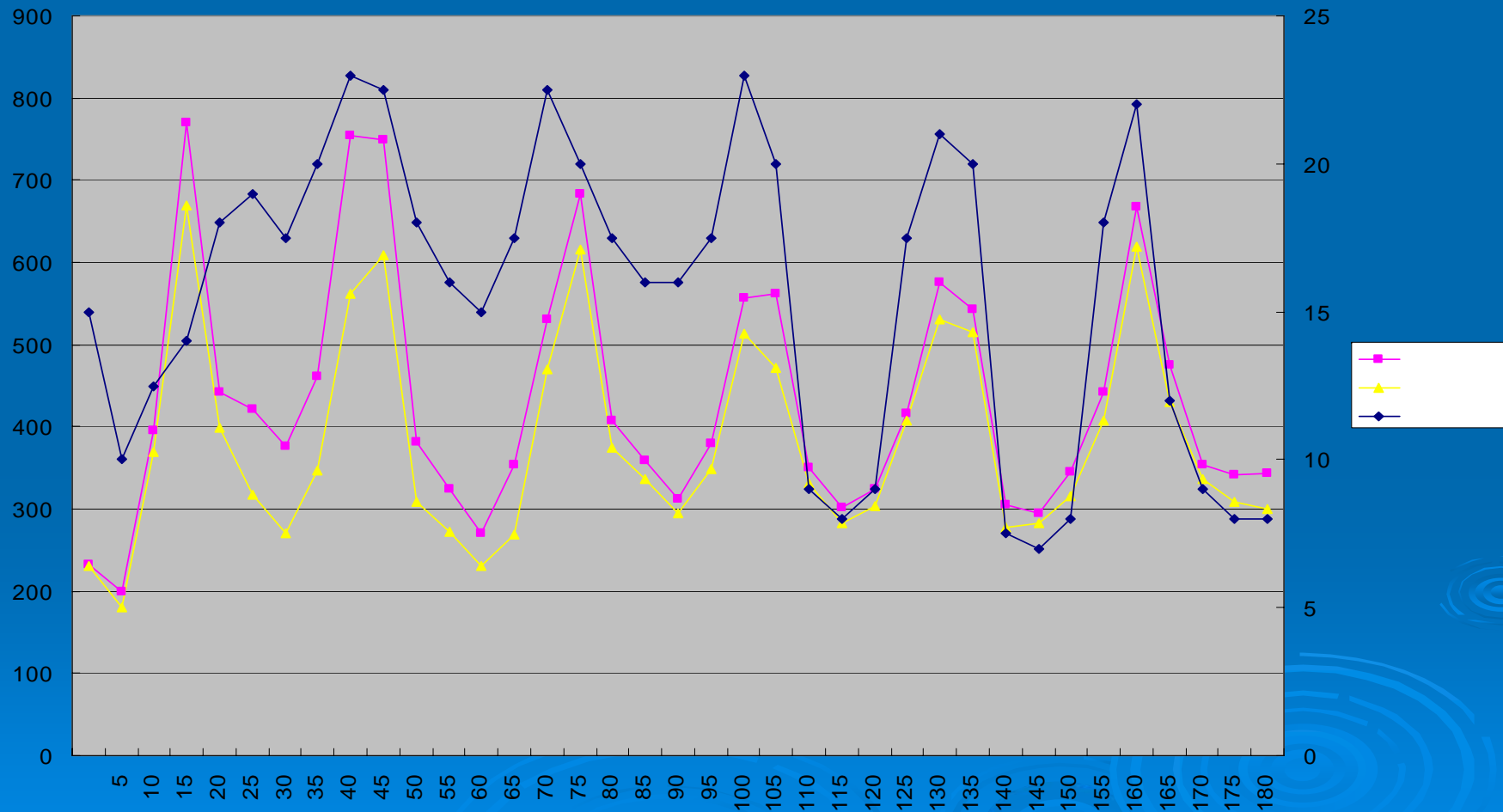
Contraction implosion according to the pressure
overwhelming the surface tension

Cavitation and it's Environments

1

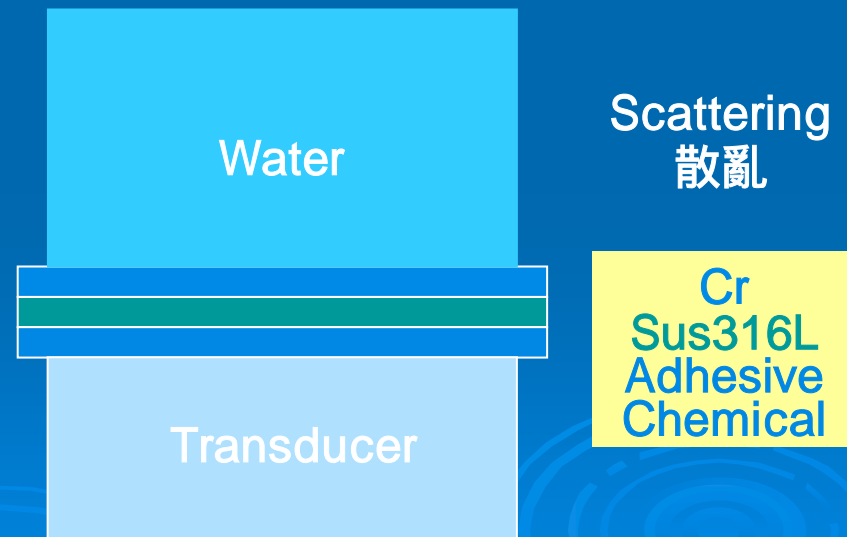


Cavitation and it's Environmens 2

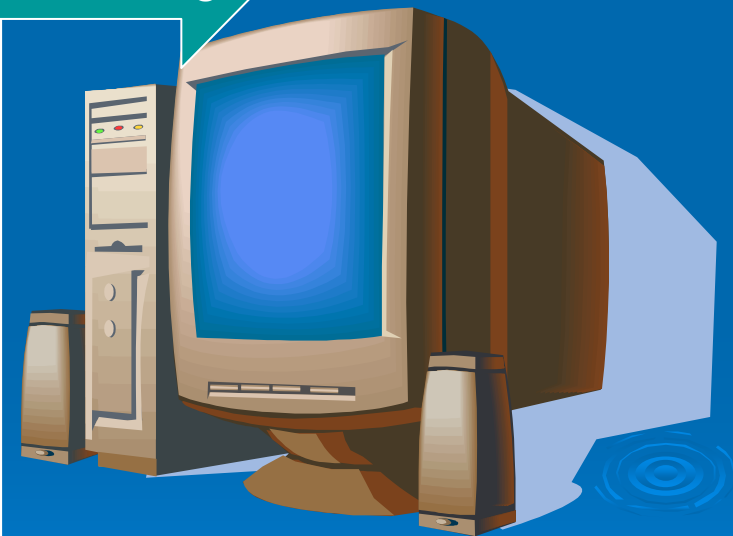
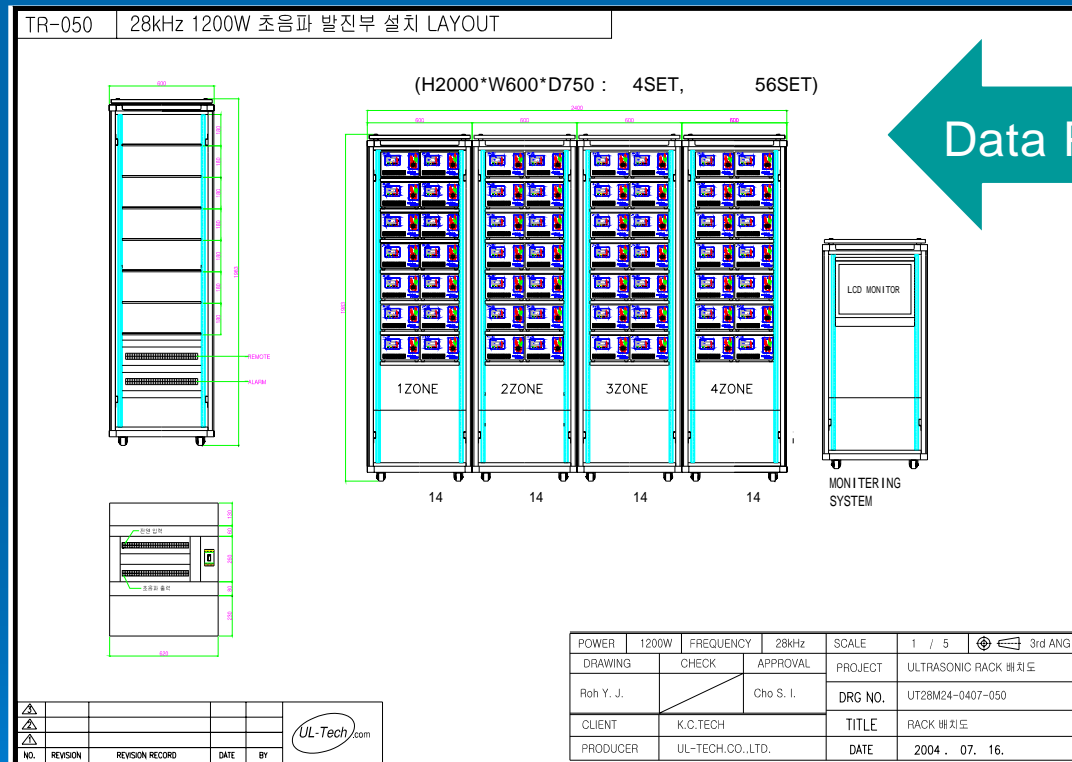


Erosion & Hard Cr coating

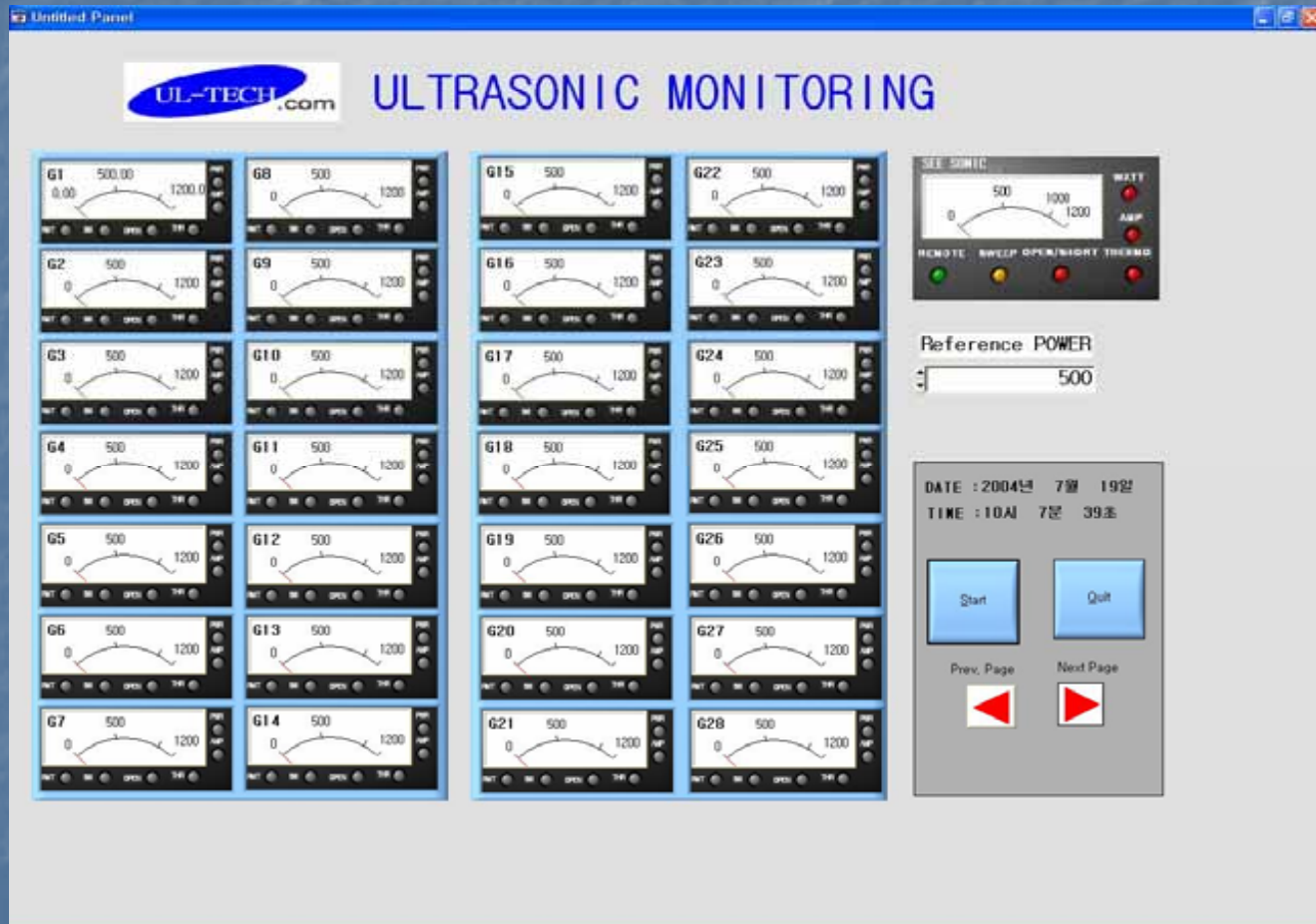
Hard Cr Coating makes to increase the life cycle but diminish the Cavitation Power.



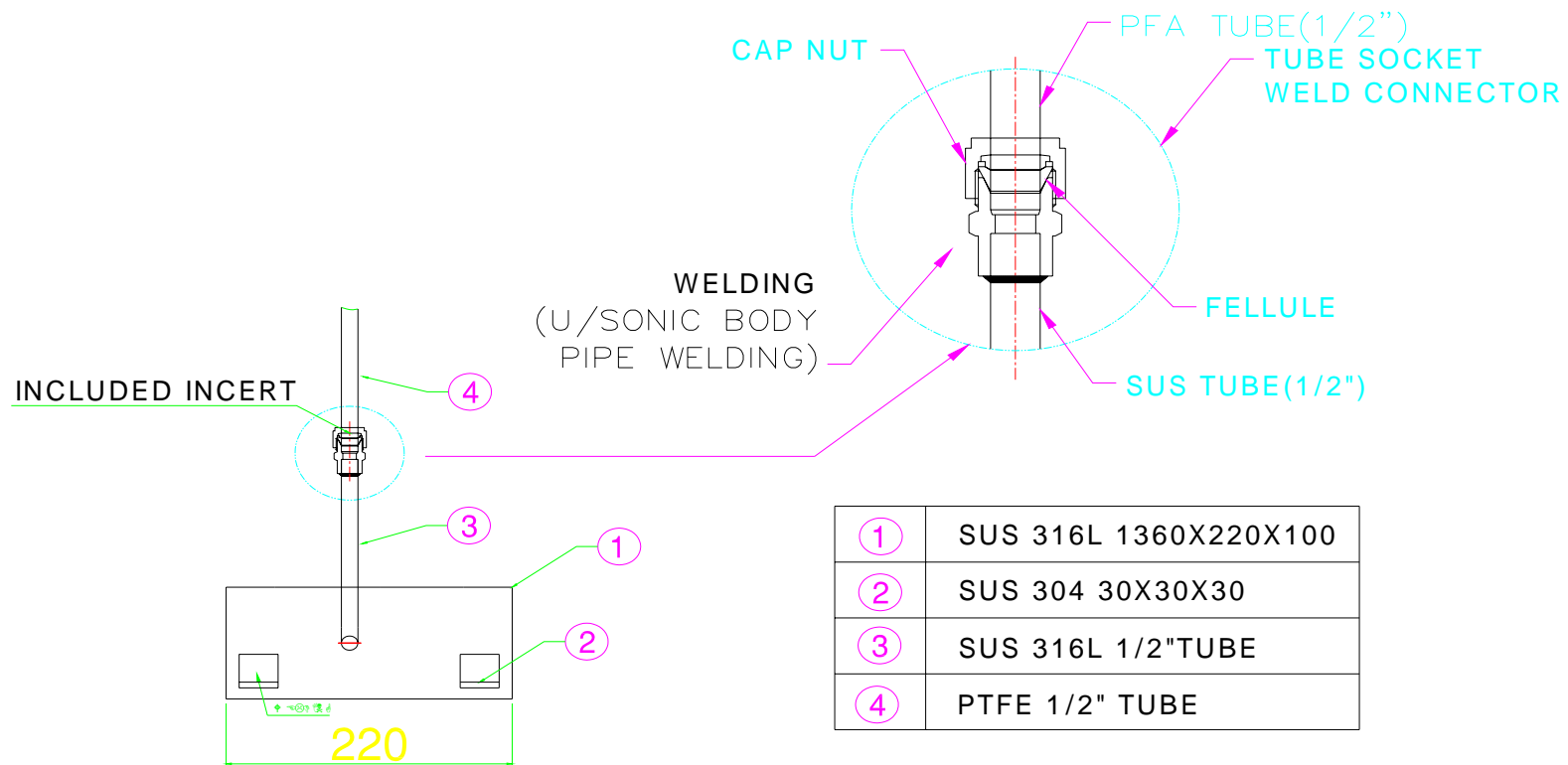
Introduce the Ultrasonic System



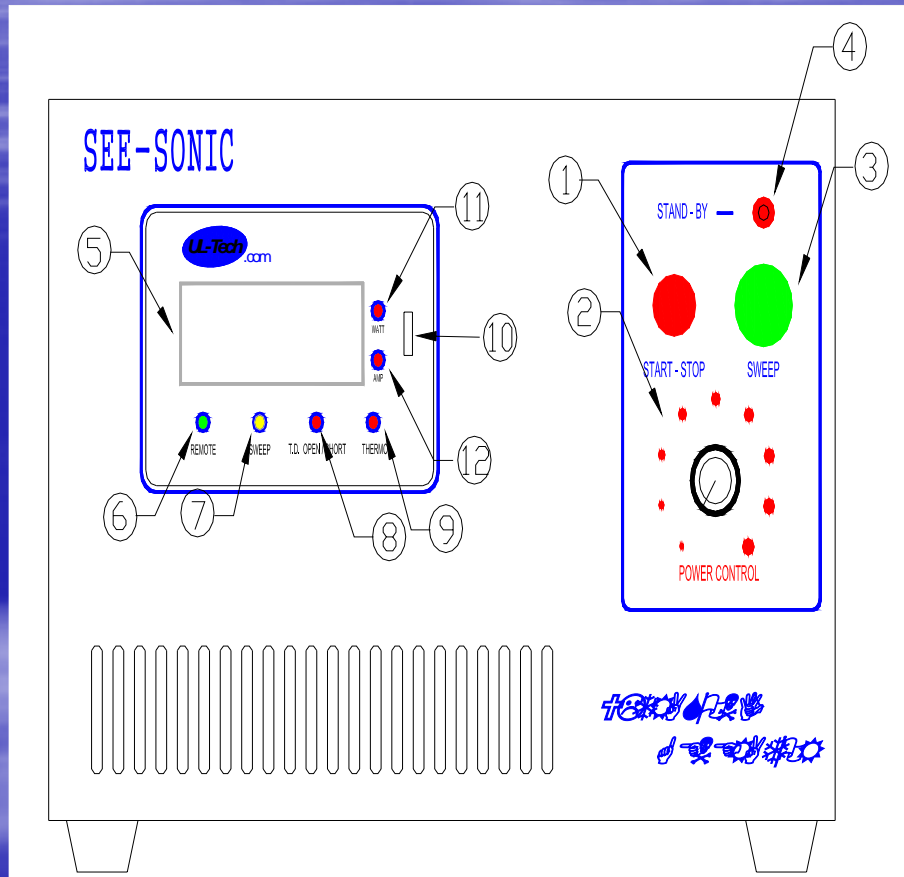
Upgrade : Communication



Changing Nipple to Protect it

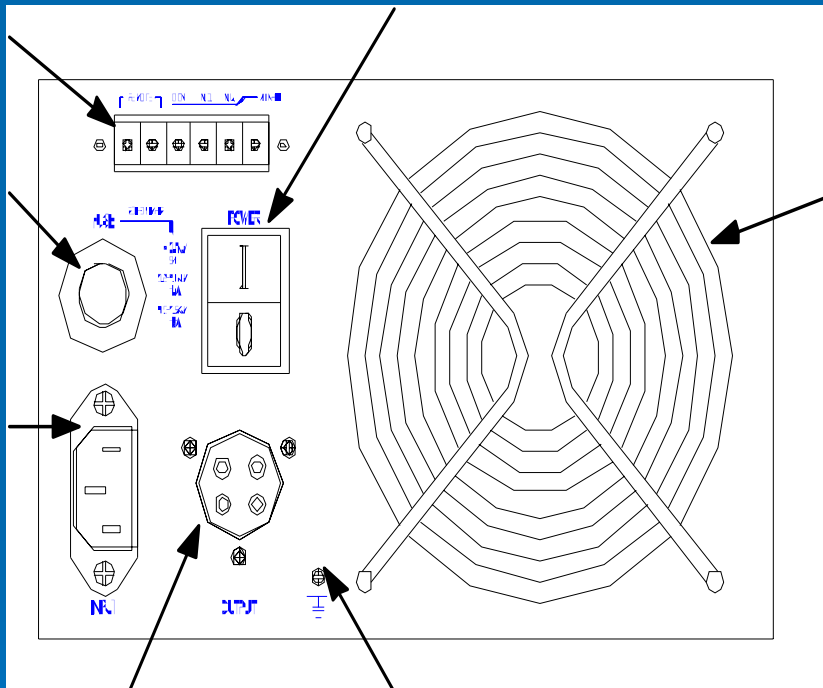


Generator for Front Panel



No	Descriptions
1	Start & Stop Toggle Switch
2	Power Volume
3	Sweep Switch
10	Slide Switch : Current / Electric Power
5	Present Electric Power Value
6	Remote Signal LED
7	Sweep Signal LED
8	Transducer Open / Short Signal LED
9	Thermo Signal LED
4	Stand By Signal LED
11	Electric Power Signal LED
12	Electric Current Signal LED

Generator for Rear Panel



No	Descriptions
1	Main Power Switch
2	Fuse
3	Electric Power Plug
4	High Freq. Output Line
5	Cooling Fan
6	Earth Plate
7	External Remote : 1,2 Alarm output Common :3 , Normal Close : 4 Normal Open : 5 ,Not Use : 6

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