

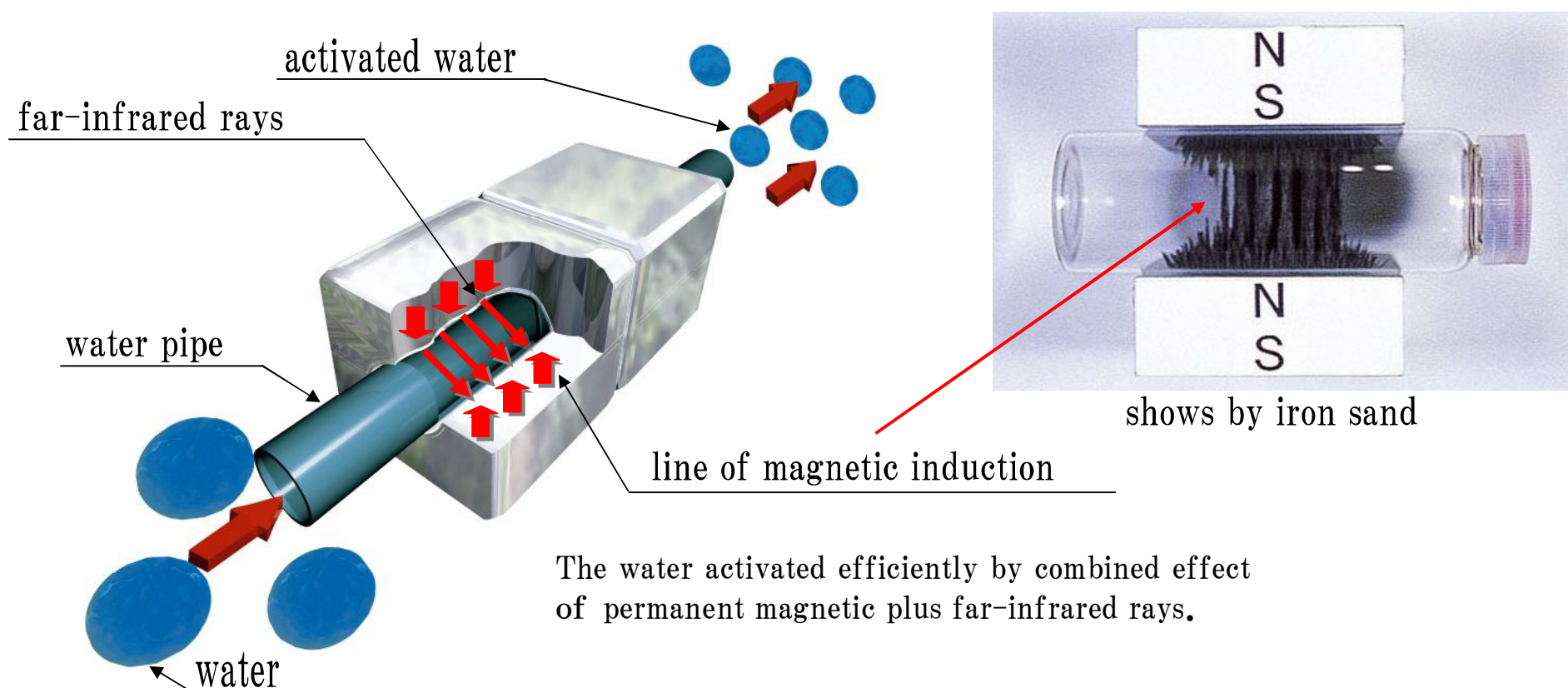
PATENTED under ;  
JAPAN NO. 2622911  
USA NO. 5055189  
EEC NO. 0392097  
CHINA NO. ZL99205654-3  
(UTILITY MODEL PATENT)

# THUNDER SYSTEM

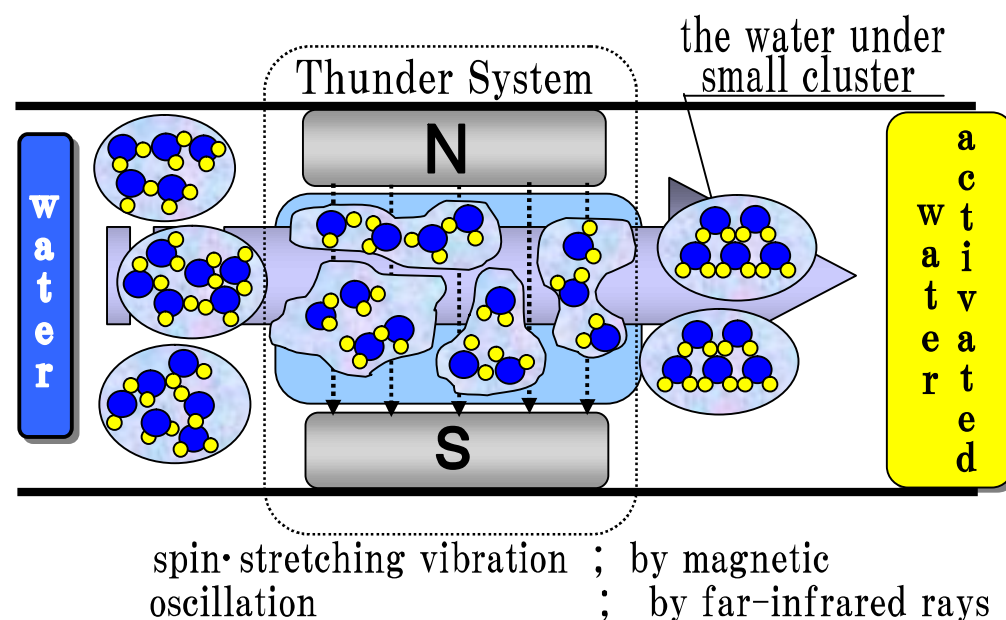
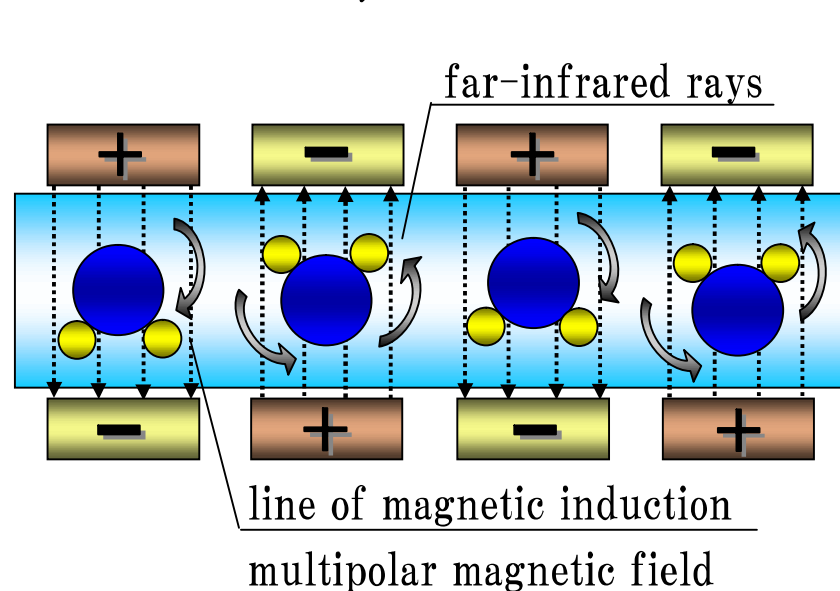
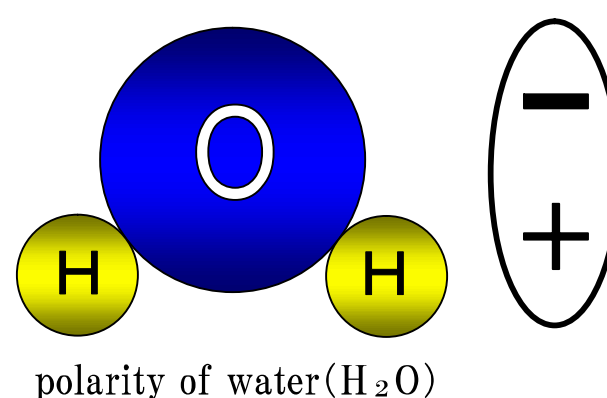
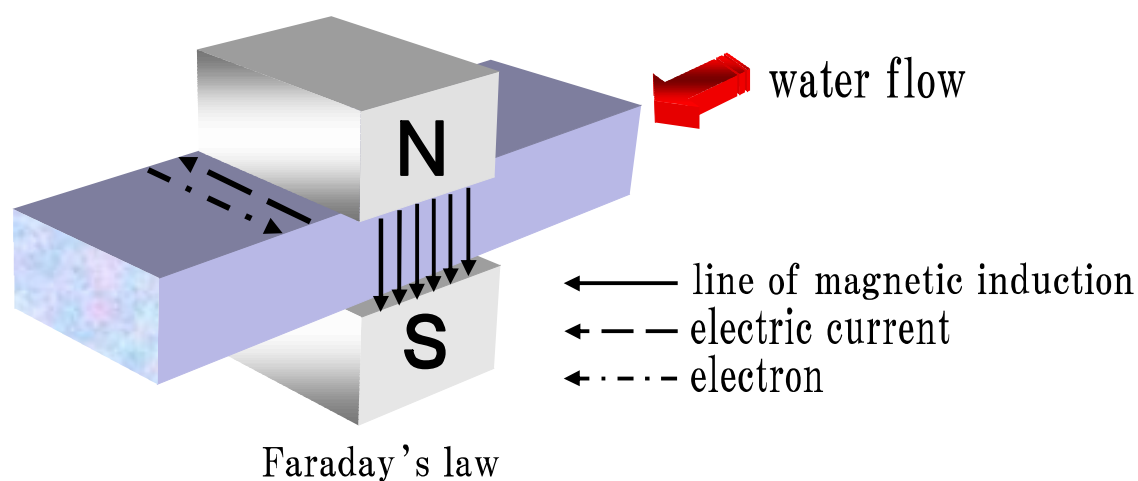
## The theory & the actualization

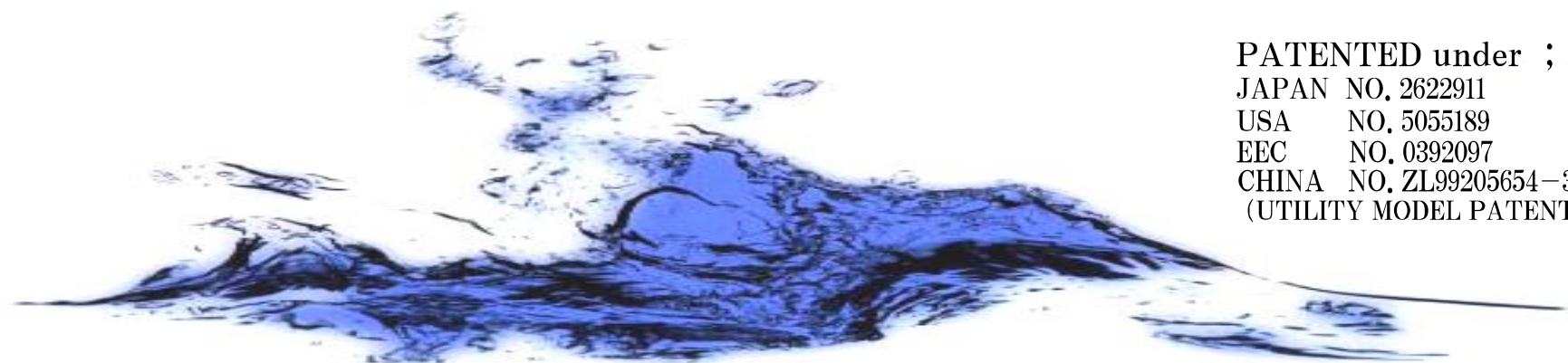
Apparatus for water treatment using multipolar magnetic field and far-infrared rays.

This system activate water by "Faraday's law".



The water activated efficiently by combined effect of permanent magnetic plus far-infrared rays.





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# THUNDER SYSTEM

## Products line up



Cho Cho  
applicable pipe size  
up to 20A

**main purposes**  
faucet  
shower hose pipe  
(fitting place temp.max.80°C)  
**surface Gauss**  
4000G  
**body material**  
acrylonitrile-butadiene-  
styrene plastic  
(ABS plastic)  
**method of setup**  
split type  
set by nipping  
**Product weight**  
0.38kg



Thunder Jr  
applicable pipe size  
15A ~ 25A

**main purposes**  
general houses  
coolant hose pipe of  
machine, etc  
(fitting place temp.max.80°C)  
**surface Gauss**  
4000G  
**body material**  
acrylonitrile-butadiene-  
styrene plastic  
(ABS plastic)  
**method of setup**  
split type  
set by nipping  
**product weight**  
1.74kg



Thunder Protect  
applicable pipe size  
32A ~ 50A

**main purposes**  
water supply pipes for  
building, factory  
cooling tower pipeline  
boiler pipeline  
(fitting place temp.max.80°C)  
**surface Gauss**  
5000G  
**body material**  
acrylonitrile-butadiene-  
styrene plastic  
(ABS plastic)  
**method of setup**  
split type  
set by nipping  
**Product weight**  
15.8kg



Thunder Original  
applicable pipe size  
32A ~ 250A

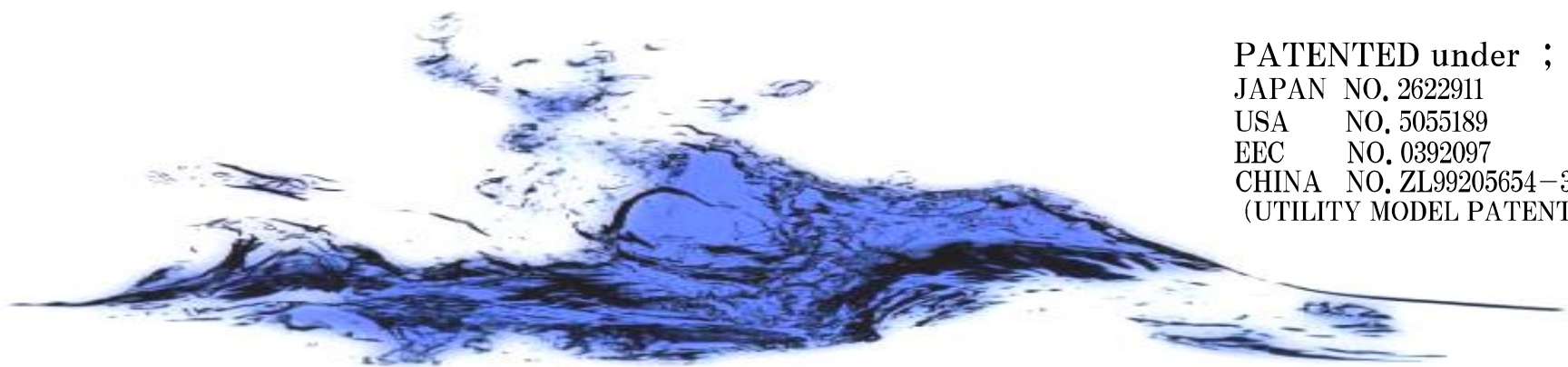
**main purposes**  
water supply pipes for  
building, factory  
cooling tower pipeline  
boiler pipeline  
(fitting place temp.max.80°C)  
**surface Gauss**  
5000G  
**body material**  
stainless steel(sus304)  
**method of setup**  
connect to the pipeline  
by flange  
**Product weight**  
22 ~ 496kg

Thunder System Junkan  
applicable tank volume  
10 ~ 100 m<sup>3</sup>



**main purposes**  
water storage tanks  
(fitting place temp.max.80°C)  
**surface Gauss**  
5000G  
**body material**  
stainless steel(sus304)  
**setting way**  
connect to the pipe line  
by flange or screw plug  
**Product weight**  
70 ~ 276kg



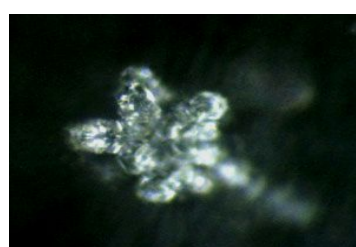


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# THUNDER SYSTEM

## The effect and the transformation

- The Properties and structure of water molecule would be freshened.



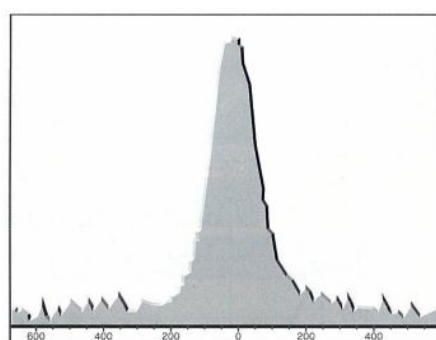
tap water



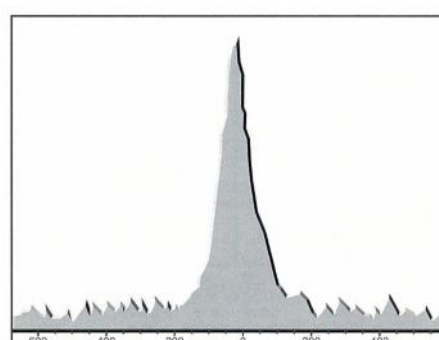
treated water

The microscopic photo shows that a proper water crystal is created from treated water using Thunder System.

- The molecular activity of the water is enhanced and keep it treated longer up to 48hours. (app.) This is realized by patented technology which combination of multipolar and far-infrared rays.



129.11Hz before treated



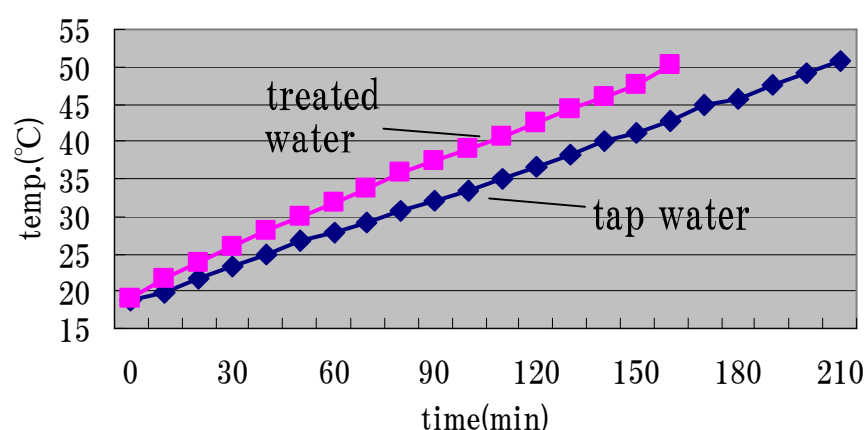
64.57Hz after treated

Analyzed by :

[Nuclear Magnetic Resonance (NMR)]

NMR expresses the rate of water molecular motion in terms of frequency (Hz). Smaller values means faster molecular motion, and it means small clusters of water molecules are energised.

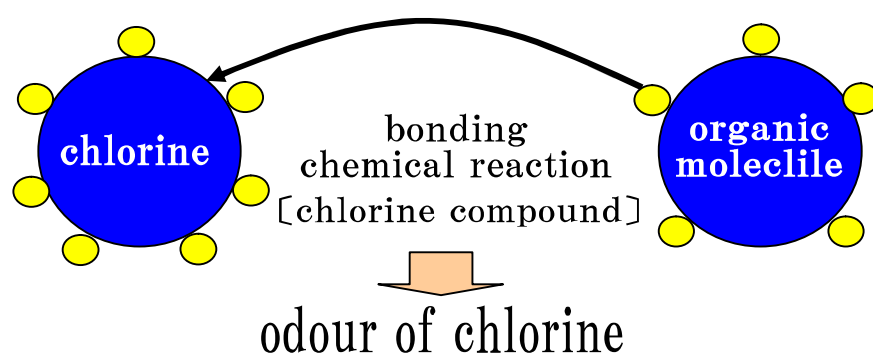
- Because of structural change to the small water cluster, the accumulated surface area of cluster is enlarged, and it reflect on the temperature rise ratio.



The treated water shows approximately 26% faster temperature rise ratio compare to tap water.

- The electronic structure stabilized by proper bonding of electron, it provide inhibitory action for tap water to reduce odour of chlorine.

[Principle]



When seven electrons are present, chlorine (Cl) is quite unstable and tends to combine with various compounds.

With eight electrons, on the other hand, chlorine is stable and can exist without combining with other compounds.

Separation of chlorine compounds and stabilization of chlorine ions by the Thunder System decrease chlorine odour.

# THUNDER SYSTEM

Bring the oxidation-reduction potential to negative change (reduction side).



before

after

## before

The inside surface of the pipe were covered by red-rust.

## after seven month passed

The surface area of red rust shrinked and black rust appear on the inside of pipe surface.

Passive coat  
(  $\text{Fe}_3\text{O}_4$  : iron oxide )

Electronic excitation (electrolytic dissociation caused between poles) occurs more actively in water treated by the Thunder System than in normal water, as negative ions combine with iron and positive ions are emitted into the water.

The concentration of negative ions increases in water thus treated because its oxidation-reduction potential decreases ; as oxidized rust combines with two negative ions to be reduced into stable iron oxide (i.e., the passive coat).

Reaction formula  
( Process to reduce corrosion)

### ★ $\text{Fe}(\text{iron}) \rightarrow \text{Fe}^{2+} + 2e^-$ (ferrous iron ion)

Fe emits two electrons to become an iron ion. The emission of two electrons requires electricity (energy). In this process water acts as a solvent and produces electromotive force, and positive and negative poles develop on the pipe wall; thus, divalent iron ions,  $\text{Fe}_2^{+}$ , are emitted into the water leaving two electrons at the positive pole.

### ★ $\text{H}_2\text{O} (\text{water}) + 1/2 \text{O}_2 (\text{oxygen}) + 2e^- (\text{ion}) \rightarrow 2\text{OH}^-$ (hydroxide ion)

Water is separated into  $\text{H}^+$  and  $\text{OH}^-$  to maintain the equilibrium. Emitted electrons combine with water molecules and dissolved oxygen to produce hydroxide ions.

### ★ $\text{Fe}^{2+} + 2\text{OH}^- \rightarrow \text{Fe}(\text{OH})_2$ (iron hydroxide)

Iron ions ( $\text{Fe}^{2+}$ ) emitted into water combine with hydroxide ion ( $\text{OH}^-$ ) to produce iron hydroxide.

### ★ $2\text{Fe}(\text{OH})_2 + 1/2 \text{O}_2 + \text{H}_2\text{O} \rightarrow 2\text{Fe}(\text{OH})_3$ (ferric hydroxide)

Iron hydroxide reacts with water and oxygen to produce ferric hydroxide. Because this reaction forms colloids that attach to iron surfaces, the dissolution and effusion into water of these colloids produces red water.

### ★ $2\text{Fe}(\text{OH})_3 + 1/2 \text{O}_2 \rightarrow \text{Fe}_2\text{O}_3 + 3\text{H}_2\text{O}$

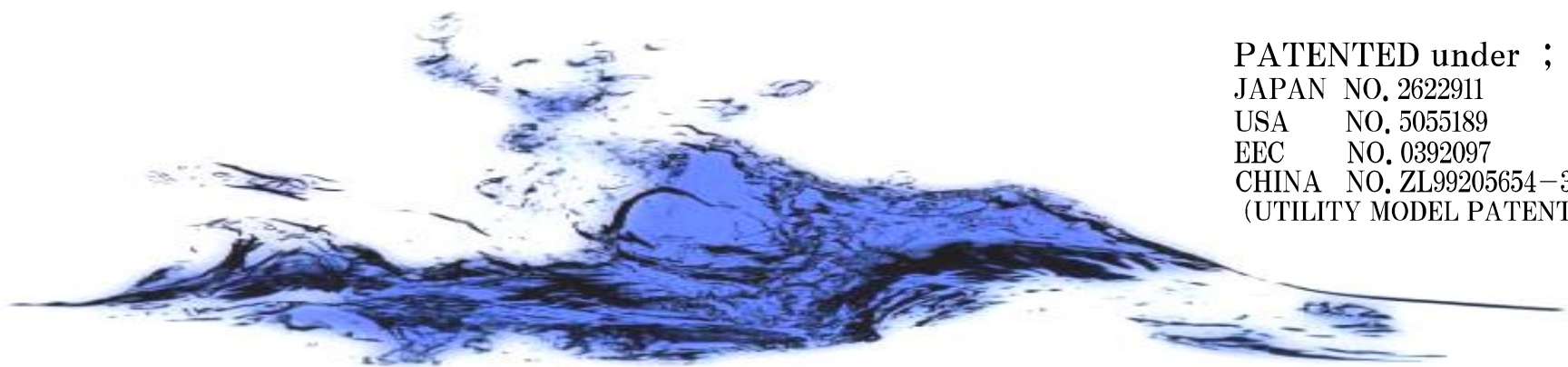
Ferric hydroxide reacts with oxygen to produce iron oxide (i.e., red rust)

### ★ $3\text{Fe}_2\text{O}_3 + 2e^- \rightarrow 2\text{Fe}_3\text{O}_4 + 1/2 \text{O}_2 + 2e^-$

Two electrons produced by the action of the Thunder System combine with iron oxide to produce stable iron oxide (i.e., black rust).

This stable iron oxide forms a passive coat that prevents contact between iron and water.





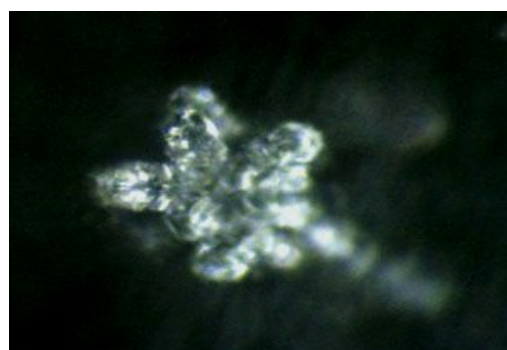
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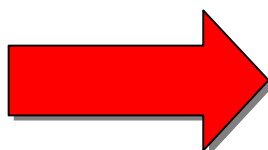
## Revealing the truth

- As chemical coupling of components are formed properly, properties of the tap water treated by Thunder System becomes more similar to natural water.

### Comparison of tap water crystals

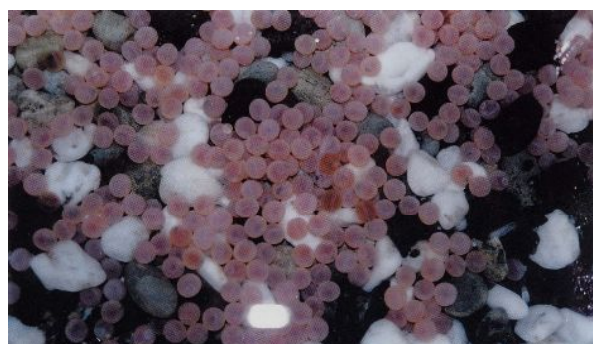


tap water



water treated by Thunder System

Hatchling laboratory work using treated tap water (fertilized salmon roe used)  
 (Tap water no hatchling occurred)



Start



49th day



89th day

- Improve the solvency, permeability and surface activity of the water.

### Grease trap



before



after three month passed

### Kitchen sink



before



after

### Toilet drainpipe (urine)



before



after one year passed

### Hot and cool water circuit pipe

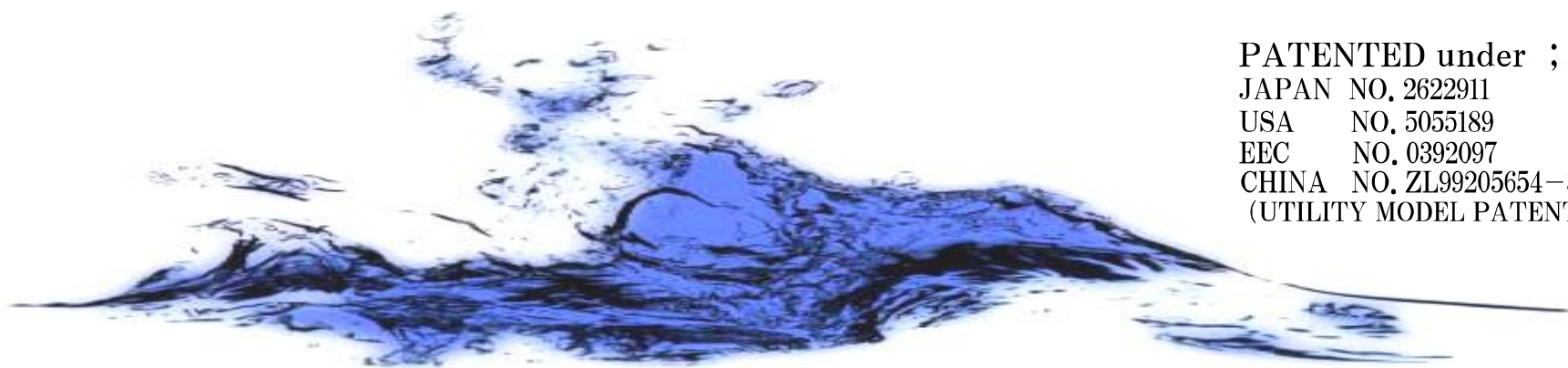


before



after three month passed





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# THUNDER SYSTEM

## Revealing the truth

■ Improve the solvency, permeability and surface activity of the water.

### A cut flower



tap water  
after one week passed



treated water  
after one week passed

### Shiitake mushroom cultivation

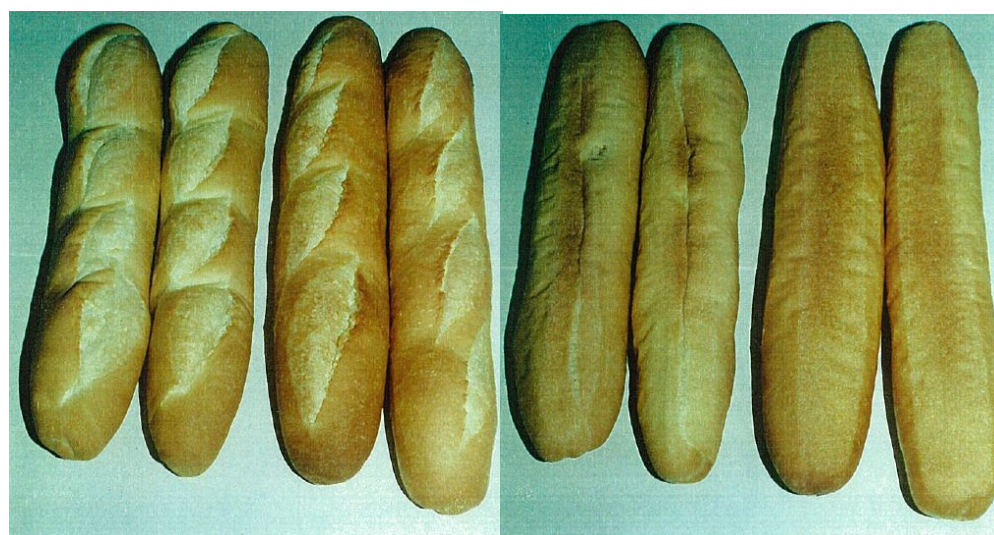


tap water  
11 pcs of shiitake harvested  
from 20 spores

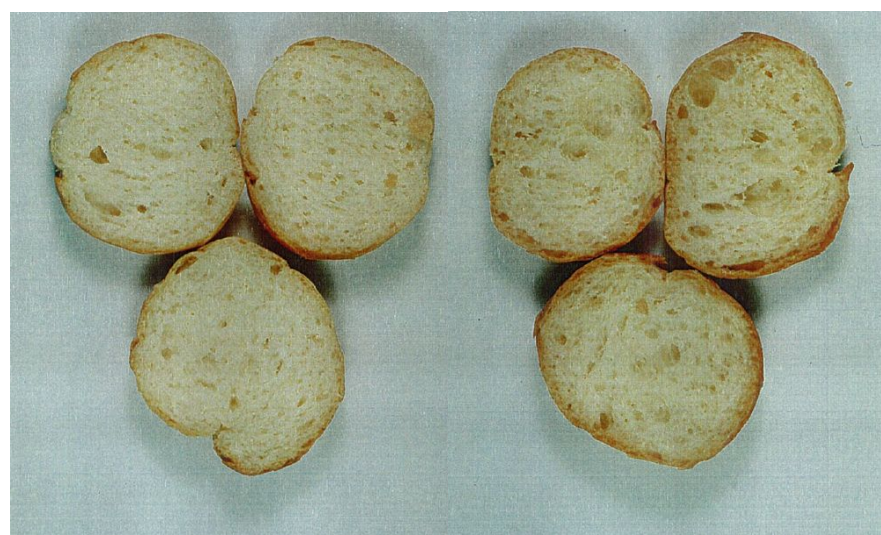


treated water  
28 pcs of shiitake harvested from  
20 spores

### A French bread

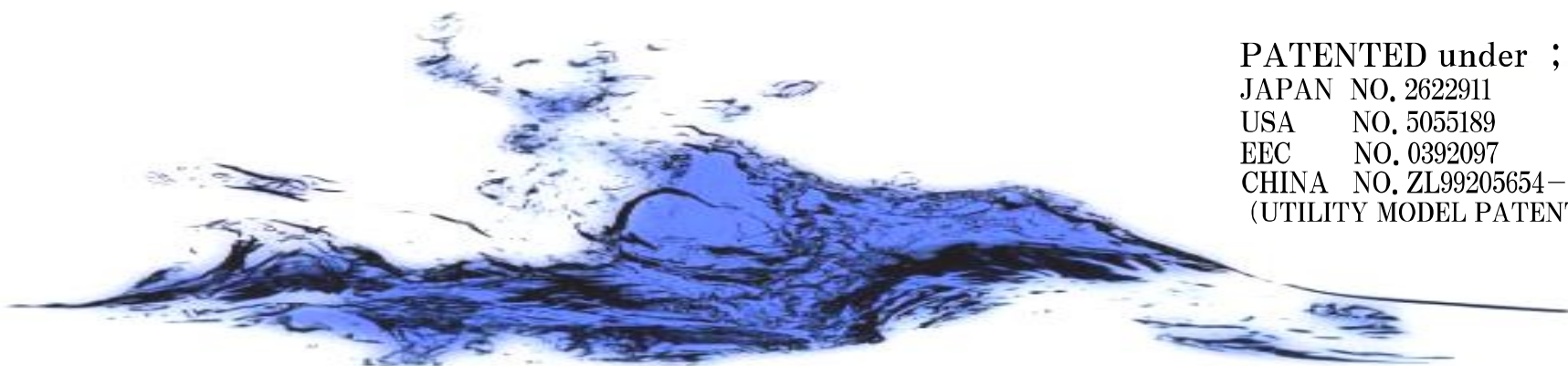


tap water      treated water      tap water      treated water



tap water      treated water



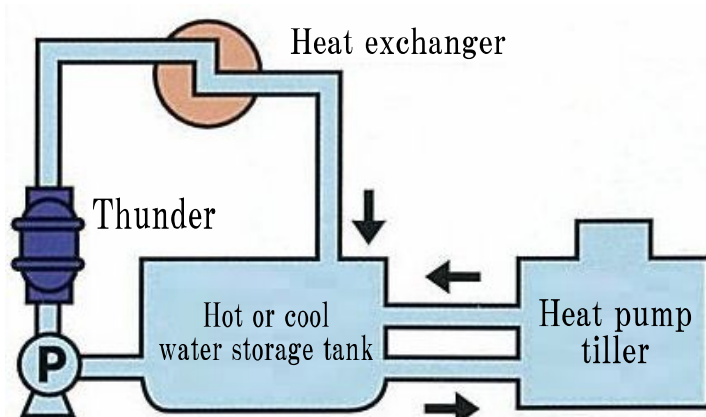


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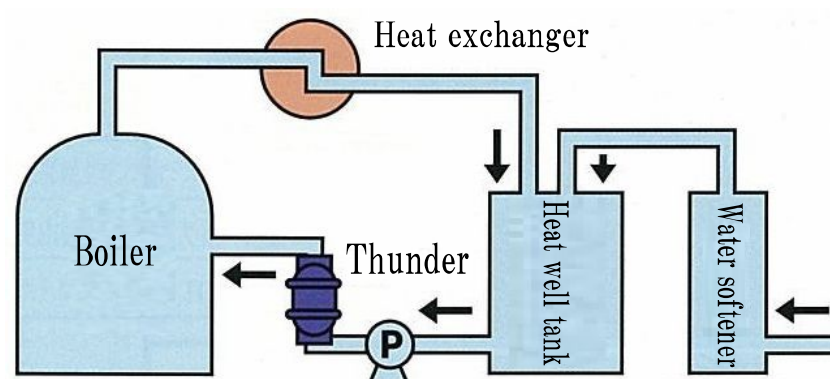
# THUNDER SYSTEM

## Examples of Thunder System Installation

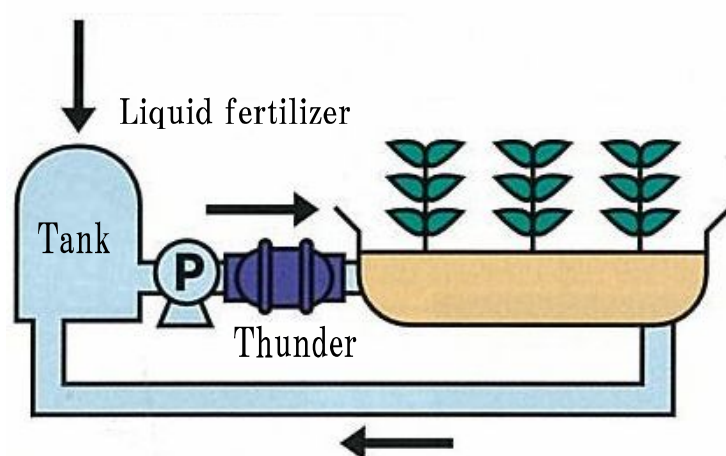
Hot or cool water circuit



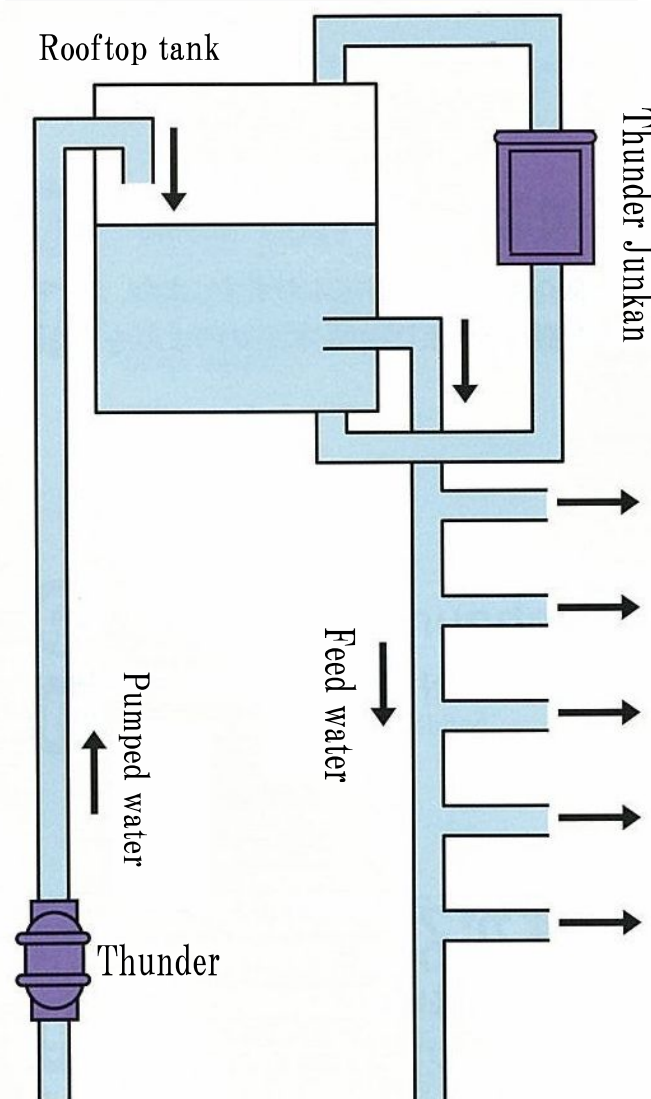
Large steam boiler



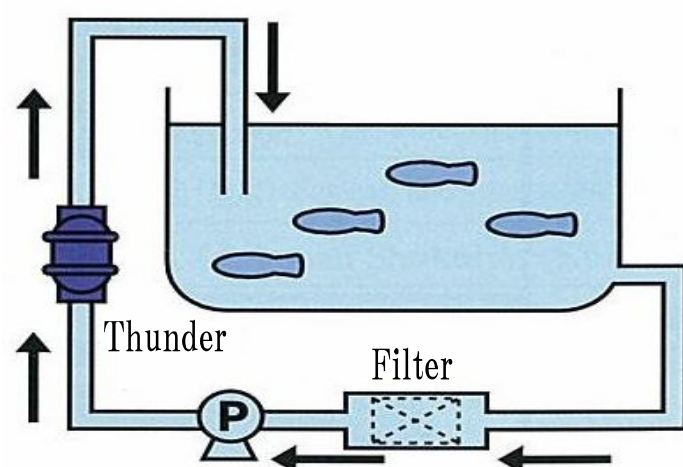
Water for agriculture



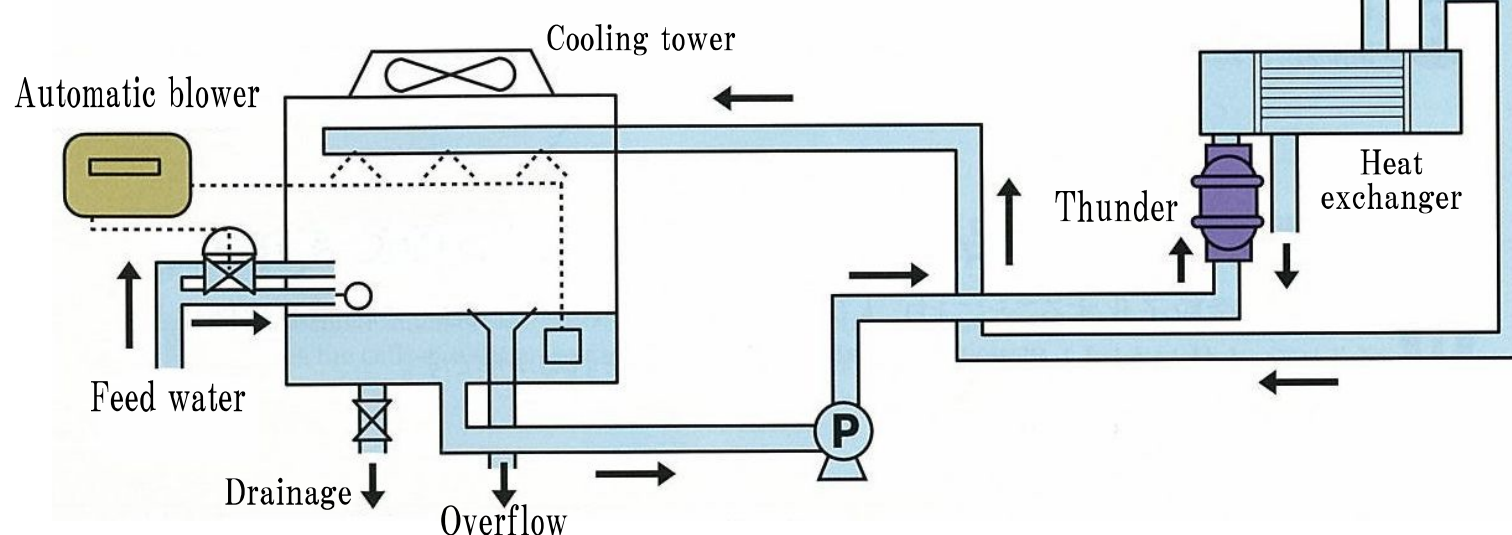
Building , apartment house



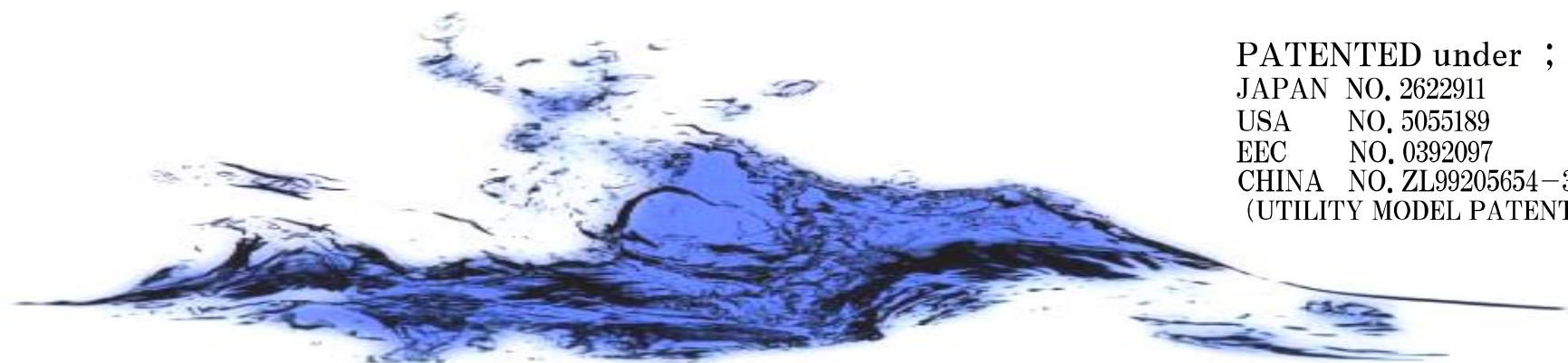
Fish tank



Cooling tower







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# THUNDER SYSTEM

## Examples of Thunder System Installation



Chocho , kitchen



Chocho , Washing machine



Chocho , Shower head



Thunder Jr , water gauge



Thunder Jr , pipe shaft



Thunder Protect , in pipe-line



Thunder Protect , pipe shaft



Thunder Original , in pipe-line



Thunder Original , water gauge



Thunder Junkan , in pipe-line



Thunder Junkan , in pipe-line