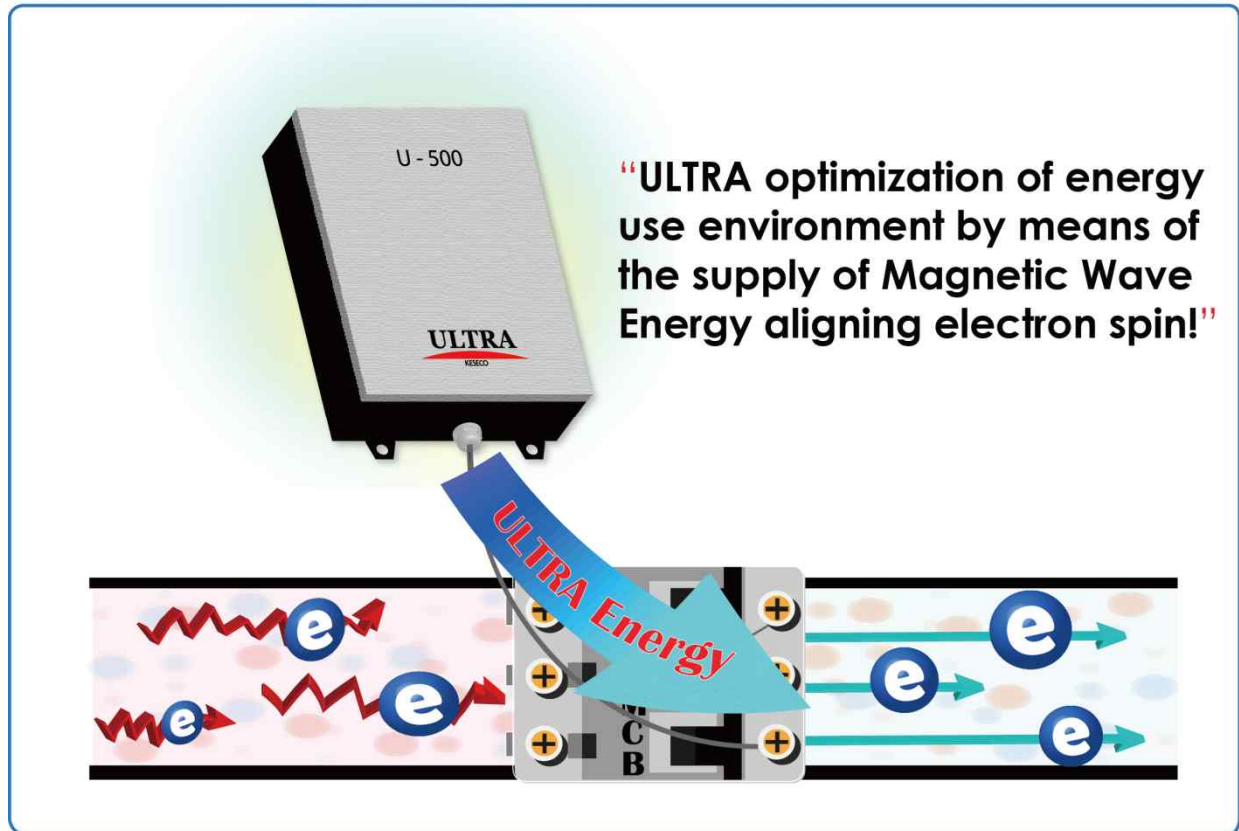


ULTRA Service Manual

I. ULTRA principle

- Summary



Until recent times, people have simply considered electric energy as the electric current created by voltage. However, the electron which creates an electric current has not only electric charge but also magnetic moment - angular momentum - called as electron spin. It's one of ultimate goals in the related scientific fields such as electronics and physics to convert electron spin into usable electric energy. This field is called as Spintronics. And the repeated development in Spintronics has discovered the great method for using electron spin energy by means of magnetic interaction aligning electron spin. This innovative discovery brings much more faster transmission of information, much more amount of data storage, and the increase of energy use efficiency.

The Brand new energy saving technology of ULTRA invented by KESECO is to provide the magnetic wave energy aligning electron spin to electric system, which offers the increase of energy use efficiency through activating electron spin energy that couldn't be used in normal condition.

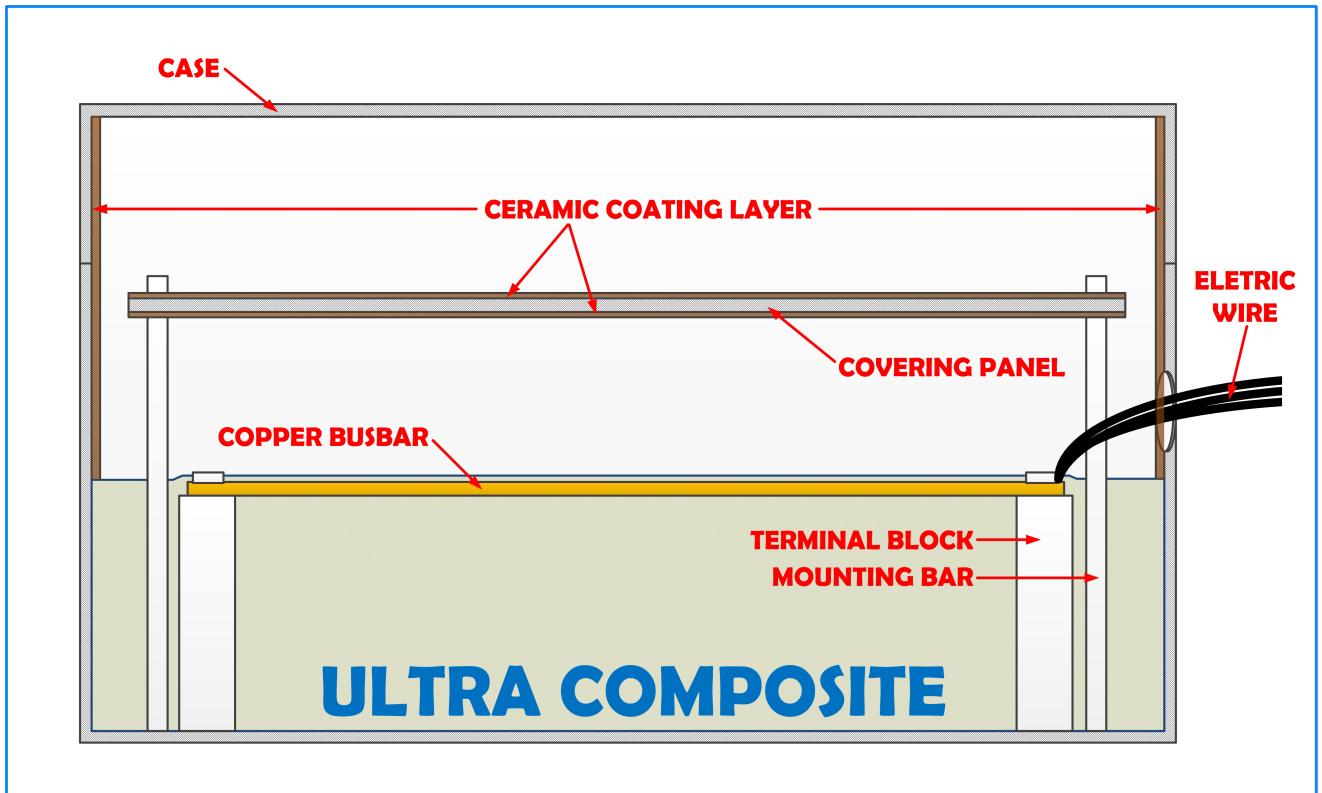
In more easy words, ULTRA makes it possible to decrease electric consumption by improving electric current without reducing an original performance. And particularly in economic aspect it means the reduction of electric cost.



Consequently, ULTRA technology can be regarded as a significant jump in commercialized level of Spintronics.

1. ULTRA structure

1) Internal structure



2) Physical Characteristic

The physical Characteristic of ULTRA can be summarized as two terms like below.

First, ULTRA does NOT have any electric circuit.

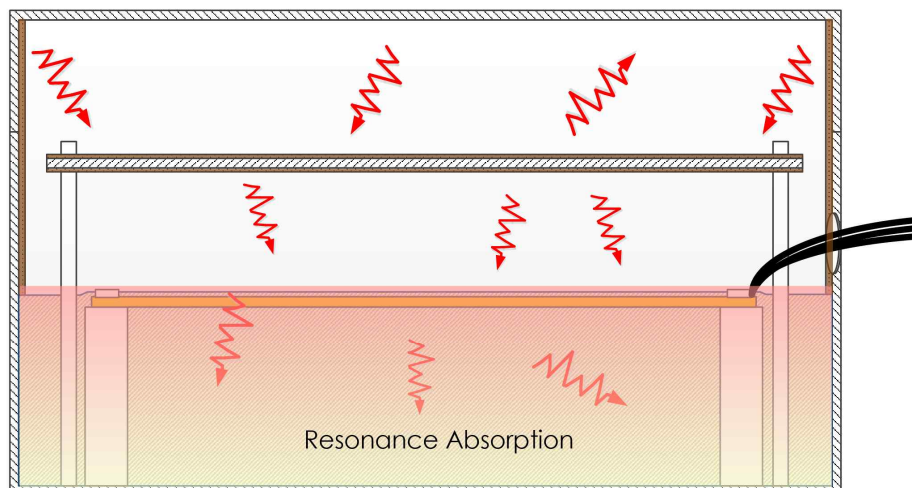
It means ULTRA doesn't need to consume any electricity for proper operation. In addition, also it indicates ULTRA is not affected by any representative electrical problem such as surge, inrush, harmonics, static electricity.

Second, ULTRA doesn't have any special elements except for ULTRA composite and ceramic coating material.

In other words, most of components – case, covering panel, copper-busbar, terminal block, mounting bar, electric wire – are in general electric use.

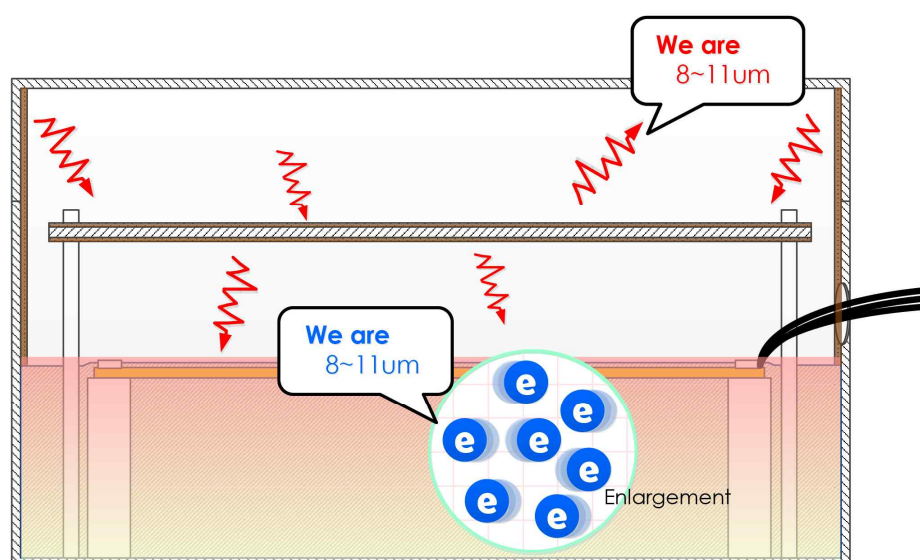
1. ULTRA principle

Step 1. ULTRA composite absorbs the energy of Far Infrared Ray radiated from ceramic coating layer.



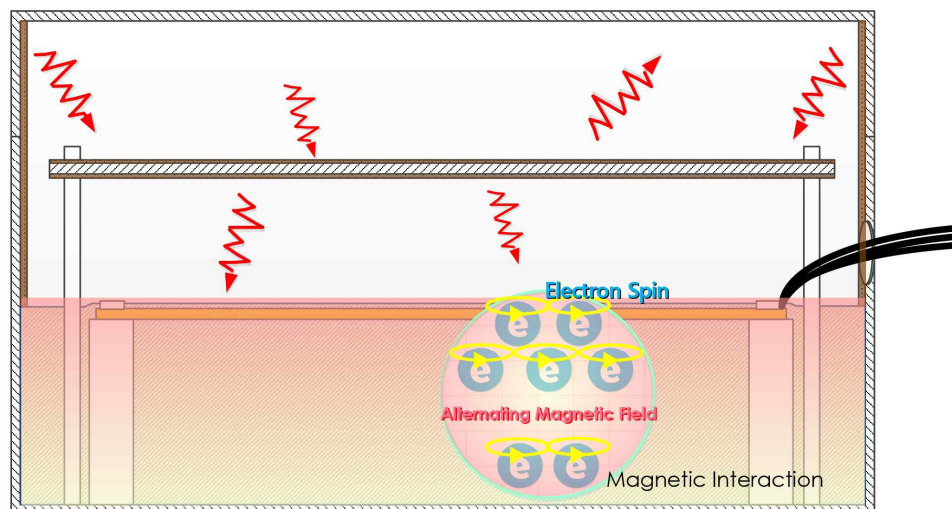
- A lot of ceramic materials have the characteristic of radiating Far Infrared Ray. As to the specific range of radiating intensity, it varies according to components composing the material.
- The ceramic material used in ULTRA is manufactured based on one of well-known radiating materials. Its radiating frequency is from 8 to 11 μm .
- The radiated energy of FIR is absorbed into ULTRA composite as the resonance absorption with the internal electron of ULTRA composite.

Step 2. The absorbed energy of FIR activates the internal electron of ULTRA composite.



- Wave energy shows the three forms of energy interaction such as reflection, absorption, permeation.
- When applying the conception of the wave energy interaction to the resonance absorption of ULTRA, the energy of **FIR** and atom will be combined in the case of the correspondence between the wavelength of **FIR** and vibration of atom,. However, in other cases, the energy couldn't be combined due to reflection or permeation.
- The ceramic coating layer shows maximum radiating energy in the range from 8~11um. And the atom of ULTRA composite has the natural vibrating frequency ranged from 8 to 11um. Therefore, the frequency condition of the FIR and the atom in ULTRA composite satisfy with the requirement of resonance absorption.
- The activation of ULTRA composite means the increase of interaction energy pursuant to the increase of lattice vibration, not the creation of electric current.

Step 3. Alternating magnetic field interacts with the spin of activated electron.

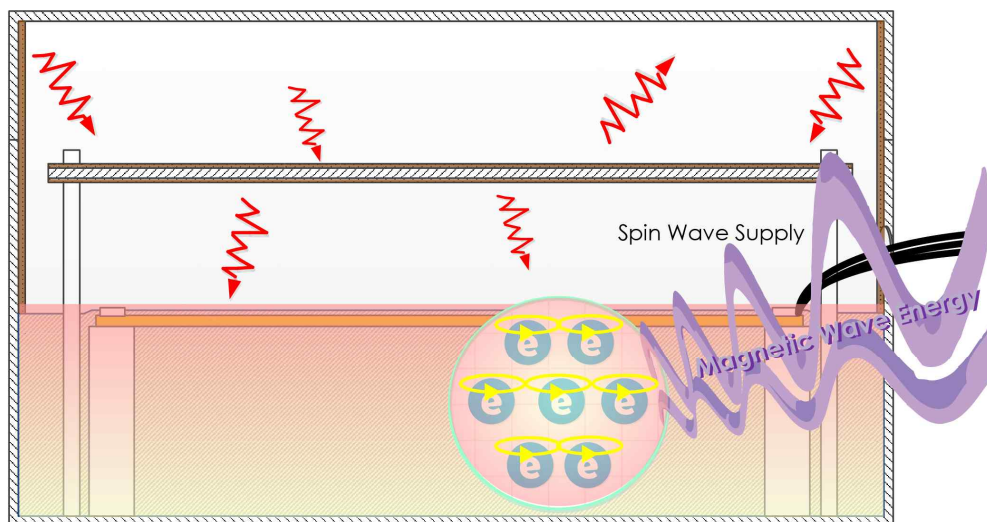


- Alternating **C**urrent generates **A**lternating **M**agnetic **F**ield, because magnetic field is created by electric current, so its form is decided by the form of electric current. Please refer to “electromagnetic induction”.
- The intensity of **AMF** is dependent on the rated power and operating condition of load in the ULTRA-installed system, because the electric current which generates the magnetic field is created as much as the needed amount of related load.
- The electron (electron spin) in ULTRA composite starts to interact with the **AMF** created by the ULTRA-installed system.
- Electron has not only the movement along the orbital surrounding the atomic nucleus, but also the rotary motion on the axis across the center of gravity in itself. The latter is called as electron spin.
- The exact definition of electron spin is not the actual revolution of particle mass, but the angular momentum of particle on the conception of quantum mechanics.



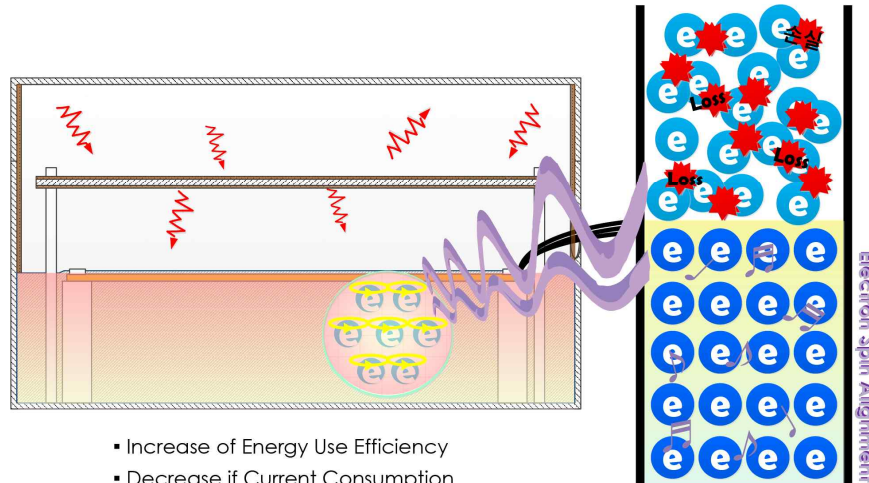
- The magnetic interaction indicates the pushing and pulling force caused among the polarities of energy, which is very similar with the magnet.
- Polarity means the condition of gathered electron cloud in a molecule composed of more than two atoms, which is simply expressed as the directivity of energy.
- The angular momentum (spin) of electron has two types of moving direction (polarity), which makes the magnetic interaction (attraction and gravitation). An electron in a material can interact with external energy from the out of the material in a certain range, because the energy of electron has negative property (- polarity).
- At the beginning stage of installation, the necessary time until showing proper performance (energy saving) is defined as the adaptation period of ULTRA, which is the time of magnetic interaction for activating ULTRA composite.

Step 4. ULTRA creates the magnetic wave energy by magnetic interaction.



- ULTRA composite creates the magnetic wave energy by means of magnetic interaction.
- Magnetic wave energy is the creation of magnetic force by the systematic transfer of angular momentum of electron without causing electron movement like chain reaction.
- According to the recent report of related cutting-edge scientific field, the ceramic material of unique atom structure which has strongly correlated electron system showing very special magnetic action. ULTRA is classified in this ceramic series.

Step 5. ULTRA provides magnetic wave energy into system.



- Increase of Energy Use Efficiency
- Decrease of Current Consumption
- Consequently, Reduction of Electric Costs

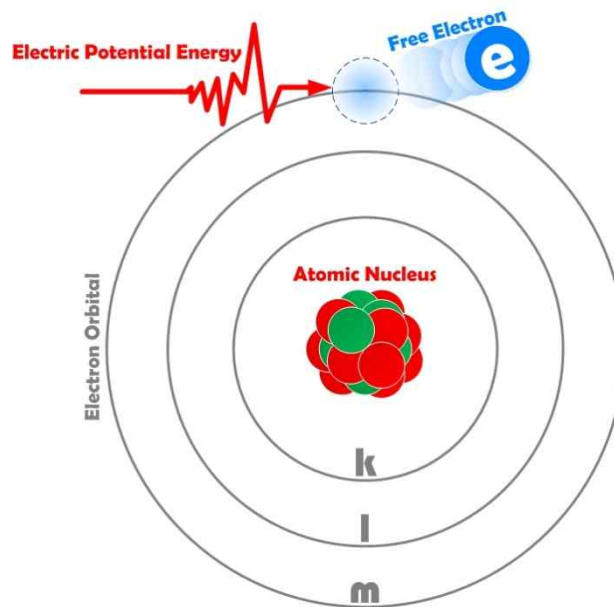
- From the time to finish the activation of the composite by sufficient magnetic interaction (from the complete of the adaptation period of ULTRA), ULTRA starts to provide Magnetic wave energy to the installed system.
- The provision of Magnetic wave energy doesn't mean the creation and supply of current by electromagnetic induction, because the ULTRA composite has strong insulating property.
- The Magnetic wave energy provided by ULTRA aligns the spin of the electron in the installed system.
- The aligned electron spin increases the mean free path and mobility, which increases the energy transfer efficiency. Consequently, it reduces the current consumption by decreasing energy loss.

2. ULTRA effect

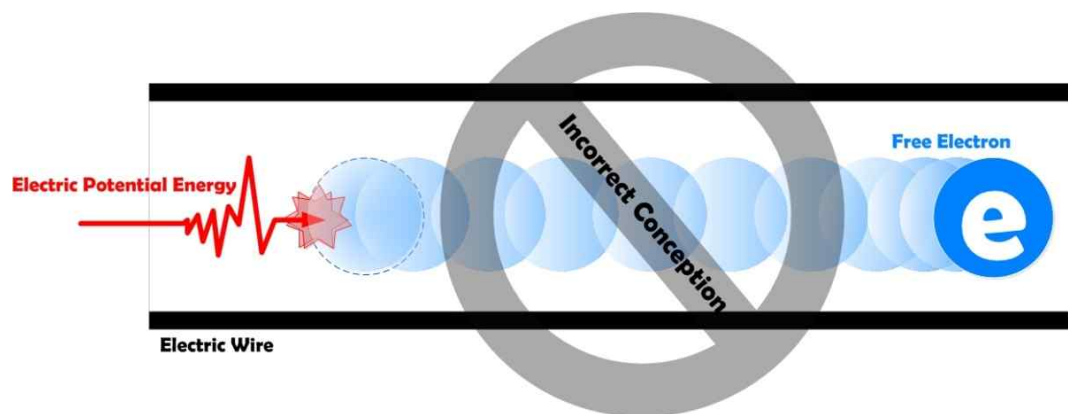
This chapter reviews the role of Magnetic Wave Energy in system.

1) Creation of Electric Current

- General Explanation about Current

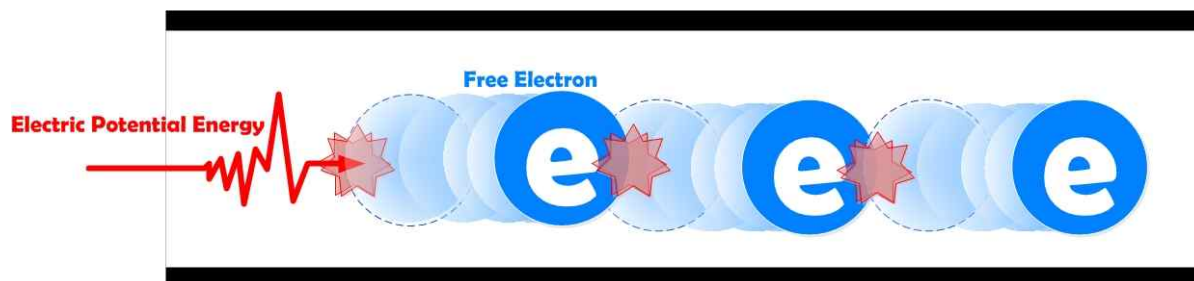


- In general idea, electric current is simply defined as the electron movement caused by electric potential difference.
- However, the general definition may confuse people as the electron movement is continuous until consumed by load.



- In other words, the general definition cannot exactly explain the creation of electric current. Because, free electron goes back to the electron orbital attracted by the positive energy of atomic nucleus after completely consuming the received energy in form of light, sound, heat, motion.

• Detailed Explanation about Current

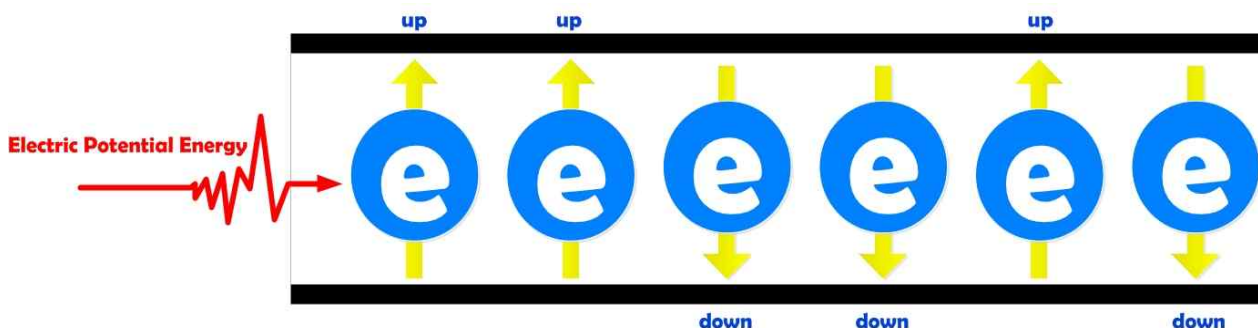


- A. In consideration of the free and binding condition of electron, the above model is more accurate than based on the general definition.
- B. In more detailed definition, electric current is not a simple movement of electron, but the physical quantity of energy transfer by the collision with adjacent electron.

2) ULTRA effect

• Exact Explanation about Current.

- A. To fully understand ULTRA effect, it needs to understand exact explanation model reflecting the conception of electron spin.



<perfectly balanced electron spin energy in normal condition>

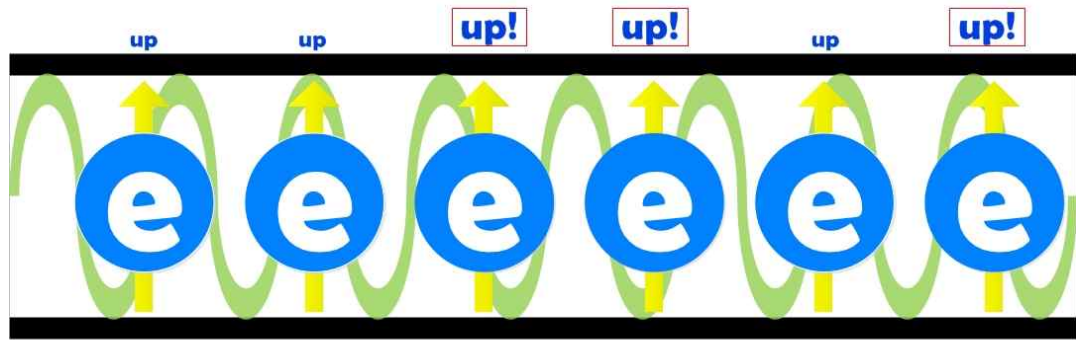
- B. In normal temperature, the condition of electron spin is balanced like above picture because the energy condition of a material is balanced (positive and negative energy are balanced).
- C. Therefore, in consideration of the former term, the general conception of power is accepted as **"Voltage x Current(electric charge) = Power"**.

• Electron Spin Alignment

- A. In consideration of terms so far, it shows it's possible to use an additional energy from electron spin if the condition of electron spin alignment were possible.

That is to say, **"Voltage x Current(electric charge) x Spin energy = Power"**.

- B. ULTRA effect is to reduce current consumption with maintaining the original energy efficiency of an installed system by means of providing special magnetic wave energy which aligns the electron spin.

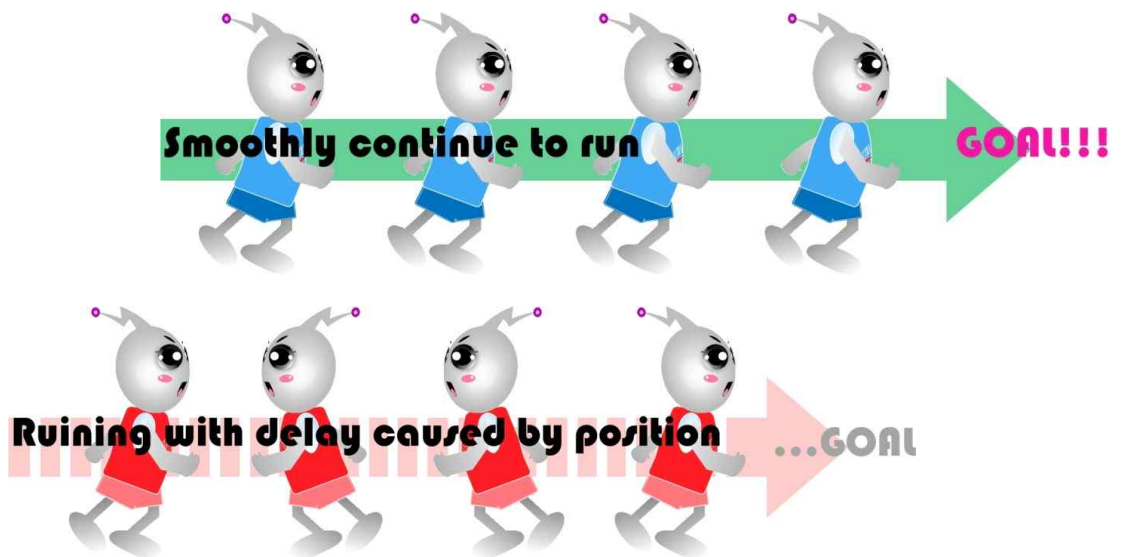


<Electron Spin Alignment by Spin Wave>

- C. How to possible to make ULTRA effect is based on that the polarity of electron is able to be changed by magnetic interaction with other energy, because electron spin is the magnetic force of electron in itself. The specific field of science which is contributed to find a method of controlling electron spin is called as Spintronics.

• **Difference between Spin Aligned Current and Normal current.**

- A. The characteristic of the Spin aligned current in comparison with normal current can be expressed through the below example as relay race.



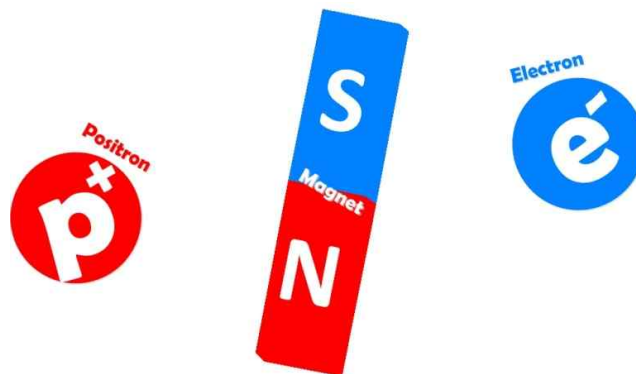
- B. In case of Blue team, the whole running ability is improved by minimizing unnecessary action at changing to next runner : Spin-aligned current.
- C. On the other hand, in case of Red team, whole running ability is decreased comparing Blue team due to the delay in course of changing to next runner.

3. ULTRA Theory

This chapter explains important theoretical conceptions for more detailed understanding of ULTRA.

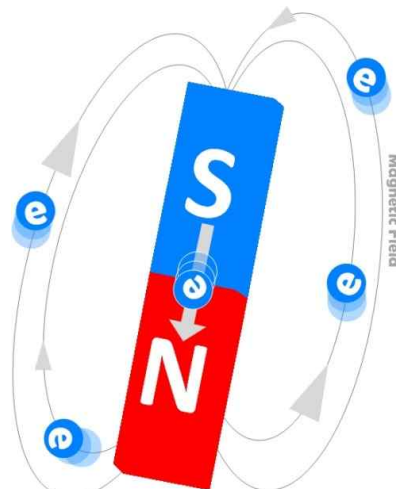
1) Magnetism

- Magnetic Force



- When a charged particles move, the attractive force and repulsive force caused among particles
- Among stopped particles there is electric force. On the other hand, among moving particles, there are not only electric force but also magnetic force.
- The magnetic force between two moving particles is described as the effect caused by the magnetic field of the magnetic force created by the opponent of each other.
- It's not only the fundamental force used in motor, but also the fundamental force of magnet when attracting a metal.
- Magnetic force is able to be regarded as fundamental interaction of all kind of energies.

- Magnetic Field

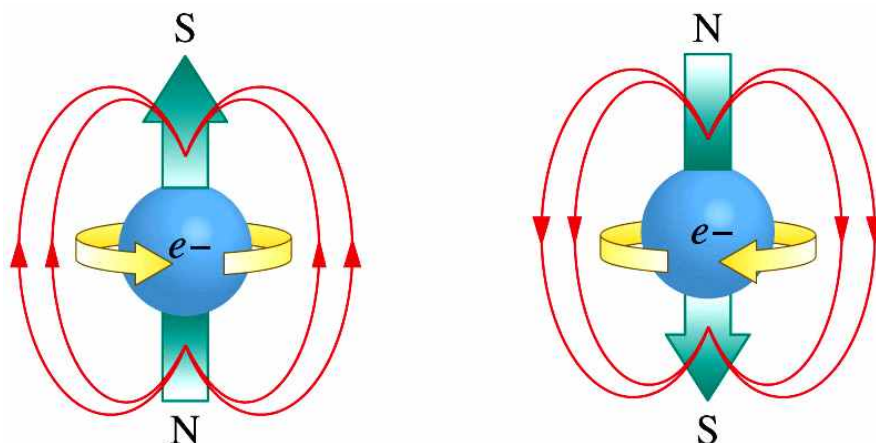


- A. The space that magnetic force influenced on is called as magnetic field.
- B. Magnet and electric current or changeable electric field which varies according to time creates the space of magnetic force. This space is called as magnetic field. Magnetic field influences on a moving electric charge, and a moving electric charge also creates a magnetic field.
- C. The gravitation of earth is also magnetic field.



2) Creation of Spin Wave

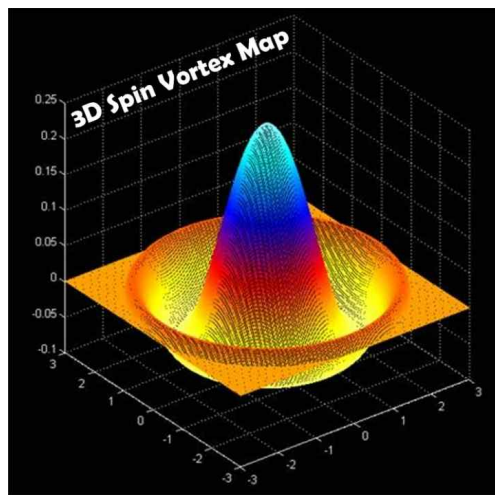
- Electron Spin



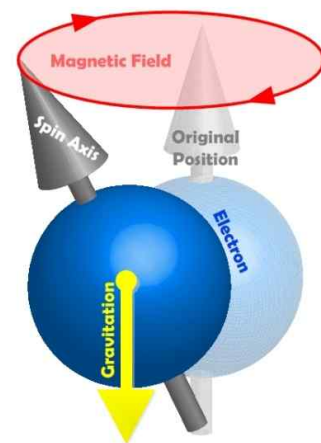
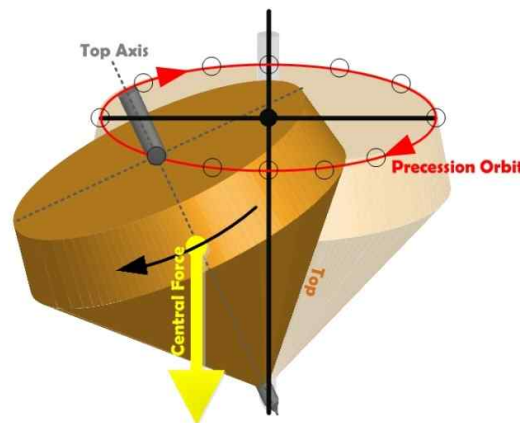
- A. It indicates the degree of freedom of electron, which is proposed by W. Pauli to explain the spectrum and periodic law of atom.

- B. Electron behaves as not only the movement surrounding the nucleus of atom, but also the rotation based on the axis across the center of gravity in itself, which is called as Spin.
- C. The exact definition of Spin is not the actual rotating movement of quantity of particle, but the fundamental angular momentum in the conception of Quantum mechanics.
- D. Spin has magnetic force according to the quantity of motion because it is also the movement of electron. The specific status of the magnetic force does the role as two polarities of magnet.

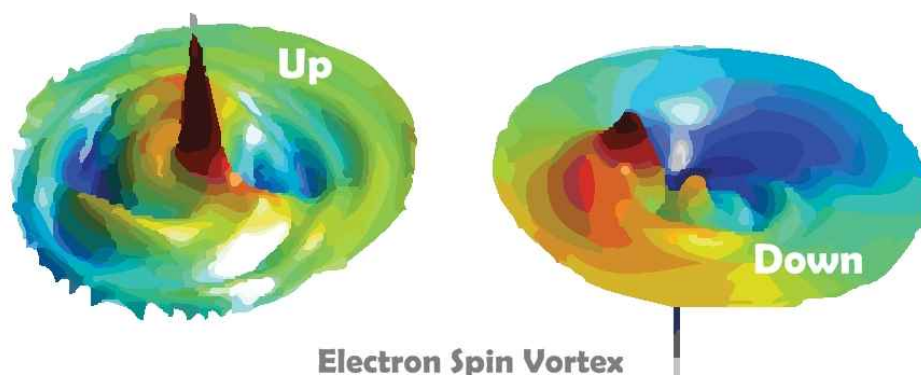
• Spin Vortex



- A. If magnetic field applied on electron spin (the rotation of electron), precession occurs like a top. In technical words, electron cannot correctly move to the direction of the magnetic field by the interaction between the rotating electron and the force aligning straightly to the direction of the magnetic field, which causes the movement of the rotation at the synthesized direction of the vector and direction of the magnetic field.

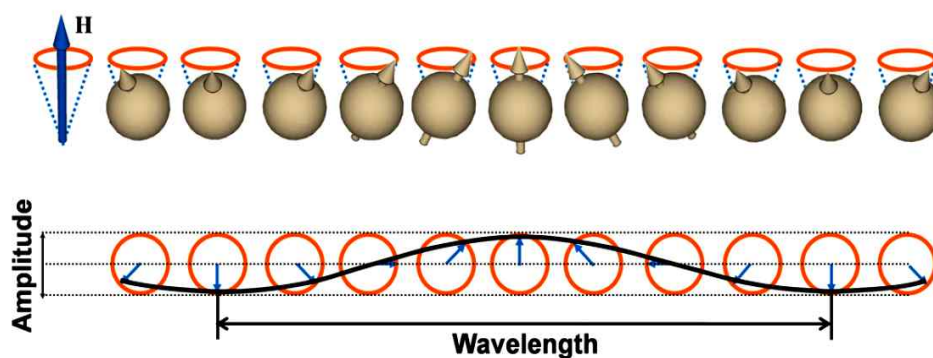


- B.** The magnetic field created by the precession of electron is called as magnetic vortex due to being similar with the form of vortex.



- C.** Spin vortex can be expressed as two sorts of magnetic status which is defined as Up and Down. Because, the creation of magnetic vortex is based on electron spin, either.
- D.** In easy word, the meaning of precession is the stumbling appearance of a rotating object like a top when a torque affects on a rigid body in rotation.
- E.** Not only a top, but also every rotating object based on a certain axis in earth can do a precession.

• Magnetic Wave Energy



- A.** It is defined as the wave energy created by the chain reaction among spin vortices which is generated by the interaction of electron spin and magnetic force.
- B.** The (magnetic) interaction itself is common interaction among all kind of energy. Therefore the interaction itself doesn't indicate the special characteristic of a material.
- C.** However, the creation of Spin wave needs the specific rule of the interaction as the systematic reaction with near magnetic vortex which is showed at not a lot of materials.
- D.** The special magnetic property mentioned in the previous term has been discovered in the ceramic materials which have the strongly correlated electron system.

II. Product Specification

Residence

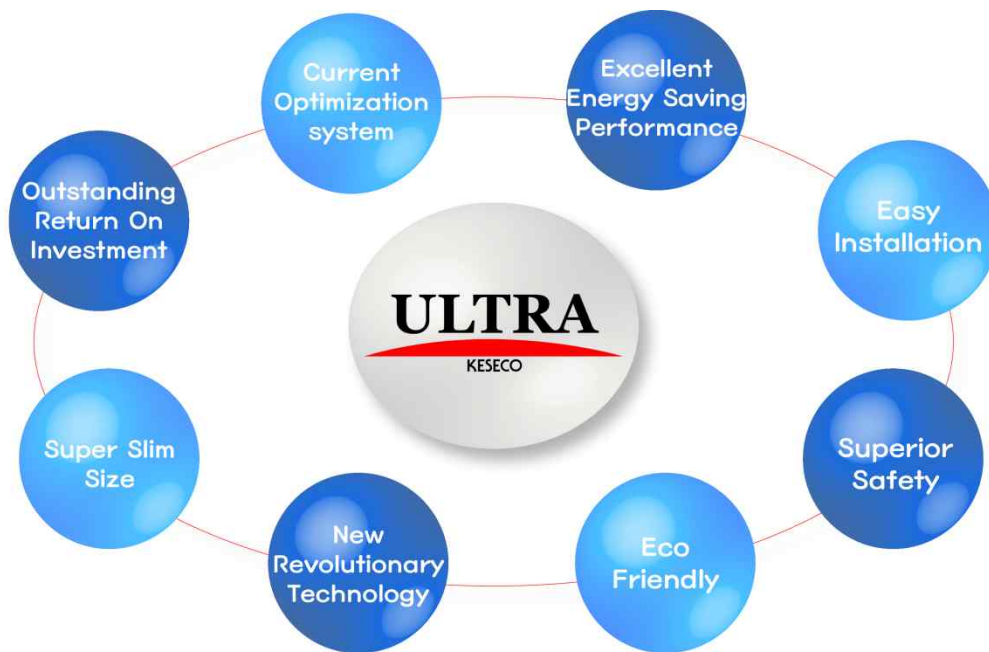


Commercial



Main TR

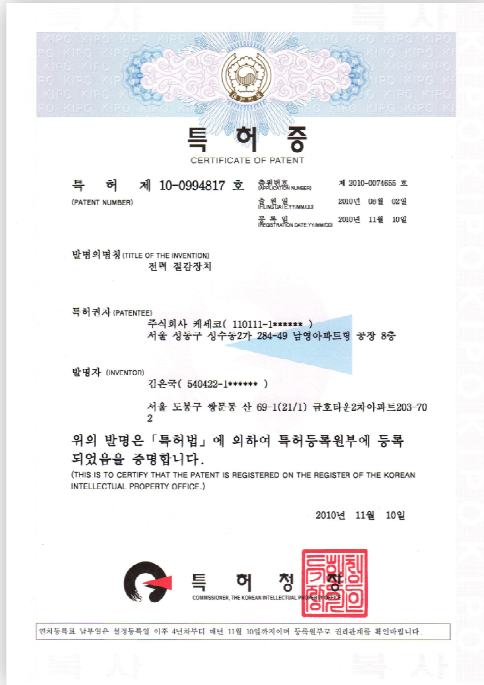




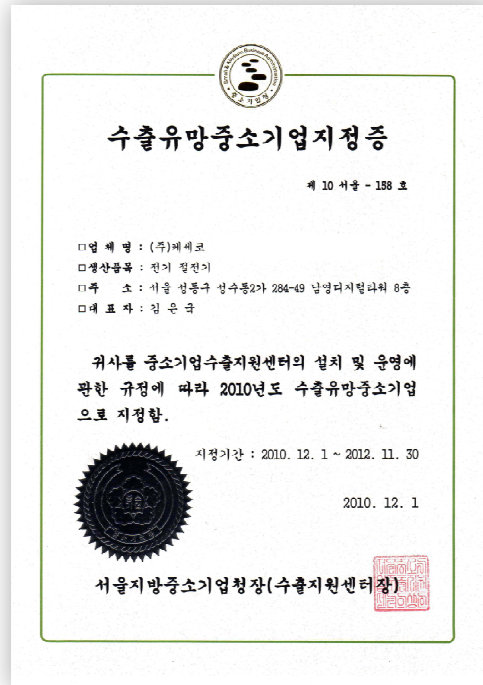
Use	Model No.	In-put	Voltage	Size (W x L x H cm)	Weight (kg)	Capacity (KVA-AC)
Main TR	U-1500	3Ø	100~600V	40 x 60 25	50	1500
	U-1000			40 x 60 x 20	40	1000
	U-700			35 x 52 x 15	27	700
	U-500			35 x 45 x 15	25	500
	U-300			30 x 40 x 10	15	300
Commercial	UC-200	3Ø, 1Ø		25 x 35 x 8	11	200
	UC-100			22 x 30 x 8	8	100
	UC-50			18 x 25 x 6	5	50
	UR-30			14 x 20 x 6	3.5	30
Residence	UR-20	3Ø, 1Ø		13 x 20 x 6	2.7	20
	UR-10			13 x 18 x 5	2.3	10
	UR-7			11 x 17 x 4	1.6	7
	UR-5			9 x 10 x 4	1	5
Module	UM-1	1Ø		8 x 11 x 3	0.8	1
	UM-0.5			6 x 10.3 x 3	0.6	0.5

III. Certification

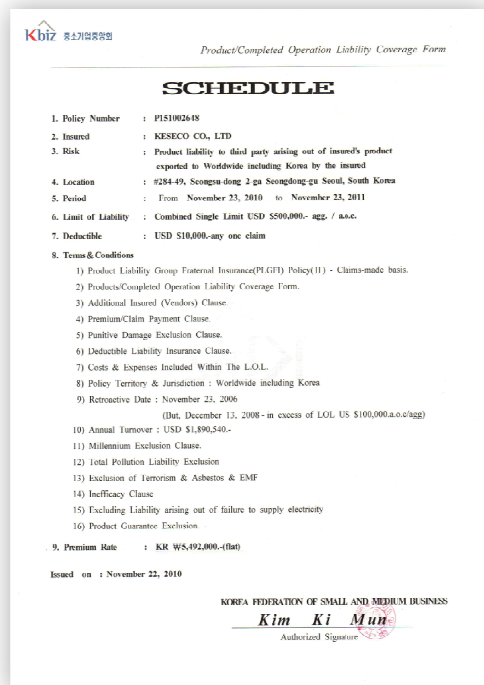
1. Patent and Safety Certificate



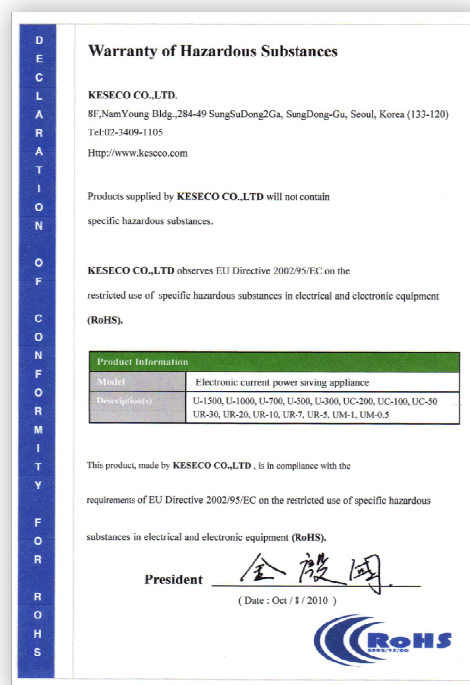
Patent



Promising Expert Firm

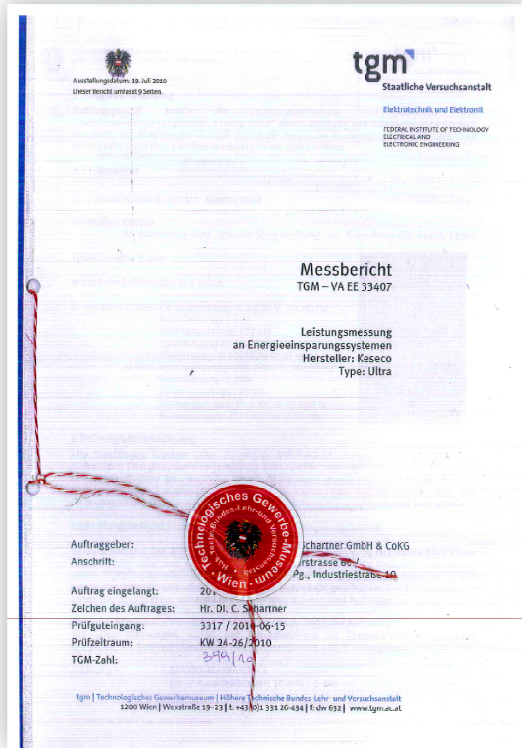


PL insurance

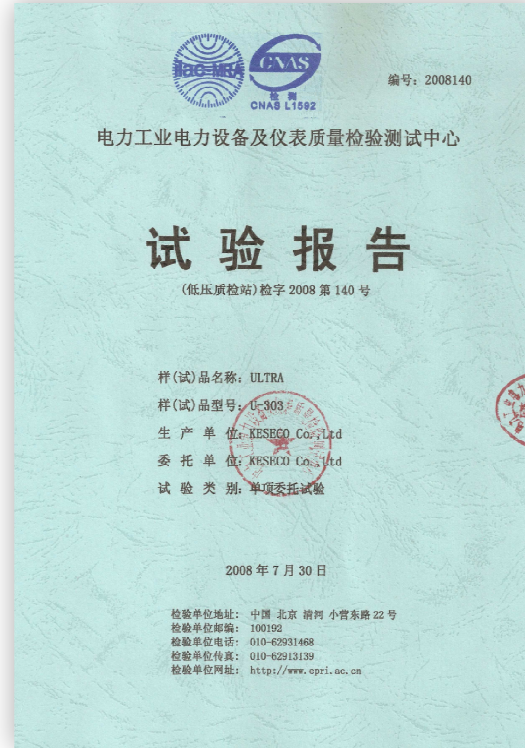


RoHS

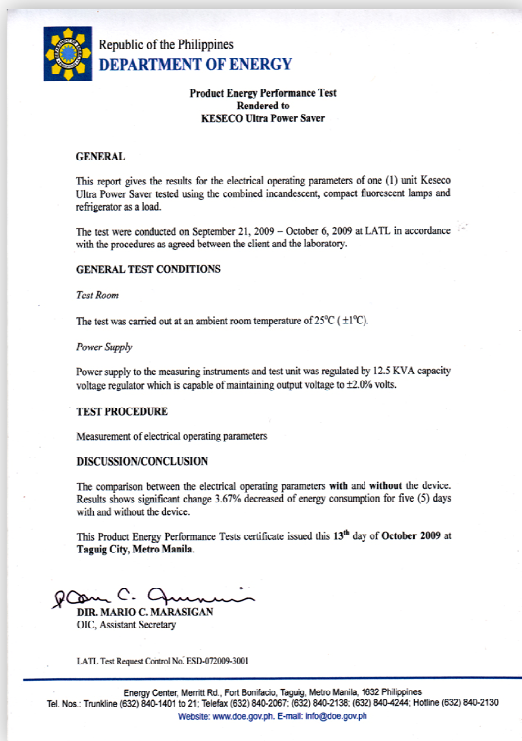
2. Performance Certificate



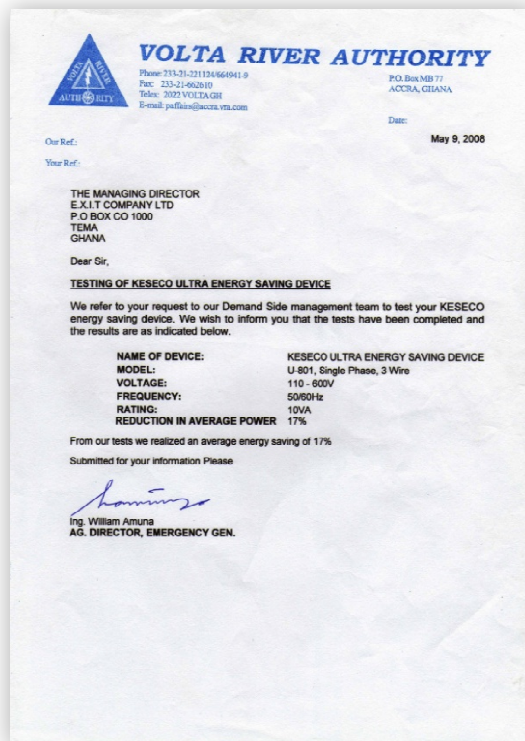
TGM



CNAS



DOE



VRA

IV. Reference

Place	Nation	Model	Saving
 <p>Factory : Eco Food S. A</p>	 <p>Greece</p>	U-1500	21.25%
 <p>Gas Station : Shell</p>	 <p>Spain</p>	UC-100	8.4%
 <p>Hotel : Hotel Ostrava</p>	 <p>Czech</p>	UC-100	7.36%
 <p>Minister Building : Busan City Hall</p>	 <p>Koreas</p>	U-1000	11%



Solar Panel : Residence



Greece

UR-5

8.47%



Office : Mapfre insurance company



Spain

U-500

8.6%



Cold Storage : Cold Star



Denmark

U-500 * 1
U-300 * 2

8.6%



Leisure Complex : Inspire Leisure



England

UR-50 * 1
UR-20 * 1
UR-10 * 1

5.2%

	 Greece	U-500	12.05%
	 Czech	UC-50	10.14%
	 Spain	U-300	12.5%
	 England	UC-200	40.9%
Aggregates_Mixer: Marshalls			