

Contributing to Society through Disaster
Prevention and Energy Conservation

Made in Japan

We promote
The SDGs by
reducing CO₂

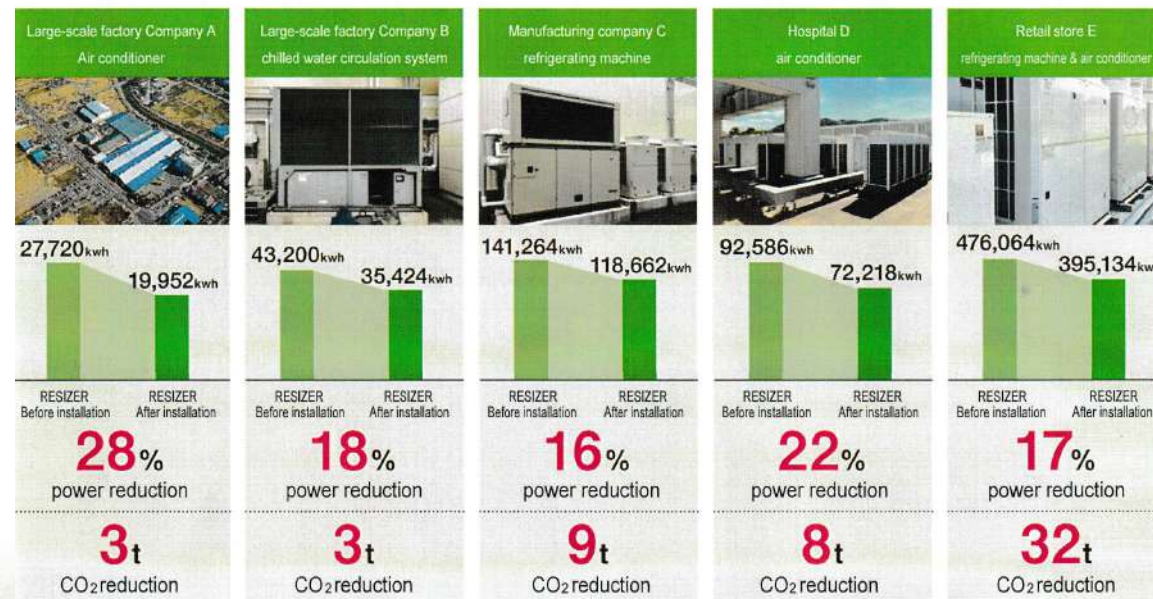
Reduction of electricity costs for
air conditioners and refrigeration units

RESIZER

Rectification restoration device

RESIZER Reduction Results

Air conditioners and refrigerators and refrigerators, which account for 30% to 70% of a facility's power consumption, are important equipment that cannot be stopped for business continuity. RESIZER does not require any modification to the equipment during installation, so it can be installed without stopping the power supply.



RESIZER is recommended for these types of industries and business types.

- Freezer/cold storage industry
- Fisheries processing industry
- Food Manufacturing industry
- Large-scale factory
- Hospital
- Elderly care facility
- Hotel
- Commercial Complex
- ETC.

Please feel free to contact us . You can consider implementing it after measuring and verifying the actual effects.

Flow of introduction



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RESIZER Dealers



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We contribute to the realization of our customers' SDGs and profitability improvement through energy-saving technology for air conditioning and refrigeration units.

We are committed to realizing the Sustainable Development Goals.

7 AFFORDABLE AND CLEAN ENERGY

We aim to reduce the electricity costs of the approximately 10 million freezers, refrigerators, and air conditioners shipped each year, and create a world that can be powered solely by natural energy.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Agricultural products and marine products require a large amount of energy to be distributed. Reduce energy loss in the supply chain.

13 CLIMATE ACTION

Now that there is an urgent need to prevent global warming, there is an urgent need to move away from fossil fuels. RESIZER contributes to CO₂ reduction.

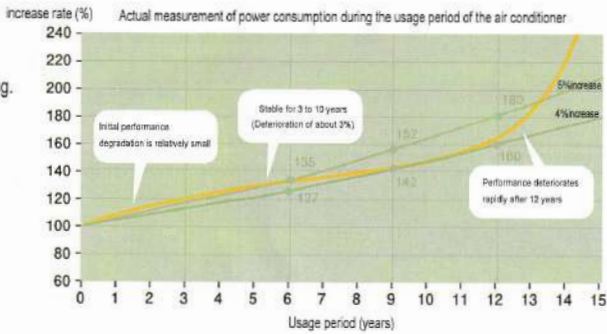
Electricity bill increased 2.1 times compared to 3 years ago!

★ Average value of high-voltage power contracts from 10 major electric power companies

Electricity costs continue to rise due to soaring fuel costs due to changes in the world situation and domestic power supply shortages.

The power consumption of air conditioners and refrigerators increases every year!

Air conditioning and refrigeration units experience a 4-5% increase in power consumption annually due to performance degradation caused by refrigerant aging. As a result, power consumption may increase by 20-30% after 5 years and may exceed 1.5 times the current level after 10 years.



What are the causes of decreased performance in air conditioning and refrigeration units?

The highly polar molecules flowing through the refrigerant pipes are attracted to each other, causing the molecules to cluster together. This clustering, combined with the sludging of deteriorated refrigeration oil, increases viscosity, making it more difficult to flow. This is believed to increase the load on the compressor and degrade heat exchange efficiency.

clustered refrigerant molecules

Refrigerating machine oil turned into sludge

Schematic diagram inside the refrigerant pipe

The flow of refrigerant molecules becomes poor and the inside of the pipe becomes laminar.

Laminar flow = poor heat exchange efficiency

If the viscosity is high and the flow is slow, the fluid will flow in a fixed direction, creating a laminar flow, which will reduce heat exchange efficiency.

Turbulent flow = good heat exchange efficiency

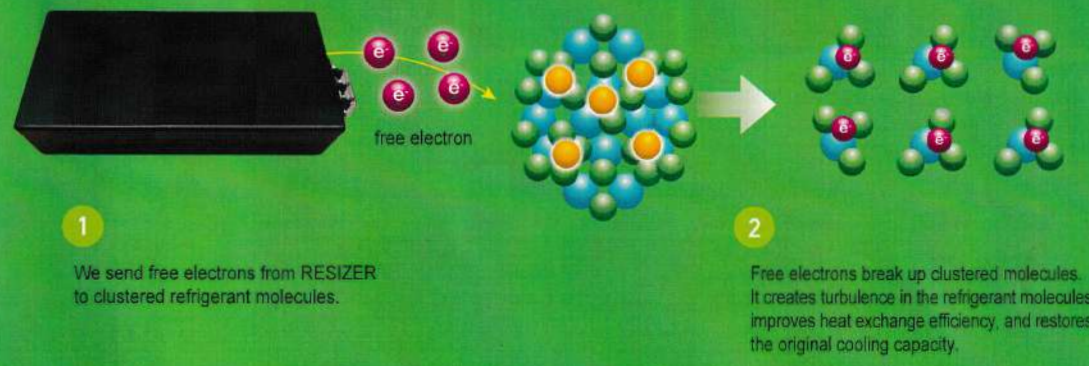
When the flow velocity is high, the Reynolds number increases, creating turbulence and improving heat exchange efficiency.

★ The Reynolds number is a dimensionless number that represents the ratio of inertial force to viscous force in a fluid.

RESIZER improves the heat exchange efficiency of air conditioning and refrigeration units, achieving CO₂ reduction and reducing power consumption.

RESIZER provides free electrons to refrigerants that have become difficult to flow through, decomposing clustered refrigerant molecules and sludge as they pass through the refrigerant pipes. This reduces the load on the compressor. As a result, heat exchange efficiency is improved, restoring the original cooling capacity and improving power consumption.

The mechanism of performance improvement in air conditioning and refrigeration units by RESIZER



Features of RESIZER

- Feature 1**

★ Approximately 20% reduction in power usage!

Improving heat exchange efficiency reduces power consumption and increases downtime, leading to lower electricity bills.

★ The reduction rate varies depending on the usage environment and scale of the equipment.
- Feature 2**

★ Energy saving without changing existing equipment!

When conducting equipment modifications, there are concerns regarding warranties. With RESIZER, since it only requires attaching lead wires supplying free electrons to the refrigerant pipes, there is absolutely no need for any modifications for installation. Additionally, there is no need to stop the power supply during installation.

★ 100V power outlet required
- Feature 3**

Reduce the load on equipment!

By rectifying the fluorocarbon gas, the load on the compressor is reduced, the life of the equipment is expected to be extended, and the operating noise is also reduced. It also has the effect of suppressing stoppages caused by high-pressure cuts.
- Feature 4**

Contribute to CO₂ reduction!

The effect of reducing power consumption also leads to a reduction in CO₂ emissions. It can also be useful from a CSR perspective.

Comments from experts

It can be said to be a groundbreaking technology that generates two benefits: cost reduction and environmental impact reduction.

Refrigerants used in refrigerators, freezers, air conditioners, etc. are composed of atoms with different electronegativities and have electrical polarity at the molecular level. As a result, molecules that are repeatedly compressed and expanded attract each other and become larger, reducing the efficiency of heat absorption and radiation. Based on this fact, I believe that the development of this technology, which he says is a Columbus-like idea, is great because it not only saves energy with inverter control and DC motors, but also improves the efficiency of heat absorption and heat dissipation of the refrigerant itself.

In other words, improving the efficiency of heat absorption and release reduces the required power and leads to a reduction in power consumption. Typically, environmental measures require new investments, but this technology, which generates significant benefits such as cost savings and reduction of environmental impact, is groundbreaking. In today's world where environmental issues are a concern, I believe it is effective as one of the measures against global warming. I hope that this technology will contribute to social welfare.



Honorary Professor, National University Corporation Tokyo Institute of Technology

General Incorporated Association Advanced Technology and Human Resources Development Organization Representative Director

Mr. Masanori Arimoto