

MDA Electron Power and Energy Saving System Equipment
Immediate solution to power shortages, electricity and energy conservation

1. Introduction

Under a stringent supply-demand situation due to the power shortage after the Tohoku Earthquake and nuclear accidents, 10-20% power and energy saving can only be achieved by adding Maruko Denshi Co., Ltd.'s MDA electron power and energy saving system equipment to existing production equipment for various goods. We stand by our equipment system.

Our equipment system can increase power and greatly improve energy savings per unit by reducing power consumption and gross heating value in the production process of various goods. Since our system can be installed on various production machines, radically increased power and energy savings in the production of various goods can be achieved.

The MDA electron power and energy saving system equipment consists of the main body of MDA electron power and energy saving equipment the maintenance system of an electric and magnetic environment which coordinates electron shower equipment and carbon buried land.

The roles of the MDA electron power and energy saving equipment are to accelerate the transmission rate of heat and energy required to manufacture various machines and to accelerate the transmission rate of heat and energy which eliminates the negative heat and energy that causes a loss in production machines' efficiency.

The roles of the maintenance system of electric and magnetic environment consisting of the MDA electron shower system equipment and carbon buried land, which substantially support this power and energy savings, are to rectify the lines of electric and magnetic forces by applying AC high potential between air and land; rectify the flow of useful charges by eliminating special floating charges; and make grounded currents rapidly flow by maximally decreasing grounded circuit resistance between production machines and land to 5Ω or less. Also, this eliminates sluggish static electric charges generated in production machines by grounding the current circuit and increases the durability of production machines by making it resistant to electric and magnetic disturbance or lightning.

2. MDA Electron Power and Energy Saving Equipment

The MDA electron power and energy saving equipment has the following two main roles:

- 1) To rapidly accelerate the heat and energy transmission rate; and
- 2) To eliminate static electricity, which decreases the production efficiency of production processes.

2-1. Acceleration of Heat and Energy Transmission Rate by the MDA Electron Power and Energy Saving Equipment

We believe the MDA electron power and energy saving equipment has a mechanism that increases the flow or vibration of electrons in solids, liquids, and gases by applying AC high potential in the field and accelerates the energy transmission rate by electrons, ions, charged particles, and charged objects. Therefore, when this equipment is used, the energy transmission rate increases and greater energy can be transmitted in a short time, which would substantially save power and energy.

With regard to the thermal conduction in solids, since this equipment, in addition to transmitting heat energy by lattice vibration phonons between atoms, accelerates the energy transmission through the flow or vibration of electrons, it accelerates the energy transmission rate by generating large quantities of free electrons and saves power and energy.

For instance, the thermal conduction in metals with electric conduction is much more affected by the flow or vibration of free electrons in relation to electricity-conducting electrons of metals, than by lattice vibration phonons.

With regard to solids with electrical insulation impermeable to the flow of electrons, free electrons are increased by applying high potential, which raises the heat and energy transmission ratio. In general, dielectric substance comprised of dipoles possessing properties to store electrons and AC flows in the alternating electric field. Also, in the alternating field, AC fluctuating vibrations of dipoles are generated and the heat and energy transmission by mutual intermolecular movement of dipoles is added. Even without the flow of electrons, power and energy is transmitted through spin-wave vibrations caused by rotation specific to electrons which are transmitted from the high-energy state to the low-energy state.

With regard to liquids, in addition to the heat transmitted by frequent intermolecular collision between hot molecular motions, the heat and energy transmission rate is accelerated by the flow and vibration of ions, charged particles, or charged objects, thereby saving power and energy.

Also, with regard to gases, in addition to the heat transmission by the frequency of intermolecular collision, the heat and energy transmission rate is accelerated through the flow and vibration of ions, charged particles, or charged objects, thereby saving power and energy.

The above-mentioned actions of electrons not only save power and energy, but also considerably affect the properties of substances. For instance, they have reduction effects, antioxidant effects, water retention effects, environmental improvement effects, etc. If converting those effects into power and energy savings, the additional value brought in by such power and energy savings is considered enormous.

2-2. Power and Energy Savings through the Elimination of Static Electricity by the MDA Power and Energy Saving Equipment

Static electricity generated in the production process of goods causes problems in various production processes. These problems decrease production efficiency and increase power consumption per unit, which impedes power and energy saving efforts. Therefore, the elimination of static electricity is imperative to saving power and energy.

The MDA electron power and energy saving equipment can be used to conserve power and energy. Even when static electricity is generated in the production process, the equipment can rapidly eliminate charged electricity by diverting static electricity with a grounded circuit.

When the surfaces A and B of different substances statically or dynamically come in contact, create friction or exfoliate, static electricity is generated on both surfaces. When a negative electric charge is acquired on the surface of substance A, a positive one is acquired on that of substance B. Whether the electric charge is negative or positive usually depends on the triboelectric series. The triboelectric series lists the electronic arrangement or binding force of atoms constituting a substance. The triboelectric series is shown in the following table A.

Static electricity is generated when opposing substances A and B in the triboelectric series contact each other, if electrons of substance B are abstracted and applied to the electronic arrangement of atoms constituting substance A or a negative electric charge is acquired on the surface of substance A while a positive electric charge is acquired on that of substance B when electrons are abstracted from B. Thus, it depends on the binding force of atoms and electrons of a substance. In this way, charged electricity needs to be neutralized by an opposite charge or rapidly eliminated by diverting it via a grounded line, because there remains a problem of lowered production efficiency as long as charged electricity is stored there.

Table-A Triboelectric Series

Triboelectric series shows the order that is arranged in the upper side A material easily charged to the positive + side and in the inferior side B material easily charged to the negative -- side when It was rubbed two materials A and B (such as rubbing glass with silk) Triboelectricity is a charge of electricity generated by friction of A and B.

Triboelectric series is shown next. Table A

Charging to the Positive + Side (for Example)

→ Air → leather → glass → quartz → mica → hair → nylon → wool → silk → aluminum →
paper → Cotton → steel → 0 potential → wood → acryl → polystyrene → rubber → nickel
→ Cupper → sulfur → gold → poly ester → foam polystyrene → acryl fiber →
poly ethylene → vinyl → silicon → ebonite →
→ Charged to the negative --side

3. Performance of MDA Electron Power and Energy Saving System Equipment

In this part we explain the outline of power and energy saving benefits by the MDA electron power and energy saving system equipment. The system is mainly used with the following technical equipment:

- 1) Technical machinery with friction, sliding, and crushing parts;
- 2) Technical machinery with electromagnetic, rotating, and traveling parts;
- 3) Technical machinery with heating, drying, and steaming parts;
- 4) Technical machinery with chemical parts such as ferment and chemical reaction;
- 5) Machinery relating to environmental improvement; and
- 6) Machinery relating to materials and production.

The equipment mentioned above has had the power and energy saving effects and also the quality of manufactured goods has been remarkably improved. In addition, the endurance of manufacturing equipment or system equipment is enhanced, which brings about a great economic benefit.

The following are the specific effects of rice polishing machines.

4. MDA electron Power and Energy Saving system equipment

Benefits of MDA Electron Power and Energy Saving Rice Polishing Machines

Case of Komeya CO., Ltd.

By installing the MDA electron equipment for the ready-made rice polishing machine, it becomes the reducing electric energy and power energy saving rice polishing machine..

Installation of the MDA electron power and energy saving equipment makes existing rice polishing machines into MDA electron power and energy saving rice milling machines.

The MDA electron power and energy saving equipment consist of an AC high potential generator, an electrode that is inserted into a brown rice hopper that temporarily stores brown rice, and an electrode insulation sheet fixed to the rice polishing machine. It has a safety circuit system where AC high potential is supplied to each electrode through insulated electrical coated conductors.

In addition, this is a safety circuit system consisting of electric circuitry that prevents electric shock even when a user comes into contact with the machines. The electric consumption of MDA electron power and energy saving equipment is 10 w or less.

By operating an MDA electron power and energy saving rice polishing machine set on a concrete floor with carbon of a building with the MDA electron shower equipment fixed on the ceiling which is built on the carbon buried land, it has been found that 15-20% of power can be saved. It's performance at Komeya Corporation in Nonoichi City, Ishikawa prefecture proved this. Please refer to Table1.

Continuous production is difficult for general rice polishing machines due to clogging caused by static electricity. However, the MDA electron power and energy saving rice polishing machines can be operated continuously because their capacity to eliminate static electricity ensures that they do not clog and the rice flows smoothly. The rice polishing pressure can be decreased, circumventing a rise in temperature and heat loss of the machine and making for efficient production of high-quality polished rice, e.g., an increase in volume when cooked, upstanding rice when cooked, prevention of yellowing and aging.

There is also an unexpected value-added effect; the improved environment of rice plishing factories effectuates the production of high-quality polished rice and bran, and delicious and safe foods. For instance, polished rice is almost like no-wash rice and powdery bran is widely popular, as well.

Other beneficial effects have been the reduction of distinctive odors at rice polishes pest control and the prevention of maize weevil outbreaks.

The MDA electron power and energy saving equipment can be installed to existing rice milling machines, so contact us for more information.

Also, the MDA electron rice polishing machines are manufactured and marketed with the power saving equipment installed.

Table- 1 The Effect of MDA Electron equipment for Electric power saving system in the polishing Rice system of Komeya Co., Japan.

	A	B	C
Polished Rice	Control	MDA Installation	Saving Electric Power
Machine System	Power Consumption	Power Consumption	A- B=C
Rice 9t/day	KWH	KWH	KWH
Glutinous Rice3t/day	13450	10660	2700(-20%)
Total 12t /1day	-----	High Potential Applied AC5000V,0.8mA,50Hz	
Carbon Buried Ground	none	Carbon Buried Grounding	
Earth Resistance	58 Ω	5 Ω	
MDA Electron shower	None	High Potential Applied AC-3,5KV, 0,8mA 50Hz	
Brown Rice Charging At tank	None	High Potential Applied AC-2KV, .0.6mA .50Hz	
Characteristics	Clogging Polishing Operation Stop Static charging Increasing of polishing stress Increasing of power consumption Rice bran no good quality Rice bran high quality	without clogging Smoothing flow None Static Charging Low stress of polishing Low power consumption Rice bran high quality Without bran·None oil contamination	

Operation controls of the MDA electron power and energy saving rice milling machines have been programed with the milling rice software, which automatically selects appropriate conditions of high-potential application, pressure, application time, whether one-time or phased application is required, etc., based on analysis of the condition of brown rice by production region and the experience of generations and, for these reasons, the machines are operated in a sophisticated manner. Currently, the quality of brown rice varies in production regions due to global warming or climate changes, so the program has been adjusted frequently to adapt to and accommodate such changes.

5. MDA Electron Power and Energy Saving System Equipment

Case of Takakura Seika Co., Ltd., Manufacture of Japanese Confectionary

(Rice Cakes, Buns, Red Rice, and Sweets)

5-1. Summary

The operation of the MDA power and energy saving system equipment installed on Japanese confectionary manufacturing machines has brought about significant results such as over 50% reduction in steaming time of glutinous rice and red rice, a 20% reduction in steaming time of buns and steamed cakes, about 50% reduction in production time of bean paste, and a reduction in soaking time for glutinous rice to 1 hour from 15 hours; and the average monthly power and energy savings reached as high as 2,675 KWH (a 35% reduction). On top of that, the products taste good and last longer, and the yield rate has been raised.

Furthermore, attendance of the employees has increased with fewer sick leaves, overtime working has been reduced to zero, and the production efficiency has considerably improved. In the plant the air is purified and becomes cleaner and transparent, there are no piled dust and less floating fungus. Traditional confectionary plants tend to have slippery floors and side ditches because of water used to wash rice or squeezed out liquid after producing bean paste, usually filled with a bad smell, and constant cleaning is required. After the installation of the MDA equipment, however, the hygiene of drainage, etc. is automatically improved, bad smells from manholes and ditches disappear, and the slippery floors get dry.

We believe that actions of electrons activated by the MDA equipment produce such effects; for example, power and energy saving effects made by the reduction of electrons and accelerated energy transmission, and the environmental cleanup effects due to oxidation, sterilization, and deodorant reactions caused by extremely small amounts of superoxide anion O_2^- , hydroxyl radical OH , and hydrogen peroxide H_2O_2 produced by water with added electrons.

The plant site of Takakura Seika is fully carbon buried with ground resistance of lower than or equal to 10Ω and the MDA electron shower equipment fixed on the ceiling of the plant is in operation and the MDA electron equipment is installed on each production machine. As for water, only the electron water prepared by the MDA electron water production equipment is used within the plant. It means that all such equipment is networked and works together to effectively accelerate actions of electrons, which makes a huge contribution to power and energy savings and improvement of hygienic environment of the plant. The actual performance is shown in Table 2. The effect is remarkable. This explains why the company has been the purveyor of Japanese confectionary to the Imperial Household Agency.

5-2. Power and Energy Saving Effects

The effects are shown in Table 2.

Table-2 The Effect of Power and Energy Saving by MDA Electron Equipment
For the Manufacture of Japanese Confectionary in Takakura Seika Co..

	A Without MDA Power Consumption KWH	B MDA installation Power Consumption KWH	C Saving Electric Power A-B=C KWH
Aircondition of factory	3600	2400	1200
Steamer of Rice Cake	825	577	284
Red Rice	550	275	275
Bun with Sake	687	550	137
Steamed Cake	412	330	82
Washing Rice	75	57	18
Boiled small beans	412	288	124
Bean Paste	962	401	421
Baked cake	1125	1015	110
Total	7648	5973	2657(-34,9%)

6. MDA Electron Power and Energy Saving System Equipment

Case of Muranaka Seika K.K., Manufacture of Japanese Confectionary

6-1. Summary

The operation of the MDA power and energy saving system equipment installed on Japanese confectionary manufacturing machines has resulted in about 50% power and energy saving effects; a 40% reduction in steaming time of glutinous rice and about 50% reduction in steaming time of red rice. Also, about 80% reduction in soaking time for glutinous rice and about 30% reduction in fermentation time of steamed cakes have been achieved. The average monthly power and energy savings reached as high as 1,617 KWH (a 25.4% reduction). Soaking time for glutinous rice is radically reduced to 1 hour from 15 hours. This company has also achieved high production efficiency with a high attendance rate and a few sick leaves, without overtime working.

Ingredients are preserved on the MDA electron freshness preservation racks, which enable long-term preservation of fresh ingredients. For instance, peas usually turn brown and then darken, but they completely keep fresh color for 2 years; and glutinous white rice usually starts to get maize weevils, but it is fresh and tastes good even after 2-year preservation.

As for frying, the oil deterioration is reduced by lowering the oil temperature and shortening the frying time, and hoods are no longer needed because volatilized oil does not make stains. In the plant the air is clear and transparent with no dust and less floating fungus. The hygiene of drainage, etc. is automatically improved, odors from manholes and ditches are eliminated, and the wet floors quickly get dry. No insects are seen in the plant and the shop because harmful insects are prevented from entering there. The company's facilities are hygienic.

Furthermore, the machinery lasts longer without trouble having resistance to disturbance like lightning strikes or magnetic storms; and boasts high production efficiency. Such achievements are shown in Table 3.

6-2. Power and Energy Saving Effects

The effects are shown in Table 3.

Table-3 The Effect of Power and Energy Saving by MDA Electron Equipment
For the manufacture of Japanese Confectionary in Muranaka Seika Co..

	A	B	C
	Control	MDA Installation	Saving Electric
Power	Power Consumption	Power Consumption	A-B=C
	KWH	KWH	KWH
Washing Rice	75	52.5	22.5
Steamer of Rice Cake	825	577.5	248
Red Rice	825	412.5	412.5
Bun with Sake	687	550	137
Steamed Cake	550	440	110
Bun of Wheat	540	440	140
Fly of Food	1125	900	225
Baked Cake	937	843	94
Bean Paste	825	577	248
Total	6349	4752.5	1617 (-25.4%)

7. MDA Electron Power and Energy Saving System Equipment

Case of Barley Processing Co., Ltd., Manufacture of Processed Wheat/Barley for Distilled Spirit, Whisky, Fermented Soybean Paste, and Forage

7-1. Summary

The operation of the MDA power and energy saving system equipment installed on wheat/barley processing machines has achieved about 15% power and energy saving effects. The machines can be operated continuously because they are free from a conventional problem of clogging and the wheat/barley flows smoothly; cracking is reduced and premium processed wheat/barley is produced with a high yield rate. In the steaming process necessary for the production of distilled spirit and fermented soybean paste, the processing time has been reduced by 10-20% and high-quality malted wheat/barley is produced. The production efficiency has improved and wonderful distilled spirit and whisky is produced with a 5% increase in alcohol production rate for distilled spirit, etc. The average monthly power and energy savings reached 29,400KWH (a 15.01% reduction).

We believe that actions of electrons activated by the MDA equipment accelerate the energy transmission rate, which brings about such power and energy saving effects. Also, such actions of electrons adjust the redox action of ferment such as malt and are likely to make the optimum environment to raise the alcohol production rate.

7-2. Power and Energy Saving Effects

The effects are shown in Table 4.

Table-4a The Effect of Power and Energy Saving by MDA Electron Equipment
For the Polishing Barley in Nishida Seibaku Co.

	A Control	B MDA installation	C Saving Electric
Power	Power Consumption KWH	Power Consumption KWH	A-B=C KWH
Polishing Barley	150000	127400	22600
Steaming	45000	38200	6800
Total	195000	165600	29400(-15.7%)

Table-4b The Effect of the Productivity of Alcohol by using MDA Electron Power and Energy Saving system Equipment

	A Control Production	B MDA Installation Production	C Alcohol Productivity Increasing of
Production			
Domestic Barley	400L/ton	423L/ton	23L/ton (+5.7%)
Foreign Barley	430L/ton	457L/ton	27L/ton (+6.3%)

8. MDA Electron Power and Energy Saving System Equipment

Case of Kaisha, Ltd., Manufacture of Processed Brewer's Rice for Sake

8-1. Summary

The operation of the MDA power and energy saving system equipment installed on rice milling machines has brought about a 20% reduction in milling time of brewer's rice, which saved an average of 43,200KWH per month with power and energy reduced by about 20%. The polished brewer's rice with little bran evenly absorbs water. The steamed rice is well drained and rapidly breeds *koji-kin* (mold), shortening the maturing period by 2 days from 25 days to 23 days. The alcohol production rate has increased by 10%. The MDA equipment has a great effect.

We believe that actions of electrons activated by the MDA equipment accelerate the energy transmission rate, which realizes such power and energy saving effects. It is likely that the alcohol production rate is substantially improved by the rapid breed of *koji-kin* and effective enzyme reactions.

8-2. Power and Energy Saving Effects

The effects are shown in Table 5.

Table-5 The Effect of Power and Energy Saving by MDA Electron Equipment
For the Polishing Sake Rice in Naka Nihon .Nousan Co.Japan

	A	B	C
	Control	MDA installation	Saving Electric Power
	Power Consumption	Power Consumption	$A-B=C$
	KWH	KWH	KWH
Polising Sake Rice	216000	172800	43200(-20%)

9. MDA Electron Power and Energy Saving System Equipment

Case of Baking Co., Ltd., Manufacture of Bread (Bread and Pastries)

9-1. Summary

The operation of the MDA power and energy saving system equipment installed on bread baking machines has achieved significant results such as decrease in fermentation temperature, reduction in mixing time for ingredients mixers, improvement of even viscoelasticity, decrease in baking temperature of ovens, acceleration of the cooling rate of bread, improved shelf life of bread from 4 days to 7 days, significant reduction in production time for soft and springy delicious bread with air bubbles contained evenly; and the average monthly power and energy savings reached as high as 7,812 KWH (about 10% reduction).

We believe that actions of electrons activated by the MDA equipment accelerate the energy transmission rate, which brings about such power and energy saving effects. Fermentation of bread is advanced by such actions of electrons, which considerably contributes to the production of high-quality bread. Plants baking large quantities of bread must store a significant amount of good ingredients and keep them fresh for a long time. The MDA electron freshness preservation racks enable long-term storage of fresh ingredients utilizing the reduction of electrons by the MDA electron preservation system. Flour and subsidiary ingredients stored on the racks remain fresh.

Also, large quantities of flour and cooking oil separately preserved in the MDA electron storage silos are fresh for a long time.

9-2. Power and Energy Saving Effects

The effects are shown in Table 6.

Table-6 The Effect of Power and Energy Saving by MDA Electron Equipment
For Production of Breads in Fuji Pan Co., Japan

	A Control Power Consumption. KWH	B MDA installation Power Consumption KWH	C Saving Electric Power A-B=C KWH
Mixing Process	8100	7200	900(-11%)
Manufacturing and Brewing of Bread	69120	62208	6912 (-10%)
Total	77220	99408	7812 (-12%)

10. MDA Electron Power and Energy Saving System Equipment

**Case of _____ Seifun Co., Ltd. (Milling Factory, Dry Grinding, Wet Grinding, 8
(Roller Grinding, and Pestle Grinding)**

10-1. Summary

At Nakashima Seifun the MDA power and energy saving system equipment is installed on rice milling machines which have made a significant contribution to power and energy savings and improvement of hygienic environment; the average monthly power and energy savings reached 1,755 KWH (a 4.2% reduction).

The MDA rice milling system has produced better and tastier white rice compared with traditional milling machines. The white rice produced by the MDA rice milling system can evenly absorb water after removing scum by washing in the MDA electron water for one minute. Then, the rice is dehydrated and dried with the humidified hot air. When drying, the air temperature which is about 20% lower than the one usually used can be applied. This saves energy and also produces high-quality dry rice still retaining freshness.

To grind such dry rice, there are two grinding methods such as dry grinding and wet grinding. In the dry grinding method, the rice temperature only rises to 54°C in the grinding machines with the MDA equipment, instead of 70°C in conventional grinding machines. Such lower-temperature grinding saves energy and prevents quality degradation caused by a high temperature. In the wet grinding method, on the other hand, the grinding machines with the MDA equipment easily enable faster and highly-efficient power saving grinding even with smaller power.

All of those grinding machines are equipped with conveyor lines which transport white rice, ground products, and powder from one production process to another; but they usually suffer from trouble like clogging caused by static electricity which slows or stops the flow of items. This tends to hold the production flows and radically reduces the production efficiency. The static-free grinding machines with the MDA equipment, however, have no such clogging trouble, and can be operated without stopping, which helps the plant to achieve planned production and improve the production efficiency.

Furthermore, substance stuck inside of general milling machines and conveyor lines which is difficult to remove (ground powder tightly sticks to meshes or walls) often interrupts the flow of items and causes hygienic problems. The installation of the MDA equipment has completely

prevented such substance from sticking. In addition, when packing or packaging flexible container bags, static electricity often generated in general machines causes packaging losses, but no such packaging losses are caused in the static-free machines with the MDA equipment.

Plant sites have suffered from harmful insects, but the installation of the MDA equipment has considerably reduced such harmful insects entering from outside because the equipment's electromagnetic environment drives away the insects. Reduction of harmful insects inside the plants helps to produce hygienically-processed rice flour. Most milling plants are not necessary well cleaned: Powder tightly stuck to the ceiling, walls, and floors is difficult to remove; dust is accumulated on the machines and pipes; the air in the plants is usually filthy with floating fine powder. The installation of the MDA equipment, however, makes the tightly stuck powder remove easier and improves the transparency of the air; and generates the hygienic environment for plants by preventing dust from piling and removing falling bacteria.

As explained above, high-quality rice powder milled by the grinding machines with the MDA equipment is viscoelastic, tasty and melts in the mouth. Substantial power and energy savings for milling are achieved.

10-2. Power and Energy Saving Effects

The effects are shown in Table 7.

Table-7 The Effect of Power and Energy Saving by MDA Electron Equipment
For the Flour milling Process in Nakajima Seifun Co. Japan.

	A	B	C
	Control	MDA Installation	Saving Electric Power
	Power Consumption	Power Consumption	$A-B=C$
	KWH	KWH	KWH
Grind Process	9000	7800	1200
Milling Process	5550	4955	555
Total	14550	12795	1755 (-12%)

11. MDA Electron Power and Energy Saving System Equipment

Case of _____ Kaisha, Ltd. (Rice Products such as Chumai (irregular rice), Snacks Made from Rice, Sake, Fermented Soybean Paste, Sweet Cooking Rice Wine, Vinegar, and Distilled Spirit)

11-1. Summary

At Daiei Sangyo the MDA power and energy saving system equipment is installed on the rice milling plant which has made a significant contribution to power and energy savings and improvement of hygienic environment; the average monthly power and energy savings reached 13,262 KWH (a 15.1% reduction).

By installing the MDA system equipment on the milling plant, only two thirds of milling pressure is required to polish rice. So, the electricity consumption is considerably reduced and accordingly the CO₂ generation is reduced. Since the flow from the brown rice storage tanks to the milling machines, the flow of rice, crushed granules, and bran in the milling machines, and the flow of polished rice, bran, and crushed granules from the milling machines are smooth and free from clogging. The plant, therefore, can be operated without stopping, which helps the plant to achieve planned production and improve the production efficiency.

The polished rice milled by the milling machines with the MDA system equipment has a much smaller amount of broken rice or crushed granules with higher yield rates than the one milled by general machines. In addition, when packing or packaging flexible container bags, static electricity often generated in general machines causes packaging losses, but no such packaging losses are caused in the static-free machines with the MDA equipment.

The generated bran is high-quality and powdery. Because of the low milling pressure the cell membrane of fat granules inside bran is not destroyed, and, therefore, the fat granules are not bared, and lipase, a hydrolysis enzyme, is scarcely affected by degradation reactions; and fatty oil consisting of glycerol, a degraded product, and fatty acid is eliminated and does not ooze.

In the plant with the MDA system equipment dirt such as dust and crushed granules is effectively collected and the floors, walls, and ceilings are free from such dirt. No dust is piled on the machines and pipes. The air in the plant is clear and transparent with no floating fine powder which is seen in traditional plants.

When you enter a typical rice milling plant, you will notice odors specific to a rice milling

plant, but the MDA method-employed plants are hygienic and odor-free. The MDA equipment's electromagnetic environment seems to shut out most harmful insects from outside. Rice has no maize weevils. The company's facilities are hygienic.

Polished rice milled by the milling machines with the MDA equipment is highly evaluated for its delicious taste and an increase in volume when cooked.

On the whole, the MDA method-employed milling machines produce high-quality polished rice. Such rice is used as ingredients of high-quality products such as chumai (irregular rice), snacks made from rice, sake, sweet cooking rice wine, fermented soybean paste, vinegar, and distilled spirit. Quality rice bran is very popular for use in rice oil, animal feed or forage, Japanese pickles, cosmetic ingredients. The entire plants are maintained in a clean and hygienic condition. The power and energy savings reached 13,262.5 KWH (a 15% reduction).

11-2. Power and Energy Saving Effects

The effects are shown in Table 8.

Table-8 The Effect of power and Energy Saving by MDA Electron Equipment
For the Polishing Particular Rice in Daiei Sangyou Co Japan.

	A	B	C
	Control	MDA Installation	Saving Electric power
	Power Consumption	Power Consumption	A-B=C
	KWH	KWH	KWH
Electric Charging			
Brown Rice	825	562.5	262.5
Polishing process	87000	74000	13000
Total	87825	74562.5	13262.5(-15%)

12. Appendix

MDA Electron Equipment and Relevant Hygienic Environmental Facilities and Equipments

12-1. Carbon Burial Ground Earth Facility Construction

It is intended to support the superiority of MDA effects by the grounding earth resistance is set to 10Ω under and by promoting rectifying the electro-magnetic flux lines in the environmental space.

The Carbon Burial Ground Earth Facility has been constructed by 6 sites per area of 1320m^2 and 100kg of carbon per 1 site of 220m^2 area is used.



Whole burrowing



Setting frame of carbon burial



Carbon filling



Finished carbon filling
concrete



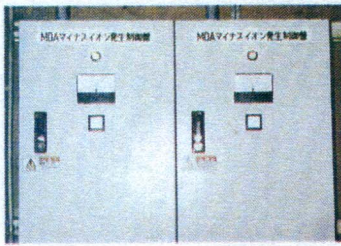
Ground back to whole



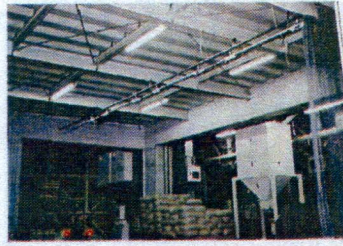
Finishing with

12-2. The MDA Electron Shower equipment

It is intended to support to be the superiority, of MDA effect by to be suppressing the generation of static charge and internal generation of the pest ,and to be prevention flying insects ,and to be deodorized unpleasant smell in factory ,and to be accelerated reductive reaction and to be prevent oxidation reaction .



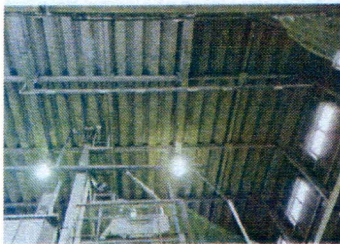
MDA Electron shower equipment control box



MDA Electron shower with row materials in factory



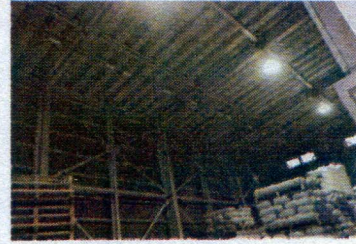
MDA Electron shower with products



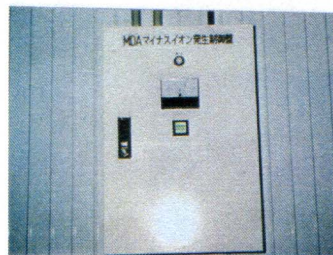
MDA Electron shower with packaging in factory



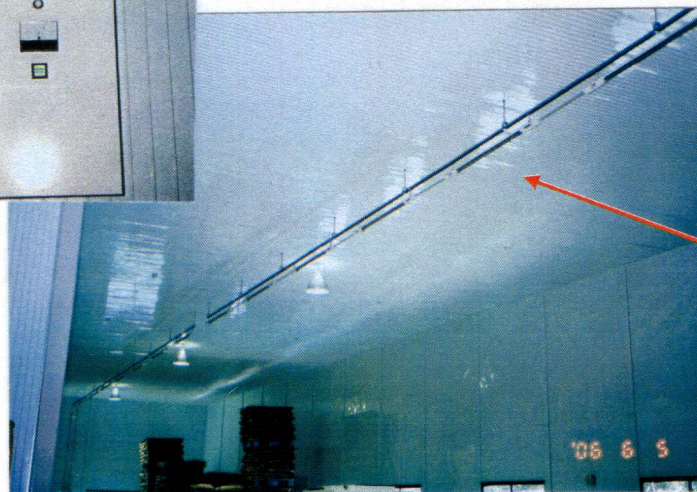
MDA Electron shower with brown rice in factory



MDA Electron shower with brown rice in factory



MDA Electron control box



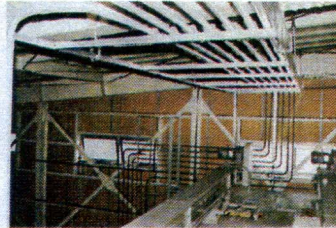
Electron shower device

12-3. The Brown Rice electric Charging in hopper tank equipment

It is intended to support to be the superiority of MDA Effect by leading to charged brown rice by applying the high electric potential through the electrode in hopper tank, and by expressing the fluidity enhancing effect of the brown rice charged particle and it is possible to be running continuously without clogging accident and also by the reductive power enhancing effect of preventing oxidation.



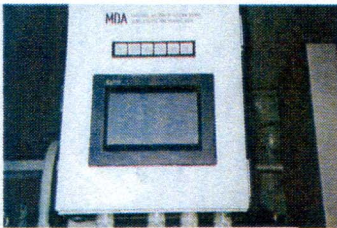
MDA Electron ac high
potential generation control
box



High potential conductive
wire pipe feed



Electrode of hopper tank of
brown rice



High potential application
time control box for non
glutinous rice

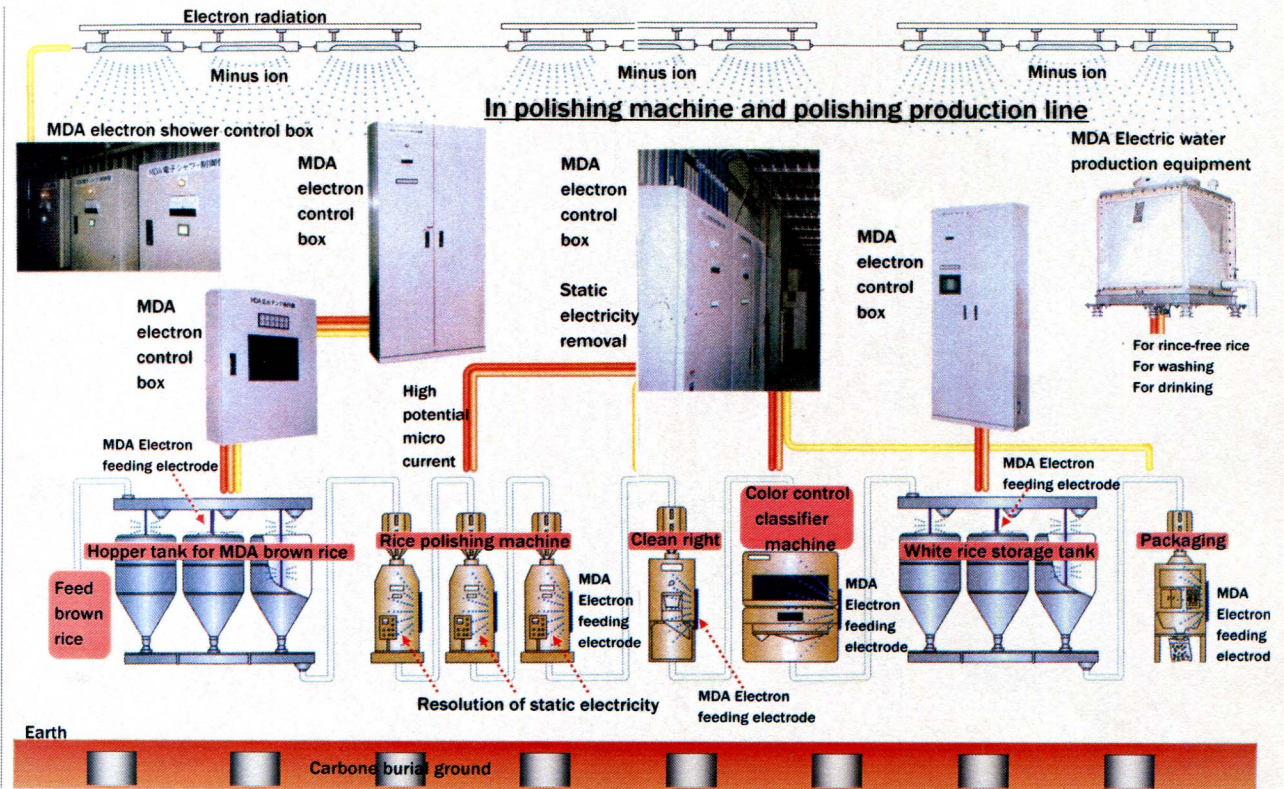


High potential application
time control box for
glutinous rice



Hopper tank electrode

Figure of MDA Electron electric and power saving system equipment
(For MDA polishing rice machine)



12-4. MDA Electron Electric Water production Equipment

It is intended to support to be the superiority of MDA effect by manufacturing electric Water(high potential electron additional water) which can be converted to the water have high penetration and reductive functionality.



MDA control box



MDA Electric water tank



Chiller of electric water(4°C)



Electric water tank for 2 ton

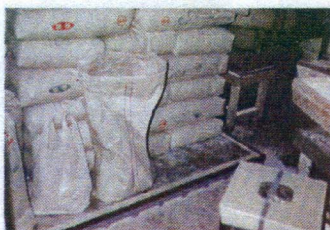
15

12-5. MDA Electron for Raw Material Storage Table Equipment

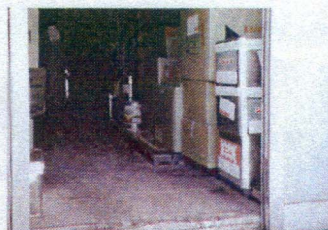
It is intended to support the superiority of MDA effect by using the Raw Material Storage Table applied high potential. It is possible to preserve food as is long-term.



MDA control box



Rice storage table with high potential



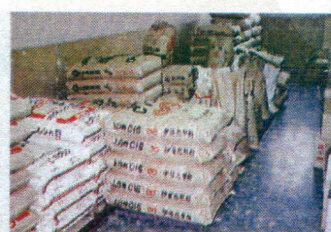
Row material storage table with high potential



Row material storage table with high potential for Japanese confectionery



Row material storage table with high potential for western confectionery



Row material storage table with high potential for pastry Azuki been



Row material storage table with high potential

12-6. MDA Electrode Dipping in water system

It is consist of water filled tank and MDA high potential immersion electrode which is dipped in water of tank and it is accelerated for absorption of water into rice by high immersive functionality.

The feature is as follows

- 1) Absorption rate pf water into the rice is fast
- 2) The amount of water absorption increased



MDA control box



Dipping of glutinous rice in water with high potential for water absorption into rice time crunching to 1 hr from 15hr very fast



Dipping electrode in water



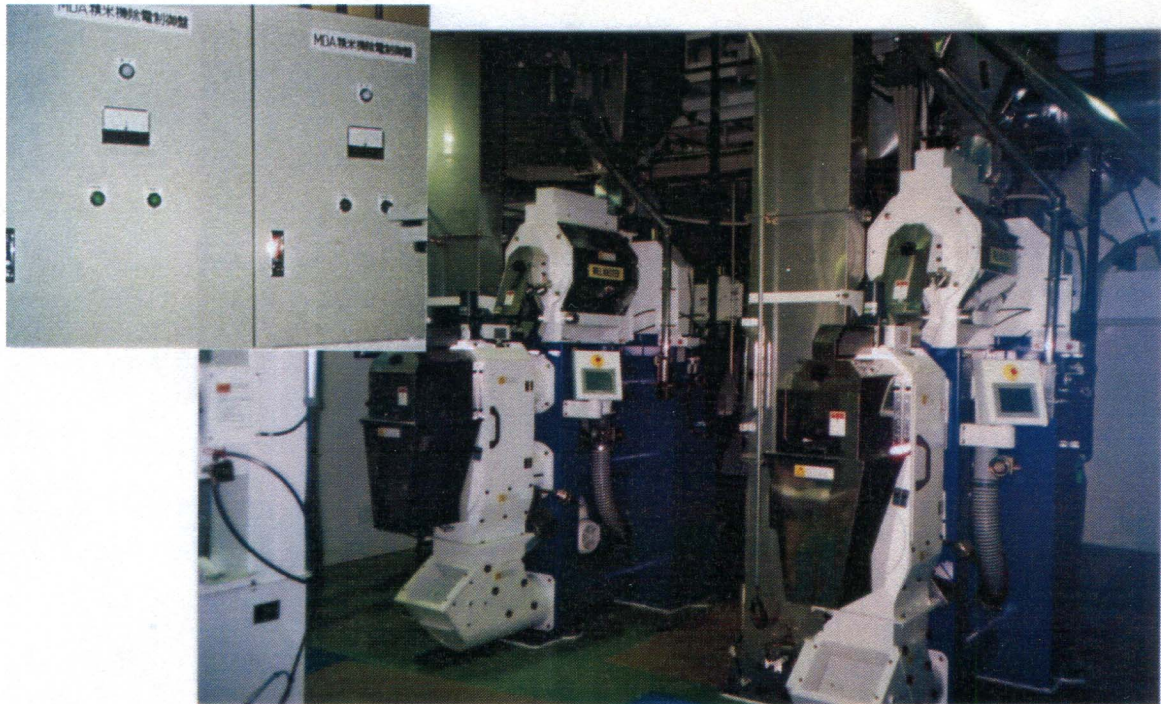
Big size

12-7. MDA Electron Rice Polishing Machine

MDA Electron rice Polishing Machine is system equipment applied alternate high potential fine current to conventional rice polishing machine. Its characteristics is to be able to do high electric power saving. It is considered for that mechanism it is to dissolution of static electricity charging and to accelerate a removal high thermal energy which generated in polishing operation.

MDA Electron Rice Polishing Machine shown figure-1.

Fig-7-1.



12-8. MDA Electron Equipment Circuit Map