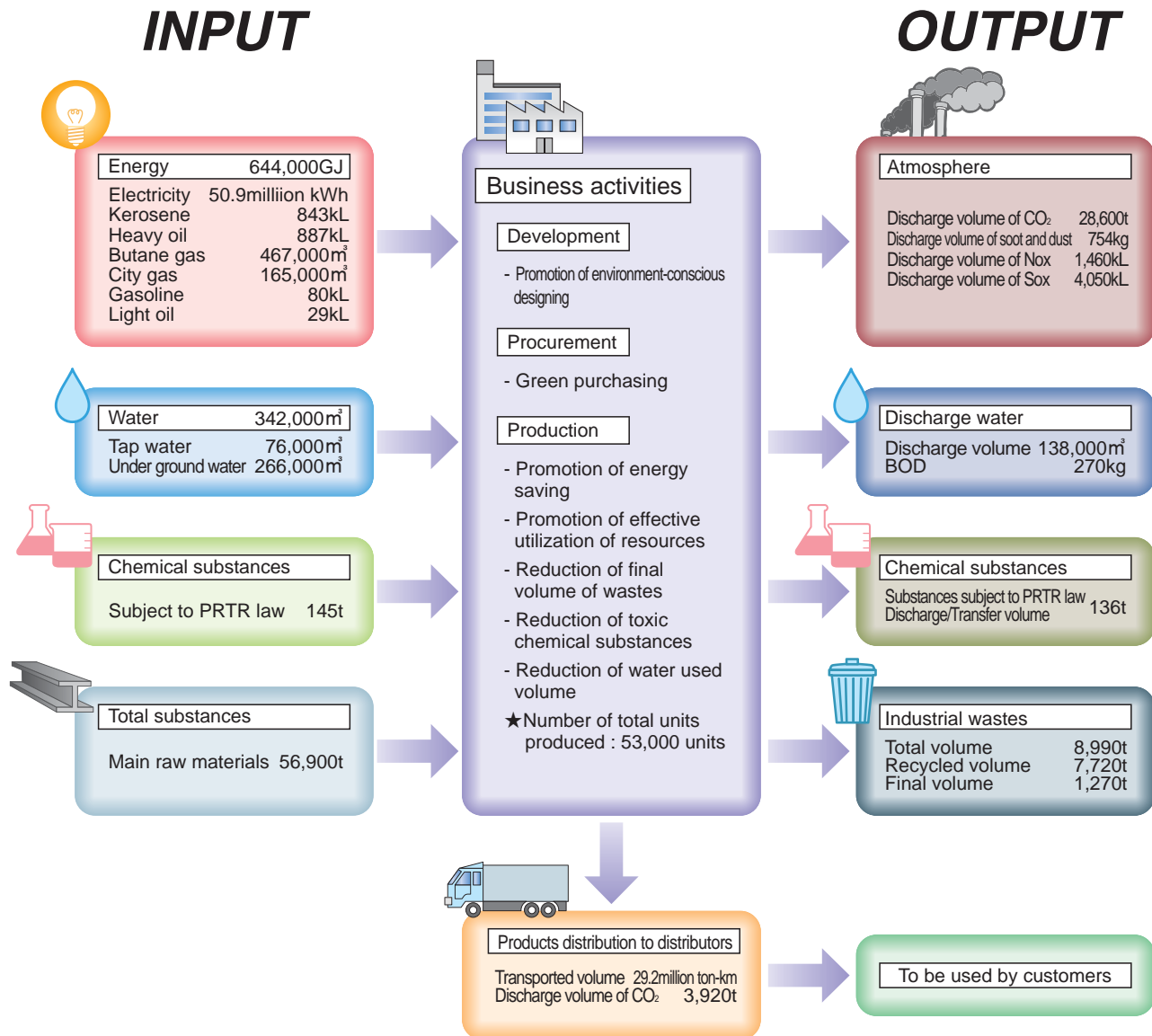


Eco balance

Environmental performance

Iseki Group uses materials such as fuel, electricity, water and other raw materials in the process of production, and discharges chemical substances and industrial wastes subject to laws related to carbon dioxide (CO₂) and PRTR (Pollutant Release and Transfer Register) law. We always check the volume of materials used for production (INPUT) and discharged volume of chemical substances and industrial wastes (OUTPUT) as an index in reducing discharge of such chemical substances and industrial wastes for realizing business activities with less environmental stresses. The following shows figures of undertakings for 2009.



Approach to reduction of environmental stresses caused by products distribution

As Energy Saving Act amended in 2006 imposed energy saving activity on every goods owner, we always check the environmental stresses caused by the products distribution and promote the reduction. The CO₂ discharged volume in 2009 is 17% lower than the last year, and*the modal shift rate is drastically lowered to 46%.

* The modal shift: means change of transportation ways.

For example : Changing the transportation ways from trucks to trains or ships.

Environmental risk management [Examples of air pollution prevention and control]

Environmental performance

[Control to inhibit the emission of GHG (Global Greenhouse Gas)]

◁ Approach to energy saving by using the inverter compressor ▷



Iseki Matsuyama MFG, Co., Ltd. uses compressed air as a source of energy to operate various equipment and tools. Workload applied to the air compressor (compressor) changes greatly according to the compressor operating time. We used to deal with this change in the workload by reducing or increasing the number of units to be operated though; appropriate compressed air for the changing workload can be supplied now by employing 2 inverter compressors. This contributes to reduce electrical usage.

This has resulted in a reduction of 400,000kWh per year, which is equivalent to a reduction of 157 ton of CO₂, saving approximately 2.8 million yen in the cost of electricity.

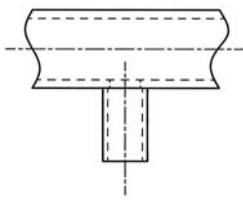
◁ Approach to energy saving for electrodeposition coating ▷

Iseki-Kumamoto MFG Co., Ltd., has promoted to expand operation of the inverter for the electrodeposition coating circulation pump (22kW x 2 units), which is operated 24 hours a day. The discharge nozzle inside the paint tank has been improved to the one with higher agitating capacity, allowing for the reduction in the output of the circulation pump motor. As a result, Iseki-Kumamoto was able to reduce the electrical usage.

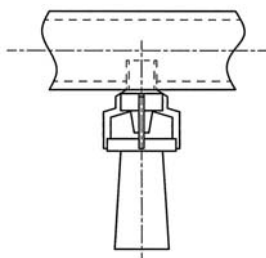
[Reduction effect in FY2009]

- Electricity usage : Approximately 83MWh/year
- CO₂ reduction volume : Approximately 29t-CO₂/year

Conventional discharge nozzle



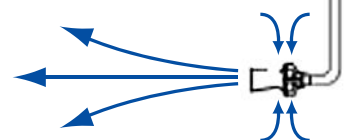
Improved discharge nozzle



140 places in total



Feature of the nozzle



The improved nozzle absorbs 4 times the volume absorbed by the conventional nozzle and strongly discharge 5 times the volume discharged by the conventional one, realizing drastic improvement of the agitating capacity in the tank. This resulted in a reduction in the output of the circulator pump.

Environmental risk management [Examples of air pollution prevention and control]

Environmental performance

[Control to inhibit the emission of GHG (Global Greenhouse Gas)]

< Approach to electric energy recycling for the tractor test facilities >

Tobe Office in Iseki Group renewed the test facilities for performance measurement and endurance test of PTO (Power Take-off) shaft to deal with the trends of growth of tractors in size. The renewed test facilities will recycle the electricity by absorbing the output energy from PTO shaft of the tractor, and employment of the data automatic measurement and monitoring function allows for 24-hour continuous operation. This also has high maintainability as the body of the dynamometer itself is an alternator and no brush is needed as well as high security without a risk of ignition of spark.



Power panel



Dynamometer

The test facilities uniquely employ an alternative dynamometer using the inverter control. The alternative dynamometer controls all digital sign waves, PWM (Pulse with Modulation), realizing high performance and low noise level. This system enable the regeneration of approximately 80% to 90% of the energy of PTO shaft output as electric energy, allowing for reduction of electricity usage and discharge volume of CO₂.

- Yearly reduction of electric energy : Approximately 100MWh (electricity cost: reduced by approximately 1,7million yen per year.)

- Reduction volume of CO₂ emission : Approximately 38t-CO₂



Operation measurement control panel

Function overview of operation measurement control panel:

As well as automatically controlling the load of the dynamometer by using the personal computer and control panel, this system automatically monitors various data (temperature, strain, shaft torque), etc. Sufficient consideration to safety is given in the automatic measurement system, which will automatically reduce the load to nearly zero and stop the engine.

Promotion of energy saving [Preventing global warming]

Environmental performance

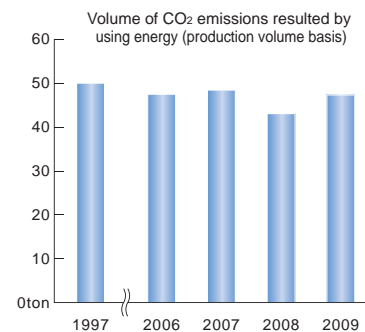
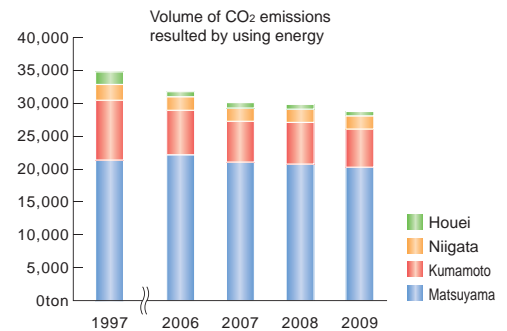
[Reduction of energy use in the plant]

4 factories of Iseki Group have been striving to reduce consumption of energy such as electricity and fuel required for production activities in 4 factories, by realizing the efficient operation of all machines and facilities, and by replacing existing machines and equipment with energy-saving type ones.

The total volume of CO₂ emissions due to energy usage was 4% lower than the previous year and the emission volume was 6% lower than the datum year. The reduction was because the production output in FY2009 was greatly reduced; we are still going to keep reducing the energy consumption.

Volume of CO₂ emissions resulted by using energy

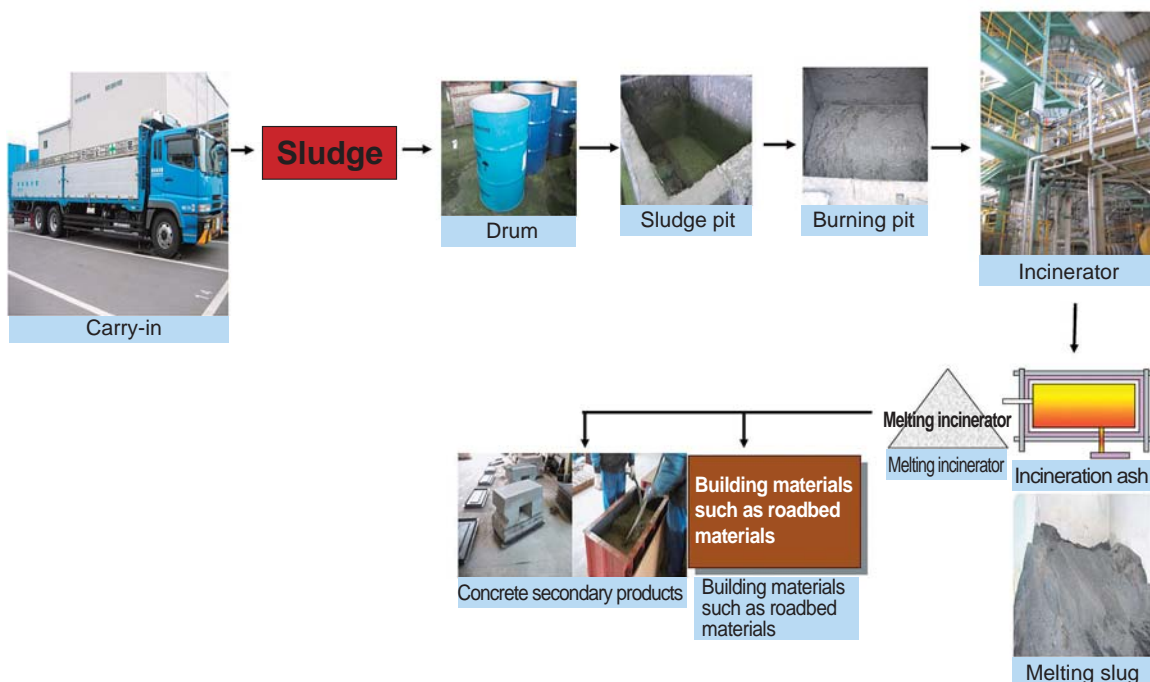
	1997	2006	2007	2008	2009
Total volume (ton-CO ₂)	34,500	31,800	30,000	29,800	28,600
Total production output per year (ton-CO ₂ / 100million yen)	50.0	47.4	48.3	43.3	47.2



[Reduction of final industrial wastes]

< Recycling sludge >

Iseki Houei factory has been aiming to realize zero emission manufacturing by implementing and applying an industrial waste products recycling system in order to promote 3R principle (restriction of wastes, reuse and recycling) for the formation of recycling-oriented society. We used to outsource the final treatment of the industrial wastes such as landfilling to the industrial treatment firm. In FY2010, however, we started recycling them into concrete secondary products or roadbed materials.



Promotion of energy saving [Preserving water resources]

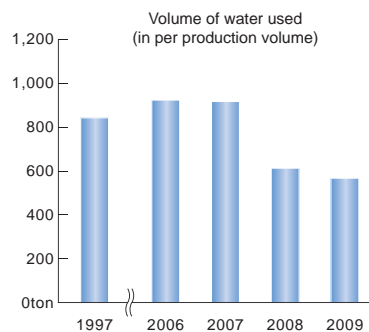
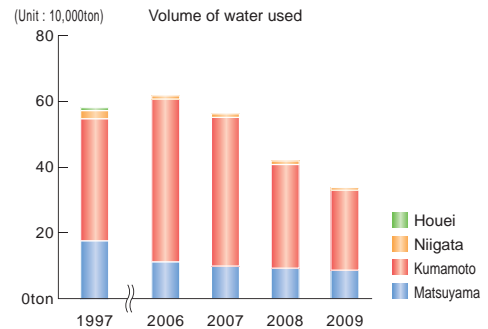
Environmental performance

[Reduction of volume of water used]

According to the installation of the water circulation facility and implementation of countermeasures for water leakage, 4 factories of Iseki Group strived to reduce the volume of water used. The volume of water used in FY2009 was reduced by 19% from the previous year, and by 33% from the datum year per production volume although the production volume was reduced. Water shortage has become more serious issue than food shortage or exhaustion of fossil fuels with population growth. We are going to reduce water usage from now on.

Water used volume

	1997	2006	2007	2008	2009
Total volume (Unit : 10,000ton)	58.2	61.9	56.7	42.4	34.2
Total production output per year (ton/ 100million yen)	844	924	913	617	565



Promotion of energy saving [Reducing total material input]

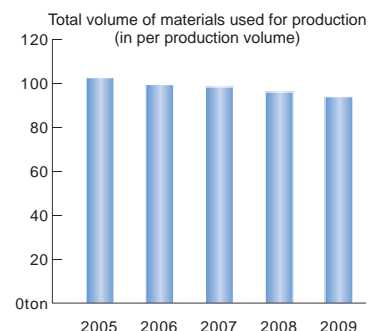
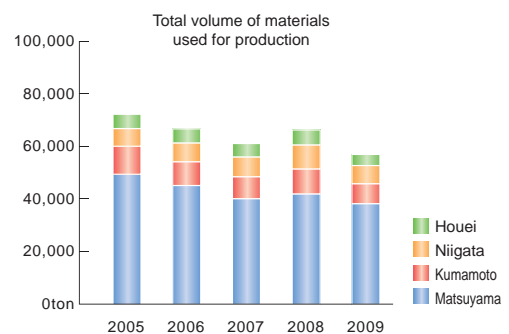
Environmental performance

[Reduction of total volume of materials used for production]

4 factories of Iseki Group use the aggregated amount of total materials such as raw materials, production supporting materials, purchasing parts, etc. as an index to reduce the total volume of materials used and by promote energy-saving activities. In comparison to previous year, the total volume of materials used for production in FY2009 per production volume was reduced by 14% due to the reduction in the production volume. The total volume of materials used for production per production volume was reduced by 8% from the FY2005 (reference year).

Materials used volume

	2005	2006	2007	2008	2009
Total volume (ton)	72,100	66,600	61,100	66,000	56,900
Total production output per year (ton / 100million yen)	103	99.4	98.3	96.0	93.9



Reduction of industrial wastes [3R of production processes]

Environmental performance

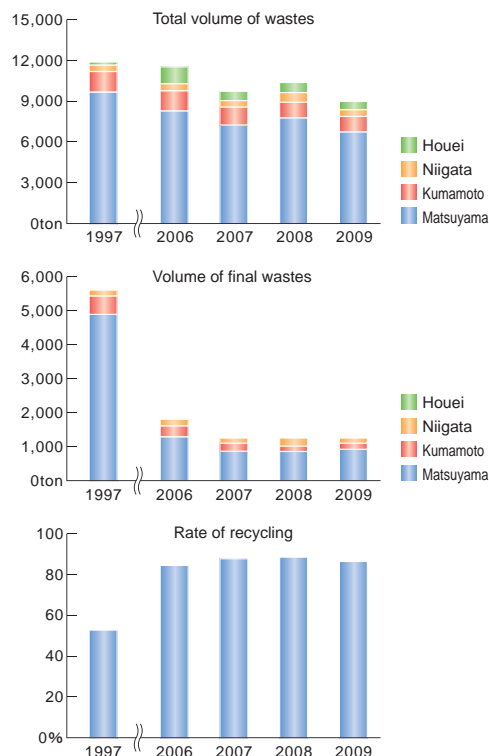
[Reduction of wastes]

To build a recycling-oriented society, 4 factories of Iseki Group have been contributing to an effective usage of their industrial wastes by promoting restriction of wastes, reuse and recycling. The total volume of wastes in FY2009 was reduced by 13% from the previous year due to the reduction in the total production volume, and by 14% lower than the datum year per production volume.

The final volume of wastes reduced this year such as by landfilling was same as the last year and there was a 74% drop in the volume of per production volume compared to the datum year. As a result, our recycling rate for the total volume of wastes improved to 86%. Now and in the future, the 4 factories of Iseki group will take further approaches towards the inhibition, reuse, and stringent segregation of wastes, as well as the promotion of recycling in accordance with the businesses of each manufacturing plant for zero emission.

Volume of wastes (ton)

	1997	2006	2007	2008	2009
Total volume of waste	11,900	11,500	9,760	10,400	8,990
Volume of recycling materials	6,270	9,640	8,490	9,120	7,720
Volume of final waste	5,640	1,840	1,270	1,260	1,270
Rate of recycling	53%	84%	87%	88%	86%

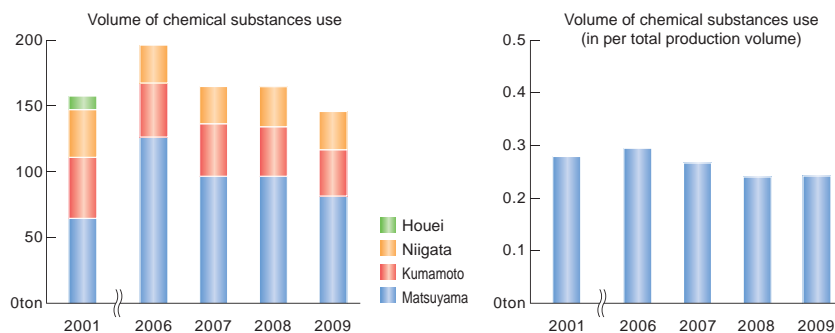


Optimal control and reduction of use of chemical substances

Environmental performance

[Optimal control of chemical substances]

The total volume of use of Category-1 Chemical Substances stipulated by PRTR law in FY2009 was 12% lower than the previous year. The used volume per production volume was reduced by 13% lower than the datum year by changing the chemical substances to those containing less toxic chemical substance stipulated. From now and in the future, Iseki will closely monitor the volume of use and reduction of VOC (Volatile Organic Compounds) use through appropriate control and management of such chemical substances.



[Volume of use of substances controlled by PRTR law]

(unit : ton)

	FY2001					FY2008					FY2009				
	Matsuyama	Kumamoto	Niigata	Houei	Total	Matsuyama	Kumamoto	Niigata	Houei	Total	Matsuyama	Kumamoto	Niigata	Houei	Total
Xylene	20.1	26.7	13.9	6.50	67.2	36.6	22.0	14.3	0.14	73.1	31.7	18.8	13.0	0.10	63.6
Toluene	13.4	4.71	8.54	1.00	27.7	17.7	1.78	3.69	0.24	23.4	17.9	2.60	4.59	0.18	25.3
Ethyl benzene	16.8	14.7	9.09	0.00	40.6	35.3	11.8	11.7	0.05	58.8	30.4	11.2	10.5	0.02	52.2
Water-soluble zinc compound	0.00	1.21	0.00	3.20	4.41	0.29	2.26	0.24	0.00	2.79	0.26	2.30	0.20	0.00	2.76
Dichloromethane	13.0	0.00	2.42	0.00	15.4	5.15	0.00	0.01	0.00	5.16	0.04	0.00	0.01	0.00	0.05
1, 3, 5-Trimethylbenzen	0.75	0.00	1.41	0.00	2.16	1.20	0.29	0.15	0.00	1.64	1.00	0.29	0.25	0.00	1.54
Total	64.1	47.3	35.4	10.7	157	96.2	38.1	30.1	0.43	165	81.3	35.2	28.6	0.30	145

Approach to environment-conscious designing

Environmental performance

< Approaches to environment-conscious designing by product assessment >

Tobe office implements the product assessment in the development and designing phase to enhance the environment-conscious designing by improving energy-saving and recycling rate of the products.

The evaluation items for the product assessment are 40 items in 8 categories including reduction of products in volume, prohibition or reduction in use of toxic substances, etc. A product cannot be commercialized if it does not pass our standard.

8 categories for evaluation of products

- | | |
|--|--|
| 1. Reduction of product volume | 5. Reduction of environmental stresses in manufacturing phase |
| 2. Prohibition or reduction in use of toxic substances causing environmental stresses | 6. Reduction of environmental stresses in product distribution |
| 3. Improvement of maintainability and ease of repair, and reduction of environmental stresses in using phase | 7. LCA |
| 4. Improvement of recycling rate | 8. Promotion of disclosure of products usage information (communication) |

< Approaches to LCA >

LCA is a method to create an inventory (list for items related to emission and absorbing volume of greenhouse effect gas) for the emission volume of toxic gas such as CO₂, especially affecting the global warming, emitted during burning of fossil fuel consumed in manufacturing phase including manufacturing of raw materials, manufacturing of products in the factories, transportation, and use or disposal of products by users.

For reducing toxic substance emission in the environment, LCA method allows for clarifying which items to be improved first and focused on in each phase by comparing our conventional products with newly developed products. Each technical department uses and promotes this method to realize effective reduction of the toxic substance emission, leading to energy and resource saving.

The following Fig. 1 shows the lifecycle model of the product.

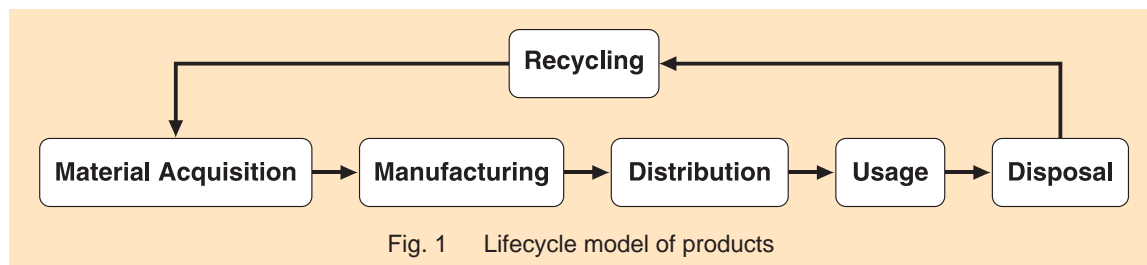


Fig. 1 Lifecycle model of products

< Approaches to prohibition or reduction in use of toxic substances >

Our products are not subject to RoHS directive though; we manage ourselves to reduce toxic substance contained in our product, which causes environmental stresses, by separating materials prohibited to be used from the ones to be reduced step by step, for promoting green purchasing activity.

* RoHS directive : This directive prohibits use of stipulated toxic substances in the electric or electronic equipment.

Substances causing environmental stresses prohibited or requiring reduction of use in our product

★ Prohibited materials

(1) PCB (2) Asbestos (3) Ozone depleting substance (PFC chlorofluorocarbon)

★ Materials requiring reduction of use

(1) Mercury (2) cadmium (3) Lead (4) Hexavalent chromium (5) Polybrominated biphenyl (6) Polybrominated diphenyl ether

Approach to environment-friendly designing

Environmental performance

<Approaches to improvement of workability for combine harvesters>



New JAPAN HJ7120

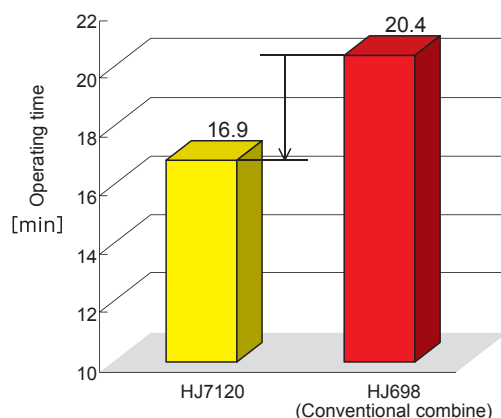
As a result of the governmental policy to cope with the successor reduction issue in the agricultural field implemented by “Ministry of Agriculture, Forestry and Fisheries of Japan”, number of certified agriculture workers have been increased and agricultural lands have been centralized, expanding the demand of large size combine harvesters. Under these circumstances, we have developed the environmentally conscious and large size combine harvesters, “JAPAN” series, around the concept of “high accuracy, efficiency and durability.”

Usability and workability have been greatly improved

Iseki 7-row type combine harvester has a 4-cylinder diesel engine of 120 horsepower, which is common rail and water-cooled type. This combine harvester is the industry's first 7-row type combine harvester, realizing ease of feeling tired at high driving speed 1.75m/s.

The reaping section in this 7-row type combine harvester is wide enough, requiring only 2 turns at the corner unlike the conventional one requires 3 turns, which has reduced the number of turns in the field. In a field of 30 ares, the working time was 17% lower when compared with that of our conventional 6-row type combine harvester. Thus, the operating efficiency has greatly been improved.

This reaping section wide enough for the width required by running and threshing realized easy handling without paying attention to the rear side even in a field near a residential area where there are high concrete walls or woods.



Field area: 30a=60m x 50m

	HJ7120	HJ698
1st time speed (m/s)	1.25	←
Speed other than 1st time (m/s)	1.75	←
Number of turns for reaping	2	3
Distance to move backward at corner (m)	10	←
Number of reapings at corner	2	3
Distance to move backward at α-turn (m)	3	←

Approach to environment-friendly designing

Environmental performance

< Approaches to reduction of environmental stresses caused by the combine harvesters >

The “switch panel” of the new combine harvester “HJ7120” has an electronic control PC board inside. The electronic control PC board requires “soldering” using leads, toxic substances, for joining the electronic panel to the PC board. For avoiding usage of leads, Iseki has employed “lead-free soldering” method. For employment of the “lead-free soldering”, all the electronic parts installed to the electronic PC board need to be applicable for the “lead-free soldering”, and have to withstand higher temperature welding, because the “lead-free soldering” has higher melting point.

This “switch panel” uses parts and materials such as cases, labels, water-proofing sealing materials and screws conforming to European RoHS directives as well as the PC board parts applicable for the “lead-free soldering.”

Integrated structure of the switch panel

The switch panel installed in the “New JAPAN” series contributes to reduction of toxic substances.

The switch panel is equipped with sensors and switches including input circuit, output circuit and communication circuit in addition to the toxic substances, integrating into the electronic control PC board while it was separately installed in the conventional switch panel.

This structure enabled removal of the operating parts such as switches or volume controllers and electric cable connection between the electronic control PC boards, reducing the weight of the switch panel.

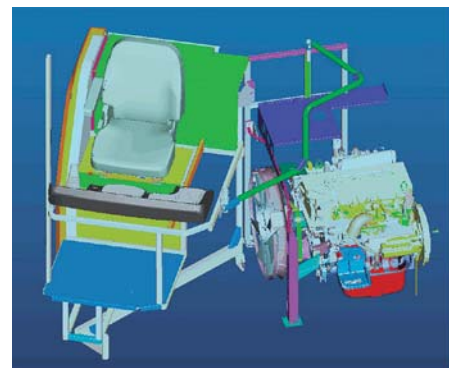
The integral arrangement of electronic parts improved the disassembling capability for easy maintenance and repair. For the indicators of the switches, super luminosity LEDs are employed, eliminating replacement work of the conventional incandescent lamps. This realized the maintenance-free switch panel.



Switch panel

Facilitations of maintenance

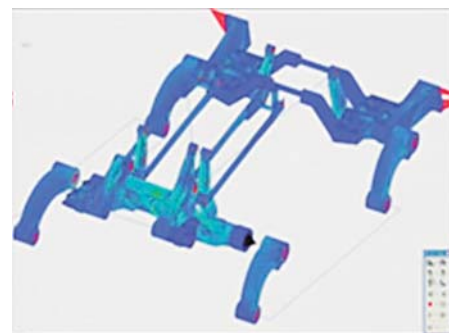
For greatly improving the maintainability of the engine, we designed the “4 point link” type open mechanism in which the engine is more widely opened. This mechanism is able to reduce extended part in size when opening, and it is not necessary to open the grain tank or reaping section. Instead, the entire operating seat was made openable. This facilitated maintenance of the important parts such as shift HST, shift transmission case, hydraulic valve, etc. as well as the engine and improved the safety.



Opened operating seat

Improvement of strength and durability

CAE analysis was implemented about mainly leg section which has many important parts, reaping frame greatly affected when it is vibrated and cylinder driving part assuming application of excessive load to select shape and material of the cases, reduce the vibration and improve the strength and durability.



CAE analysis of running frame

Approach to environment-friendly designing

Environmental performance

< Approaches to reduction of rice huller >

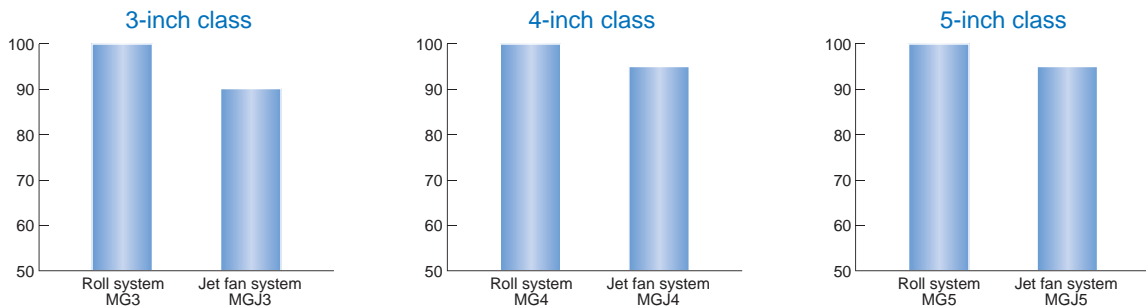
The oscillating type rice huller, MGJ series, employs jet fan system in the husking part which is a main mechanism of the husker, realizing reduction of power consumption during husking work by approximately 5 to 10% as compared with the conventional roll system.

The noise workers feel has also been reduced. Thus, human and environment-friendly machine was realized.



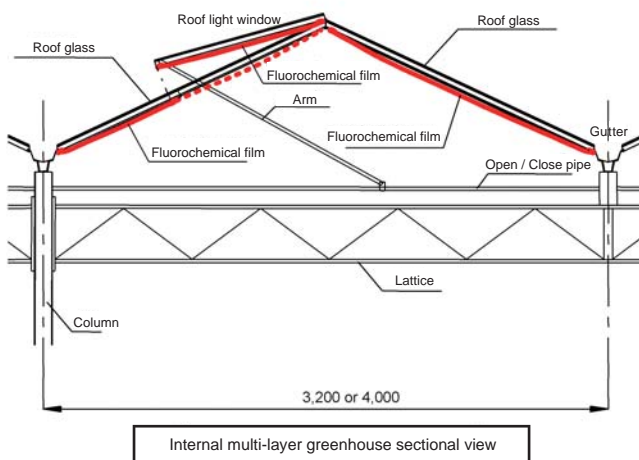
MGJ5

Power consumption rate



(Value is calculated provided that the power consumption of the conventional roll system is 100.)

< Approaches to reduction in use of petroleum-based fuel by employment of multi-layer greenhouse roof >



Boilers or hot air heaters are installed as a heat source of the heating system for heating the greenhouse plantation facility during cold period. Many of those boilers or heaters use petroleum-based fuel. The consumption of the petroleum-based fuel is one of causes of global warming, and it is our duty to reduce the consumption.

For this duty, we have made the greenhouse roof multi-layered, allowing for great reduction in consumption of petroleum-based fuel. The multi-layered roof was created by overlaying a new cover material on the existing cover material in parallel with some space left between. By creating air layer between cover materials, the greenhouse insulation capacity increased allowing for reduction of the volume of the heat from the heater inside the greenhouse.

In our laboratory greenhouse, the fuel consumption has been reduced by 1/3 by employing multi-layer roof with fluorochemical films applied inside the glass.

Support to promote environment-friendly agriculture

Environmental performance

< Approaches to electric mini tiller, which is environment-friendly >



ERENA

ASUNA

Electric mini tiller

Recently many people have been appealing for food safety, and gardening and table gardens have become a boom in a wide range of people including baby boomers or people interested in the field. Under the circumstances, demand for tiller which can be handled by aged person or women has grown. Thus, Iseki commercialized the field's first electric mini tiller driven by lithium ion battery for realizing both full-scale work (cultivation, ridge making, field filing and weeding) and environment-conscious work.

★ Clean operation

- The electric mini tiller, emitting no gas and releasing no odor, is an environmental and human-friendly product.
- There is no need for supplying gasoline or replacement of engine oil.
- Employment of a clean tray realized to keep the tiller clean even while it is running on a road, a worker is loading a cargo into the vehicle or the tiller is stored.



Clean tray

★ Silent operation

- This noise-less tiller, driven by a motor, allows for environment-friendly operation around a residential area.

★ Simple operation

- Easy charging
A lithium ion battery, having large capacity and rechargeable, is employed.
- Easy transportation
The tiller is equipped with 2 driving wheels for stable and easy transportation. This tiller is foldable and can be loaded into a trunk of an automobile.

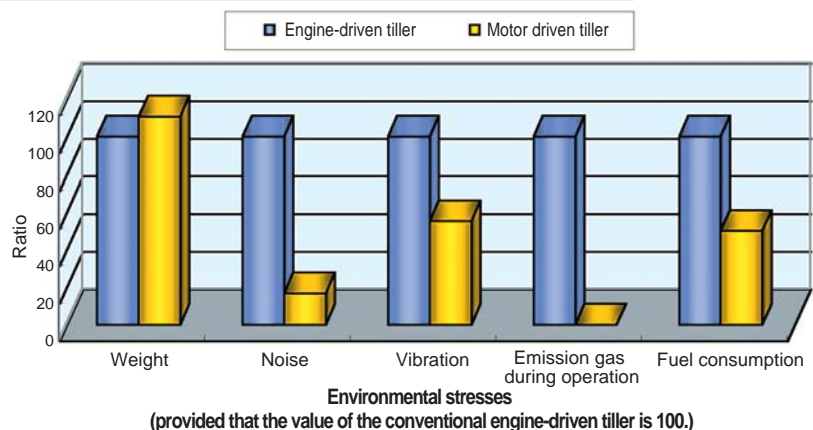


Loaded into a car trunk

Comparison of environmental stresses between the conventional tiller (driven by a engine) and electric mini tiller (driven by a motor)

The graph proved that the new motor driven tiller is superior to the conventional one in almost all the aspects except for weight. It is notable that there is no emission from this new tiller during operation, contributing to environment-friendly manufacturing activities.

When evaluated (compared with our standard) by Life Cycle Assessment (LCA) from the manufacturing phase to disposal phase including the phase of recharging batteries, the lifetime emission volume of CO₂ is 42% of that of the conventional one driven by a gasoline engine, realizing drastic reduction of CO₂ emission volume.



Support to promote environment-friendly agriculture

Environmental performance

< Approaches to low-fuel consumption for TJV tractor >



TJV95

With a common rail type electronically-controlled fuel injection system, conforming to the emission control standard in Japan in 2008, installed, this new tractor accurately controls pressure, volume and timing of injection by using a computer for fuel injection appropriate for the operating condition of the engine.

It employed a function to select either mode between 2 modes (standard mode or green mode (fuel-efficient mode)) depending on the kind of work, attaining reduction in usage of energy, high fuel efficiency and environment-friendly operation.

By selecting the green mode (fuel-efficient mode), the fuel consumption was reduced approximately by 10% in light load operation.

By using the governor mode selector function (either droop or isochronous) together with other main functions, the working efficiency was improved due to change in the operating condition or method. Thus, fuel efficiency can be improved.

Operators' awareness of reduction of fuel consumption, by the graph display of the fuel consumption rate on the panel, was improved, contributing to improvement of the global environment.

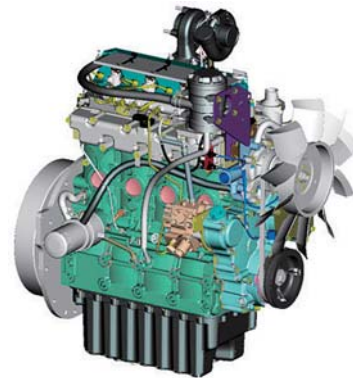
Droop mode:

Standard control to reduce engine speed when the engine is overloaded.

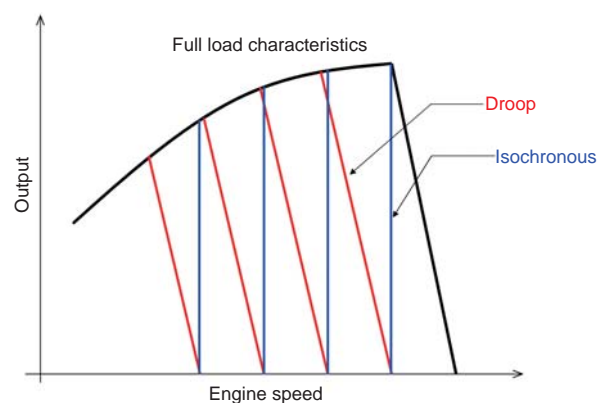
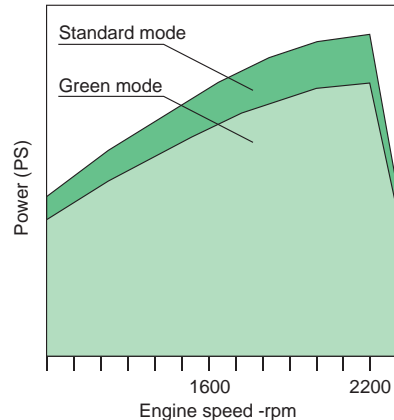
Isochronous mode:

Control to keep the engine speed constant.

In response to the gain of momentum for improvement of food self-sufficiency ratio in Japan, demand for high horsepower tractors exceeding 50PS has been expanding in a field of tractors. Iseki developed an environment-friendly new model tractor (TJV series) with PS between 58 and 95 meeting the demand.



Iseki common rail engine



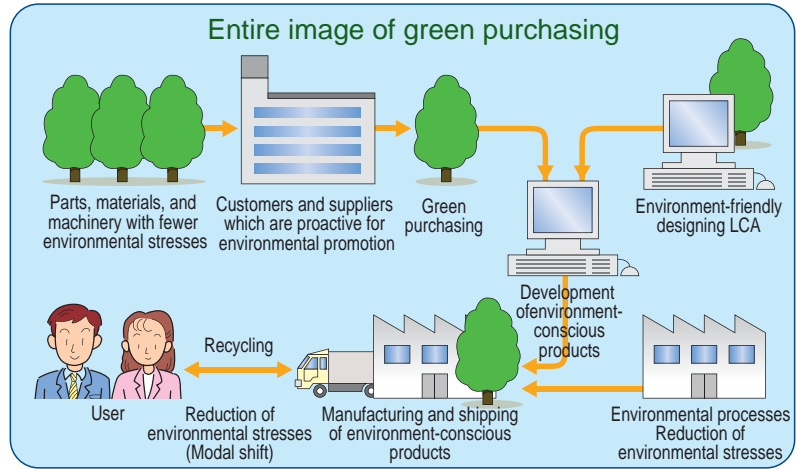
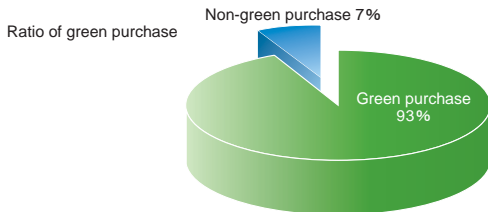
Governor mood chart

Green purchase

Environmental performance

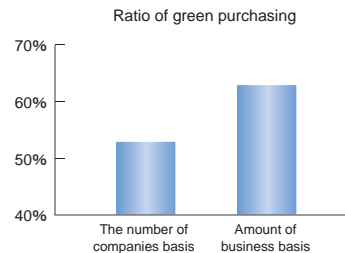
<Green purchase of office suppliers>

We have established the green standards for paper and 14 other categories of commercialized commodities such as office suppliers and electric and electronic devices. In order to follow these standards, Iseki promoted the purchase of products with environmental labels such as eco marks and GPN standard products on a priority basis. The total amount of green purchase of entire Iseki Group was 93% of the total purchase in FY2009.



<Level of environmental awareness of our suppliers and vendors>

The Green Purchase ratios of our suppliers and vendors based on the environmental management system (EMS), such as ISO14001 and Eco Action 21 (EA-21), were 53% of the total number of vendors and suppliers and the amount of purchase from these suppliers and vendors was 63% of our total purchase. Iseki strive to encourage such suppliers and vendors to implement the EMS and expand the usage in the future so as to establish a supply chain which enhances the ratio of our Green Purchasing.



<Purchase of green electricity certificate>

Green electricity certificate

Tobe office purchased the green electricity certificate in FY2009 from Matsuyama city as a part of our green activities.

Solar power that electrical power is converted from sunlight does not emit CO₂ when generated, which is environment-friendly, providing environmental value.

This green electricity certificate system enables us to trade the green electricity certificate with the environmental value. By purchasing this certificate, therefore, Iseki is regarded as a company purchasing electricity generated from non-fossil fuel (solar power, wind power, etc.) in a positive manner.

Outline of this business

This green electricity certificate is issued by Matsuyama city. They sell the environmental value of solar power given from the public facility, etc. to companies in Matsuyama city (the area of Tobe office became applicable in this year) in the form of the certificate. Matsuyama city uses the earnings to employ solar systems for further expanding the business.



Sale destinations of the 1st and 2nd term green electricity certificates, the "green electricity certificates model project", started as a part of "Matsuyama Sunshine Project"

2nd term (December 2009)

Iseki & CO., Ltd.
Iyo Railway Co. Ltd.
Ehime Beverage Inc.
Ehime-Shinkinbank
Eco Tec Kaneshiro Sangyou
Shinei Design Co., Ltd.
Seki Co., Ltd.
Hoshi Advertisement, Ltd.
Hodono Syoten
Messe Matsuyama 2010 Executive Committee
Reimu
Workshop Co. Matsuyama

1st term (July 2009)

i-TELEVISION INC.
The Iyo Bank, Ltd.
Ehime Bank, Ltd.
The Ehime Shinbun Co., Ltd.
Ehime Consumer Affairs Center
Ehime Re-cycle Civil Association (NPO)
Seki Co., Ltd.
CELCO JAPAN
HAUKOUISHIEN Executive Committee (NPO)

