

Intellectual Property Report 2018



ISEKI & CO., LTD.

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Cover

- Front mower SF235 Global strategy product
- Tractor T. Japan V TJV985 Product for large scale farm management
- Combine Ultra Japan HJ6115 Product for large scale farm management

Message from the President

Since its establishment in 1926, the ISEKI Group has pursued creative research with a mission to "contribute to society through agricultural machinery" with the philosophy of its founder "trying to liberate farmers from their heavy labor" as the starting point. The "spirit as the engineer" for "always being one step ahead of the competitors," "to be totally dedicated to product philosophy," "to exert all technical potential" and "to market ideas" has been continually passed down to our technical experts to this day. Making full use of all our accumulated technical potential, we will continue to contribute to agriculture both in Japan and around the world by providing products that satisfy our customers.

Japanese agriculture is currently undergoing structural changes including dwindling farming population and aging, large-scale farming through the aggregation of farmland, shifting to dry-field farming and vegetable crops. In order to keep up with these changes, we will conduct proactive business activities both from tangible and intangible perspectives, i.e., provision of high-quality products using advanced technologies such as ICT and robot technology with superb cost performance as well as agricultural technologies useful for labor saving/low-cost farming and proposals relevant to diverse range of crops of vegetable production.

For overseas markets, we have provided products mainly for landscape maintenance and light civil engineering work for the European market and rice cultivation for the Chinese market. Recently, with our rice cultivation technologies nurtured in Japan, we have developed and are supplying products for ASEAN nations where the need for expanded

The ISEKI Group positions intellectual property as its "strength." We are pleased to have achieved 1st place in registered patents per specialty field in FY2017. We also took 1st place among all industries in terms of patent assessment ratio in FY2017. In this report, we will introduce our views and activities on R&D as well as how we handle intellectual property, the fruit of our activities. We sincerely hope that this report will provide you with a good understanding of the R&D and intellectual property-oriented initiatives of the ISEKI Group.

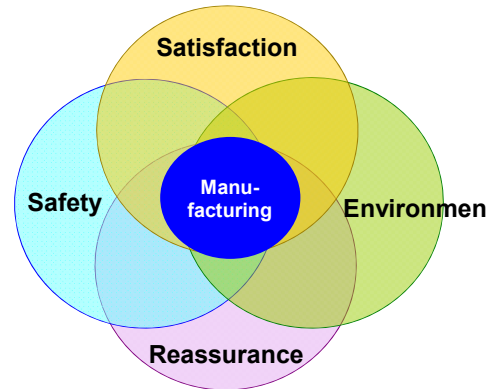


Representative Director, President & Executive Officer
Eiichiro Kinoshita

1. R&D Strategy

<Basics of Manufacturing>

ISEKI has designated "Customer satisfaction," "Safety," "Reassurance" and the "Environment" as the "basics of manufacturing" to promote R&D.



<Reinforcing Initiatives for Domestic and Overseas Markets>

ISEKI is reinforcing its initiatives for overseas markets and the changing structure of agriculture in the domestic market through strategic R&D based on the three core technologies.

■ Key strategic fields in R&D

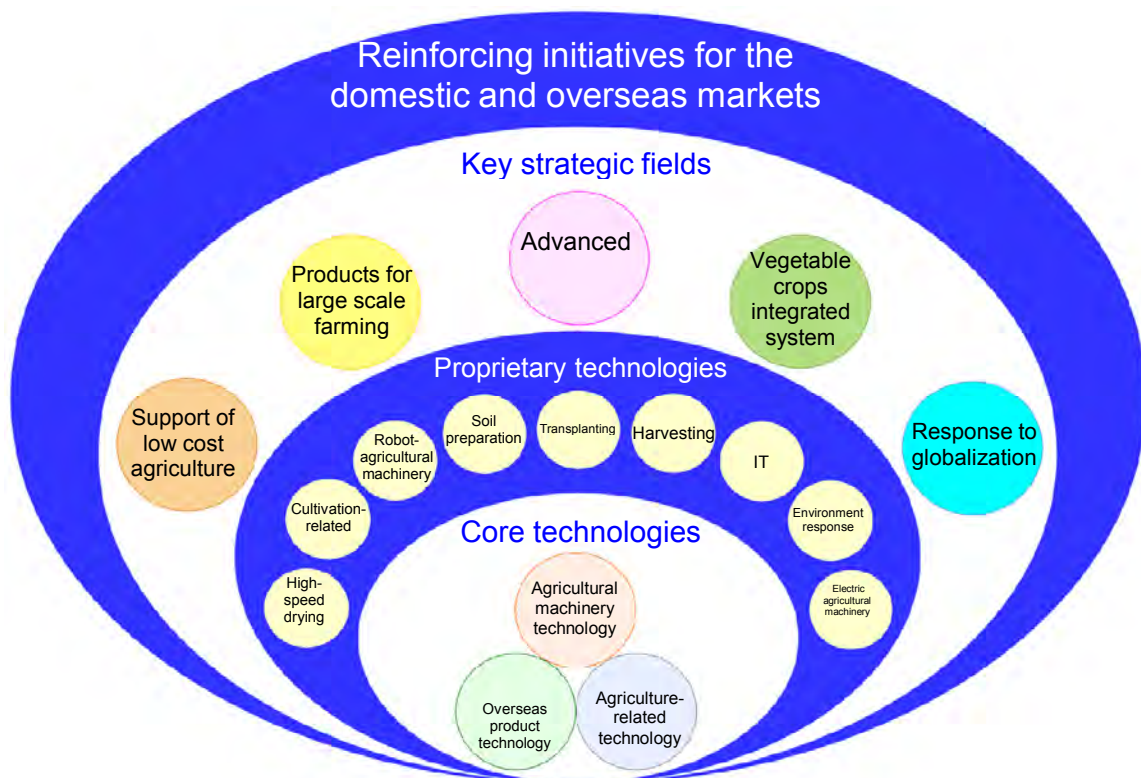
"Advanced technology" ⇒ Response to efficiency/labor saving of farm management

"Products for large scale farming" ⇒ Response to expanding scale of management

"Integrated system of vegetable crops" ⇒ Response to crop conversion

"Support for low cost farming" ⇒ Response to cost reduction of production materials

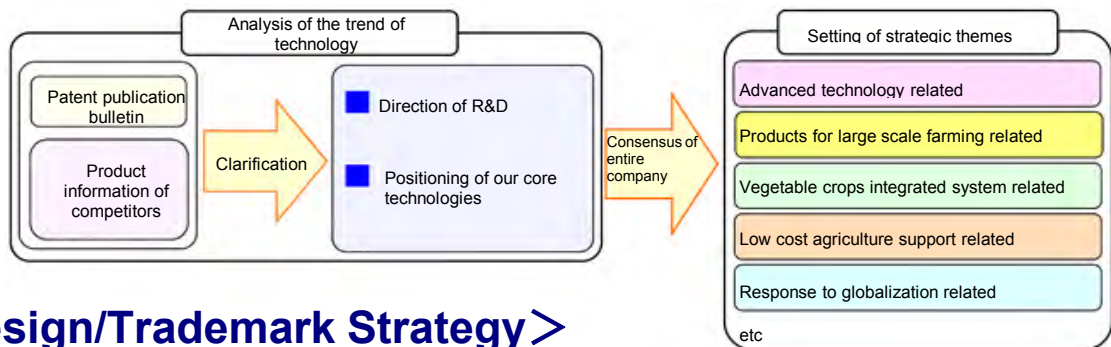
"Response to globalization" ⇒ Adoption to mode of agriculture of each nation



2. Intellectual Property Strategy

<Creation of Inventions/Patent Application Strategy>

- Setting strategic themes on the consensus of the entire company
Through creation activities based on strategic themes, we create a patent network, ensuring the priority of product development.

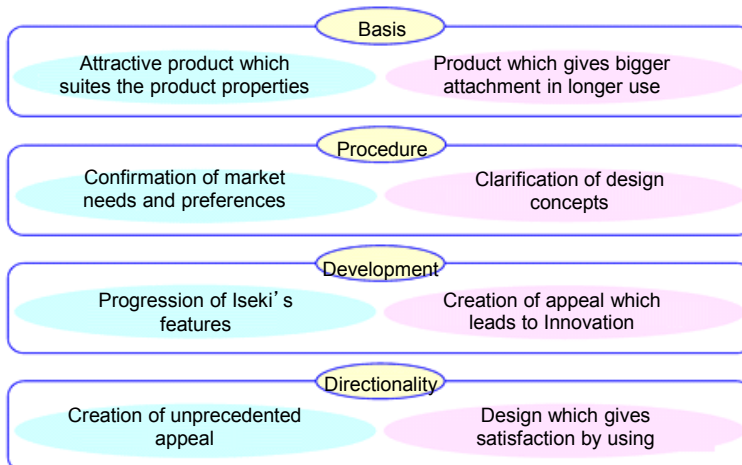


<Design/Trademark Strategy>

- Enhancing protection of design and improving brand value

We distinguish our products from those of our competitors by preserving attractive designs and affectionate pet names as design rights and trademarks.

<<Iseki's initiative for product design>>



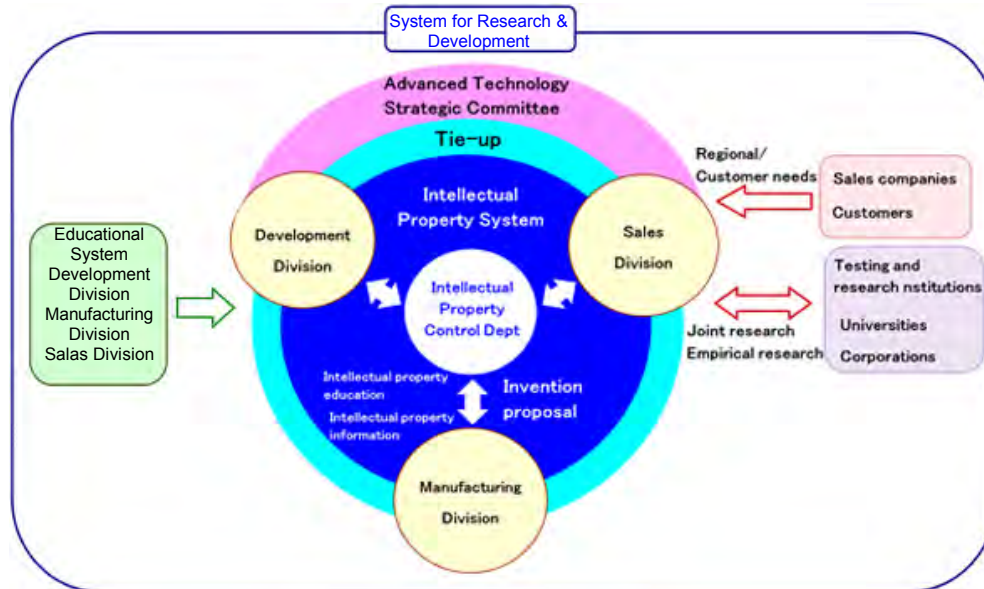
<Global Intellectual Property Strategy>

- Tie-ups with divisions in charge of development and overseas operations, as well as with patent offices in each country



We strive to improve the precision of analyzing each country's market trends and intellectual property status, as well as to obtain and accumulate effective rights in each country.

3. System for R&D, Education, Intellectual Property



<System for Research & Development>

■ Exerting comprehensive strength of each of the development/manufacturing/sales divisions

We promote R&D that responds quickly to customer needs both in Japan and abroad.

■ Joint R&D efforts with research institutions and universities

In FY2017, we jointly conducted studies on 12 themes with testing and research institutions and on two themes with universities.

[Product Development]

■ Accumulation of technologies and know-how unique to the product

We accumulate proprietary technologies through systematic R&D for each product.

■ Strengthening of the system to promote state-of-the-art technologies

We discuss and determine the direction of development in the Advanced Technology Strategic Committee.

[Manufacturing]

■ Manufacturing of high-quality/low-cost products

We are actively engaged in improvement activities. In FY2017, more than 57,000 proposals were made.

We are promoting cost reductions mainly through designing, manufacturing and parts procurement methods.

[Commitments to Advanced Agriculture]

■ Support for research and diffusion of advanced agri-business technology

We promote research of labor-saving/low-cost cultivation methods and research of agricultural ICT and robot technology using advanced technology at Dream Agricultural Research Institute (Yumesoken).



Exhibition Hall of Yumesoken

<Educational System>

[Nurturing Talent]

■ Development division: Further improving design skills

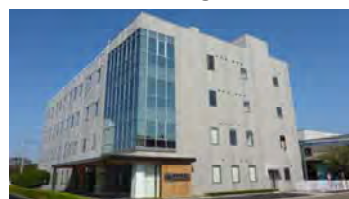
We develop young designing engineers at the ISEKI Engineering Training Center (IETC).



IETC

■ Manufacturing division: Transferring manufacturing skills

We promote the development of human resources and the nurturing of leaders for our production bases both in Japan and overseas at the ISEKI Technical Training Center (ITTC).



ITTC

■ Sales division: Reinforcing technical service capabilities

We established the ISEKI Global Training Center (IGTC) in January 2017 and train our domestic and overseas sales/service personnel.



IGTC

[Initiatives]

■ Intellectual property education and transfer of creation know-how

We conduct intellectual property education by stratified education according to years of experience.

Experienced engineers lead invention-creation activities (patent picking) to enhance young engineers' capabilities and motivation for creation.

■ ISEKI Technological Research Presentation

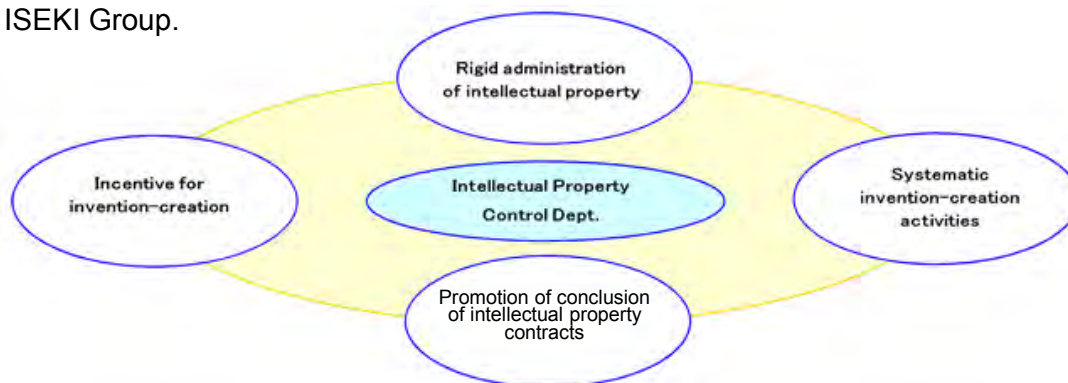
The ISEKI Technological Research Presentation is held each year and has been held a total 28 times.

It provides an opportunity to share the results of R&D and invention information, as well as for mutual study through deliberations.

We have reinforced our educational system, resulting in invention proposals constantly exceeding 20,000 every year.

<System for Intellectual Property>

The Intellectual Property Control Department controls the intellectual property of the entire ISEKI Group.



4. Contribution of Intellectual Property to Business (Specific examples)

<Domestic business strategy - Response to structural changes of Japanese agriculture ->

[Advanced technology related products]

■ Machine control ISEKIREMOTE

We support machine control in large scale farming taking advantage of M2M technology.

[Antitheft function]



Time and range of the operation schedule is set for each machine.

In case of operation beyond set range, theft detection is notified by e-mail.

*M2M (Machine-to-Machine): System which provides optimum control by automatic exchange of information among machines interconnected by the network.

[Maintenance support]



Visualization of machine information by obtaining its location and operation information.

It allows analysis from various points of view by making accumulated data as a graph.

- List of machine information
- Machine model
 - Hour meter
 - Battery voltage
 - Machine condition (stopped/working)
 - Fuel condition

■ Farming control AGRISUPPORT × agri-note

In response to diversifying needs of farming system (farming software), we provide support for farming management.

「ISEKI Agri-support」

System which displays/memorizes operation information/abnormal information, etc. on the portable terminal.

Linked to

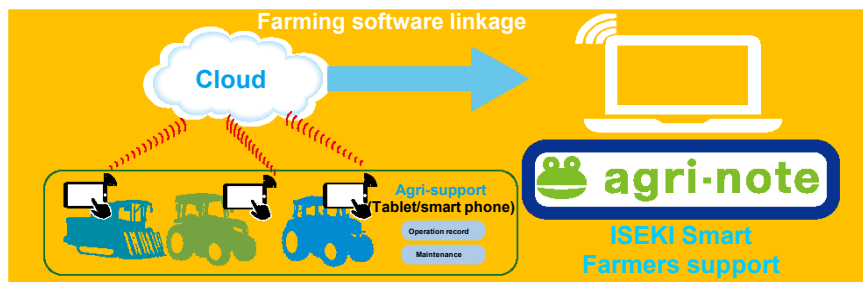
Linked to

「ISEKI Smart Farmers Support」

System which accumulates farming information including operation results, growth information and spreading record of fertilizer/chemical on the cloud to make analysis.

「agri-note」

Farming/cultivation support system of our new partner water Cell inc. which provides field control and real time information sharing on the cloud.



■ Manned monitoring control robot tractor

In order to cope with rapid scale expansion of farm management, we are promoting studies of advanced agricultural machinery which realize efficiency/labor saving of

Manned monitoring control robot tractor enables unmanned operation securing safety by monitoring/remote controlling by the operator.



Robot tractor (left photo)

- ① High precision positioning by GPS
- ② Automatic travelling along set routes
- ③ Automatic stop at obstacle detection

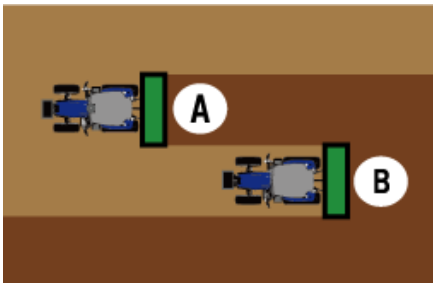
Manned tractor (right photo)

- ① Simultaneous operation monitoring of robot tractor from behind
- ② Enabled remote controlled starting and stopping of robot tractor

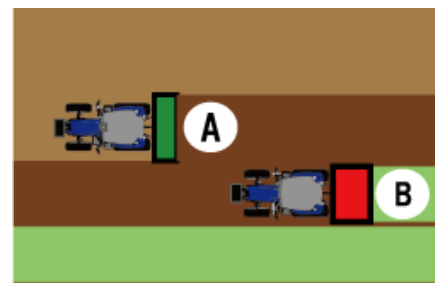
Robot tractor engaged in upfront operation

Manned tractor engaged in monitoring operation

Manned tractor (B) ridden by the operator follows robot tractor monitoring from behind robot tractor (A) automatically travelling along set routes.



When 2 vehicles engage in the same operation



When 2 vehicles engage in different operations

Running multiple tractors by one operator, labor saving is realized through enhanced operational efficiency.

By conducting same operation of tillage or soil plowing or different operations such as tillage and fertilization using 2 tractors, operational efficiency is improved.

We are promoting development towards commercialization in 2018.

[Products for large scale farm management]

■ Tractor “TJW3-TJV5 Series”

We developed TJW3-TJV5 Series with finishing touches of exterior designs of powerful yet beautiful presence.

New design

Sharp eye-like beam emitted from the front mask which combines LED side view light and projector type head lamp overwhelms viewers.



TJW3 Series



TJV5 Series

■ Combine “Japan HJ Series”

“Ultra Japan” which was made more user-friendly having succeeded concept of high precision/high efficiency/high durability.

Correspond to fourth regulation on emissions from special automobiles with mounted DPS (Diesel Particle Filter) and urea SCR (Selective Catalyst Reduction) systems.



Sub display information display control

Variety of information such as threshing load can be displayed by switching over on the sub display projected on color liquid crystal enabling work efficiency.

Equipped with exhaust gas cleaning equipment

Maintenance safety is enhanced by positioning high temperature DPF and urea SCR between threshing part and grain tank and covering by the cover.

[Products related to integrated vegetable production system]

■ Semi-automatic vegetable transplanter, “PVH 100”

The design has been renewed and usability has been improved.

Transplanting work of seedling is made efficient and labor-saving.



Folding seedling tray

Seedling supply work is made easy by positioning folding seedling tray to the side of operator.

One-touch stand

Changing of use condition and storing condition of the stand can be made without plugging and unplugging the pin.

■ Walk-behind radish harvesting machine, “VHD 102-S”

It facilitates manual harvesting by pulling out the radish and cutting off the stems and leaves. The labor and man-hours required for radish harvesting can be reduced.



Discharge mechanism for cut stems and leaves

After the stems and leaves have been cut off, they are discharged on the opposite side of the transmission mechanism of radish raising device, facilitating their collection.

Cutting device

By cutting off the tops of the radishes, it reduces the processing work for the harvest.

<2018 Development Award of the Japanese Society of Agricultural Machinery and Food Engineers>

Walk-behind radish harvesting machine, “VHD 102-S” was awarded the Development Award of the Japanese Society of Agricultural Machinery



[Low cost Agri-Support Products]

- For small scale/ individuals -

■ Rice transplanter, “Sanae P40”

Compact design which enables loading on platform of light truck has been realized. It is easily transportable on narrow roads leading to mountainous areas and farms.



Enabled loading on light truck

Length of the machine body is shortened as the planting section moves forward when being elevated, enabling loading on the platform of light truck.

Auxiliary grip/wide auxiliary step

By providing a large auxiliary grip and thick and wide step, getting on and off was made smooth.

- For large scale/ farming companies/ co-op farming -

■ Tractor, “TJX 3 Series”

We have developed simple/ low priced tractor TJX 3 Series with a renewed appearance and equipped with DOC (Diesel oxidation catalyst) and urea SCR (Selective catalyst reduction).



Equipped with exhaust gas cleaning equipment

Placing cover to the urea SCR installed outside of the bonnet, prevent mud splashed by the front wheels from entering.

New design

Adopting projector type 4 lights head lumps, night time visibility was enhanced.

■ Combine, “HX Series”

While maintaining basic performance which realizes high efficiency and high precision work, it was made simple and low priced. We support low cost farming for bearer



Emergency stop device during threshing operation by hand

By pulling up lever at supply section, feed chain moves at low speed enabling hand threshing with relief.

HST driven-type reverse rotation cooling fan

Overheating is prevented blowing off straw waste adhered to the dust proof net by reverse rotation of the fan.

<Overseas business strategy - Response to the global market ->

[Global strategic products]

■ Front mower for Europe, “SF224-235”

We have developed front mower for Europe, “SF224-235” which provides stable travelling on sloping land and operability.

Adjustment of mower deck cutting height

Stable cutting height position is maintained by its structure to shift mower deck up and down horizontally. In addition, cutting height can be adjusted by one touch.



Large capacity collector

By installing nodding function to allot thatching grass evenly in the large capacity collector, high-efficient operation is provided.

Low center of gravity of the body

By making positions of body frame and engine low, the body has a low center of gravity and stable raveling is secured even on slope land.

■ Rice transplanter for China, “PZ60”

Equipped with fertilizing equipment, wide space has been secured for operation on top of the machine which provides enhanced operability for support worker and loading capacity of seedling.



Side fertilizing equipment

By positioning fertilizing equipment on both right and left sides, wide operation space has been secured providing easier supply operation of seedling.

Z shift

Mechanical oil valve and switching motor, etc. may be attached and detached as one unit, providing excellent property of maintenance.

5. Intellectual Property/Awards and Recognition

<Status of Intellectual Property>

[Number of Registered Patents per Sector and Patent Assessment Ratio]

■ Number of registered patents per sector: First rank for 2 consecutive years

Sector	Other special machinery	
Year	2017	
Rank	Applicant	Registered patents
1	ISEKI Co., Ltd.	203
2	KUBOTA Corporation	168
3	YANMAR Co., LTD.	101
4	SUMITOMO RUBBER INDUSTRY	74
5	TORAY INDUSTRIES, INC	70

(Reference: Number of public patents per sector)

Iseki has been ranked at the top for 15 consecutive years, in the "agriculture and fishery sector" from 2000 to 2006 and in the "other special machinery sector" from 2007 to 2014 when the sector classification was changed up.

Sector	Agriculture and fisheries	Other special machinery
Year	2000 ~ 2006	2007 ~ 2014
Rank	First	

*In the Patent Administration Annual Report 2017, disclosures have changed from the previous number of public patents per sector to the number of registered patents per sector.

■ Patent Assessment Ratio: First rank among all industries for a total of 13 years

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Patent assessment ratio (%)	84.6	83.7	90.4	89.3	85.8	88.5	91.8	91.8	94.7	97.0	99.2	97.5	100	98.1
Rank	First							Second	First					

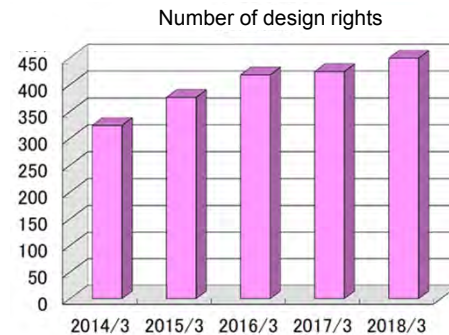
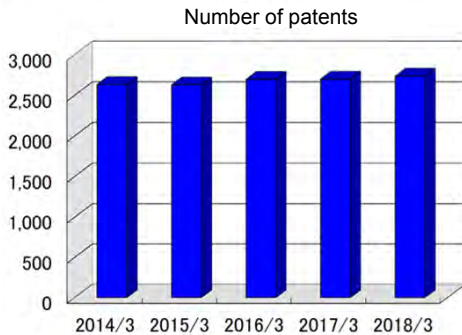
* Patent assessment ratio=Number of decisions to grant patents/(Number of decisions to grant patents + Number of decisions of refusal + Number of withdrawals or abandonment)

[Number of withdrawals or abandonment=the number of applications withdrawn or abandoned after notice on the reason for rejection]
The figures are based on Patent Administration Annual Report 2002 edition – 2018 edition.

[Patents Held]

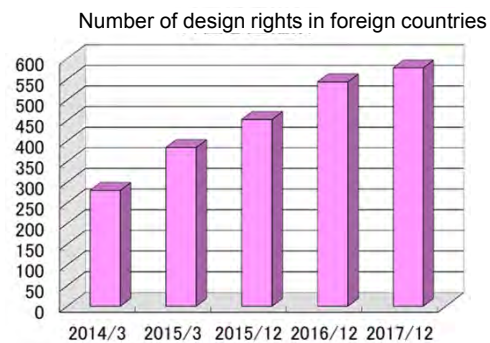
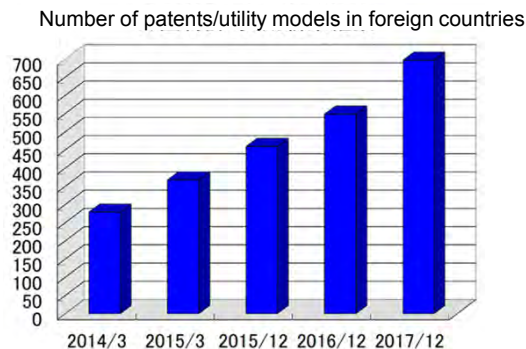
■ In Japan

We are striving to acquire and build up effective patent rights and currently we maintain over 2,700 patents, while design rights are also increasing each year.



■ Overseas

We effectively utilize the intellectual property rights systems of Europe, the USA and Asian countries to actively make applications.



<Awards and Recognitions>

[History of Awards]

Iseki has produced a long list of technical experts who received awards including national decorations, national medals of honor, official commendations by the Minister of Education, Culture, Sports, Science and Technology and citations for inventions for their contribution to agricultural machinery technology.

■ Invention of the founder

1952

Founder Kunisaburo Iseki invented the Iseki “Automatic wind power control device of revolving thresher,” and received a “national prize for invention” from the Japan Institute of Invention and Innovation.

■ Achievement of development and diffusion of auto-threshing combine

1993

Iseki was awarded the “President's Award of the Association to Commemorate a Century of Agricultural Experimentation and Research” in recognition of our development and diffusion of auto-threshing combine harvesters, for which we achieved commercialization for the first time in Japan.

■ Award for Excellent Enterprise Active in the Industrial Property Rights System

2008

Iseki received the “Meritorious Award for Intellectual Property” (Commissioner of the Japan Patent Office Award) in recognition of our traditional management style of placing importance on intellectual property rights.

■ National Awards for Invention/Regional Awards for Invention

Iseki has received awards from the Japan Institute of Invention and Innovation every year.

Number of Award-winning Inventions: 211 (As of December 2017)			
■ National Awards for Inventions 18	National Awards	President's Award of the Japan Institute of Invention and Innovation	1
		The Asahi Shimbun Award	1
	National Awards for Inventions		2
	Invention Awards		14
■ Regional Awards for Inventions 193	Special Awards	Encouragement Award of the Minister of Education, Culture, Sports, Science and Technology (Former Encouragement Award of the Director-General of the Science and Technology Agency)	9
		Encouragement Award of the Commissioner of the Japan Patent Office	6
		Award of the Director-General of the Regional Bureau of International Trade and Industry (Award of the Director-General of the Shikoku Regional Bureau of International Trade and Industry)	8
		Encouragement Award of the President of the Japan Institute of Invention and Innovation	7
		Encouragement Award of the President of the Japan Patent Attorneys Association	4
		Total	34
	Award of the President of the Ehime Institute of Invention and Innovation (District Head Award)		15
	Outstanding Invention Awards, etc.		37
	Invention Encouragement Awards		106
	Invention Encouragement and Merit Award		1

[2017 Shikoku Regional Invention Award]

■ Award of the President of the Ehime Institute of Invention and Innovation: 1

Patent No. 5871086 Seedling rail of rice transplanter

■ Invention Encouragement Prize: 3

Patent No. 4894169 Transmission control equipment of tractor

Patent No. 5517077 HST driven reverse rotation cooling fan

Patent No. 4952154 Professional full automatic vinegar mixer

6. Topics

<2017 JAICABE fellow title >

Our Representative Director, President & Executive Officer Eiichiro Kinoshita was awarded the title of “2017 Japan Association of International Commission of Agricultural and Biosystems Engineering (JAICABE) Fellow” from JAICABE and the award ceremony was held on May 15, 2018 at Yayoi Campus of the University of Tokyo.

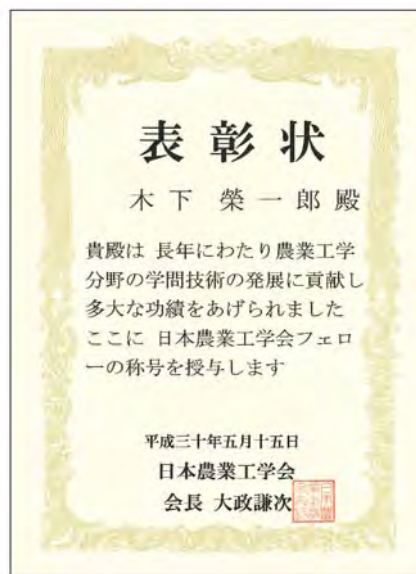
JAICABE is the academic association which promotes projects including academic development in the field of agricultural engineering as well as cooperation with related associations in tie up with the International Commission of Agricultural and Biosystems Engineering (CIGR) as the federation of 10 academic conferences and associations that engage in studies of engineering technologies such as basis, operations, mechanization and environmental improvements related to agricultural production.



Left: President Kenji Omasa, JAICABE



Fellow title badge awarded



ISEKI Group has produced various new products having committed to technical development with enthusiasm.

While the title of fellow is awarded to persons who have accomplished distinguished contributions to development of studies and technologies in each field of agricultural engineering, we deem that this award of the title was received by Eiichiro Kinoshita who had been an engineer on behalf of engineering staff of our company.

[ISEKI Group will continue to contribute to the development of agricultural technologies.](#)

7. Information on Legal Actions Related to Intellectual Property

There are no pending suits at issue related to intellectual property rights which could affect our management in or outside the country.

In promoting our business and R&D, we will implement intellectual property strategies steadily with the greatest of care.

8. Third-party Opinion

We have received an opinion regarding our initiatives from a knowledgeable person.



Mr. Eiji Morimoto
Associate professor
Department of Life and
Environmental Science of
Agriculture
Faculty of Agriculture, Tottori
University

I was able to understand directionality of R&D of ISEKI Co., Ltd. easily through its Intellectual Property Report 2018.

In concert with the deepening speed of IoT, we witness progressing changes and diversifications in recent field of agricultural ICT.

Rapid move in the deepening signifies equally rapid process in selections and rejections of technologies.

In this respect your company has products such as Variable Fertilizing Rice Transplanter Equipped with Soil Sensor, Rice Transplanter with Straight-travel Assist System “OPERESTA” as well as Yield Combine Harvester.

I could feel closely that you have been performing compass-like role in the agricultural machinery industry through early engagement in establishment of information collection/control system of the data collected from these machines using applications in tie-up with IT vendors and others, not only for agri-support.

I believe that collaboration with different type of business having professional and sophisticated technologies will become essential from now on as they say “every man knows his own business best”. There is no doubt that the most important base in smart agriculture is the data on farmworks collected by agricultural machinery.

In this context also, I expect further progress of your company as the top runner in development of leading-edge technologies to serve needs of farmers around the world not only in Japan as a manufacturer specialized in agricultural machinery.

Corporate Data

Company Name	ISEKI & CO., LTD.
Head Office	700 Umaki-cho, Matsuyama, Ehime, Japan
Tokyo Headquarters	3-14, Nishi-Nippori 5-chome, Arakawa-ku, Tokyo, Japan
Foundation	August 1926
Paid-in Capital	23,344 million yen (as of December 31, 2017)
Employees	Consolidated: 5,760 (as of December 31, 2017)
Principal Business	ISEKI' S principal business is the manufacture and sale of following products:

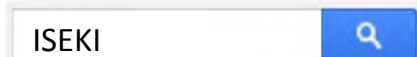
Cultivating machinery: Tractors, tillers, high-clearance multipurpose vehicles, mowers
Planting machinery: Rice transplanters, vegetable transplanters
Harvesting machinery: Combine harvesters, binders, harvesters
Processing machinery: Rice hullers, dryers, rice polishers, rice graders, vegetable harvesting and processing machinery
Other: Farming implements, pesticide control machines, repair parts, agricultural facilities

[Cautionary Statements]

1. This booklet has been prepared to provide information to the public and is not intended to solicit any kind of action.
2. This booklet contains the results of the Company' s analyses, including forward-looking statements regarding the outlook for the Company, its plans, policies, prospects, strategies, interpretations of facts, and other information related to the future. All such statements and other information are based on forecasts, assumptions, plans, and other information collected by the Company at the time of the preparation of this booklet.
3. In preparing forecasts, with the exception of known facts, the Company makes use of certain assumptions. There are no guarantees that these assumptions are objective and accurate or will prove to be true in the future. These assumptions are dependent on technology and demand trends in Japan and in other countries, economic conditions, competitive conditions, and other factors. If these assumptions change, it is possible that matters and outcomes, other than known facts, stated in this report may differ from the statements in this publication.
4. Data on the number of rights held and other data related to intellectual property are those of Iseki Co., Ltd., and do not include data on subsidiaries or affiliates.



Intellectual Property Reports can also be viewed on our website.



Company website [Company Information]→[Intellectual Property Report]
http://www.iseki.co.jp/english/ir/intellectual_property/

For further information, please contact the following:

Intellectual Property Control Department
Development & Production Division, ISEKI & CO., LTD.
1 Yakura, Tobe-cho, Iyo-gun, Ehime, Japan 791-2193
Tel: +81-89-956-9810
Fax: +81-89-956-9818
URL: <http://www.iseki.co.jp/english/>
E-mail: shared-s41300@iseki.co.jp

Issued in November 2018



Make efforts to purchase green.



Printed with soy ink, reducing petroleum solvents.