

Compact Machinery Business Explanatory Meeting

December 12, 2019

Kazunori Nakamura,

Hitachi Construction Machinery Executive Officer and

Hitachi Construction Machinery Tierra President

🌐 **Hitachi Construction Machinery Co., Ltd.**

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1. Introduction: HCM Compact Machinery Business and the Current State of Structural Reform

The Compact Machinery Business has been consolidated into **HCM Tierra**, which previously handled the development, production, and sale of mini excavators and other machinery*1, as part of the structural reform of the domestic Japanese businesses
(The production of mini wheel loaders*2 is scheduled to be transferred during FY2019)

Company name	Hitachi Construction Machinery Tierra Co., Ltd. (Tierra means "earth and land" in Spanish)
Address	Minakuchicho, Koka, Shiga Prefecture
Business description	Development, manufacture, sales, and after servicing of construction machinery
Established	March 2, 1949
Capital	1,440.55M JPY (100% subsidiary of HCM)
President	Kazunori Nakamura
Number of employees	640 people (as of April 1, 2019)

*1: Mini excavators (operating weight of less than 6 tons), hydraulic excavators (less than 10 tons)

*2: Mini wheel loaders: engine output of 50 kW or less

Establishing a development and production system that is resistant to changes in the market environment

● Goals of the reforms

Development: Concentrate the research and development resources to reform the development efficiency and process and to enhance product development capabilities

Production: Consolidate the seven major sites by class and function to build a system that can rapidly respond to environmental changes

● Progress

FY17-19: Plant transfer for large-sized hydraulic excavators

FY18-19: Plant transfer for wheel loader components

HCM Tierra Shiga Works

Development: compact,
main components for compact

Production: compact

Bansyu Works

Production: main components
for compact

HCM Tierra Osaka Works

Production: main components for compact

Hitachinaka-Rinko Works

Production: Mining

Hitachinaka Works

Production: components
for mining and construction

Kasumigaura Works

Production: components
for mining and construction

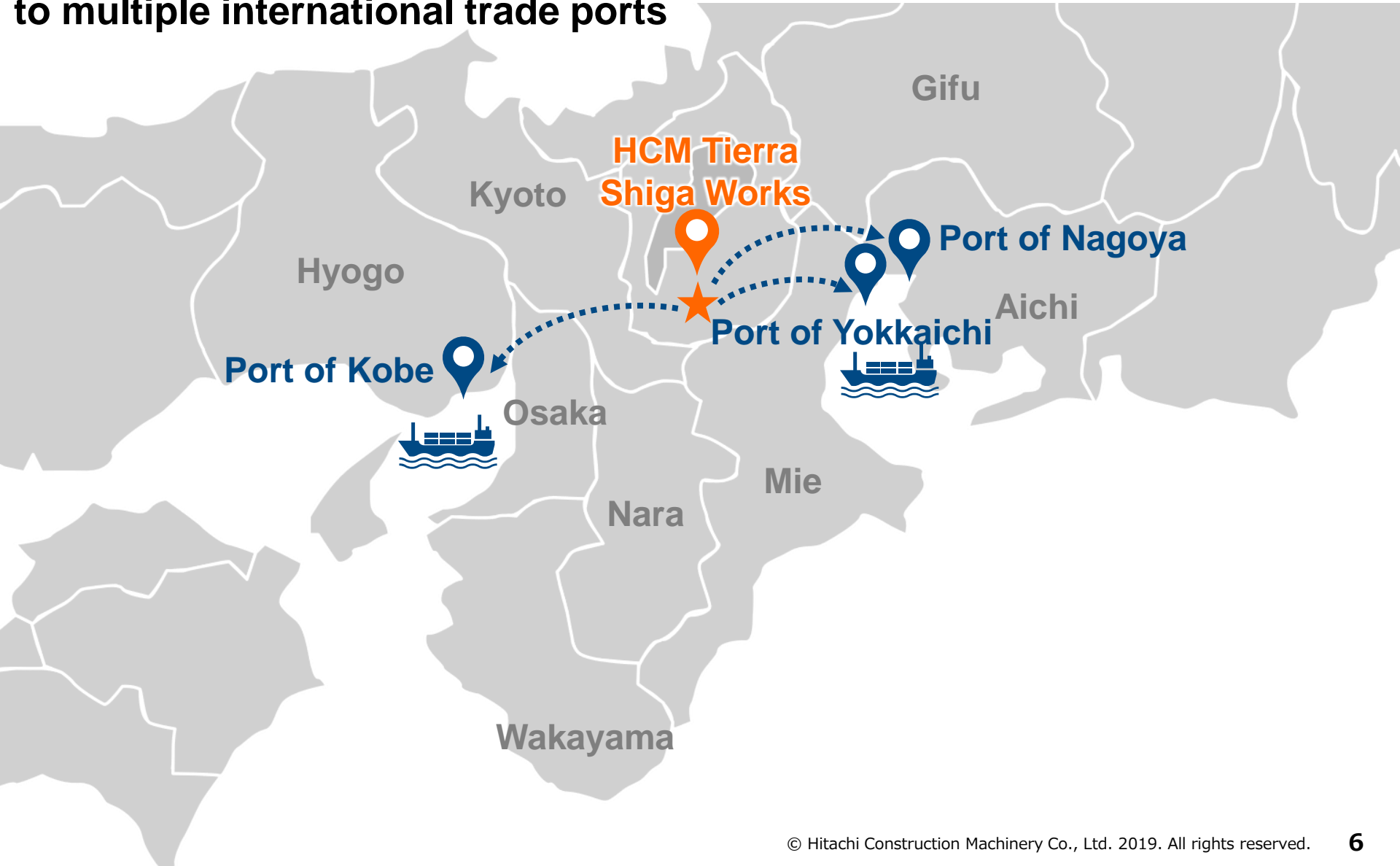
Ryugasaki Works

Production: main components for
construction

Tsuchiura Works

Development: mining, construction, and components
Production: construction

Favorably situated in between the Kansai and Tokai regions with access to multiple international trade ports



2. What is the Compact Machinery Business?

**2.1 Product Categories and Definitions, Characteristics,
Increased Demand Factors**

2.2 Global Demand Trends

Product business was consolidated into three segments by target customer

Compact

Hydraulic excavators: 6 tons or more to less than 10 tons

Mini excavators: less than 6 tons



Mini wheel loaders: less than 50 kW



Main applications

Urban civil engineering, housing, snow removal, agriculture and forestry, landscaping, and animal husbandry

Construction

Hydraulic excavators: 10 tons or more to less than 100 tons



Wheel loaders: 50 kW or more



Main applications

Ground leveling construction, roads, railways, rivers and other social infrastructure

Mining

Hydraulic excavators: 100 tons or more



Rigid dump trucks



Main applications

Mining
Large-scale social infrastructure

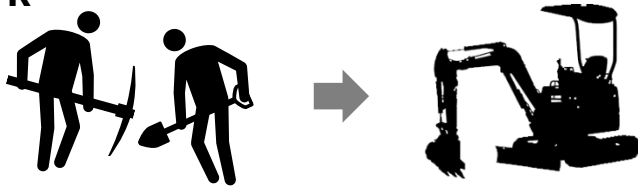
*Hydraulic excavators: operating weight (t), wheel loaders: engine output (kW)

In the compact machinery market, the operating load is small, but mobility is required

	Compact	Construction	Mining
Main applications	Urban civil engineering, housing, snow removal, agriculture and forestry, landscaping, and animal husbandry	Ground leveling construction, roads, railways, rivers and other social infrastructure	Mining Large-scale social infrastructure
Main excavation target	Soft Earth, gravel	Earth, gravel	Hard Coal, iron ore
Average daily operating time	Short Several hours	8 hours	Long 23 hours
Operating weight, engine output	Small Hydraulic excavators: less than 10 tons Wheel loaders: less than 50 kW	Hydraulic excavators: 10 tons or more Wheel loaders: 50 kW or more	Large Hydraulic excavators: 100 tons or more Rigid dump trucks

(1) Increase in labor costs due to economic development

Shift from "manpower" to "mechanical work"



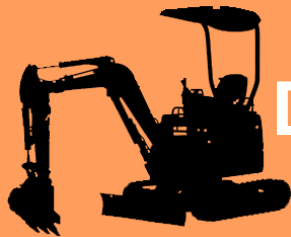
- Work efficiency improvements due to mechanization
- Increasing needs in various industries (Agriculture and forestry, landscaping, animal husbandry, demolition, snow removal, etc.)

(2) Rapidly advancing urbanization

Increasing number of "narrow spaces" due to urbanization



- Work increasing in narrow spaces that large machinery cannot fit
- Demand for mobility and operability



Demand increasing globally

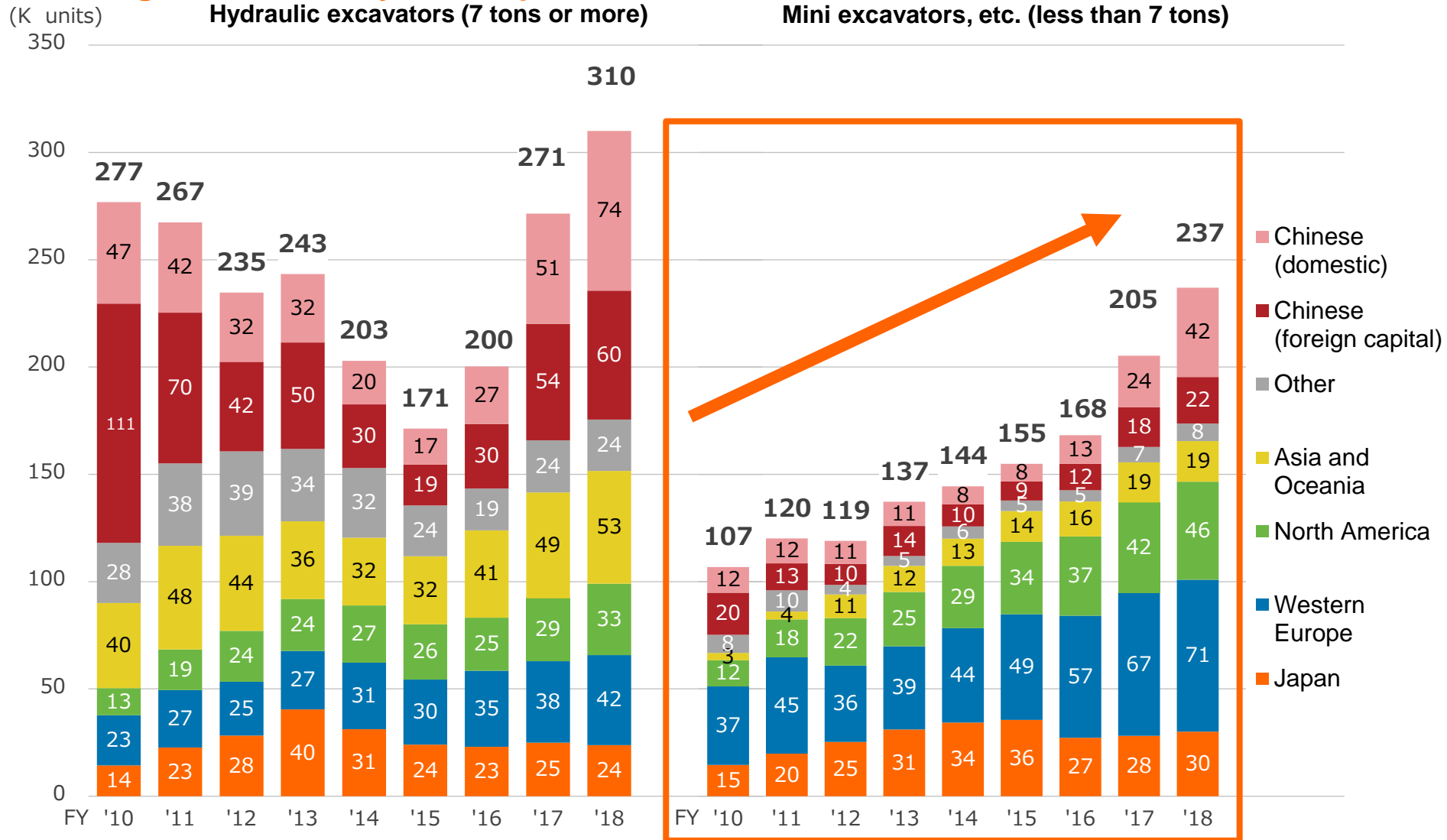


Global Demand Trends: Hydraulic Excavators (Including Chinese Domestic Manufacturers)

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Reliable solutions

Demand for mini excavators is highly resistant to the business cycle. Growth is soaring thus far mainly in Europe and the U.S.

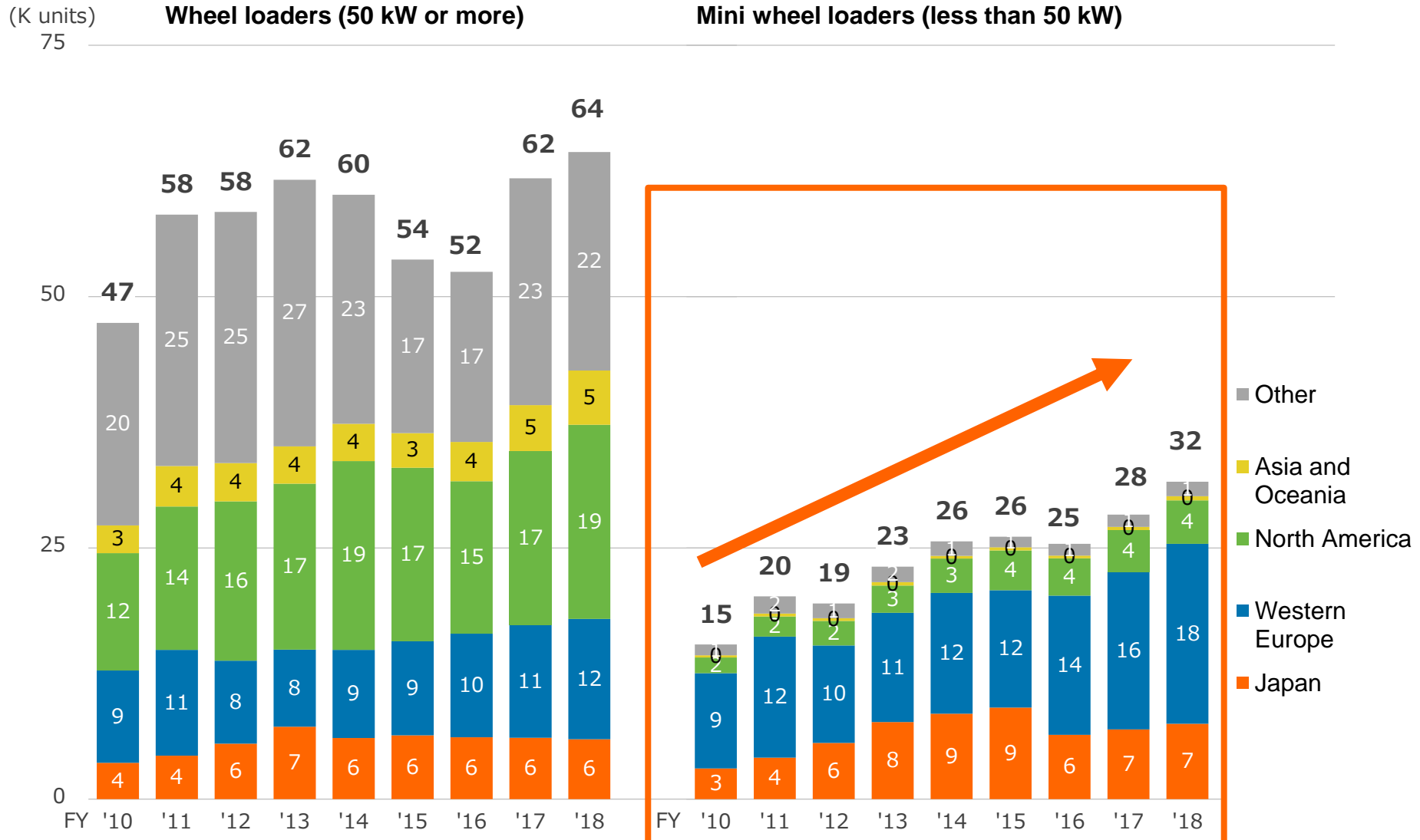


*Estimates by HCM, includes Chinese domestic manufacturers

*Other: Russia CIS, Eastern Europe, Africa, Middle East, Latin America

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Mini wheel loaders are also growing steadily in advanced countries



* Estimates by HCM, does not include China

*Other: Russia CIS, Eastern Europe, Africa, Middle East, Latin America

3. Initiatives in the Compact Machinery Business

3.1 HCM Tierra Performance Trends and Turning Points

3.2 Management Reform Through VE (Value Engineering)

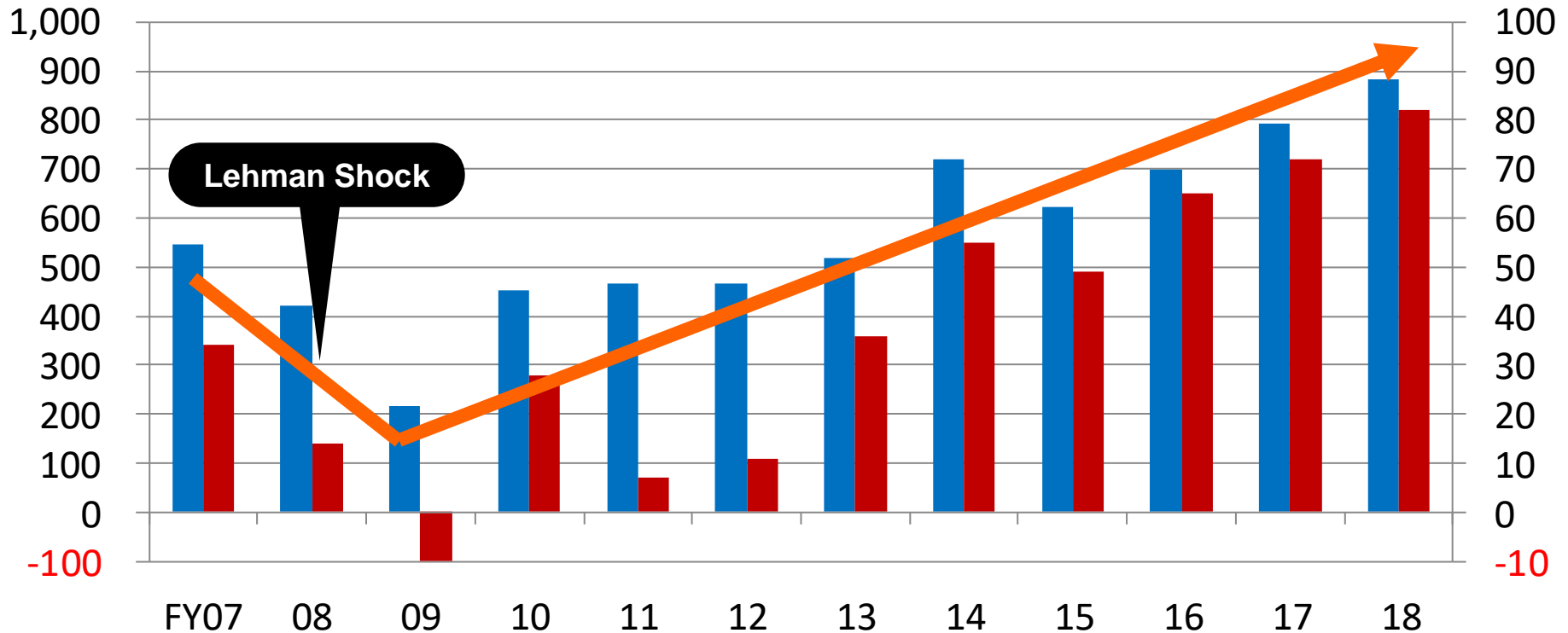
3.3 Production Line Reform

3.4 Marketing Reform

V-shaped turnaround from the Lehman Shock achieved through the "three reforms" which bet the future of the company

Sales (100M JPY)

Operating profit (100M JPY)



Deficit experience due to the Lehman Shock. Determined that reforms were necessary for the continuation of company management

[1] Management reform through VE

[2] Production Line reform

[3] Marketing reform

Note: Independent results for HCM Tierra. The figures for sales and operating profit are according to Japanese standards

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VE (Value Engineering)

VE is a method in which the "value" of products and services is understood through the relationship between the "functionality" that they should provide and the "costs" which are applied to increase the "value" through a systematized process*.

At the HCM Group, we add a "C" (Customer) and call it "VEC" as we are not simply reducing costs but aiming to achieve a balance between improving value for customers and improving the enterprise value (profits).

VEC: Value Engineering for Customers

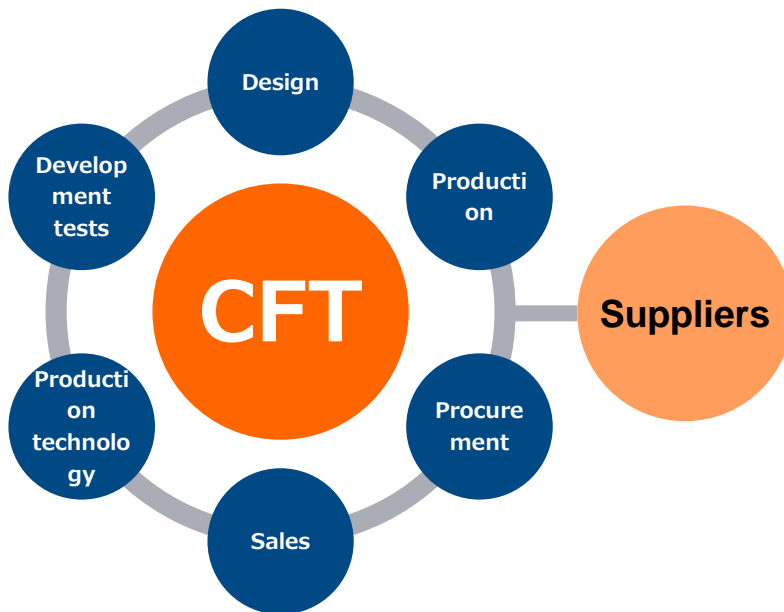
$$\begin{array}{ccccc} \text{Product} & & \text{Functionality} & & \text{Price} \\ \text{value} & = & \frac{\quad}{\text{Price}} & \times & \frac{\quad}{\text{Cost}} \\ & & \text{(Customer satisfaction)} & & \text{(Company satisfaction)} \end{array}$$

Reduce costs while maintaining the product lineup and quality

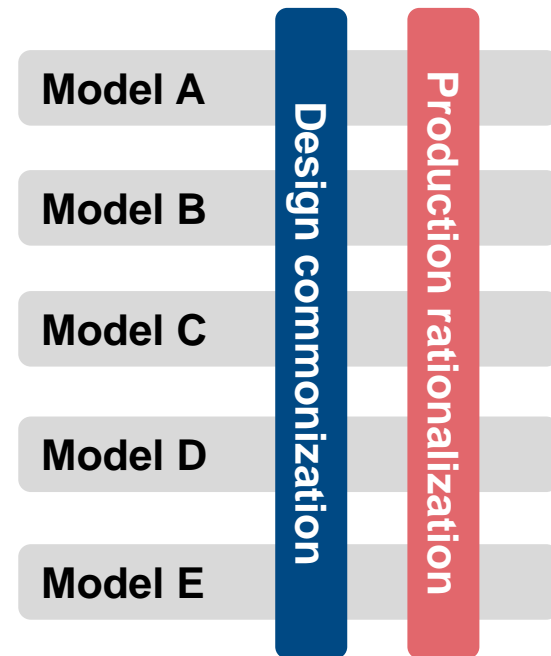
*Cited from the web site of the Society of Japanese Value Engineering (public corporation)

Key points of the reforms

- Promote as activities which overcome inter-departmental barriers and cut across the entire company
- Reduce both design and production costs through simultaneous development of multiple models



Activities cut across the entire company through CFT (cross functional teams). Later expanded into activities which include suppliers.



Design: basic layout unification, functional part commonization, etc.

Production: jig reduction, commonization of welding structural parts, etc.

Formed a task team which cuts across the entire company and is not limited to the Design and Production departments
Involved not only internal personnel but promoted the expansion of activities to include suppliers



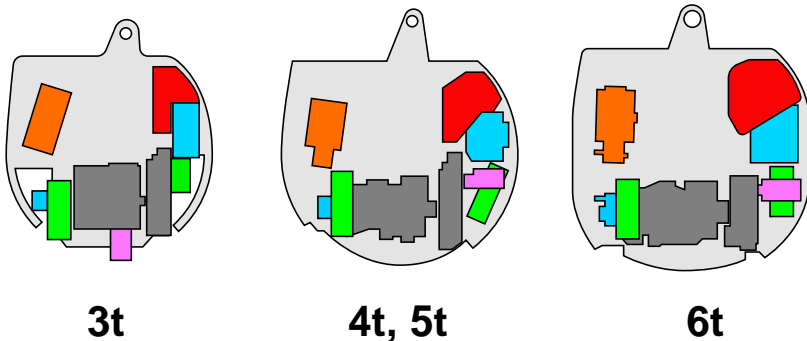
Disassembled a mini excavator and had the supplier managers understand how their own parts are being used in the machinery from various perspectives and propose ideas for VE based on new approaches.

Total number of proposals: 2,329

Adoption rate approx. 80%

Commonization of basic designs through simultaneous development of multiple models

- Basic layout unification
- Standardization and commonization of functional parts



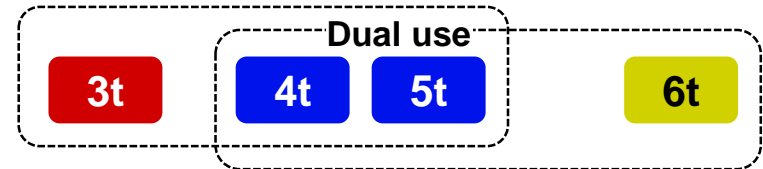
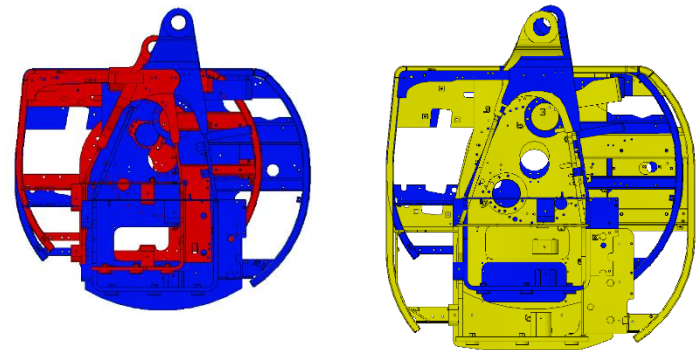
Ex: Functional part "A" (5 models)

15->7 types

Production rationalization of manufacturing

- Jig reduction through the unification of working standards
- Commonization of welding structural parts*

*Box shaped structural parts manufactured by welding steel plates



Ex: Welding jig

25->6 types

Key points of the reforms

- Shortening of the distribution lines through a fundamental change of the plant layout
- Automation through the introduction of robots on undercarriage assembly lines which mix multiple models
- Increase productivity through work environment improvements



Consolidate four processes into one



Automation of the undercarriage assembly lines



Working posture and environmental improvements

2013



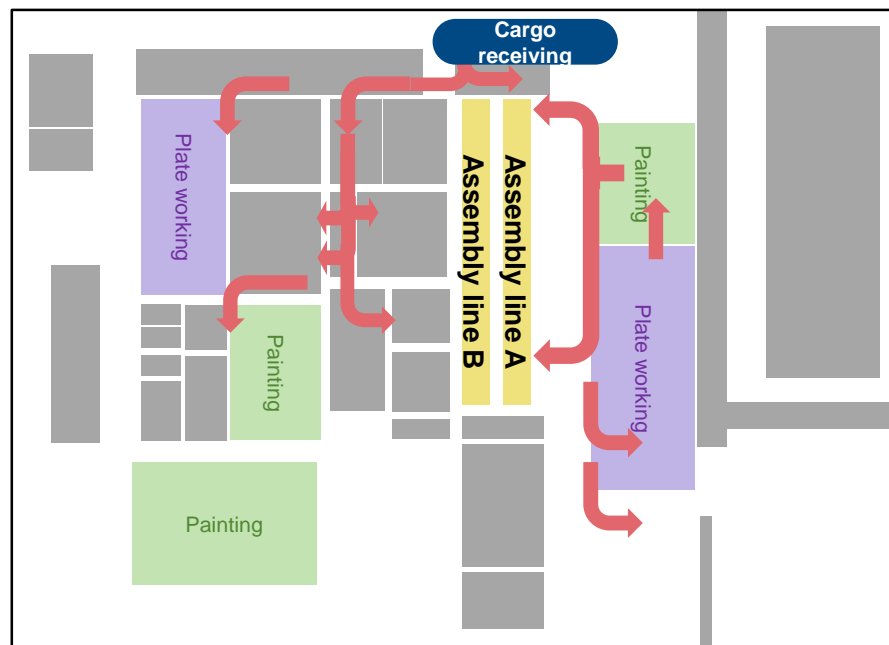
2019



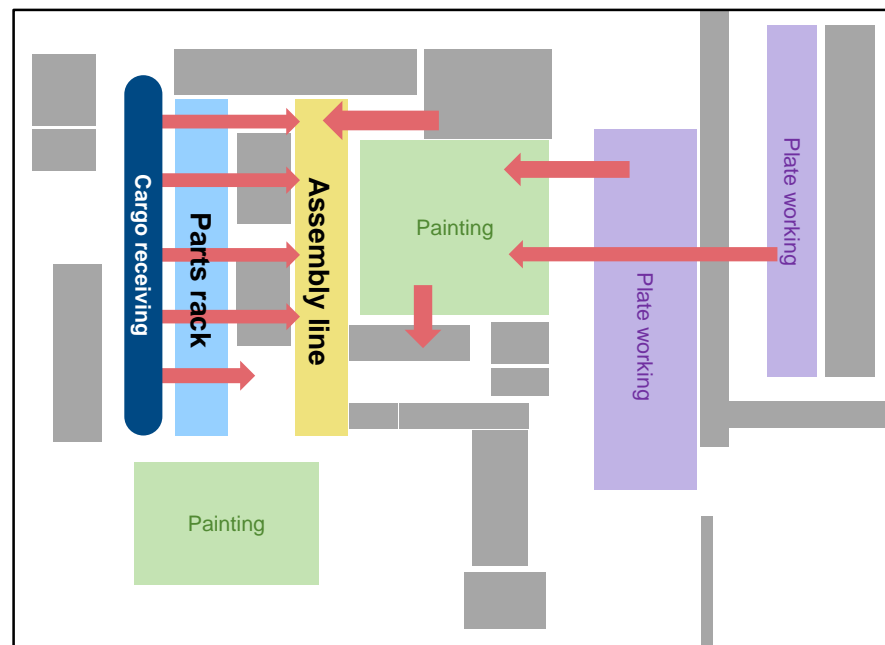
40% Work efficiency
(financial conversion)
reduction

Shortening of the distribution lines through a fundamental change of the plant layout

2013 (previous layout)



2019 (current)



* → Examples of distribution lines

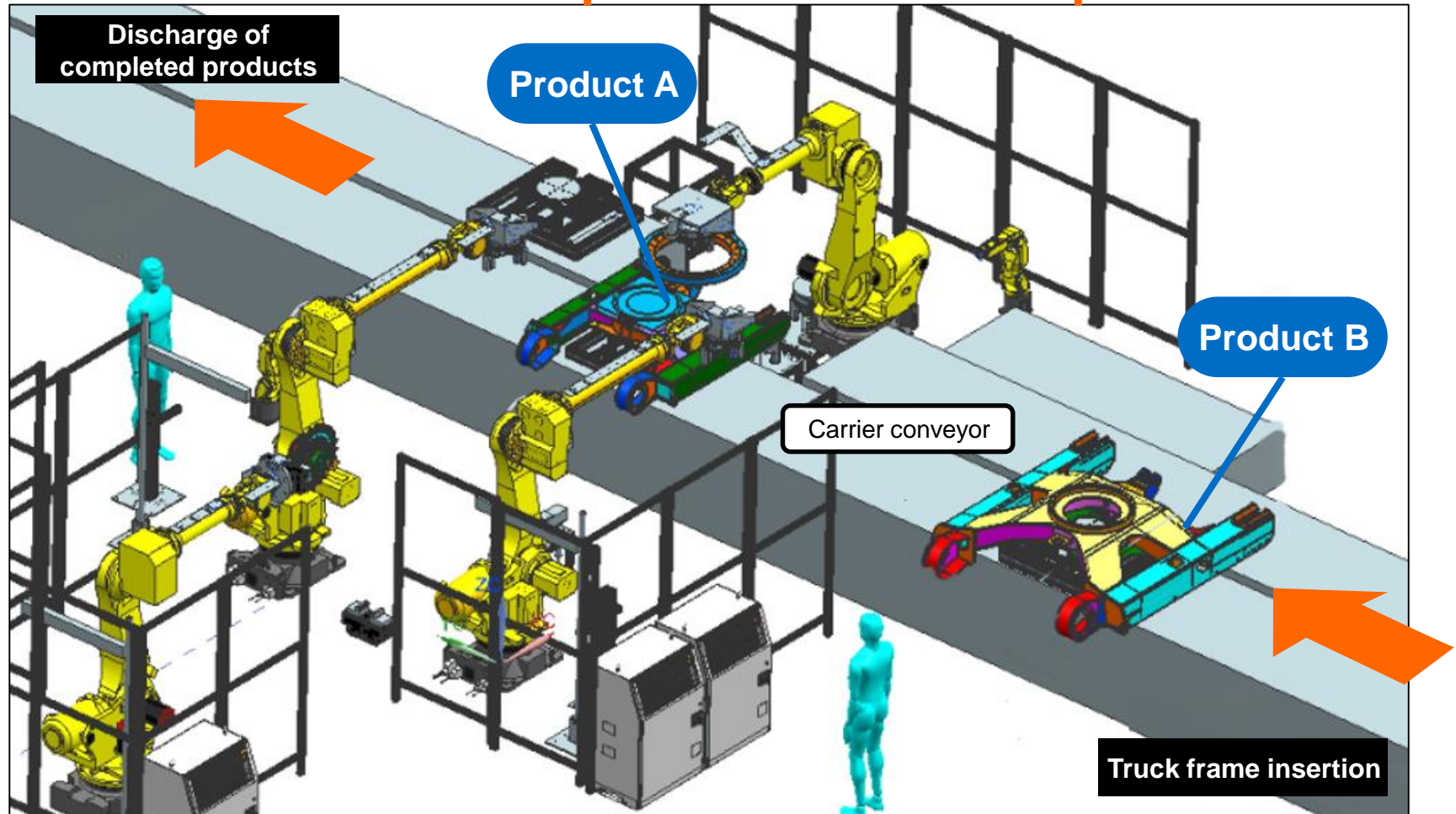
Ex: Reduction in the number of assembly processes

89->59 processes

Ex: Shortening of the transportation distance within the facility

376->176 km/day

Introduction of automated equipment through robots which enable the mixed production of multiple models



*Truck frame: part of the undercarriage

Production Line Reform: Mixed Production of Multiple Models (Undercarriage Assembly)

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Reliable solutions



Production Line Reform: Mixed Production of Multiple Models (Painting Process)

HITACHI

Reliable solutions



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Improve safety and reduce the physical load on the workers

Use lift tables to assemble from a comfortable position



Reduce the fluctuations in elevation and work in high places



The tool carts move together with the workers on the conveyor line to reduce the effort of carrying them around

Stabilization of the work quality regardless of the worker proficiency

Indicate the required parts with lights and numbers to make the picking work easy



Work number

Picking quantity

Work completion confirmation button

Panels for picking training

**Checking the work process
with a multilingual tablet**



**Pleasant work environment
regardless of gender**



**Signs notated in
Japanese, English, and Portuguese**



**Creating spaces to incorporate
the opinions of female employees**



Key points of the reforms

- Expand the product line up to meet a diverse set of needs
- Strengthen the sales and service networks in target overseas markets

Implement a full-scale market survey to understand customer needs

Marketing headquarters established in 2015, full-scale survey conducted in Japan, Europe, and China

Abundant product lineup and applications



16 models deployed

Products developed for different applications

Urban civil engineering, demolition, snow removal, agriculture and forestry, landscaping, and animal husbandry

Significant increase in share in target markets

Germany



Dedicated agent
established
Cultivation sales
specialist

Indonesia



Clarification of
target markets
Cultivation sales
specialist

Meet diverse customer needs with abundant variations

0.8t Select the model size according to the type of work



*Ten classes of model sizes
Total of 16 models including models with
short swing design and short rear-end swing design

Deploying products for different applications to solve particular work site needs



Short swing design
for narrow spaces



Indoor
demolition



Wooden
building
demolition



Underground
demolition



Excavation and
gripping



Snow removal

Background

Strengths: high performance, high quality, and high reliability from the brand image of the construction products

Weaknesses: sales priority on construction products, shortage of personnel dedicated to compact machinery



Germany

- Established a dedicated agent for compact machinery (30 locations)
- Cultivated sales specialist

Several %->10%

FY2016

FY2018



Indonesia

- Clarified targets to attack (target share, opponents, and models)
- Cultivated sales specialist, incentives policy

10% -> 30%

FY2012

FY2018

Received the VE Activity Award of Excellence

Hosted by the Society of Japanese Value
Engineering (public corporation)
October 2018

Management contributions to continuous VE
activities were recognized

Award-winning theme :

Application and dissemination/establishment of VE in
existing products and developed products



Health and Productivity White 500 Certification

Hosted by Nippon Kenko Kaigi
Awarded consecutively in 2018 and 2019

Simultaneously certified with HCM. Independent
initiatives were recognized and only HCM Tierra was
certified as a subsidiary



4. Targeting Additional Growth

Advantages of consolidating the mini wheel loaders



Strengthen development capabilities

- Construction product knowledge sharing and application
- Commonization of parts and supplier consolidation
- Apply the synergies of HCM Group technologies (ICT, electric technologies, application products, etc.)

Improve production efficiency

- Commonization of production equipment (painting equipment, jigs, etc.)
- Leveling of annual production volumes (Domestic wheel loaders frequently used for snow removal with an increase in demand before the winter)
- Reduce procurement costs through consolidated purchasing of parts

Sales and value chain rationalization

- Same customer segment, which makes it easy to propose products
- Market information sharing
- Commonization of after services, ConSite® application

Solution Linkage® Assist

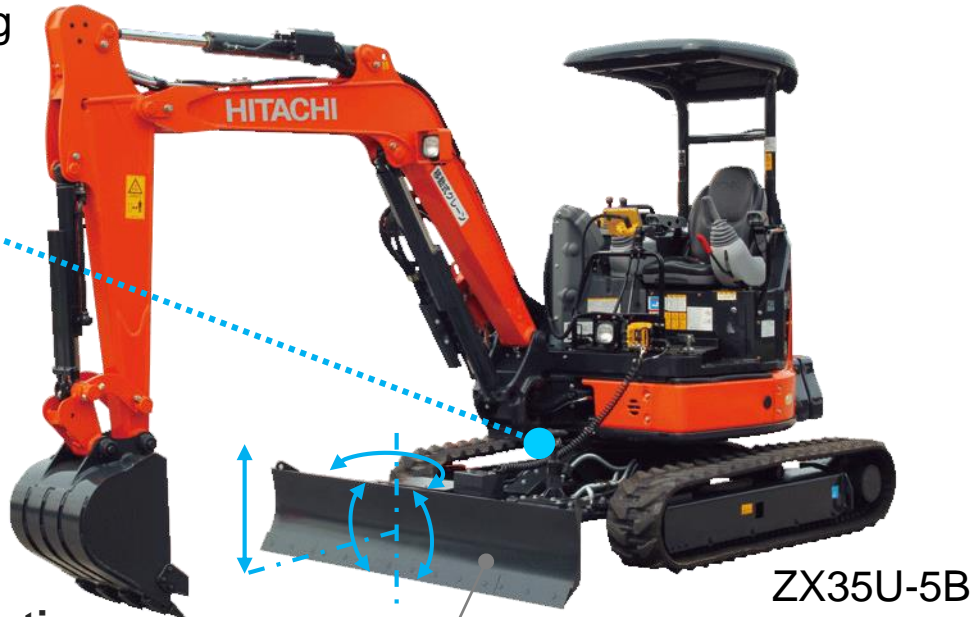
Semi automation of ground leveling work in small-scale construction such as athletic fields and community roads

- Combines the functions of a mini excavator and a bulldozer to finish the construction with one unit
- PAT blade moves according to the 3D design data to enable even inexperienced operators to accurately perform ground leveling



Automatic tracking total station

Detects the reference (prism) position of the hydraulic excavator and calculates the accurate position information



PAT blade (Power Angle Tilt blade)

Blade capable of vertical movements, tilt, and angle movements

Coordination between Japan and Europe to develop electric hydraulic excavators

- Sharing information about the strong environmental response needs of the European market
- Creating a road map for electrification through cooperation
- Common specifications for each product range

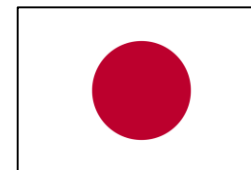
European
Application
Center



Development based on existing models to rapidly respond to European market needs



2t and 8t prototypes for the European market
(Exhibited at bauma2019)



HCM
HCM Tierra

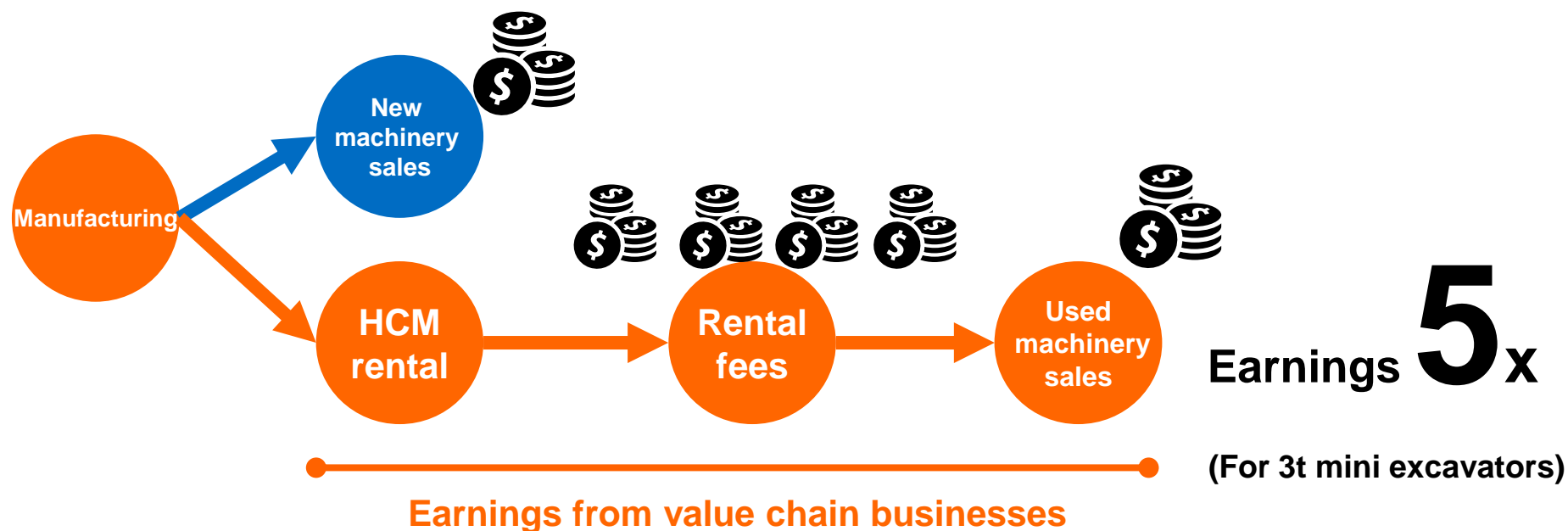
Electric hydraulic excavator with a short rear-end swing design developed with an emphasis on work in narrow spaces



5t class short swing design prototype

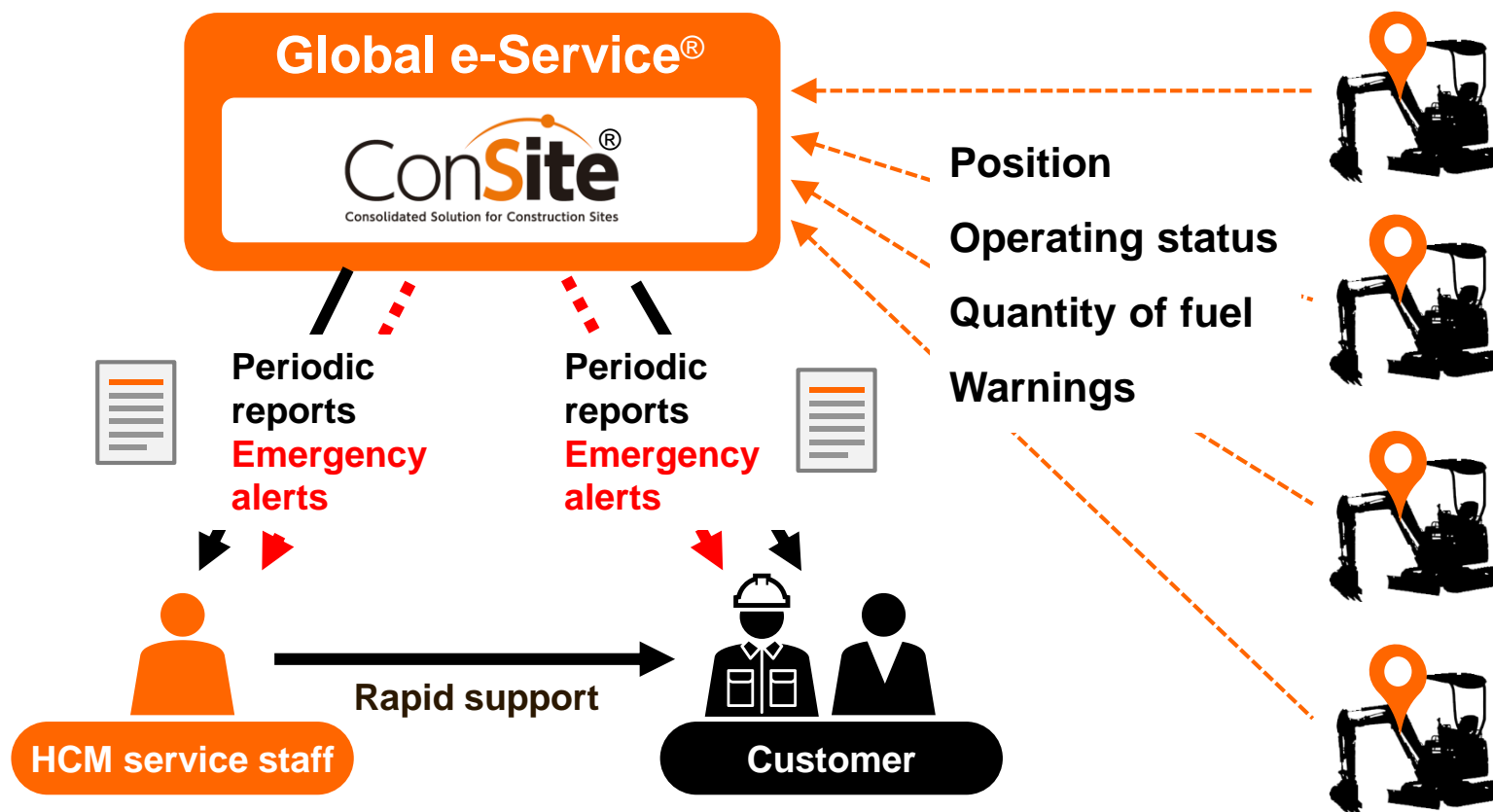
Provide everything from rentals to used machinery sales through HCM and improve profitability

- The rental earnings and used machinery sales prices for mini excavators are high, and the profit ratio is high.



Start offering ConSite® for mini excavators from FY2020

- Apply service solutions for protecting construction machinery through remote monitoring to mini excavators as well
- Know the position, operating status, etc. of multiple machines in real time through the wireless service
- Reduces life cycle costs and provides high convenience when managing many machines



Global e-Service®: service which allows customers to view operational and position information for construction machinery

5. Summary

- 1 Further strengthening of marketing**
Understand customer needs and deploy diverse products, value chain support
- 2 Strengthen development and production capabilities through consolidation of the compact machinery business**
Balance the improvements of customer value and enterprise value through continuous VE activities
- 3 Strengthen the sales and service networks which specialize in compact products**
Build regional networks which are closer to customers

[Cautionary Statement]

This material contains forward-looking statements that reflect management's views and assumptions in the light of information currently available with respect to certain future events, including expected financial position, operating results, and business strategies. Actual results may differ materially from those projected, and the events and results of such forward-looking assumptions cannot be assured.

Factors that may cause actual results to differ materially from those predicted by such forward-looking statements include, but are not limited to, changes in the economic conditions in the Company's principal markets; changes in demand for the Company's products, changes in exchange rates, and the impact of regulatory changes and accounting principles and practices.

[Cautionary Statement]

[Trademark notes]

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