

Competitive Advantages of the CMP Segment and Generation of Synergies between the Businesses

Shinji Juman
Component Solutions Segment President,
Power Control Company, and Head of
Production Innovation



Career History



Shinji Juman

Representative Director

Senior Managing Executive Officer, Component Solution Segment President, Power Control Company, and Head of Production Innovation

Jun. 2009 Plant Manager, Tsu Plant, Precision Equipment Company of Nabtesco Corporation

Jun. 2011 Executive Officer of Nabtesco Corporation and President, Nabtesco Automotive Corporation

Jun. 2014 President, Precision Equipment Company of Nabtesco Corporation

Jun. 2015 Managing Executive Officer, Nabtesco Corporation

Mar. 2017 Director of Nabtesco Corporation

Jan. 2018 Head of Production Innovation of Nabtesco Corporation (to present)

Mar. 2018 Representative Director of Nabtesco Corporation (to present)

Jan. 2019 Managing Executive Officer, Component Solution Segment of Nabtesco Corporation (to present)

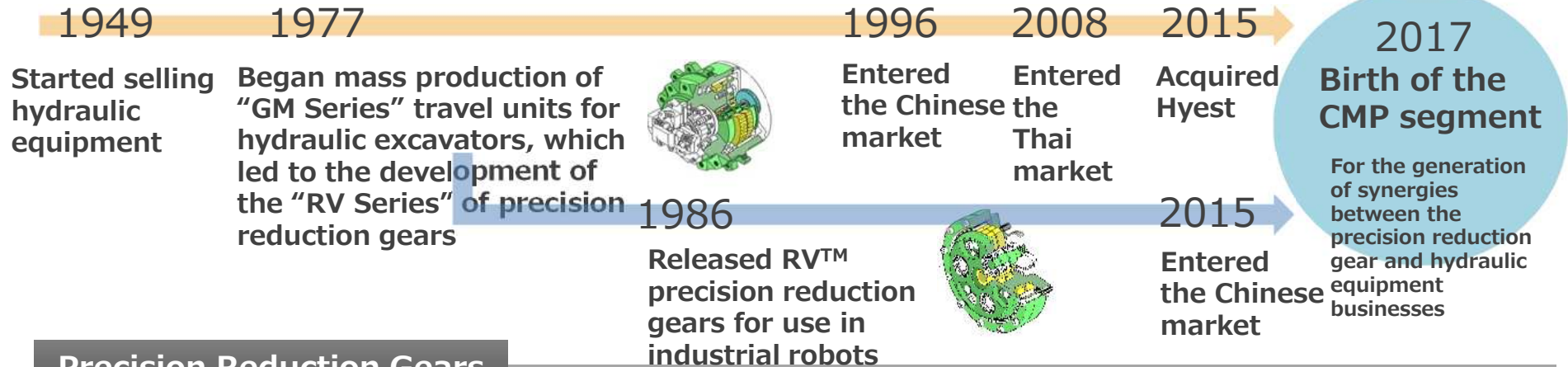
President, Power Control Company of Nabtesco Corporation (to present)

Jan. 2020 Senior Managing Executive Officer of Nabtesco Corporation (to present)

Interests: Visualization, improvement and speedup activities

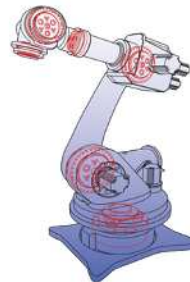
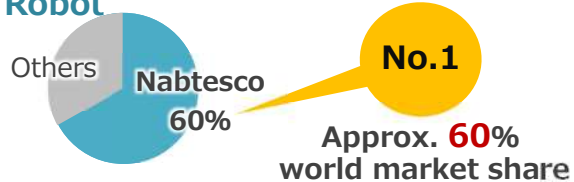
Outline of the CMP Segment

History



Precision Reduction Gears

■ Joints of Medium and Large size industrial Robot



Main Customers

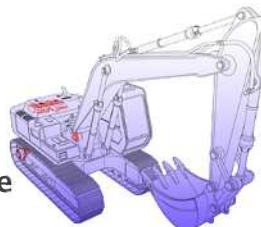
Industrial Robots:

Fanuc, Yaskawa Electric, KHI, KUKA Roboter (Germany), ABB Robotics (Sweden)

Machine Tools: Yamazaki Mazak, Okuma, DMG Mori Seiki

Hydraulic Equipment

■ Traveling Units for Hydraulic Excavator

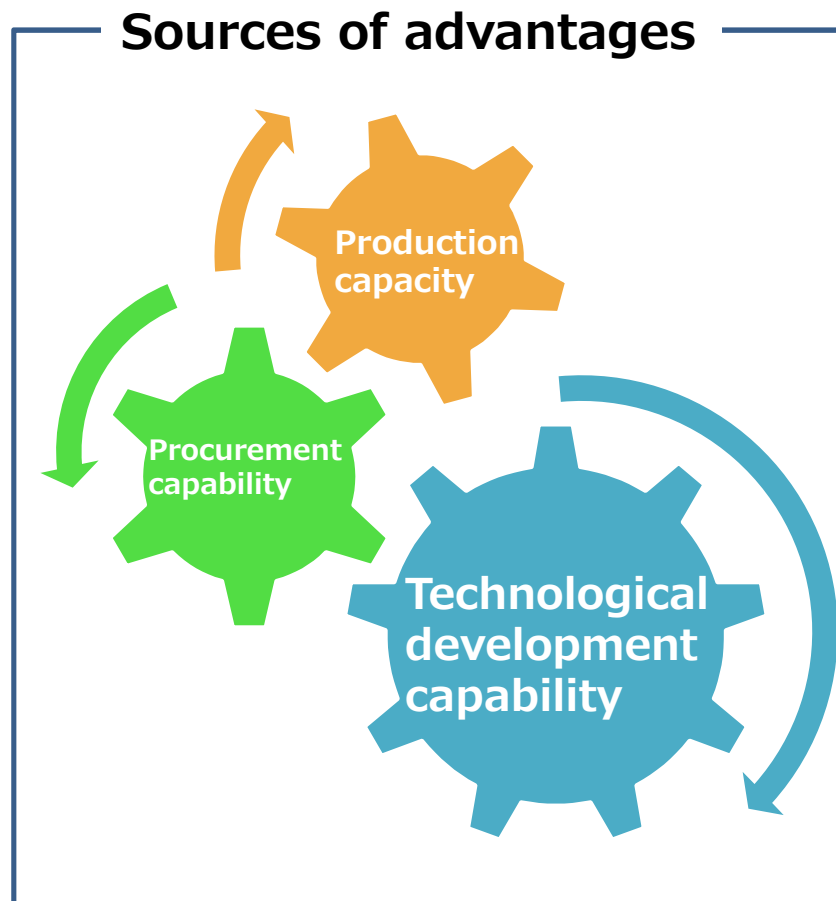


Main Customers

Traveling Units: Komatsu, Sumitomo Construction Machinery, Kobelco Construction Machinery, Sany (China), XCMG (China), Liu Gong (China)

Competitive Advantages of the CMP Segment

The CMP segment has five advantages come from technological development, procurement and production capability



1. Product competitiveness

High product quality based on customer-oriented development and outstanding production technology

2. Production capacity adaptive to market changes

Production capacity that can meet demand, and "local production and local consumption" system

3. Higher competitiveness by further automation

Higher productivity gained through step-by-step automation at each plant

4. Synergies between the businesses

Sharing manufacturing and quality management measures

5. Business continuity planning (BCP) at plants

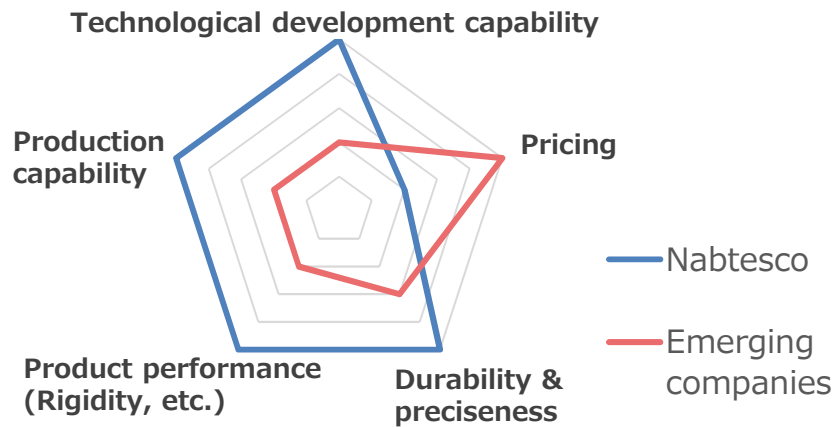
Prompt risk responses based on on-site ability to take actions

1. Competitiveness of Products in the CMP Segment



Precision reduction gears

Product features



■ Products with incomparably high performance

- Highly rigid (resistance to distortion)
 - Highly durable (long lasting)
 - Highly precise (precise operation)
- Outstripping competitors in terms of comprehensive specs.



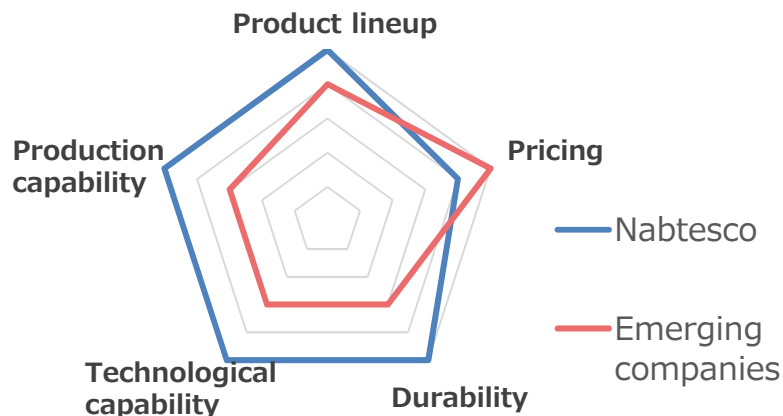
■ Customer-oriented development process

Identify customer needs in the development stage to speedily develop advanced products two or three steps ahead of competitors



Hydraulic equipment

Product features



■ High-quality products with cost competitiveness

Meet demanding needs of customers by using the technological capability developed based on the core technologies of Teijin Seiki, NABCO and Hyst. Provide customers with high-quality products with cost competitiveness.

■ Selling systems based on the broad lineup of products

Excavator	Travel unit	Valve	Pump	Swing unit
Small	○	○	○	○
Medium to large	○	○	○	○

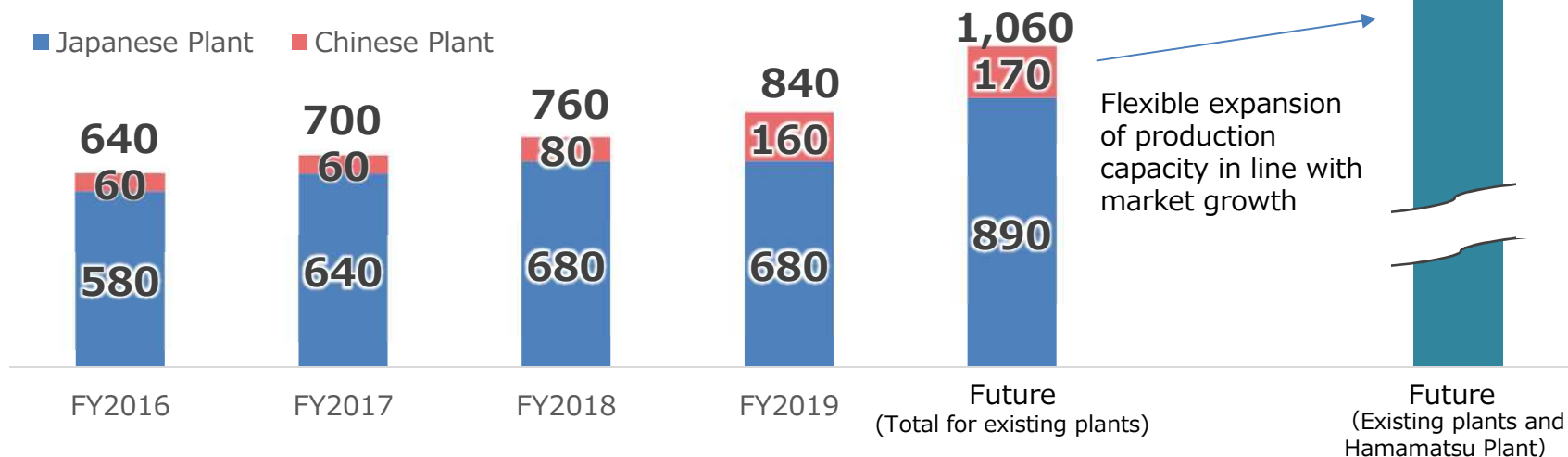
2. Production Capacity Adaptive to Market Changes

Maintain competitiveness by production capacity adaptive to demand changes and by customer-oriented plant operation

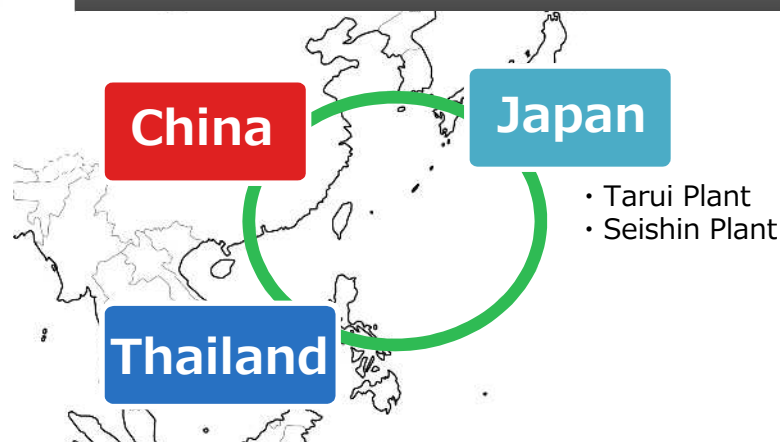


Precision reduction gear production capacity

■ Japanese Plant ■ Chinese Plant



System of producing hydraulic equipment in 4 regions



■ Optimal production based on the “local production and local consumption” system
(Higher cost competitiveness and shorter lead time)

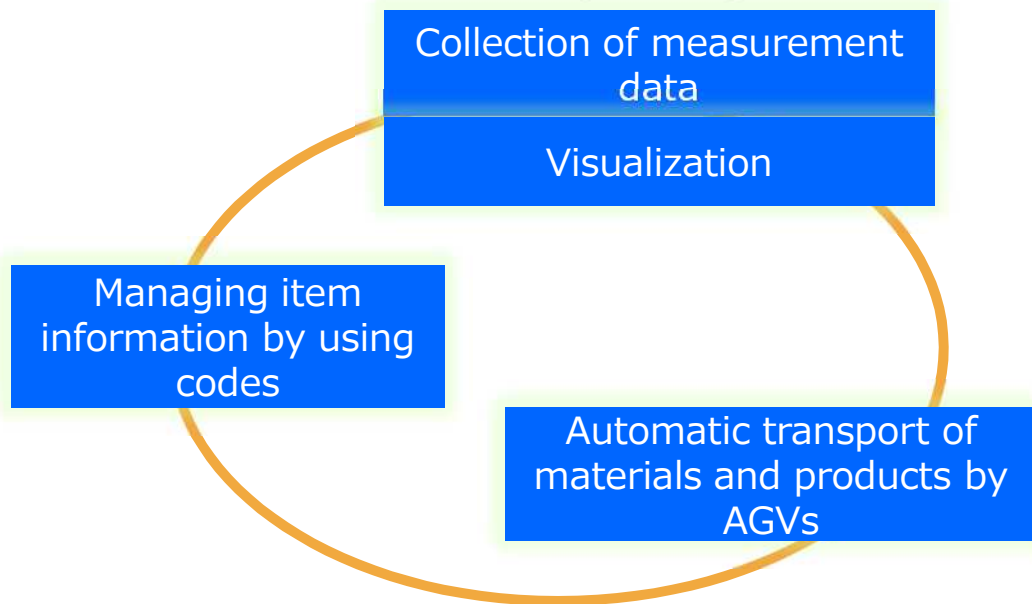
■ Promotion of global procurement

■ Alternative production in case of emergencies

3. Enhancement of Competitiveness by Automation (Ex.: through DX)

Aiming to further enhance competitiveness by using robots and making more data analysis

Example: Automation by using 2D codes



Progress with automation

- General automation rate at the Tsu Plant
Relative to 2017: 1.5 times (2020)
- Process automation rate at the Tarui Plant
Relative to 2017: 1.5 times (2020)

Targets

Automating ancillary work¹
for:
**High-speed, highly efficient
production line**

(¹ Washing, arrangements, inspection, etc.)

Using MES² to analyze big data
gained from processing
information for:
Higher product precision

^{*2}Manufacturing Execution System

Introducing advanced
equipment for:
Lower power consumption

Reducing night shift work for:
Higher employee QOL

4. Generation of Synergies in the CMP Segment

Introduction of the “Segment President” system in 2019 to foster synergies between the businesses

Production bases



Precision reduction gears

◆ **Precision reduction gears**
Tsu Plant (Mie)
Chinese Plant (Changzhou)
Hamamatsu Plant: To be operated from 2023



Hydraulic equipment

◆ **Travel unit**
Tarui Plant (Gifu)
Chinese Plant (Shanghai)
Thai Plant (Chonburi)
◆ **Valves**
Seishin Plant (Hyogo)

Synergy effects (in the segment)

Quality & procurement:

- Implement procurement measures across the businesses (joint procurement, etc.)
- Implement quality measures taken at each plant across the plants

Sales:

- Joint sales activities for each customers
- Share the overseas offices

Design and production technology:

- Share thermal processing and surface processing technologies to move up to next level
- Foster development by promoting exchanges between engineers

Human resources:

- Flexible exchange of human resources
- Allocation of human resources in consideration of the on-season period of each plant

5. Business Continuity Planning at the Plants (in the face of the coronavirus crisis)

In the face of the novel coronavirus crisis, the plants continued their operation and production, demonstrating their ability to take actions against emergencies.

Source of this capability: Each plant can implement effective measures independently and promptly. ⇒Based on the acquisition of resilience certification by each plant

Example: BCP measures taken by the plants in the face of the coronavirus crisis

Procurement

- Adjustment of the procurement ratio
After the outbreak of the coronavirus in China, reduced the procurement of castings from China and began procuring them from other regions, thereby preventing a shortage of castings, which could be a bottleneck for production, and reducing the procurement risk related to China

Entire plants

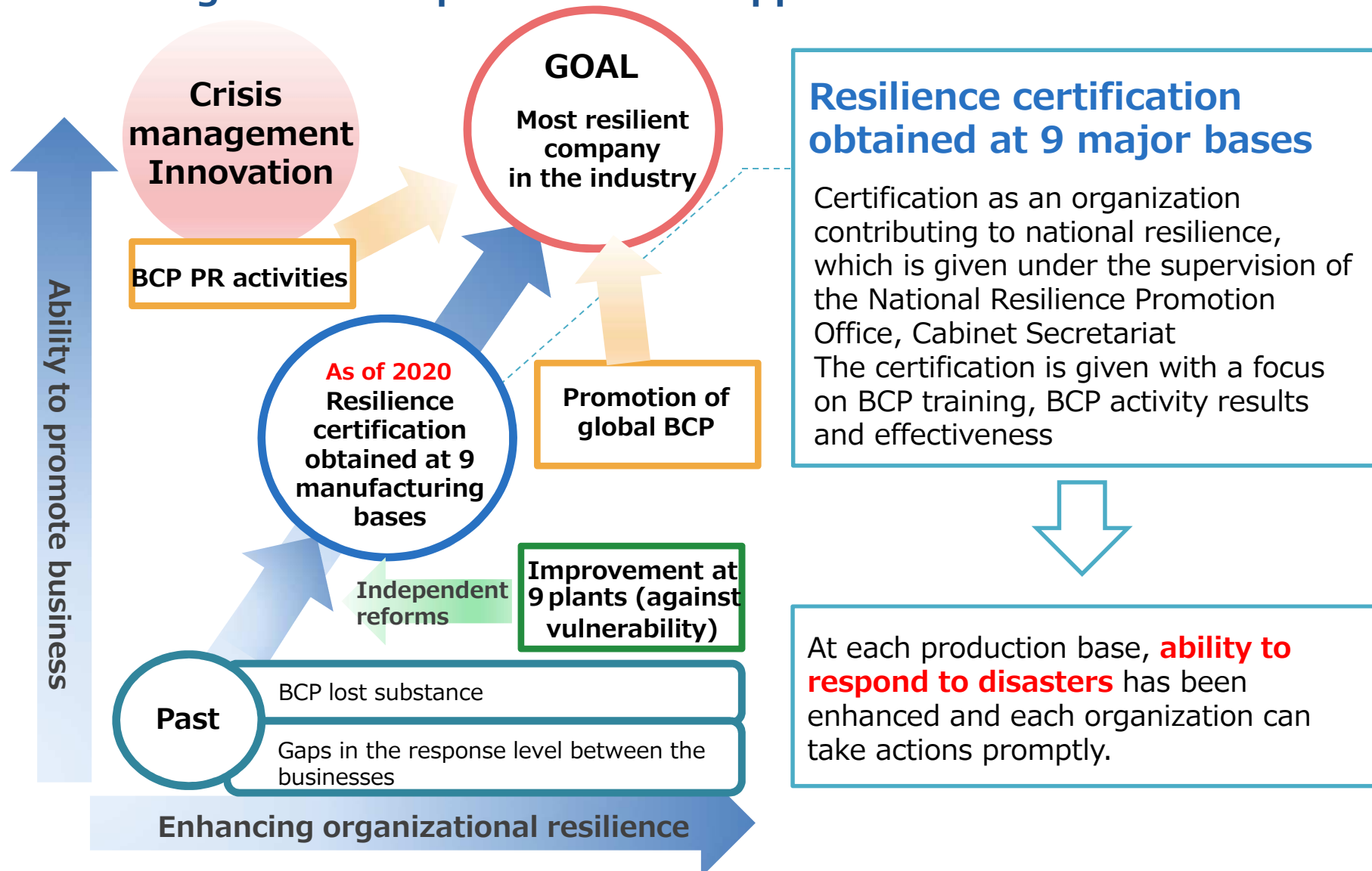
- Strict restrictions on entry and strict adherence to infection prevention rules
→Adopted a strict shift system and prevented all contact between employees working different shifts to prevent cross-infection
- Implementation of infection prevention measures and measures to identify “close contacts” in the event of any employee becoming infected

Manufacturing site

- Reduction of infection risks by dividing the manufacturing site into areas and limiting access to each area
- Use of face guards and others by employees

5. Business Continuity Planning at the Plants (BCP measures: Resilience Certification)

Aiming to be one of the most resilient companies in the industry by advancing BCP in cooperation with suppliers



For Medium- to Long-Term Growth (Environmental friendliness)

Contributing to mitigating climate change by making products compact and increasing environmental efficiency in the production process

■ Environmental contribution through products

- Responses to the needs for compact (space saving) industrial robots
 - Making precision reduction gears smaller, thereby reducing the use of materials (resources)
 - Contributing to reducing power consumption in the use stage of precision reduction gears

■ Reduction of environmental impact in the production process

- Installation of solar panels across the plant
 - On fine days, the panels generate about 45% of the entire amount of power consumed by the plant.



1991



Tsu Plant

2020

■ Promoting energy conservation and creation

- Introduction of an energy conservation certification system
 - Giving incentives for the development of environment-friendly, energy-saving products

Certification Criteria

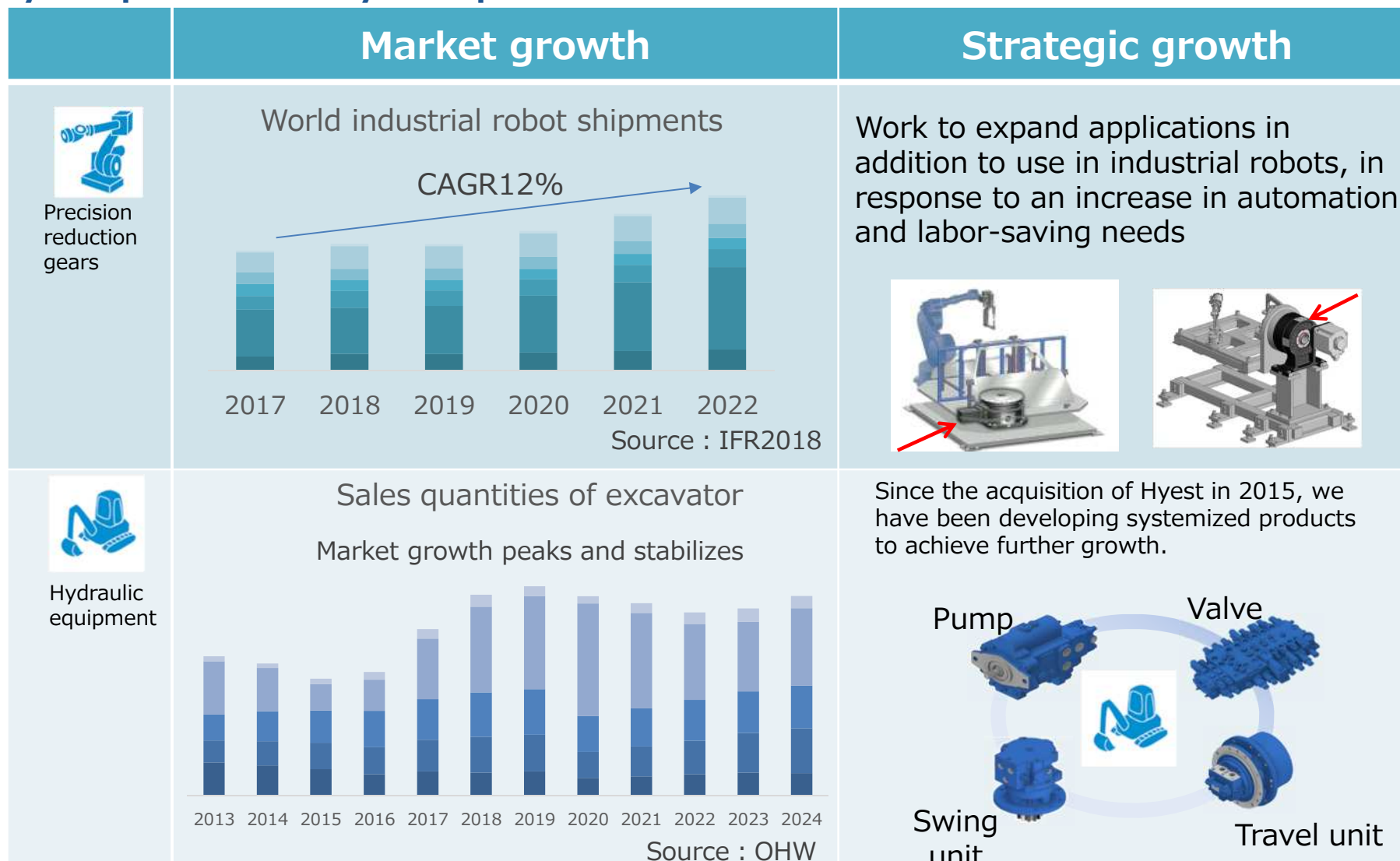
Downsizing and weight reduction	Higher efficiency and less energy use
By 15% or more compared with previous models	By 15% or more compared with previous models
Longer life	Non-use of hazardous substances
By 20% or longer compared with previous models	Not contained



Example of certified product :
Compact Actuator AF - series

For Medium- to Long-Term Growth (Growth potential of the businesses)

Growth of the core business, Expanded applications and Sustainable development by the provision of system products



Nabtesco

moving it. stopping it.

