
Monozukuri Supporting
Toyota's Competitiveness

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Mitsuru Kawai

Executive Vice President
Toyota Motor Corporation



Major crises for the company in the past

1970s oil crisis, vehicle emissions regulations, Japan-U.S. trade friction, collapse of the “bubble economy,” 2008 global financial crisis, Great East Japan Earthquake, recall problems in the U.S., etc.

Electrification, connected technology, automated driving, etc.
The automobile industry is undergoing a period of once-in-a-century revolutionary change.

The Toyota Way



Toyota Production System

Jidoka

(Automation with a human touch)
Building Quality into the Process


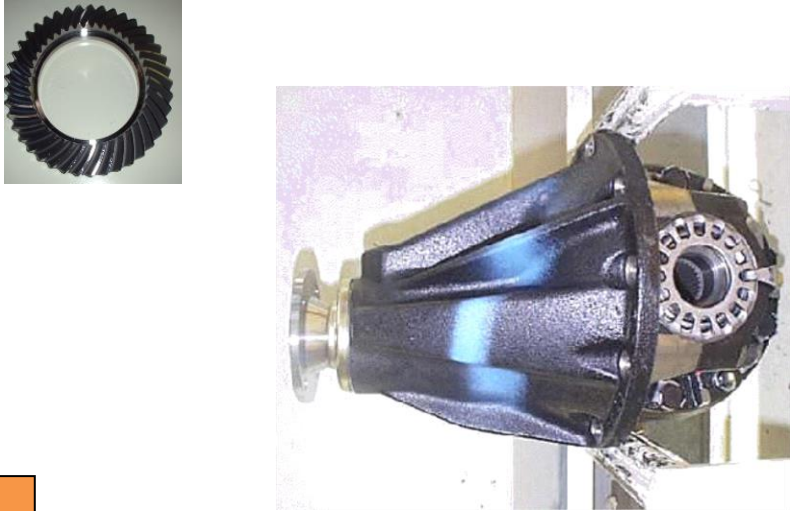
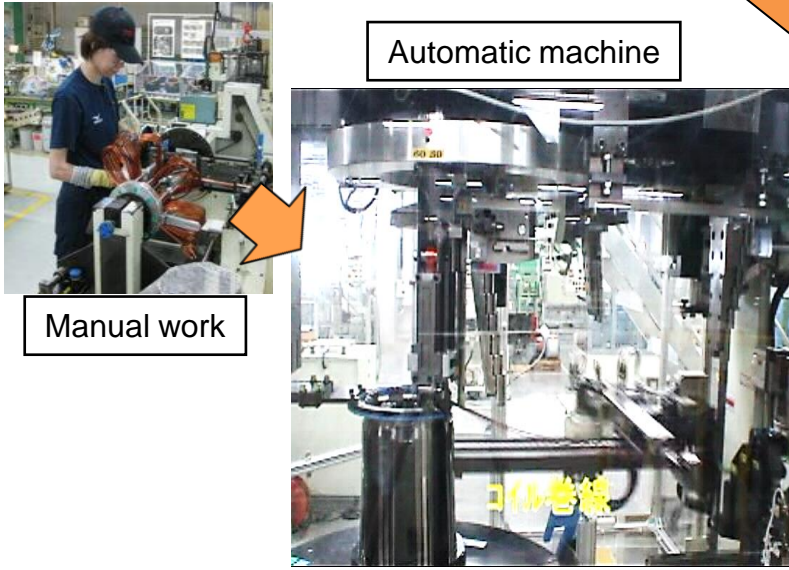

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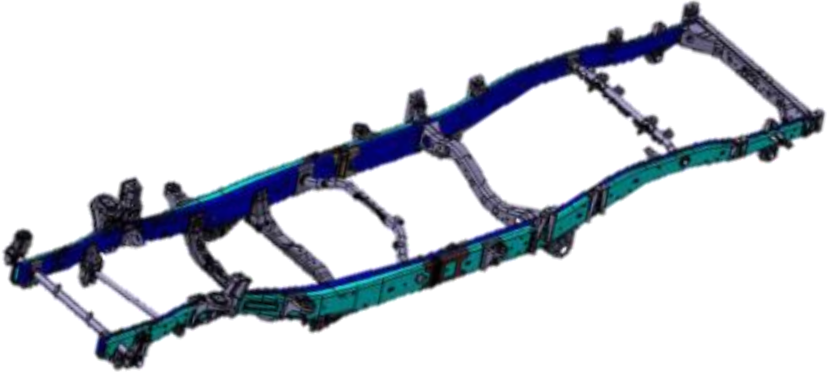


Just-in-Time

Making only what is needed,
when it is needed,
and in the amount needed

Manufacturing professionals who successfully take on challenges and changes

I. Revolutionary Once-in-a-century Period of Change

	Production Process	Products
Ring Gear	 <p>The production process for Ring Gear is shown in two images. The top-left image is a close-up of a finished ring gear. The main image shows a factory floor with a worker in a purple shirt and blue gloves working on a machine. A large orange arrow points from this section down to the HV T/A section.</p>	 <p>The products for Ring Gear are shown in two images. The top-left image is a close-up of a finished ring gear. The main image shows a large, dark, conical component, likely a part of a transmission, with a ring gear attached to its end.</p>
HV T/A	 <p>The production process for HV T/A is shown in two images. The top-left image shows a worker in a blue shirt and cap working on a component, labeled "Manual work". The main image shows a large, complex machine, labeled "Automatic machine". A large orange arrow points from the Ring Gear section down to this section.</p>	 <p>The products for HV T/A are shown in two images. The top-left image is a close-up of a finished HV T/A component. The main image shows a large, complex, silver-colored component, labeled "HV T/A".</p>

	Production Process	Products
Frame		
FC Stack		

Targeted Way of Jidoka

Toyota Production System

Jidoka

Building Quality into the Process

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Just-in-Time

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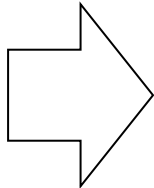
- 1) Completely establishing work with manual operation until safe work can be securely conducted
- 2) Thoroughly simple, compact, flexible, easy-to-use, and inexpensive machine/machines that rarely produce defective products

Robot Calligraphy

To make a robot write a character beautifully, human (skilled personnel) skill is required.

Person

(Person who has never studied calligraphy)



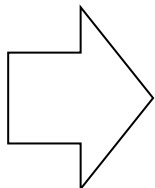
Robot



Teaching a robot

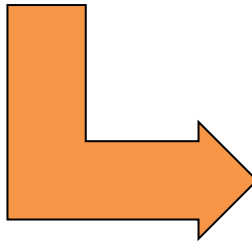


(Person who has studied calligraphy)



Snowball Effect of Skills and Technologies

Incorporating into robots the “skills of a craftsman”
in manual spraying



Case example of teaching human movement

After improvement

- 1) Reduction of turning movement at the ends
- 2) Simultaneous painting on general surface and the ends

- Completely establishing production lines with manual work
- Learning the principles of manufacturing
 - Application of the principles at the manufacturing site



Accumulation of
improvement
⇒ craftsman's skill



Jidoka/Karakuri



Simple, compact, flexible line

Company's continuous growth

⇒ For the happiness of individuals 50 years from now

1st generation
Corolla



50 years later

MIRAI



Continuously developing manufacturing professionals who successfully take on challenges and changes