

Delivering the Leading-Edge Manufacturing that Continues to Evolve Using Data

Toward the Realization of Innovation in Manufacturing and Business Model

In July 2018, Yaskawa opened a new plant, "YASKAWA Solution Factory". This plant will demonstrate cutting-edge production technology based on the i³-Mechatronics solution concept announced in October 2017.

Business model transformation

The background to the establishment of this plant is the shift in Yaskawa's business model from the current "component sales" to the "sales of integrated solutions." In other words, it is a business model that not only sells products such as AC servos, AC drives, and robots, but also visualizes various data obtained through these machines, and proposes new manufacturing solutions that solve customers' management problems, such as improving production efficiency and quality using IoT and AI, as well as predicting failures.

For this reason, with YASKAWA Solution Factory, we have established a system to understand the actual site where our product is actually used, to verify the solution to the problem, and to reflect the problem obtained through the demonstration to the product development through the production of AC servo "Σ-7" series using Yaskawa's robot, AC servo and AC drives.

Responding to rapid demand fluctuations

In recent years, Yaskawa's AC Servo production has doubled over the past five to six years due to the rapid increase in capital investment for production automation on a global basis.

In addition, as globalization has increased, customers have diversified and large-scale orders with shorter delivery times have increased than in the past. As a result, it has

become difficult to meet customer needs using the same production methods as in the past, and it has become necessary to create new production systems.

Yaskawa's production toward realization of Vision 2025

Against this background, and in order to achieve operating income of 100 billion yen as early as possible as stated in our long-term business plan Vision 25, we have set "Meet deadlines and minimize costs to maximize profitability" as a goal of the Our Company Production System Concept and are working to achieve the following 3 goals.

- ① Strict adherence to market demand for delivery dates
- ② Labor-saving manufacturing
- ③ Building a framework for improvement based on data

A new production system based on this concept is first verified at the YASKAWA Solution Factory through the production of AC Servo Drives "Σ-7" series, and once the results are confirmed, then it will be introduced to other factories.

Future developments

Other companies also analyze data collected from the field. However, the strength of Yaskawa's products, which are responsible for the actual operation of products, is the ability to collect data digitally and in an integrated manner. Moreover, problems arising from data analysis can be fed back to production lines in real time and can be improved in a timely manner at production sites by changing the way equipment is operated.

By using the data in this way and using the PDCA cycle quickly, we aim to expand new business opportunities by developing and establishing the Yaskawa Group's manufacturing system with the ever-evolving state-of-the-art production system, and by utilizing this advantage in our business models for proposing to customers.

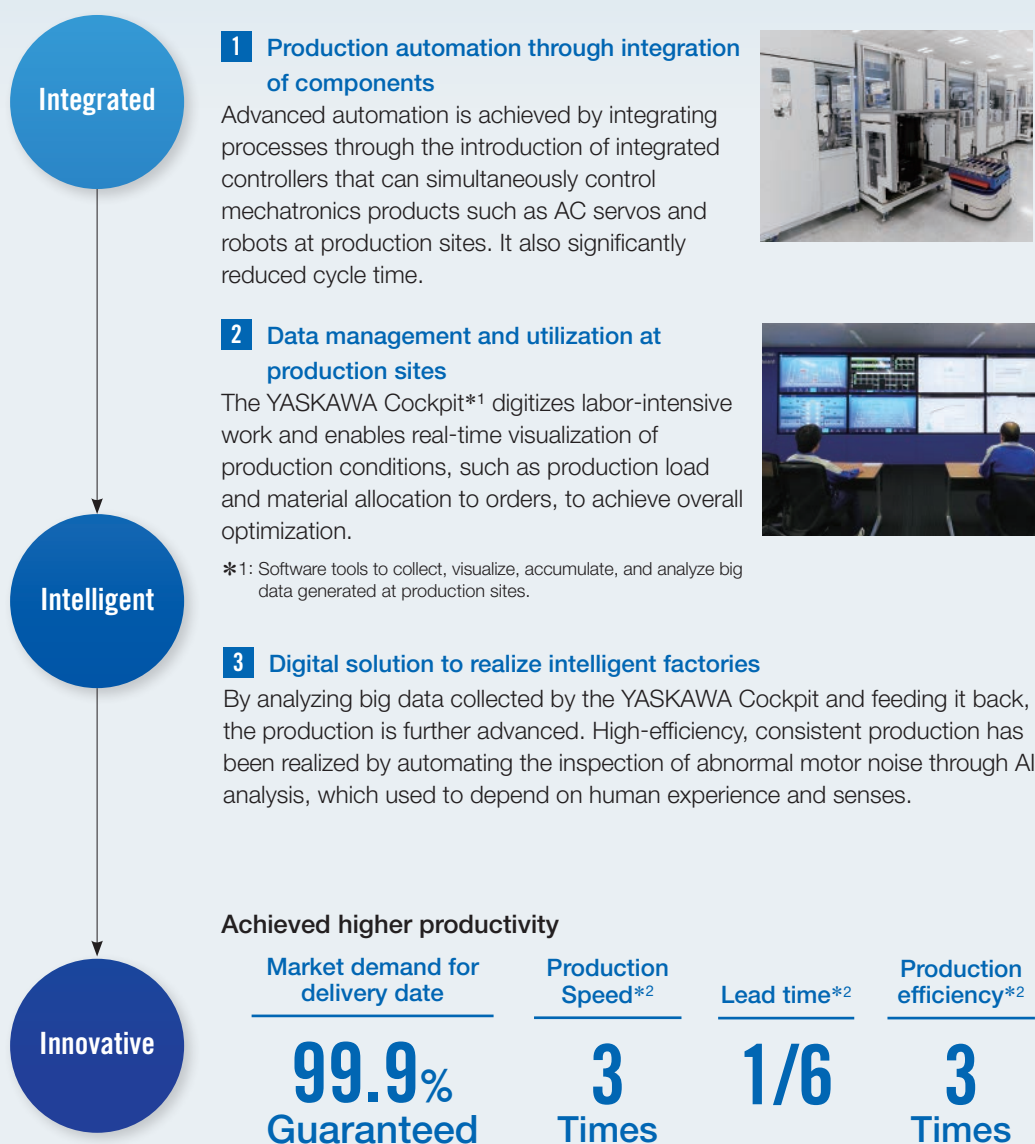


FOCUS



Increase productivity through technological innovation

At YASKAWA Solution Factory, the three-step demonstration of i³-Mechatronics dramatically improved productivity.



*1: Software tools to collect, visualize, accumulate, and analyze big data generated at production sites.

*2: Compared to Yaskawa's previous plant

GLOBAL PRODUCTION

Yaskawa group conducts optimum production at 28 locations in 12 countries for its businesses of Motion Control, Robotics and System Engineering with the policies to produce in the areas where the demand is and concentrated production.

We benefit from producing close to our customers in aspects of delivery time and building relations, as well as reduced risks related to forex rates, disasters and geopolitics.

* Production locations for robotics include system factories.

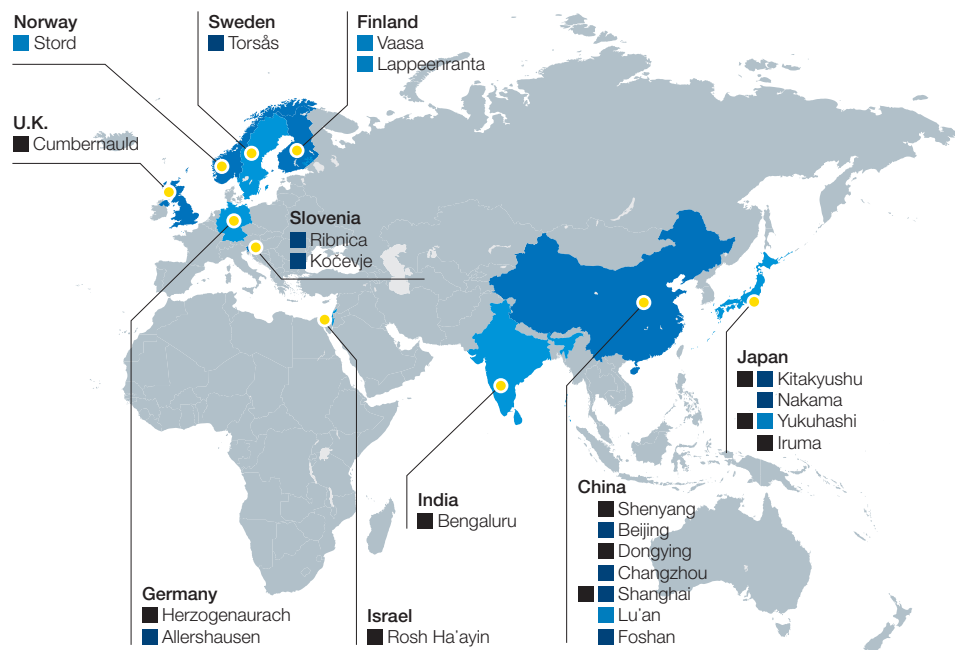
Slovenia

Kočevje, Slovenia

YASKAWA Europe Robotics d.o.o.

Responding to customer needs in the European market with high growth potential

In order to meet future robotics demands in Europe, the production base started to operate in 2019 as the third robot production location following Japan and China. Yaskawa creates new supply chain to quickly supply to all EMEA (Europe, Middle East, Africa) areas.



China

Shenyang, China

YASKAWA ELECTRIC (SHENYANG) CO., LTD.

Supplying a robust demand in China as a concentrated production site for AC servo motors and amplifiers

Shenyang plant began production in 2010. The facility supplies high quality AC servo motors and amplifiers to Chinese market where manufacturing for the global market is concentrated. By building the third plant in FY2018, Yaskawa has in place the structure to respond to Chinese demands expected to further grow.



Shanghai, China

SHANGHAI YASKAWA DRIVE CO., LTD.

Contributing to the business expansion as Yaskawa's 1st plant in China

Shanghai plant was established in 1995 as Yaskawa's first manufacturing plant in China. It started with the production of single-phase motors, and now produces industrial AC drives and PM motors for elevator application. It is supplying the Chinese demand while improving QCD* by cooperating with the mother factory in Japan.



*: Quality, Cost and Delivery

Changzhou, China

YASKAWA (CHINA) ROBOTICS CO., LTD

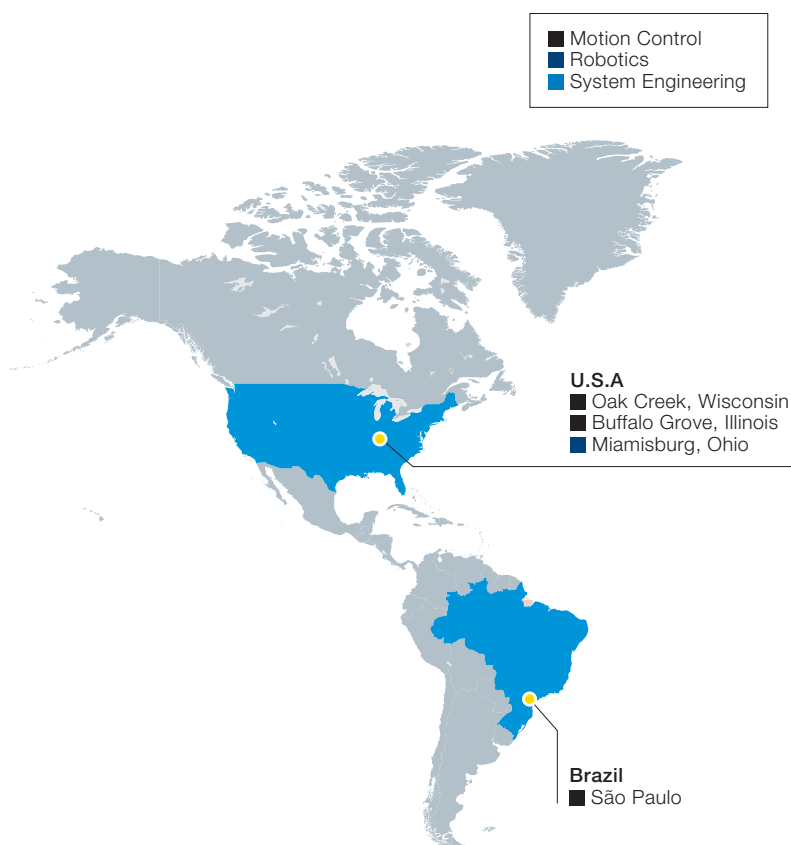
Supplying a demand for automation in China where manufacturing for the global market is concentrated

Changzhou plant began production in 2013. It conducts in-house machining of cast products for robots and assembly, and supplies high-quality industrial robots to the Chinese market. The plant implements environment-friendly manufacturing through adoption of water-soluble paints for robots for the first time and reducing VOC* emissions considerably.



*: VOCs (Volatile Organic Compounds) are organic solvents that are also a major source of photochemical smog. VOC emissions from industries that handle large volumes of paint are regarded as a significant issue.

NETWORK



Nakama, Japan

Yaskawa Electric Corp. Nakama plant

Built on the concept of being "environmentally and human-friendly, fast, and efficient" site, producing mid to large sized robots.

Nakama plant conducts in-house parts processing and assembly for mid to large sized robots. With the third plant completed in August 2015, this facility has not only reduced production lead time by 30%, but also achieved a 70% reduction of VOCs emissions.



Iruma, Japan

Yaskawa Electric Corp. Iruma plant

Supplying a global demand as the mother factory for AC servo motors and amplifiers

The plant was established as Tokyo plant in 1964. Now the plant supplies globally as the concentrated production site for AC servo motors and amplifiers. The new "YASKAWA Solution Factory" was completed in FY2018, and drastic improvement in productivity was achieved by the demonstration of cutting-edge production technologies such as IoT and AI utilization.



Japan

Kitakyushu, Japan
Yaskawa Electric Corp.
Headquarters (Robot Village)

Supplying globally as the mother factory for Robotics business

Current headquarters in Kitakyushu is where Yaskawa Electric Manufacturing Co., the predecessor of Yaskawa Electric Corp. was established in 1915. In the startup period, it produced motors for use in coal mining. Now the headquarter building and robot factories are located, and together with YASKAWA Innovation Center, the Robot Village welcome many visitors every day.



Yukuhashi, Japan

Yaskawa Electric Corp. Yukuhashi plant

Contributing to the global energy saving with two mother factories for Drives business and System Engineering business

Two mother factories for the Drives business and System Engineering business are located in Yukuhashi plant. The plant produces AC drives and medium voltage drives, and the headquarters for photovoltaic and wind generation-related businesses are located, contributing to the global energy saving.

