

Start of production of eco-friendly hydraulic excavators with ACERT® new generation environment-oriented technology

Production has started of CAT hydraulic excavators equipped with ACERT new generation environment-oriented technology unique to Caterpillar Akashi.

ACERT is an innovative technology using advanced combustion control for reducing the harmful substances such as NOx (nitrogen oxide) and PM (particulate matters) contained in engine exhausts.

The line-up is being expanded in companies all over the world.



CAT C9 ACERT
Engine

The “Noryosai,” an annual summer festival which attracts many visitors, including local residents, to the plant

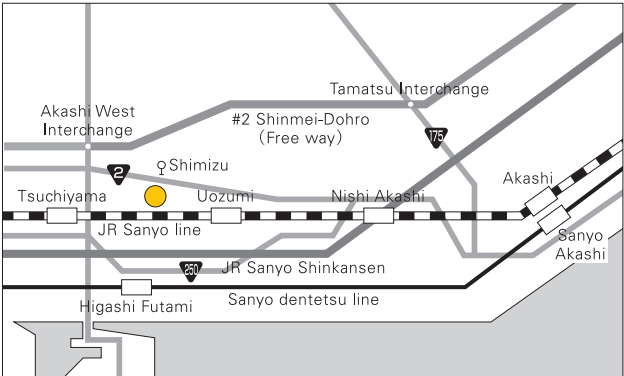
“Noryosai” - a big festival held every summer. The plant is always crowded with many guests from the community.

The festival opened with a performance by a wind band from a local junior high school. Popular comedians also performed mime and manzai - comic dialogues on stage, making everyone laugh. Popular refreshment stands and a charity bazaar are also run by employees.

“Noryosai” once again closed on a high note.



A wonderful performance by a wind band from the local junior high school set the mood for the opening of the “Noryosai”.



■ Akashi Plant/Hydraulic Excavator Development Center

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Akashi-shi, Hyogo-ken, 674-8686

Phone (078) 943-2111

[Access information]

Bus service

- Take a bus for Fukusato or Kakogawa at the bus platform #2 in the rotary on Shinkansen bullet train side of JR Nishi Akashi Station, and get off at Shimizu. (About 30 minutes)
- Take a bus for Akashi at Tsuchiyama Station on Route 2 north of JR Tsuchiyama Station, and get off at Shimizu. (About 10 minutes)

Taxi Service

- About 20 minutes from JR Nishi Akashi Station
- About 5 minutes from JR Uozumi Station

■ Tokyo Office

Administration / Marketing Dept.

4-10-1, Yoga, Setagaya-ku, Tokyo, 158-8530

Phone (03)5717-1121
/ (03)5717-1201

■ Sagami Plant

3700, Tana, Chuo-ku, Sagamihara-shi,
Kanagawa-ken, 252-5292

Phone (042)763-7011

■ List of Dealers

Nippon Caterpillar LLC
Chichibu Visitor Center
Caterpillar Solution Engineering Ltd.
Caterpillar Operator Training Ltd.
Hyogo Operator Training
Tokyo Rental Ltd.

Phone (03)5334-5666
Phone (0494)24-7311
Phone (0467)75-0740
Phone (042)763-7130
Phone (0794)67-2211
Phone (03)5333-0851

Shikoku Kiki Ltd.
Shikoku Construction Equipment Sales, Ltd.
Yonken Corporation
Caterpillar Kyushu Ltd.
Cat Rental Kyushu Ltd.
KCM Leasing, Ltd.

Phone (087)836-0355
Phone (089)972-1481
Phone (089)972-0106
Phone (092)924-1211
Phone (092)923-6851
Phone (092)924-1225

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AKASHI PLANT GUIDE



Caterpillar

http://www.cat.com/ja_JP.html

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REGA is registered trademark of Caterpillar Japan LLC.

CATERPILLAR®

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Advanced Product Quality

Half a century or so has passed since the Y35, the first hydraulic excavator in Japan, was developed. Highly regarded and loved by users everywhere, the hydraulic excavators produced by the Akashi Plant have always had features that have kept them one step ahead of the competition. Driving the resolve to improve hydraulic excavators is the craftsmanship and passion for creating new machines. From the Y35 to the REGA, these are hydraulic excavators built to global standards. From being a pioneer in the field of construction machinery in Japan, to becoming a world leader in hydraulic excavators - our products and tasks may change, but our aspirations remain the same.

History

We have a long history. Now there's a future to build.

The path the Akashi Plant has followed traces the history of the evolution of hydraulic excavators. The Akashi plant was founded as part of the Kobe Shipyard, Shin Mitsubishi Heavy Industries Ltd. (current Mitsubishi Heavy Industries Ltd.) for the exclusive production of construction machinery. The year after the plant was established, the Y35, the first hydraulic excavator developed in Japan, appeared. The Y35 was acclaimed throughout Japan for its high capabilities, and the term "Yunbo", origin of the "Y" in the product name, became synonymous with hydraulic excavators. We then unveiled a series of "acclaimed machines," including the MS series in 1972, in which cutting-edge technology was combined with the know-how gained from the Y series, and the REGA, the CAT hydraulic excavator 300 family with global specifications developed in 1992. We have now unveiled the new REGA series, where cutting-edge performance and product quality have been realized through "plant innovation" and advanced production systems - another milestone in the history of the Akashi plant. The challenge of constantly exploring the possibilities for hydraulic excavators is never ends.

- 1960 • Started as a construction machinery plant of the Shin Mitsubishi Heavy Industries Ltd. (current Mitsubishi Heavy Industries Ltd.) Kobe Shipyard. **1**
- 1961 • Started production of the Y35, the first hydraulic excavator in Japan.
- 1971 • Enhanced production capacity in response to an expansion in demand. Separated from the Kobe Shipyard and started out as the Akashi Machinery Plant of Mitsubishi Heavy Industries Ltd. **2**
- 1972 • Started production of the MS series, a new model based on the concept "Mighty and Speedy."
- 1986 • Established the Hydraulic Excavator Development Center (HEDC).
- 1987 • Merged with Caterpillar Mitsubishi Ltd. and formed "Shin Caterpillar Mitsubishi Ltd." Started production of the E200B, the first CAT-branded hydraulic excavator. **3**
- 1989 • Cumulative production amounted to 100,000.
- 1992 • Started production of the REGA, the CAT hydraulic excavator 300 family with global specifications. **4** The NTC building, a new development center for hydraulic excavators, was completed.
- 1996 • Started production of the REGA B Series. Obtained "ISO9001" certification, an international standard of product quality management, for hydraulic excavators.
- 1998 • Worldwide sales of 300 family hydraulic excavators amounted to 100,000.
- 1999 • Obtained "ISO14001" certification, an international standard for environmental management.
- 2000 • Cumulative production amounted to 200,000. Started production of the REGA C Series.
- 2003 • Started the "Plant Innovation" project, aimed at reinforcing production systems.
- 2005 • Started production of the REGA D Series.
- 2008 • Cumulative production amounted to 300,000. Changed the company name to "Caterpillar Japan".
- 2011 • Started production of the CAT hydraulic excavator E Series.
- 2014 • Started production of the CAT hydraulic excavator F series.
- 2015 • Cumulative production amounted to 400,000. **5**
- 2016 • Y35 was registred in Essential Historical Material for Science and Technology. **6**



Bird's eye view of the Akashi Plant at the time of its foundation.



A meeting was held on foundation, under the slogan "Let's build production systems dedicated to construction machinery!"



The E200B, a CAT brand hydraulic excavator, developed for the first time after establishment of the HEDC.



CAT320 REGA, developed as the first step in the REGA series.

The REGA, with its innovative functions and design, has now evolved into the D series, and is actively used on work sites all over the world as a hydraulic excavator meeting global standards.



A ceremony to commemorate a production volume amounting to 400,000.



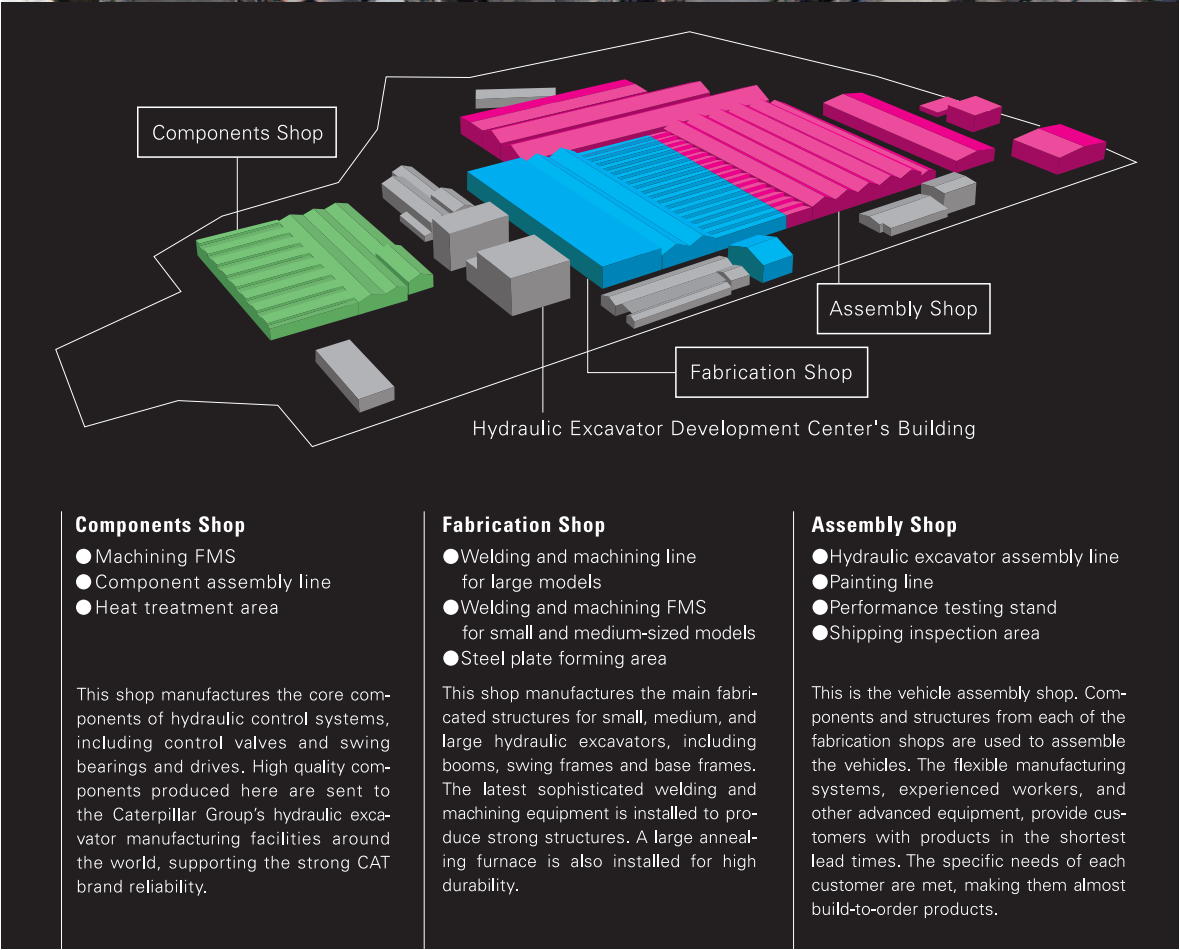
The remarkable Y35, the first hydraulic excavator in Japan.

Starting with Y35, a series of best selling models including Y55 (1967) which was at the vanguard of the growth in side of hydraulic excavator made up the Yseries which continued until Y90 (1969).

Plant

Sophisticated hydraulic excavators are created in the most-advanced production environments.

The Akashi Plant has an integrated manufacturing system installed for the production of hydrau excavators. The plant manufactures main components, such as control valves - core components hydraulic systems - as well as fabricated structures. To accomplish its task as a leading hydrau excavator plant representing the Caterpillar Group, providing sophisticated products backed-with a high level of reliability for our customers, we are undertaking "Plant Innovation". This aimed at the realization of high manufacturing efficiency, flexibility and product quality. In partic lar, this includes the creation of manufacturing systems for build-to-order production, optimiz distribution through JIT supply, the establishment of networked systems for product quality inf mation with dealers and suppliers, the introduction of advanced manufacturing and product qual control equipment such as computer-controlled machine tools, measuring equipment, welding bots and automated transportation systems. Moreover, we have developed to integrate t whole plant into a single system in order to meet the widely varying needs of hydraulic excavat customers and to increase added value.



*FMS:Flexible Manufacturing System

Products

Variety and diversity. Hallmarks of products made in Akashi.

The hydraulic excavator line-up. The range of main products from the Akashi Plant is rapidly diversifying in terms of size and specification in order to meet market needs and customers' requirements. We are currently manufacturing 138 standard models*, ranging in class from 11 to 90 tons. Based on the standard specifications, a variety of options can be freely selected by, for example, changing buckets to those for special applications - such as buckets for demolition, stone crushing and breaking, as well as mounting long arms (sticks) or wide crawlers, and selecting preferred seats or cabs. We have more than 400 types of product, including those with export specifications.

*As of December 31, 2015

Hydraulic Excavator

There are 138 standard model products, ranging from the 11 tons class best suited to use in urban areas, to large 90 tons class machinery for use on huge earth work sites.



Components

It is no overstatement to say that the performance of hydraulic excavator is determined by the quality of control valves used for hydraulic control and operation, and the components used for the swing drive and swing bearing. Automation has been widely adopted on the component manufacturing lines in our shops, with computers controlling the entire manufacturing process, from machining and assembly to painting. The introduction of automatic inspection and quality control features on each line has resulted in both high quality/greater added value and labor savings.



Control valve machining FMS has introduced high-speed/highly rigid horizontal machining center.



Honing Processing Line is capable of micron accuracy.



Assembly of control valves in high specification clean rooms.



Test stand for quality inspection of control valves assemblies.



We feed individually painted components not only into our machine assembly line but also to the overseas factories.



Induction hardening is carried out to increase the hardness of ring gear side faces.



Large, computer-controlled 5-face machining center makes effective use of 160 types of tool.



Swing frame FMS with 4 advanced welding robots units.



High-speed production of robust base frames using twin-tandem welding robots.



Accuracy of dimensions and external appearances are tested for each of structure.



The largest class of 3D measuring system in Japan for checking structures on a micron level.



Production of robust boom using the high-speed tandem arc welding robot.

Fabrication

Durability is critical for hydraulic excavators. Advanced welding techniques, testing and measuring need to be carried out several times, in addition to machining on a micron level, in order to create strong bodies and structure, and ensure product quality. In our fabrication shop, NC machine tools with automated measuring features, 4 lines of FMS with arc welding robots, an advanced large 5-face machining center, and a large structures line with the largest class of 3D measuring system in Japan have been installed. Integrated manufacturing of all types of fabricated structures, from small to large models, is carried out at this plant.

Assembly

Even if the model or specifications vary by machine, the manufacturing lead-time is the same as if it were for a single model. To meet the needs of customers who seek more diverse and multifunctional machines, the Akashi Plant installed systems optimized for the manufacturing of a wide variety of products in small quantities at an early stage. In the newly built 200-meter main assembly line, the handling of materials has been dramatically rationalized by organically linking the automated facility to a component supply unit. Product quality inspection is done for each process, ensuring products of the highest product made by workers who have the product knowledge and skills, and careful checking is carried out on the lines by examiners.



Changes of delivery interval can be made freely depending on the model on the new 200-meter main assembly line.



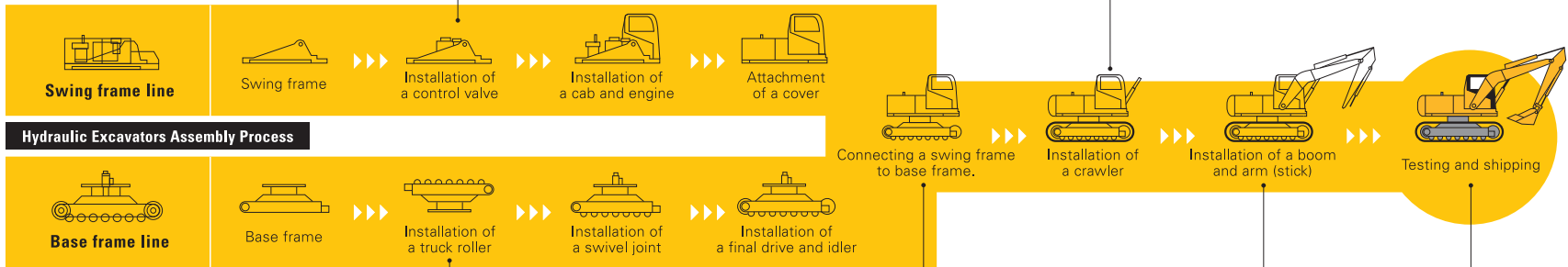
Monorail for delivering small parts to each station on an assembly line.



Crawler being installed on base machine.



In the performance testing station, each finished vehicle is checked on a computer-controlled test stand.



Efficiency in the installation of truck rollers is improved with automated systems in all processes, including delivery and bolt fastening.



Auto-loader for delivering finished swing frames for joining to a base frame.



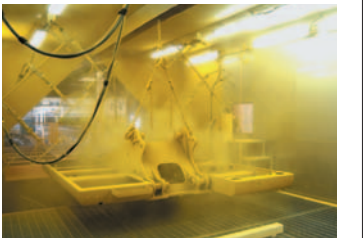
Booms or arms (sticks) are attached quickly and as specified in an order.



Specialized examiners in the shipping inspection area perform careful final checks of performance and product quality.

Paint

Our commitment to product quality covers painting. The painting of a swing frame is finished smoothly and an environment-friendly powder coating is used. Moreover, attention is paid to every detail; a consistent finish is maintained by individual component painting before assembly.

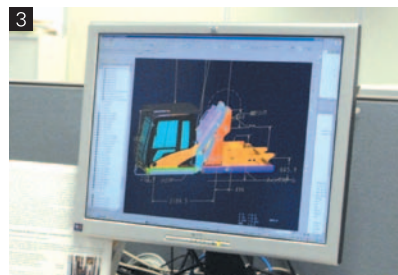


Powder coating is used for large fabricated structures, a world first.

Development

The Hydraulic Excavator Development Center – creating future hydraulic excavator.

Hydraulic excavators distributed worldwide by the Caterpillar Group are developed at the Hydraulic Excavator Development Center (HEDC). In this center, global market information and operation data are comprehensively analyzed by top specialists from Japan and the US, and development concepts are planned. Design specifications are worked out by repeated simulation analyses and inspections by component tests using design tools and a vast amount of accumulated know-how. Engineering drawings created using these processes are sent to each Caterpillar plant around the world, and the common design specifications used for manufacturing.



1 NTC building, where the HEDC is located.

2 Worldwide meeting with development staff from Japan and the US

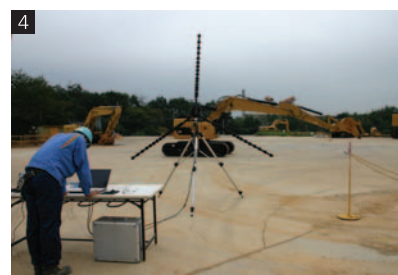
3 3D CAD is used for the realization of concepts and the quick design of high quality products.

4 First step in development examines complex components by visualizing 3D-CAD data of a real machine using a virtual reality system.

Test & Evaluation

Uncompromisingly severe proving ground.

“CAT”, it’s a token of confidence. Only products backed up by top quality and performance carry signifies the label. Prior to shipping to worldwide markets, next-generation CAT hydraulic excavators must undergo various severe tests. Our vehicle proving ground offers uncompromisingly severe test conditions and is the best test site in the world for evaluating product quality. Only products for passing various uncompromising durability tests involving prolonged continuous operations including digging, bump travel, uphill runs, and shaking, are approved as Caterpillar products for delivery to customers.



1 Continuous severe operational tests to assure product quality.

2 Endurance test with shake table assure greater reliability and safety for customers.

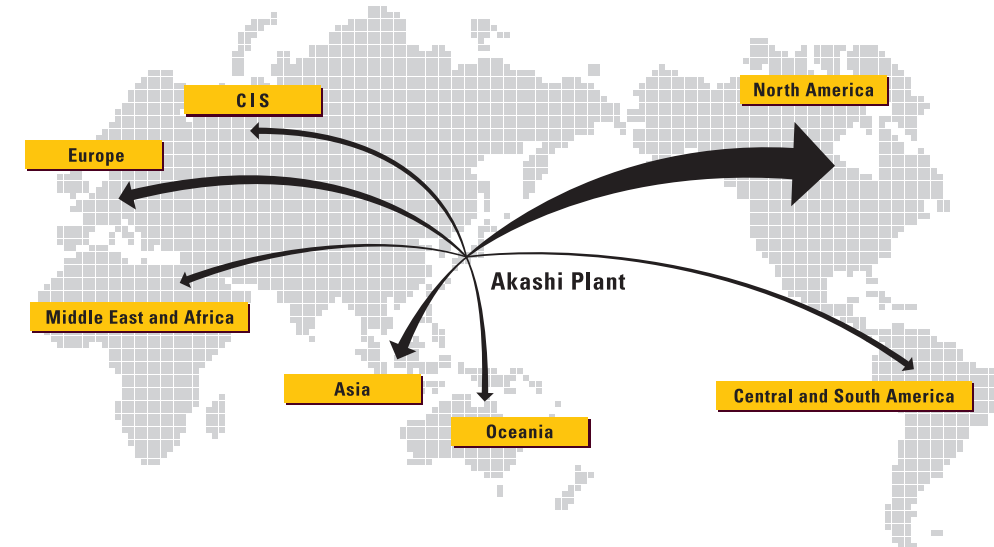
3 Heat source measuring by computer.

4 Sound field measuring data, used for sound suppression for next generation machines.

Global Supply

Akashi Plant quality and technology – the world is waiting.

70% of hydraulic excavators shipped from the Akashi plant are supplied to overseas markets. Areas supplied are growing, and now include countries in Asia, Oceania, Europe, the Middle East, Africa and Central and South America, as well as North America, home to Caterpillar. The volume of exports grows steadily each year. The Akashi Plant also acts as a base supplying main components to plants overseas. In particular, the plant supplies all the swing bearings needed by Caterpillar Group plants all over the world.



Technical support is provided, with a focus on Asia

Akashi Plant activities in Asia are not limited to the distribution of hydraulic excavators and components. We actively exchange personnel with the Caterpillar manufacturing plant in China, thereby supporting production, product management techniques, training of engineers etc.

Responsibility

We never overlook our responsibilities with regard to quality and the environment.

The more products we produce, the greater our responsibilities with regard to product quality and the environment. This is a commitment. The Akashi plant gained ISO9001 certification, the international standard of quality control, for the manufacture of hydraulic excavators, in 1996. We aim for constant improvement in the quest for excellent product quality, applying strict quality control systems from the raw material stage to the finished vehicle. We also obtained environmental conservation certification ISO14001 in 1999. We strive to reduce impacts on the environment from product manufacturing in the spirit of our environment-oriented policies. We also have a policy of green procurement and develop environment-conscious products.



1 Effluent treatment facility for cleaning up waste from plants.

2 Gas engine type compressor for recycling waste heat to a heater for component cleaning liquid.

3 Metal structure analysis using an advanced scanning microscope.

4 ISO9001 Certificate, the international standard of quality management.

5 ISO14001 Certificate, the international standard of environment management.