

Hot Rolling Mill Line for Ring Gears Completed New production line constructed to cope with expanded demand for next-generation vehicles and global expansion

Aichi Steel Corporation (Headquarters: Tokai, Japan, President: Takahiro Fujioka) held the completion ceremony, Wednesday March 13, for its new hot rolling mill*¹ line designed to strengthen production capacity, quality, delivery dates, and cost-competitiveness for differential ring gears.*² This is part of the company's drivetrain component strategy for the predicted expansion of global demand for next-generation vehicles (HVs, PHVs, EVs, FCVs) in particular.

This line will maintain Aichi Steel's high yield rates*³ and high productivity, the strengths of the company's forged product production, while employing a newly developed electrical servo-driven vertical-type rolling mill to cope with future global expansion.

By changing molds from the conventional horizontal types to vertical types, it is possible to reduce the number of components and make the equipment more compact, in addition to preventing oxidation scale from being included, achieving higher quality.

In addition, by achieving highly reproducible rolling control through the use of electrical servos, it is possible to achieve production that does not depend on the skills of the workers, and create a line that can be used globally.

Moreover, improvements to changeover work and unified line design from heating to heat treatment processing allow lead times to be shortened, and contribute to saving energy and reducing CO₂ emissions.

The automobile industry is currently facing a once-in-century transformation. As the number of components in engines is expected to reduce as we move toward next-generation vehicles, we expect even more demand for drivetrain components such as ring gears. In addition, with our customers expanding local production of automobiles, our globally-based supply system needs to be further enhanced.

In future, Aichi Steel will continue to construct new production lines to make our forging plant our "mother plant" in order to improve the global competitiveness of our drivetrain components, and contribute to the steady supply of reliable quality for our customers.

Outline of the Hot Rolling Mill Line for Differential Ring Gears

1. Construction: High-speed automated forging line from differential ring gear forging to heat treatment processing
2. Location: Aichi Steel Forging Plant (Shinpo-machi, Tokai-shi)
3. Equipment: High frequency heating furnace, transfer conveyor-type automated press, rolling mill, FIA,*⁴ furnaces, transport devices (industrial robots)
4. Products: Differential ring gear
5. Production capacity: Approx. 180,000 units/month
6. Investment: 1.8 billion yen

*¹ Rolling mill: One of the production methods Aichi Steel is notably skilled at, this method rolls components formed in torus shapes to expand their diameters.

*² Differential ring gear: One of Aichi Steel's core forged products, this is a ring gear used in differentials to absorb the speed difference between the inner and outer sides when a vehicle turns.

*³ Yield rate: The difference between the mass of material required to make a product and the mass of the product.

*⁴ FIA furnace: The abbreviation for "Forging Isothermal Annealing," which is heat treatment using energy retained from hot forging.

