

Series / Equipment Name	Features	Type/ Treated weight	Treatment	Temperature	Applications
A Series	This series consists of representative models of small-scale heat treatment furnaces used for non-oxidation quenching of small-lot parts. Models best suited for machinery structural steels (carbon steels, alloy steels) and tool steels (cold work die steels, hot work die steels, plastic mold steels) are available. Since heat treatment is performed in a non-oxidation atmosphere, oxidation and decarburization can be restricted.	Ferrous materials (Steels), General heat treatment	Quenching, Annealing, Bright heat treatment	High temperature (up to 1060°C) / High temperature (up to 1250°C) / Air Cooling/Oil Cooling	Machinery structural steels (carbon steels, alloy steels) / Tool steels (cold work die steels, hot work die steels, plastic mold steels)
> SAM Multi-Function Heat Treatment Furnace	Composite equipment that enables a single unit to perform the heat treatment of oil-quenched, nitrogen-gas-quenched and high-speed steel.	25 to 100 kg/gross		600 to 1250°C	Heat treatment of oil-quenched, nitrogen-gas-quenched and high-speed steel
> SA Non-Oxidation Quenching Furnace with Oil Bath	Quenching furnace dedicated to oil-quenched steel. Automated oil quenching ensures stable product quality.	25 to 150 kg/gross		600 to 1060°C	Quenching oil-quenched steel
> SAG Quenching and Tempering Furnace for Gas Cooling	A single unit can perform heat treatment from quenching to tempering.	500 to 1060°C		500 to 1060°C	Heat treatment of nitrogen-gas-quenched steel (SKD)
> AVC Pressurized Gas Cooling Vacuum Quenching Furnace	Heating in vacuum enables bright heat treatment. Pressurized cooling is performed in nitrogen gas. (N ₂ 280kPa)	30, 60 kg/gross		500 to 1250°C	Bright quenching and tempering of nitrogen-gas-quenched steel (SKD, SKH)
> LAM Vertical Type Atmosphere Cooling Furnace	Enables non-oxidation heat treatment at low costs. Simple structure and easy operation.	30 to 200kg/gross		600 to 1060°C	Non-oxidation heat treatment
R-L Series	Models in this series are widely used for tempering, annealing, age hardening, shrink fitting, baking, and various types of drying in a low temperature range.	Ferrous materials (Steels), General heat treatment	Tempering, Annealing	Low temperature (up to 300°C) / Low temperature (up to 450°C)	Tempering in a low temperature range / Age hardening / Baking / Drying / Curing of resins
> LT Precision Low-temperature Heat Treatment Furnace	<ul style="list-style-type: none"> The sheath heater provides long life and easy maintenance. Hot gas circulation furnace ensures excellent temperature distribution. 	炉内容積 0.2 to 1.8m ³		Up to 280°C	Low-temperature tempering, baking treatment after plating, curing of resins and drying
> LD Wagon-type Low-temperature Heat Treatment Furnace	<ul style="list-style-type: none"> Volume treatment is possible using a wagon. Provided with rails to allow a wagon to be easily moved in and out. Hot gas circulation furnace ensures excellent temperature distribution. 	炉内容積 1.5 to 8.0m ³		Up to 280°C	Low-temperature tempering, baking treatment after plating, curing of resins and drying
> RA Gas Atmosphere Low-temperature Heat Treatment Furnace	<ul style="list-style-type: none"> Enables non-oxidation, low-temperature heat treatment. Efficient design for quickly raising and lowering the temperature. Hot gas circulation furnace ensures excellent temperature distribution. 	15 to 60kg/gross		150 to 400°C	Annealing and age hardening of copper alloys, heat treatment of magnesium alloys, annealing for stress removal and non-oxidation heating
R-H Series	This series uses a surface hardening method, which improves wear resistance by hardening the work surface while retaining softness within the work to allow energy loaded on the surface to be absorbed internally. This method is used in carburizing and quenching, carbonitriding and gas soft nitriding.	Ferrous materials (Steels), General heat treatment	Tempering, Annealing	Low temperature (up to 550°C) / Low temperature (up to 650°C)	Tempering / Annealing / Age hardening / Shrink fitting / Baking / Drying in a low to medium temperature range
> RBM/RH Airflow Type, High-temperature Furnace	<ul style="list-style-type: none"> Enables tempering in low to high temperature ranges. Hot gas circulation furnace ensures excellent temperature distribution. Inside parts are stainless steel for toughness and long life. 	50 to 100kg/gross		100 to 550°C (RBM) 100 to 630°C (RH)	Tempering of steel (low to high temperature), shrink fitting, stress removal after welding and T4/T5/T6 treatment of aluminum
> TAF/TAF-H Fully Automated Cyclic Tempering Furnace ※	<ul style="list-style-type: none"> Temperature raising, holding and cooling sequence is automated. Easy automated operation using programs. Hot gas circulation furnace ensures excellent temperature distribution. 	50 to 100kg/gross		100 to 550°C (TAF) 100 to 630°C (TAF-H)	Tempering of steel (low to high temperatures), shrink fitting, stress removal after welding and T4/T5/T6 treatment of aluminum
> RON Simplified Atmosphere Annealing Furnace	<ul style="list-style-type: none"> Both equipment and operation costs are the lowest, enabling atmosphere heat treatment to be easily introduced. Small-lot products and urgently needed products that are difficult to outsource for heat treatment can be easily processed in-house. Heat treatment in an air atmosphere without using nitrogen gas is also possible. 	30kg		100 to 530°C	Atmosphere tempering, annealing of copper, age hardening of beryllium copper and tempering of spring materials
> RBC Hot Gas Circulation Conveyor Furnace	<ul style="list-style-type: none"> Large volume heat treatment is possible by simply putting works one after another on the conveyor. The heating chamber uses a 1 to 5 point zone control with a circulation fan installed in each zone for uniform temperature distribution. Heating time can be changed using a speed controller. 			100 to 450°C	Tempering after induction hardening, low-temperature tempering and annealing of steel, and glass firing
> RBH Precision Middle-temperature Heat Treatment Furnace	<ul style="list-style-type: none"> Energy-saving type using double steel plate and special heat insulation material to minimize thermal losses. High-performance fan achieves excellent heat distribution. 	Furnace volume 0.2 to 2.25m ³		100 to 560°C	Tempering and annealing (low to medium temperatures) of steel materials, baking treatment after plating and T5 treatment of aluminum

SH Series	This series includes heat treatment furnaces for non-ferrous metal materials including copper, aluminum, magnesium and titanium alloys. Hydrogen, nitrogen, argon and other gas atmospheres are used. The hot gas circulation method ensures excellent temperature distribution.	Ferrous materials (Steels), Surface heat treatment	Quenching	Carburizing (up to 650°C) / Nitriding (up to 1000°C)	Carburizing / Carbonitriding / Nitriding
> SAD Small Gas Carburizing Furnace	<ul style="list-style-type: none"> Highly airtight using a heat resistant steel muffle, which is suitable for repeated intermittent operation. Quick temperature raising and stabilization in atmosphere. Energy-saving, compact type suitable for small-lot production. 	60 to 100kg/ch		800 to 950°C	Quenching of oil-quenched steel, carburizing and quenching, carbonitriding and annealing
> ELPN Pot Type Gas Nitriding Furnace	<ul style="list-style-type: none"> Gas purge in the furnace. Works are moved in and out from above manually or with a hoist. An exhaust gas decomposition device is provided for detoxifying ammonia in the exhaust gas. (Option) 	50 to 300kg/ch		400 to 600°C	Hard nitriding and soft nitriding of dies and die parts
> RAVN Horizontal Vacuum Nitriding Furnace	<ul style="list-style-type: none"> Suitable for precision parts and complex shape parts since gas substitution in the furnace is performed after vacuum purging. Works are moved in and out from the side manually or using a forklift. An exhaust gas decomposition device is provided for detoxifying ammonia in the exhaust gas. (Optional) 	100 to 300 kg/ch		400 to 600°C	Hard nitriding and soft nitriding of dies and die parts
N Series	This series includes heat treatment furnaces for non-ferrous metal materials including copper, aluminum, magnesium and titanium alloys. Hydrogen, nitrogen, argon and other gas atmospheres are used. The hot gas circulation method ensures excellent temperature distribution.	Heat treatment of non-ferrous metals	Annealing, Solution heat treatment, age hardening	Low temperature (up to 550°C) / Low temperature (up to 800°C)	Bright heat treatment of copper and copper alloys / Heat treatment of aluminum
> BMR Bell Type Bright Annealing Furnace	<ul style="list-style-type: none"> 25% energy savings achieved by the regeneration burner and 100% hydrogen. Metal losses are eliminated since pickling is not required. Friendly to environment since waste disposal is not required. 	3 to 50t/ch		100 to 800°C	Bright annealing of copper alloys (bands, strips, wires, pipes, heavy objects), aluminum foil bands, copper bands and forgings
> RAV Horizontal Vacuum Purge Bright Annealing Furnace	<ul style="list-style-type: none"> Clean gas is fed to enable heating with minimum temperature distribution. The heating furnace, cooling system and vacuum device are integrated in a compact unit. 	50 to 500 kg/ch		100 to 650°C	Clean heating of precision parts and electronic parts that require high quality
> RA Gas Atmosphere Low-temperature Heat Treatment Furnace	<ul style="list-style-type: none"> Enables non-oxidation, low-temperature heat treatment. Efficient design for quickly raising and lowering the temperature. Hot gas circulation furnace ensures excellent temperature distribution. 	15 to 60kg/gross		150 to 400°C	Annealing and age hardening of copper alloys, heat treatment of magnesium alloys, annealing for stress removal and non-oxidation heating
> EMP Pot Type Atmosphere Heating Furnace	<ul style="list-style-type: none"> The high-power airflow fan enables a uniform temperature distribution and homogenous atmosphere in the furnace for highly efficient cooling. Low-, medium-, and high-temperature types are available for selection depending on the work material and heat treatment method. 	50 to 400kg/ch		200 to 930°C	Annealing of brass and phosphor bronze, annealing of low silicon steel plates, and solutionizing and artificial aging of magnesium alloys
> RBT Box Airflow Annealing Furnace	<ul style="list-style-type: none"> Circulation by the high-power fan and precision temperature control enable accurate temperature distribution. Energy-saving because high-performance lightweight ceramic-fiber is used for heat insulation. 	100 to 2000 kg/ch		100 to 650°C	Tempering of steel (after vacuum quenching, induction hardening, or carburizing and quenching), annealing of metals, and shrink fitting
C Series	Various types of continuous heat treatment furnaces for volume production of pressed and machined parts are available according to the material and shape of the target work Hundreds of Thermal's continuous furnaces have been installed at sites in Japan and overseas, and are used in a wide range of areas. Upon request, we can also test and prototype your product samples to propose the optimum conditions.	Ferrous materials (Steels), Continuous heat treatment	Bright annealing, Bright brazing	Low Temperature (up to 900°C) High Temperature (up to 11500°C)	Bright treatment of stainless steel / Brazing of ferrous materials and stainless steel
> BCE(A) Stainless Steel Bright Annealing Furnace	<ul style="list-style-type: none"> Treating stainless steel with reducing atmosphere reduces any oxides on the surface, enabling bright treatment. An atmosphere circulation system (quick cooling system) is optional. Unlike vacuum furnaces, evaporation and deposition of chromium will not occur, and heating and cooling times are short, providing superior mechanical properties and corrosion resistance. 			1100°C	Bright treatment of stainless steel (annealing and solution heat treatment of austenitic stainless steel, quench hardening of martensitic stainless steel, and annealing of ferritic stainless steel)
> BCE(B) Non-oxidation Brazing Furnace	<ul style="list-style-type: none"> Allows brazing without flux. Non-oxidation heat treatment eliminates the need for pickling in the postprocess. Allows simultaneous brazing at multiple points. Allows simultaneous brazing and quenching. Carburizing and quenching after brazing are also possible. 			500 to 1150°C	Brazing in non-oxidation furnace
> BCE(E) Baking Furnace for Electric Parts	<ul style="list-style-type: none"> Low-temperature type: 100 to 300°C Medium-temperature type: 450 to 600°C High-temperature type: 800 to 1,000°C 			100 to 1000°C	Baking electronic parts

Other Equipment	Other equipment including our long-selling heating furnaces, shaker hearth furnaces, sub-zero treatment equipment and alkali warm water washers.	Ferrous materials (Steels), General heat treatment, Ancillary equipment	Quenching, Heat treatment for fine parts, Sub-zero treatment, Washing		Quenching of ferrous materials (steel) / Quenching of fine parts / Sub-zero treatment / Washing
> TL Box Heating Furnace	<ul style="list-style-type: none"> Robust and easy-to-use box type with long life. Installed in 3,300 major factories in Japan. 			500 to 1100°C	Heat treatment (quenching, tempering, annealing) of metals such as dies and machine parts, and heat testing
> MAC Inclined Shaking Continuous Quenching Furnace	<ul style="list-style-type: none"> Works are advanced by intermittent vibration with the furnace body inclined, and dropped in an oil bath from the opening in the rear retort, enabling quenching with minimum distortion. Nitrogen-based non-oxidation atmosphere is created to prevent oxidation and decarburization of works. Quenching oil is maintained at a constant temperature (80 to 200°C) while it is agitated. 			800 to 880°C	Quenching and marquenching of oil-quenched steel (heat treated steel)
> CT Ultra-low-temperature Sub-zero Equipment	<ul style="list-style-type: none"> Enables setting the temperature from ambient temperature to -180°C. Enables quick cooling compared with electrical cooling systems. 			RT to -180°C	Sub-zero treatment, expansion fitting and low-temperature tests
> CNW Alkali Warm Water Washer	<ul style="list-style-type: none"> Thorough cleaning of works by spray washing in all directions (up/down, right/left). Circulation system that uses washing liquid repeatedly. Provided with an oil skimmer (waste oil removing device), which makes the washer suitable for washing parts after quenching. 	100kg, 250kg		Up to 80°C	<ul style="list-style-type: none"> Degreasing before and after heat treatment Degreasing after pressing process Degreasing and rust prevention after machining and before assembling