

We offer a diverse range of heat-treated products using various equipment and appropriate treatment methods to ensure quality.

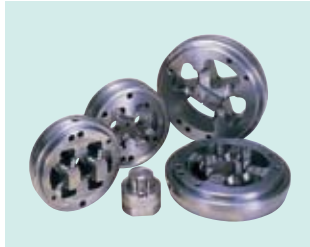
## Features

- 1** The best possible heat treatment process can be used according to the required properties of the product.
- 2** Excellent mechanical properties are obtained.
- 3** Stable quality is achieved.
- 4** Shape and dimension accuracy of precision machined components are maintained.

## Target Components

- Cold work dies: press dies, forging dies, drawing dies, powder molding dies, plastic molds
- Hot and warm work die: press dies, forging dies, extrusion dies, die casting molds
- Cutting tools: end mills, hobs, milling cutters
- Rolls: forming rolls, cold work rolls, Sendzimir rolls, engraving rolls
- Blades: shear blades, slitters, bar shears
- Molding tools: rolling dies, forming mandrels
- Machine components: shafts, specialty gears and cams, stainless steel components, small components and electrode materials, titanium and other non-ferrous components

### Hot extrusion dies, forging dies



### Engraving rolls, long rolls



### Irregularly-shaped components



### Die casting molds



We use a wide range of equipment and extensive proprietary know-how to perform optimal heat treatment that maximizes the properties of materials.



#### ■ Vacuum Heat Treatment

Stable surface quality, flat finish

Production plants: all heat treatment centers

Equipment:

- Vertical switching gas cooling vacuum furnace
- Jet gas cooling vacuum furnace
- Oil and gas cooling vacuum furnace

(Gas cooling can be set up to a maximum of 7 bars)



#### ■ Atmosphere Heat Treatment

The atmosphere can be controlled according to the material



#### ■ Salt Bath Heat Treatment

Improve toughness and minimize distortion using short-term constant-temperature quenching

Production plant: Osaka Heat Treatment Center



#### ■ Bright heat treatment

Atmosphere controlled with high precision for surface quality stability

Production plant: Sagami Heat Treatment Center

### ■ Equipment at Each Center

Category		Osaka Heat Treatment Center	Nagoya Heat Treatment Center	Shizuoka Surface Treatment Center	Sagami Heat Treatment Center	Ota Heat Treatment Center	Maximum effective dimensions	
Heat treatment	Vacuum furnace	○	○	○	○	○	・800×1200×800	
	Atmosphere furnace	○	○		○	○	・φ1500×1600	
	Salt furnace	○					・φ280×550	
Surface treatment	Bright furnace				○		・600×900×540	
	Deposition technique	CVD			○			・φ500×750
		PVD			○			・φ550×600
		Compound PVD			○			・φ550×600
	Diffusion technique	PS	○	○	○	○	○	・1100×1000×1850
		PW	○				○	・800×1100×1000
		PSG					○	・φ1000×1500
		PWG					○	・φ1000×1500
		Ion nitriding	○					・φ650×1100
Radical nitriding				○			・φ600×600	