

**Commenced Mass Provision of Contracted Heat Treatment Process  
with the Next-Generation Carburizing and Quenching Furnace Z-TKM  
and Receipt of an Equipment Order**

DOWA THERMOTECH CO., LTD. (14-1, Sotokanda 4-chome, Chiyoda-ku, Tokyo; 1 billion yen; President: YAMADA Kiyoshi), a subsidiary of DOWA HOLDINGS CO., LTD. (14-1, Sotokanda 4-chome, Chiyoda-ku, Tokyo; 36.4 billion yen; President: SEKIGUCHI Akira), previously installed testing equipment for the newly developed next-generation carburizing and quenching furnace Z-TKM at the Hamamatsu Plant of DOWA THERMOENGINEERING CO., LTD. (14-1, Sotokanda 4-chome, Chiyoda-ku, Tokyo; 100 million yen; President: NUNOKAWA Susumu), a wholly owned subsidiary of DOWA THERMOTECH CO., LTD. (hereinafter, "Hamamatsu Plant"), with demonstration evaluations beginning in April 2023. As a result, mass provision of a contracted heat treatment process using the Z-TKM commenced in November 2023, while an order for Z-TKM was also received from a major automotive parts manufacturer.

Heat treatment is essential to enable gears, shafts and other parts indispensable for automobiles, construction machinery, agricultural machinery, industrial robots, aircraft, etc. to have reliability, abrasion resistance, and other properties. Meanwhile, heat treatment is associated with a lot of energy consumption and also involves carbon itself in the gases used in the main process, carburizing treatment. Therefore, efforts to conserve energy and reduce CO<sub>2</sub> emissions in this process are a necessary for the realization of a low carbon society and the achievement of carbon neutrality.

The Z-TKM is a heat treatment furnace that can shorten lead times while maintaining heat treatment quality, contributing to improved productivity and minimizing gas and CO<sub>2</sub> emissions from the heat treatment process. Moreover, by combining green energy, ammonia burners, and hydrogen burners, operation that emits almost no CO<sub>2</sub> in-process could be achieved.

The Z-TKM will continue to provide our customers with services through both contracted heat treatment processing and equipment sales.

With contracted heat treatment processing, DOWA continues to work with many customers on prototyping and certification procedures. Moreover, in anticipation of a future increase in orders, DOWA has additionally installed a Z-TKM at the Hamamatsu Plant. Going forward, DOWA will gradually install the Z-TKM at other heat treatment plants in Japan and overseas, thereby expanding contracted heat treatment processing using Z-TKM globally and reducing CO<sub>2</sub> emissions in its customers' supply chains.

As for equipment sales, DOWA intends to keep increasing orders as the Z-TKM will be a powerful tool to help customers achieve carbon neutrality. For customers who have installed existing heat treatment equipment (TKM series), the size of the equipment itself is the same, so that can be replaced without the need for construction of oil tank pits. Moreover, new installations can be made at pitless locations, so DOWA is able to accommodate to the needs of its customers.

DOWA THERMOTECH CO., LTD. will continue to provide customers around the world with the value of one-stop solutions while accumulating technology and operational know-how by leveraging strengths in development, manufacturing, and maintenance of heat treatment equipment (hardware) and contracted heat treatment process (software).



The Z-TKM installed at the Hamamatsu Plant

【References】 Product overview of 「Z-TKM」

## The Next-Generation Carburizing and Quenching Furnace

Z-TKM series

### BENEFITS

**Significantly reduced CO2 emissions**

CO2 emissions output level comparison (our products)	
Conventional Furnaces	<div style="width: 100%; height: 20px; background-color: #ccc; position: relative;"> <div style="width: 10%; height: 100%; background-color: #0070C0; position: absolute; left: 0;"></div> </div>
Z-TKM	<div style="width: 100%; height: 20px; background-color: #ccc; position: relative;"> <div style="width: 30%; height: 100%; background-color: #0070C0; position: absolute; left: 0;"></div> </div>

97% reduction in in-plant emissions

60% reduction in total emissions

Can be reduced by more than 90% by using green energy

**Processing time comparison for the Z-TKM gas carburizing and quenching furnace**

Shortening lead time

### FEATURES

- Achieves the same quality and running cost as an atmosphere carburizing furnace
- Significantly shortened lead time and increased space productivity
- Intrinsically safe with no flames
- Fully interchangeable with the TKM series, so it can be installed in existing lines
- Ammonia/hydrogen burners and green energy can also be used as heating source

### SPECS

Basket size		Gross weight	Conveyance method	Maximum operating Temp.	Quenching	Utility
Width	760mm	720 kg / max	Batch type, Straight through	1,000°C	Atmospheric pressure oil quenching	Electricity, compressed air, cooling water, nitrogen gas, carburized gas
Length	1,230mm					
Height	720mm					

### STRUCTURE

**[Overview of DOWA THERMOTECH CO., LTD.]**

- Nagoya Head office: 19-1, Ukishima-cho, Mizuho-ku, Nagoya, Aichi
- Representative: YAMADA Kiyoshi
- Founded: May 2006
- Capital: 1 billion yen
- Shareholder: DOWA HOLDINGS CO., LTD. 100.0%
- Business outline: Design, manufacture, sale and maintenance of heat treatment equipment, heat treatment processing, surface treatment processing, and surface modification processing

**[Overview of DOWA THERMOENGINEERING CO., LTD.]**

- Nagoya Head office: 19-1, Ukishima-cho, Mizuho-ku, Nagoya, Aichi
- Hamamatsu Plant: 2-27-1, Aoinishi, Chuo-ku, Hamamatsu-shi, Shizuoka
- Representative: NUNOKAWA Susumu
- Founded: May 2006
- Capital: 100 million yen
- Shareholder: DOWA THERMOTECH CO., LTD. 100.0%
- Business outline: Design, manufacture, sale and maintenance of heat treatment equipment, heat treatment processing, surface treatment processing, and surface modification processing

**[Past press releases related to this release]**

"DOWA THERMOTECH CO., LTD. Develops the Z-TKM, a Carburizing and Quenching Furnace That Contributes to a Low Carbon Society" May 30, 2022

<https://ir.dowa.co.jp/en/ir/news/news20220530.html>

Contacts for inquiries

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[Inquiries about products and services]

DOWA THERMOTECH CO., LTD.

<https://www.dowa.co.jp/thermo-tech/en/contact/>