

## Environmentally conscious technology

Providing unique technology based on expertise in energy saving and automobile paint finishing

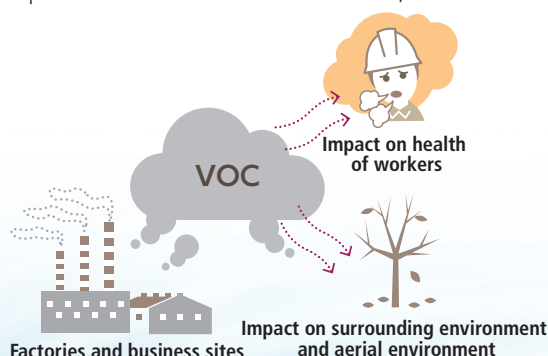
## Contributing to Environmental Development with Exhaust Air Processing Technologies (RTO)

In the automobile paint finishing process, paint booths release volatile organic compounds (VOCs), which cause one of the air pollution problems, namely, photochemical smog. Taking advantage of its experience in constructing automobile paint finishing facilities, Taikisha has been working on the development of exhaust-gas treatment devices that render VOCs harmless.

With its know-how and proprietary technologies that have been nurtured over many years, Taikisha will contribute to building an environment with clear air while making proposals and taking action to meet customers' needs.

### VOCs' impact on people's health and the natural environment is a concern

VOCs are widely used as solvents in automobile painting, as well as in printing and other manufacturing processes. However, there are concerns over the impact of VOCs on the surrounding environment in terms of air pollution, odors, etc., in addition to their impact on the health of construction workers, etc.



### Characteristics of Taikisha's RTO \*

\* Regenerative Thermal Oxidizer

Disintegrates  
most VOCs

High thermal  
recovery rate  
(95% or higher):  
Energy saving

Proposals  
combined with  
other products



### History: Taikisha's response to the environment

Decade	Background and issues during the decade	Taikisha's response
1970s	First case of harm caused by photochemical smog reported in Japan, leading to a surge in demand for exhaust-gas treatment devices that render VOCs harmless.	Taikisha developed a VOC abatement system following the construction of a drying oven for paint finishing process.
1980s	The system developed in the 1970s required enormous amounts of fuel due to its inability to effectively use thermal energy, and failed to treat some types of VOCs.	Taikisha focused its attention on "RTO," which had become widespread in the U.S. and Europe with strict VOC emission regulations. Foreseeing that RTO would become the mainstay of VOC abatement systems in the 1980s, Taikisha commenced the development of RTO.
1990s	In the U.S. and Europe, enactment of laws and regulations led to a downtrend in VOC emissions. In Japan, emissions remained flat despite measures taken by some local governments through municipal ordinances, due to the lack of legal measures to curb emissions.	In 1994, Taikisha established a specialized unit and entered into a sales agreement with MEGTEC in the U.S., which was ahead in the practical application of RTOs. In 1998, Taikisha delivered the first unit to a factory in Japan. Based on its collaboration with MEGTEC, Taikisha gained substantial knowledge and technology related to RTO and, in 1999, delivered an RTO (developed in-house) for drying ovens for automobile paint finishing lines.
2000s	In May 2004, the revised Air Pollution Control Act (VOC regulation) was promulgated. The Act presented guidelines aimed at curbing emissions by combining laws and regulations with business operators' voluntary initiatives in an appropriate manner.	Taikisha made unique proposals combining RTO with its products to meet the needs of its main clients, such as manufacturers in the fields of semiconductors, liquid crystal, film and printing, in addition to automakers. RTO was adopted in an increasing number of projects.
2010s	In 2014, China began toughening VOC regulations as serious air pollution had become a problem. Stricter emission standards were imposed than any other country in Asia, and legal and tax reforms and tougher penalties were promoted with the aim of tightening environmental regulations, while corporate investment in the environment accelerated.	In relation to RTO, Taikisha proactively engaged in activities, including the development of a local production framework in China. While capital investments had tended to be cost-oriented in the early days of tougher regulations, there has since been a gradual increase in inquiries to Taikisha for its high quality and solid track record.

## Example of system adoption

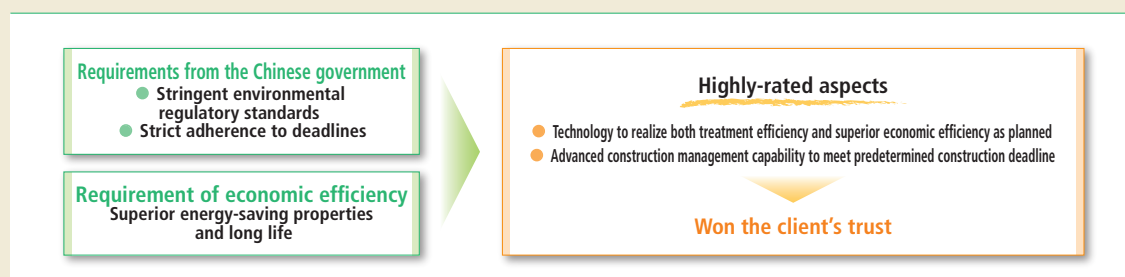
### Hefei Plant of Hitachi Construction Machinery Co., Ltd.

Since Taikisha received an order to construct the mother plant of Hitachi Construction Machinery Co., Ltd. (HCM), the two companies have been jointly conducting studies on new technologies with the aim of automating paint finishing and improving quality. At HCM's site in China, namely, its hydraulic shovel production plant in the city of Hefei, Anhui Province, Taikisha undertook work to comply with China's environmental regulations by delivering exhaust-gas treatment systems (RTOs) to its existing paint finishing facilities.

In conjunction with the tightening of environmental regulatory standards by the Chinese government, the latest project required Taikisha to meet the prescribed deadline, before the revised standards came into effect. While exhaust-gas treatment facilities do not have a direct impact on the products manufactured at the client's factory, client satisfaction was pursued in terms of energy-saving and durability of the facilities. In order to fulfill these requirements, Taikisha—a company that has strengths and expertise in both paint finishing and exhaust-gas treatment—brought together its Green Technology System Division and Paint Finishing System Division to establish a joint project team in which members would collaborate closely with each other by cutting across business offices.

Upon the commencement of the project, the joint project team first conducted an on-site survey in advance and identified issues in the existing paint booths. The team then proposed the optimal system based on the measurement results of exhaust airflow, exhaust constituents and concentration and dust volume. In addition, with the cooperation of a client to whom Taikisha's HVAC division in Shanghai had delivered RTO, the team created an opportunity for HCM personnel to visit and inspect existing facilities in operation.

Through the process described above, HCM gained a full understanding that Taikisha has the technology to realize treatment efficiency, energy-saving and durability as planned and advanced construction management capability to meet predetermined construction deadline, and as a result, HCM selected Taikisha from among multiple contractor candidates to undertake the project.



RTO for new B line



RTO for ATT line

## Customer Feedback



**Kenzo Endo**  
General Manager of Production  
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Hitachi Construction Machinery (China) Co., Ltd.

This project, in which China's standards had to be met fully in terms of environmental requirements, needed to be completed within the predetermined period. To prepare for tougher environmental requirements in the future, it also required the introduction of a paint finishing line for large structures capable of aqueous coating, as well as an exhaust-gas treatment facility.

For this reason, Taikisha was chosen for its track record in introducing exhaust-gas treatment facilities and its comprehensive range of painting facilities. Thanks to Taikisha, we were able to look into both facilities in a reasonable manner, and select the specifications smoothly.

Having met the tight deadline, the facilities currently in operation meet all the specification requirements and are capable of operating even at times when a first-grade alert, the strictest alert under the environment regulations of the Chinese government, is issued.

Going forward, we hope Taikisha will maintain its advanced technological capabilities and continue to be not only a company that can meet requirements and win trust in each country but also a good partner to the HCM Group, as environmental regulations are becoming increasingly stringent worldwide.