

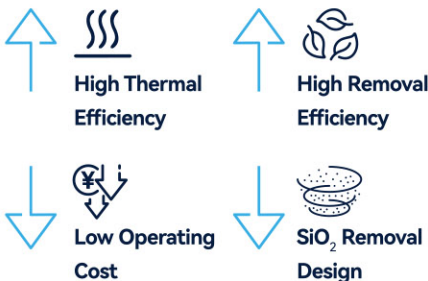
VOCs RTO+TO

Zeolite Wheel + TO/RTO System

Working Principles

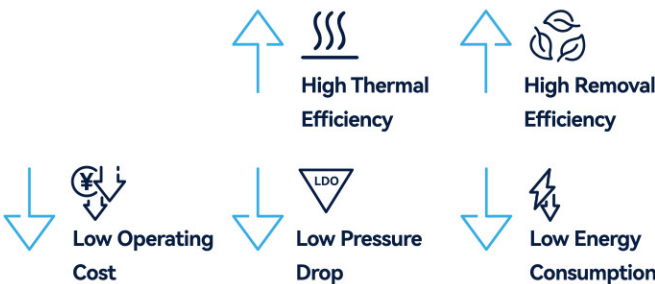
Exhaust gas is first filtered to remove part of impurities, then goes through the wheel adsorption zone for treatment. The treated exhaust gas is emitted through the chimney. Using air as the cooling gas, it passes through the wheel cooling zone, then be heated by the heat exchanger and enters the wheel desorption zone to desorb the adsorbed VOCs gas. High concentration and small flow VOCs gases are detached from the wheel and sent to the heat exchanger for heating, then entering the combustion furnace. The high temperature decomposes the VOCs into CO₂ and H₂O, the heat of purified gas is recovered by heat exchanger and finally emitted through the chimney.

Performance Features



TO Equipment Features

- High processing efficiency:** The inlet is designed with a honeycomb structure, which makes the combustion of exhaust gas more thorough.
- Prevent SiO₂ blockage measure:** vertical structure of equipment, drawer-type ash hopper
- High heat recovery efficiency:** plate type heat exchanger
- Comprehensive security guarantee:** equipped with flame detectors, explosion-proof pressure relief ports, flame arresters, etc.
- Simplified PLC interface operation,** the system is smooth and stable
- Long service life,** convenient maintenance
- Space saving:** aerospace-grade thermal insulation materials can be used to improve thermal insulating property and reduce thickness



RTO Equipment Features

- Reduce maintenance frequency:** special thermal storage material and structural design (heat resistance, thermal shock resistance, abrasion resistance)
- Space saving:** aerospace-grade thermal insulation materials can be used to improve thermal insulating property and reduce thickness
- High safety design:** high temperature protection, bypass exhaust, concentration detection, explosive pressure escaping device, vacuum valve, etc.
- Compact equipment structure with reduced volume:** side-mounted and vertical lifting poppet valve
- Modular delivery,** quick on-site installation

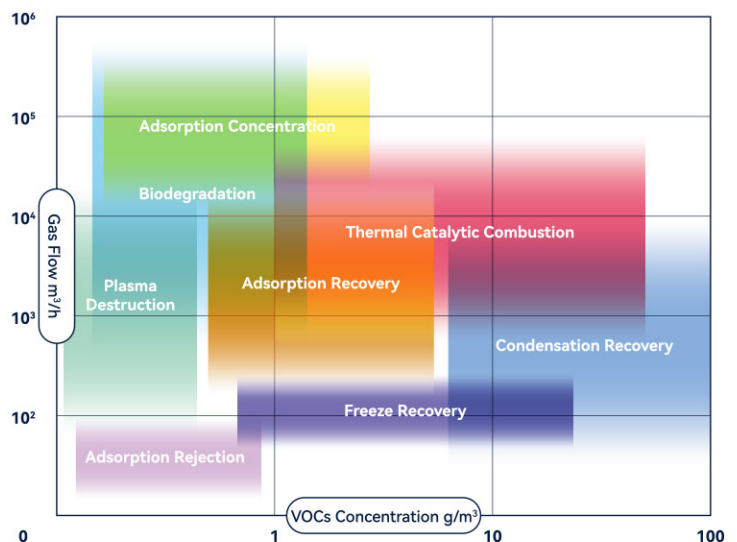
VOCs

Volatile Organic Compounds

Concept

Volatile Organic Compounds, saturated vapor pressure greater than or equal to 0.01 kPa at 20°C, or under specific applicable conditions with the corresponding volatility of all organic compounds collectively. Most VOCs have atmospheric chemical reactivity, as key precursors for the formation of ozone and PM2.5. VOCs are also an important source of haze and photo-chemical smog pollution.

Governance Method



Applications

1. Semiconductor Integrated Circuit
2. Liquid Crystal Display (LCD)
3. Chemical Industry
4. Lithium Electronics (electrode formation process, electrolyte filling process)
5. Spray Workshop (automobile manufacturing, shipbuilding, aircraft manufacturing, steel products, resin products, etc.)
6. Printing Workshop (intaglio printing, building decoration material printing, other printing)
7. Drycleaning laminated paper products, coating processing, etc.

RTO

Regenerative Thermal Oxidizer

Over Temperature Protection

When the furnace temperature exceeds the set temperature, the heat bypass and dilution damper are activated to reduce the intake concentration and lower the inside furnace temperature. If the inside furnace temperature continues to rise and reaches the first level alarm, the combustion system will automatically shut down and the exhaust gas will be emitted through the bypass. LEL monitoring and protection can be implemented according to project requirements.

Composition of Intake Gas

Alcohol/Alkane/Olefin/Ketone/Benzene/Organohalogen Compounds, etc.

Special Thermal Storage Material Features^①

The thermal conductivity can reach above $24.5\text{W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$, which is significantly higher than that of ordinary thermal storage ceramics;
The latent heat before thermal cycling is $203.2\text{J}\cdot\text{g}^{-1}$, and after 3000 thermal cycles, it retains 93.4% without alloy leakage;
High thermal storage density, good thermal shock stability, excellent thermal conductivity, and thermal performance far superior to similar thermal storage ceramics.

Valve Box Design^②

【Structure】

Side-mounted poppet valve, the valve stem vertically lifted and the valve seat is integrally cast;

The poppet valve and the poppet valve box are integrated structure, modular delivery.

【Sealing】

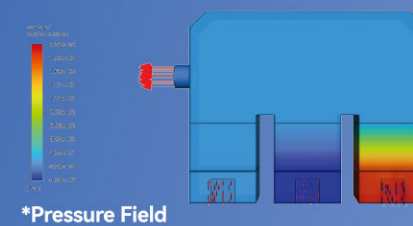
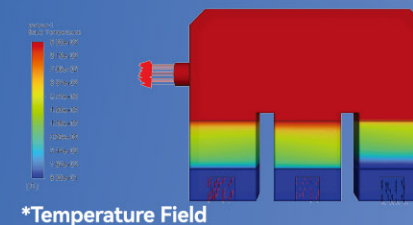
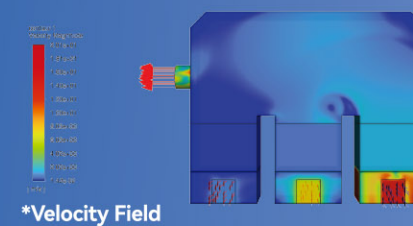
Double sealing type of lift valve (soft seal and gas seal).

Heat Exchanger Design^③

Adopting oblique intake, prevent dust accumulation;

The front-end is equipped with detachable sacrificial sections (segmented heat exchange tubes) to reduce maintenance time.

CFD Fluid Simulation Diagram



Technical Specification

Applicable Exhaust Gases

Alcohol, Alkane, Olefin, Ketone, Ether, Benzene, etc.

Destruction Removal Efficiency

> 99% (DRE)

Concentration Range

0-25%LEL

Air Volume Range

2,000-150,000CMH

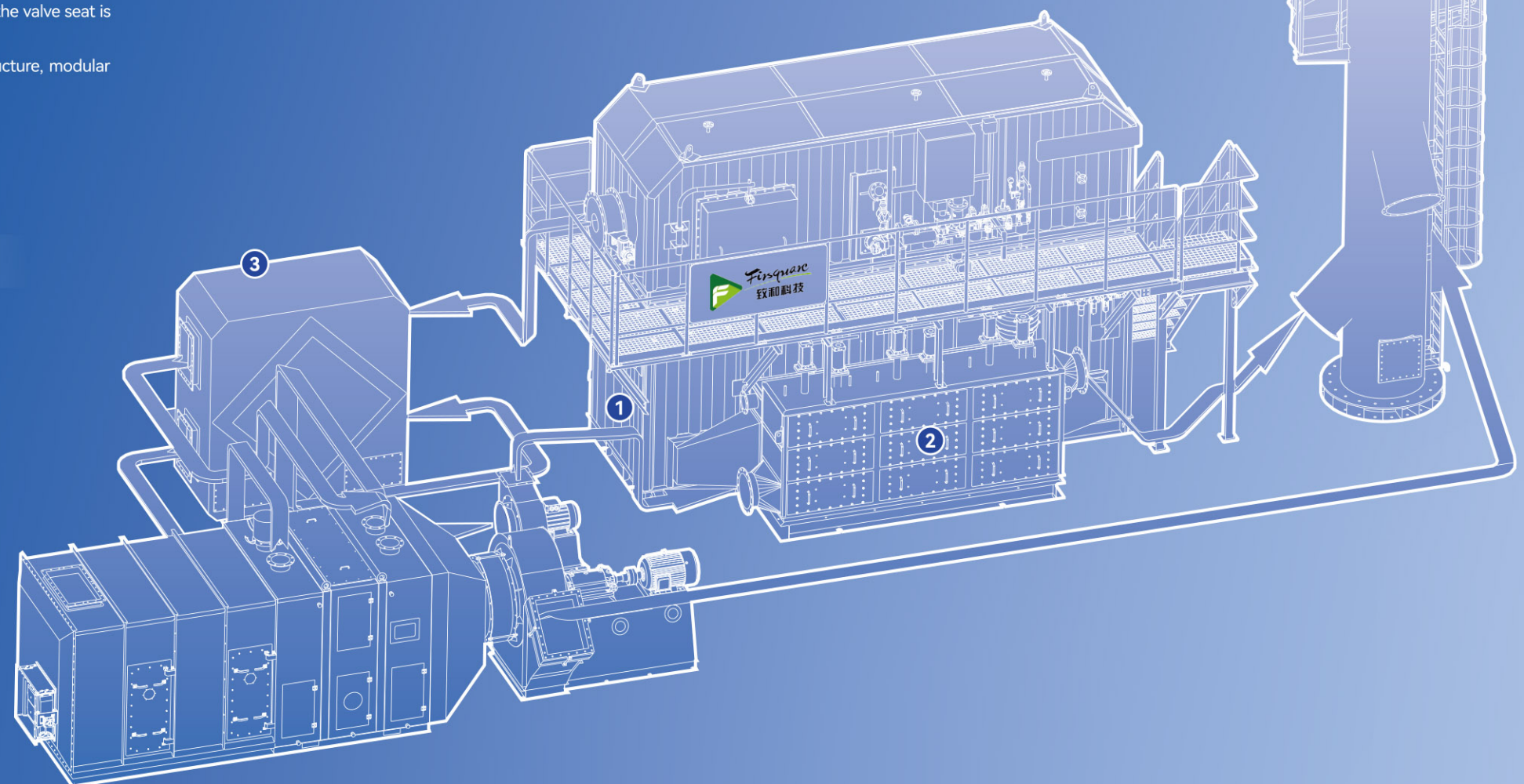
Equipment Model - Treatment Air Volume

ZH-RTO-006 - 6000CMH

ZH-RTO-008 - 8000CMH

ZH-RTO-010 - 10000CMH

ZH-RTO-012 - 12000CMH



TO

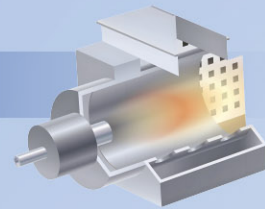
Thermal Oxidizer

Chamber Space Increase^①

The chamber space increases, the exhaust gas gets a longer residence time and makes the combustion more thorough.

Porous Structure^②

The air inlet adopts a porous structure to ensure fully exhaust gas combustion.



Composition of Intake Gas

Alcohol/Alkane/Olefin/Ketone/Benzene/Organohalogen Compounds, etc.

Heat Exchange Tube Features^③

Elliptical structure increases heat transfer area and improves heat transfer efficiency;
Special metal materials to prevent the adhesion of SiO_2 on surfaces;
Absorb thermal expansion deformation and extending service life.



Chamber Insulation Material^④

Aerospace-grade thermal insulation materials can be used to improve thermal insulating property and reduce thickness.

Selectable Configurations



**Plate Type
Heat Exchanger**

High heat recovery efficiency



**Vertical Structure
+
Drawer-type Ash Hopper**
Prevent SiO_2 blockage measures

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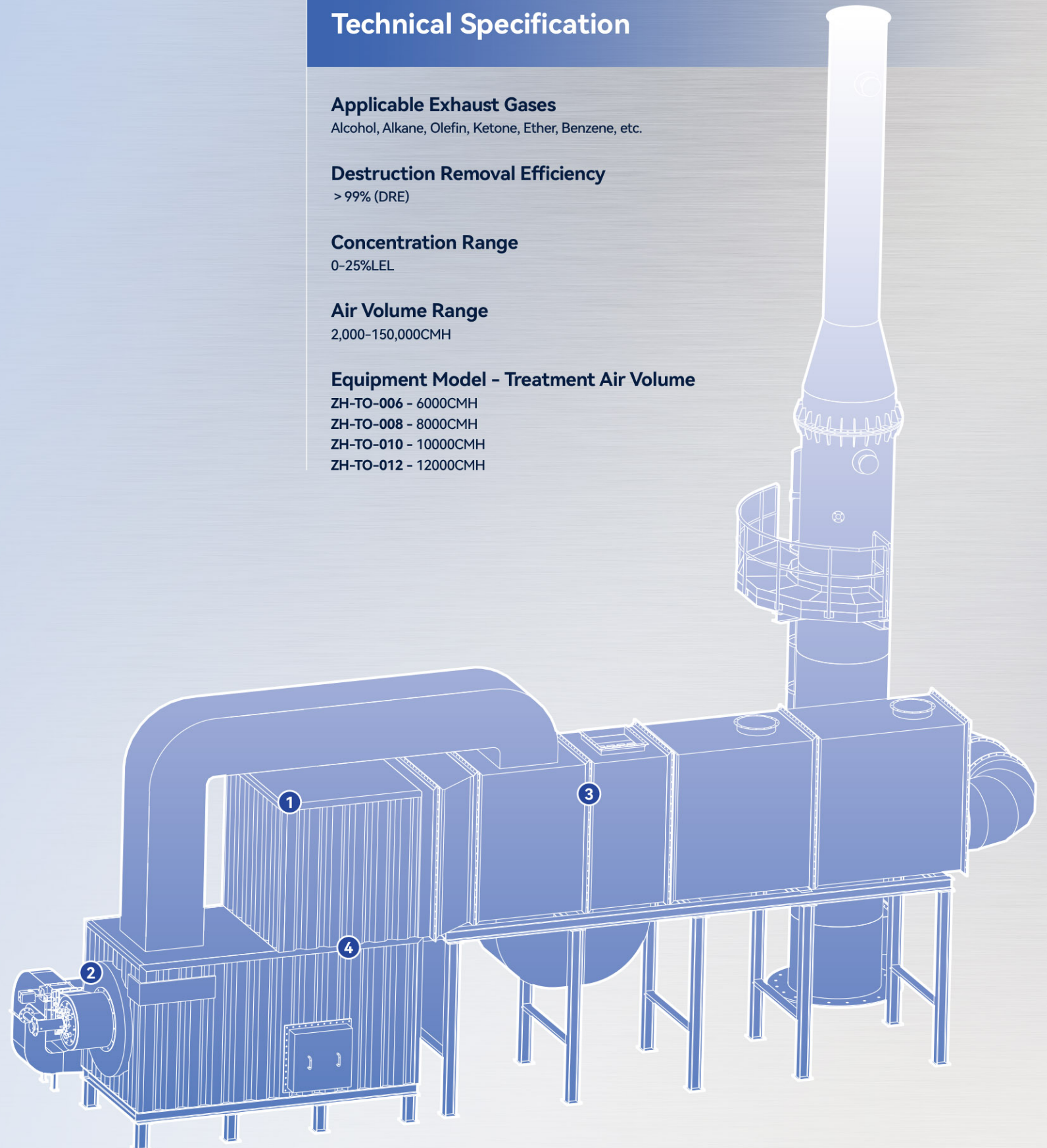
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