MUSI Technology

Spray Coating Specialist

TECHNICAL SPECIFICATIONS

RTO Regenerative Thermal Oxidizer

Technical Data Sheet

MUSI Technology - Spray Coating Specialist
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Manufacturer	Changzhou MUSI Environmental Technology Co., Ltd.
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Product Description

RTO (Regenerative Thermal Oxidizer) is a high-efficiency thermal destruction system for Volatile Organic Compounds (VOCs) and odorous hydrocarbons. MUSI offers 2-chamber, 3-chamber, and 5-chamber configurations with ceramic honeycomb regenerative heat exchangers achieving 95-98% thermal energy recovery.

Operating Principle

Contaminated air enters one of multiple ceramic-packed chambers and is preheated as it passes through hot ceramic media. The preheated air then enters the combustion chamber where any remaining VOCs are oxidized at 760-820 deg C. The cleaned hot gas exits through another ceramic-packed chamber, transferring heat to the cold media. Valves switch periodically (60-180 seconds) to alternate chamber function.

Technical Specifications

All values are typical for standard configuration. Custom specifications available on request.

Parameter	Value / Range
Air volume	10,000 - 100,000 m^3/h
VOC concentration range	100 - 4,000 mg/m^3
Destruction efficiency	>=99% (VOC, BTEX, HAP)
Heat recovery	>=95% (3-chamber), >=97% (5-chamber)
Combustion temperature	760 - 820 deg C
Residence time	0.75 - 1.0 second at combustion temp
Chamber configuration	2 / 3 / 5-chamber
Valve switching time	60 - 180 seconds
Operating pressure	-2 to +3 kPa
Fuel	Natural gas / LPG / diesel
Fuel consumption (loaded)	Auto-thermal at >=2,000 mg/m^3 inlet VOC
Auxiliary fuel (low VOC)	5-20 Nm^3/h natural gas typical
Ceramic media	Honeycomb 200x200x150 mm
Media service life	5-10 years
Burner type	Low-NOx natural-draft or forced-draft

Dimensions and Layout Requirements

Dimension	Value
Footprint	6-15 m wide x 4-10 m deep
Total height	5-10 m
Chamber dimensions	2x2 to 5x5 m base each
Foundation	Reinforced concrete pad, min 30 cm thick
Stack height	15-30 m typical (per local regulation)
Building clearance	2 m perimeter, no enclosure required (outdoor)

Options and Accessories

Bypass Damper

Emergency bypass to atmosphere during system fault.

Pre-Filter

Bag filter for high-dust streams ahead of RTO.

Secondary Heat Recovery

Air-to-water or air-to-thermal-oil for facility heat.

CEMS Integration

Continuous emission monitoring with FID, NDIR, O2.

Low-NOx Burner

Sub-30 mg/Nm^3 NOx emission burner.

Catalyst Conversion

Convert to RCO at lower temperature (250-350 deg C).

Control System

PLC

Siemens S7-1500 with safety functions

HMI

15 inch touchscreen with trend graphs

Temperature monitoring

Combustion + ceramic media + stack temperatures

Valve control

Pneumatic actuators with position feedback

Safety system

SIL 2 burner management, gas valve interlocks

Remote monitoring

OPC UA / Modbus to plant DCS, optional 4G modem

Installation Requirements

Foundation

Reinforced concrete pad, 30 cm thick

Power

3-phase 380/415V at 50-150 kVA

Natural Gas

0.05 MPa, 50-500 Nm^3/h

Instrument Air

0.6 MPa, 1-3 m^3/h for valve actuators

Cooling Water

Optional for heat exchanger, 5-20 m^3/h

Installation Time

4-8 weeks including hot commissioning

Permit

Air emission permit per local EPA before commissioning

Service and Maintenance

Daily

Visual check, temperature readings, fuel consumption logging

Weekly

Valve cycle check, burner flame visual

Monthly

Pressure-drop measurement, combustion analysis

Quarterly

Burner tuning, ceramic media pressure-drop test

Annual

Combustion chamber internal inspection (every 8,000-12,000 hours)

5-7 years

Ceramic media replacement (partial or full)

Warranty

12 months MUSI standard

Typical Applications

- Spray coating exhaust (automotive, appliance, furniture)
- Printing facility solvent vapor
- Chemical reactor vent and process off-gas
- Pharmaceutical solvent treatment
- Plastic compounding off-gas
- Petrochemical storage tank vapor recovery

Standards and Compliance

Standard	Compliance
ISO 9001:2015	Quality Management - certified
ISO 14001:2015	Environmental Management - certified
ISO 45001:2018	Occupational Health and Safety - certified
CE Marking	EU compliance (LVD, EMC, MD)
ATEX	Zone 1/2 explosion-proof (where applicable)
China GB	Domestic safety and environmental compliance

Contact MUSI Technology

For inquiries, technical questions, or to request a custom quotation, please contact our sales engineering team:

Channel	Details
Sales Email	lin@coating-spray.com
Phone (Sales)	+86 181 5173 1332
WhatsApp	+86 181 5173 1332
Website	https://coating-spray.com
Headquarters	Wujin Industrial Park, Changzhou City, Jiangsu Province, China
Business Hours	Monday-Saturday 08:30-18:00 (GMT+8)
Response Time	Sales inquiries within 24 hours, technical proposals within 5-7 business days

How We Engage

Step 1 - Discovery

Share workpiece specifications, target throughput, color count, facility layout, and budget. Engineers respond with technical questions within 24 hours.

Step 2 - Process Simulation

We model your line in 3D, simulate cycle time and energy consumption, and provide a baseline ROI analysis.

Step 3 - Proposal and Quotation

Detailed technical proposal with layout drawings, equipment list, payment terms, and delivery schedule.

Step 4 - Manufacturing

Custom fabrication in our 28,000 sqm facility under ISO 9001 QMS. Progress photos shared via customer portal.

Step 5 - Factory Acceptance Test

You witness or remotely observe pre-shipment testing.

Step 6 - Site Installation

MUSI engineers travel to your site for installation, commissioning, and operator training.

Step 7 - Aftersales Support

Warranty support, remote diagnostics, preventive maintenance, and spare parts supply via our global network.