

Zeolite Rotor Concentrator

Technical Data Sheet

MUSI Technology - Spray Coating Specialist

Document Reference: MUSI-TDS-ZEO-001

Issue Date: 2026

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Product Description

Zeolite Rotor Concentrator concentrates low-concentration high-volume VOC streams 10-20 times for downstream treatment by RTO or RCO. The continuously rotating hydrophobic zeolite rotor adsorbs VOCs in the process zone, releases them in a smaller hot desorption zone, and is cooled before returning to adsorption.

Operating Principle

Untreated process air enters large adsorption sector of rotor where VOCs are captured by hydrophobic zeolite. Clean air ($\geq 95\%$ removal) exits to atmosphere. Rotor rotates slowly (3-6 rpm) - small desorption sector exposed to hot air (180-220 deg C) which strips VOCs in concentrated stream 10-20x inlet concentration. Concentrated stream sent to downstream RTO or RCO for destruction. Cooling sector brings rotor back to ambient.

Technical Specifications

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

Parameter	Value / Range
Process air volume	20,000 - 200,000 m ³ /h
Inlet VOC concentration	30 - 500 mg/m ³ (typical low-conc)
Concentration ratio	10x - 20x
VOC removal efficiency	>=95%
Outlet air concentration	less than 10 mg/m ³ typical
Desorption air temperature	180 - 220 deg C
Desorption ratio	5-10% of process air volume
Rotor diameter	2.0 - 5.0 m
Rotor speed	3-6 rph
Adsorbent	Hydrophobic zeolite on ceramic fiber
Pressure drop	1,000-1,500 Pa across rotor
Power consumption	0.3-0.6 kWh per 1,000 m ³ treated
Compatible VOCs	Toluene, xylene, MEK, IPA, MIBK, ethyl acetate, BTEX
NOT recommended for	Halogenated VOCs, polymerizing monomers

Dimensions and Layout Requirements

Dimension	Value
Concentrator footprint	3-6 m wide x 3-6 m deep
Height	3.5-5 m
Required clearance	2 m around for maintenance
Stack and ducting	Sized to process air volume
Foundation	Reinforced concrete pad

Options and Accessories

Pre-filter

Bag or cartridge filter to protect rotor from dust

Cooling Stage Separation

3-sector vs 2-sector design

Combined Zeolite + RTO

Skid-mounted complete package for low-conc high-volume

CEMS

Continuous emission monitoring on outlet stack

Energy Recovery

Heat recovery from RTO/RCO to provide desorption air heating

Dual Rotor Configuration

Larger flows or for redundancy

Control System

PLC

Siemens S7-1500

HMI

10 inch touchscreen

Rotor drive

Frequency-controlled gear motor with speed feedback

Damper actuators

Pneumatic with position feedback

Temperature control

Desorption heater PID with redundant thermocouples

Safety

High-temp shutdown, low-flow shutdown, e-stop

Installation Requirements

Foundation

Concrete pad sized to footprint

Power

3-phase 380/415V at 30-100 kVA

Compressed Air

0.6 MPa, 1-2 m³/h for damper actuators

Heat Source

Electric heater, gas heater, or recovered RTO heat

Installation Time

3-5 weeks

Permit

Air emission permit (combined with downstream destruction)

Service and Maintenance

Daily

Visual inspection, pressure-drop log, rotor speed check

Weekly

Filter cleaning, damper actuator check

Monthly

Inlet/outlet VOC sample for efficiency verification

Quarterly

Rotor seal inspection, gear motor lubrication

Annual

Complete rotor surface cleaning

3-5 years

Zeolite rotor replacement (if performance degrades)

Warranty

12 months MUSI standard, 3-year for rotor

Typical Applications

- Spray coating booth exhaust (large coating plant)
- Printing facility low-concentration VOC
- Semiconductor manufacturing solvent emission
- Pharma cleanroom exhaust
- Auto refinish facility exhaust
- Furniture manufacturing solvent emission

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.