Industrial Applications

With over 100 successful installations in many different industrial applications, Munters designs abatement systems to meet the individual needs of our customers. Our experience allows Munters to design optimal solutions for any application. Typical applications are:

- Paint Finishing
- Coating Operations
- Wood Finishing
- Semiconductor Manufacturing
- Electronics Manufacturing
- Printing
- Flexible Packaging
- Styrene/Composites
- Paint Manufacturing
- Chemical Processing
- Pharmaceutical Manufacturing
- Ground Water Remediation
- Investment Casting
- Pulp & Paper

Munters Zeol systems have been installed around the world since 1996. Shown above are installations at semiconductor plants in Massachusetts and California, and an automotive parts manufacturing facility in Michigan.
Munters is the only company in the world manufacturing complete rotor concentrator abatement systems. Turnkey systems are manufactured at our Amesbury, Massachusetts facility. Munters pioneered rotor technology 60 years ago. Since then, over 30,000 rotors have been used around the world. Munters Zeol Rotor Concentrator Systems are the leading technology for abatement of volatile organic compounds (VOCs). Over 30,000 rotors have been used around the world. Munters Zeol is a division of Munters Corporation, a sixty year old air treatment technology company, headquartered in Stockholm, Sweden. The company’s founder, Carl Munters, was a renowned 20th century inventor who many consider the “Edison of Sweden.” Among his accomplishments were the development of the first home refrigerator and the substance now marketed widely as “Styrofoam.” Before his death in 1989, Munters had earned nearly 1000 patents.

Carl Munters (1897-1989) was a successful Swedish inventor and entrepreneur. Today, our lives are impacted by Munters technology in a myriad of ways. Our products fight pollution, speed manufacturing, improve building comfort, increase agricultural production and help people recover from disasters. In each case, Munters products improve or control the quality of air. Our success is based on leadership, technology, solutions-oriented engineering and a dedication to product quality.

Sixty Years of Excellence and Innovation

With the combination of breakthrough zeolite research and time-tested Munters rotor technology, the systems have introduced a new level of efficiency and effectiveness to VOC abatement. Continuous research and engineering has lead Munters to its current dominant position in the field.

Leading the World in VOC Abatement

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The company that now bears his name has operations on six continents. Munters began its American operations in the 1950s, manufacturing products for humidification and dehumidification. Since then, Munters has grown to be the worldwide market leader in air treatment technologies.

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Design Criteria

Munters application engineers are always available to discuss the specifics of your situation. Important design criteria include airflow rate, temperature, relative humidity, solvent mix and concentration. The following guidelines apply for a typical application:

- Solvent concentration of less than 500 ppm.
- Ambient temperature less than 120°F.
- Relative humidity less than 90%.
- Solvents with boiling points greater than 100°F.

To discuss your application with a Munters engineer, call 1-800-843-5360.

Munters will design a system to meet customer specific requirements. Options to choose from include:

- System Bypass
- Redundant Fans
- Insulated Plenums
- Particulate Pre-Filters
- Pressure Control
- Induced or Forced Draft Fans
- Heat Exchangers
- Pre-Conditioning Process Air (i.e., temperature, humidity)
- Fire Protection
- Materials of Construction (Aluminum or Stainless)
- Continuous Emissions Monitoring
- Remote Monitoring
- Flexible Control Packages
- Exhaust Stacks
- Seismic Restraints
- Vibration Isolation

Rotor/Thermal Oxidizer with Redundant Process Fans/Bypass

This configuration is commonly used to treat exhaust from semiconductor fabs where 24/7 continuous operation is required. Redundant process fans/VFDs are used for high reliability and pressure control. Primary and secondary shell & tube heat exchangers make the system very fuel efficient.

Rotor/Catalytic Oxidizer with Pre-Filters

This configuration is used to treat exhausts containing large amounts of solids and low concentration VOCs. For paint finishing applications, pre-filters can be used to filter solids before the zeolite rotor. An integrated catalytic oxidizer is used with high energy efficiency to destroy concentrated VOCs.

Rotor/RTO with Desorption Heater

Large airflow applications for automotive and aerospace finishing can be abated most cost-effectively by taking advantage of the concentrator technology and fuel efficient regenerative thermal oxidation.
How the System Works

Solvent laden air is drawn through the HoneyCombe rotor where VOCs are removed from the airstream by adsorption onto the hydrophobic zeolite. After passing through the rotor, the cleaned air is discharged into the atmosphere. The Zeol rotor turns continuously (1-6 rph) transporting adsorbed VOCs into a regeneration zone. There, the VOCs are removed by a small heated air stream that is 5-10% of the process air volume. The regenerated zeolite is then rotated back into the process air stream.

The concentrate is typically sent to a small oxidizer where the VOCs are converted to water vapor and CO₂. The energy content of the VOCs contributes to the oxidation process further reducing the fuel requirement. Heat exchangers are used to pre-heat the concentrate and provide the required heat needed to desorb the rotor and create additional fuel efficiency.

Hydrophobic Zeolites

Munters proprietary zeolite offers several characteristics that are ideal for VOC abatement.

Hydrophobic Properties
Munters zeolite is made hydrophobic using a chemical process that replaces the aluminum in the crystal with silicon atoms. Since it repels water, it is unlike any other zeolite, synthetic or natural. This property allows the zeolite to use all of its pores to attract and hold VOC molecules from an air stream.

Non-flammable Properties
As an inert and stable inorganic crystal, it does not react with organic materials or exhibit catalytic properties. This allows use of high temperatures for desorption of high boiling compounds and eliminates the safety risk associated with carbon adsorbers.

Adsorptive Capacity
At low inlet VOC concentrations, zeolite has a higher capacity to adsorb VOCs than comparative technologies. (see Chart A)

1. At high relative humidities, zeolite adsors less water than carbon (see Chart B) leaving more sites for adsorption of organic molecules. Carbon experiences loss of adsorbent efficiency at 50% RH, whereas Munters zeolite remains efficient up to 90% relative humidity.

2. At low concentrations, Munters zeolite's adsorption capacity exceeds that of carbon.

How the System Works

Pore Sizes
Zeolite pore size determines which molecule the zeolite will attract. Munters uses a proprietary mixture of zeolites with pore sizes to cover a wide range of organic solvents.

Advanced Rotor Design

Zeolite HoneyCombe rotors are manufactured from a corrugated mineral fiber substrate treated with a proprietary zeolite and other inorganic materials to provide physical integrity, rigidity and enough flexibility to withstand thermal stress. The HoneyCombe rotor, capable of withstanding 1,100°F is not affected by corrosive substances such as strong acid and is not blocked by high boiling solvents, particulates or resinous materials. Air flow through the flutes is uniform and of low velocity, resulting in very low pressure drop (less than 1.5” w.c.). It has continuous operation, non-fluctuating outlet conditions with no adsorbent attrition and few moving parts. The rotor has low friction contact seals to prevent leakage.

Munters custom fabricates replacement zeolite blocks for any existing carbon or zeolite concentrator system. The drive motor is explosion proof, inverter duty, UL listed and can be manually adjusted with a speed controller.

Worldwide Service

Munters Service is dedicated to helping our customer optimize the value of their equipment through planned maintenance programs. Drawing from 60 years of experience as the leading manufacturer of air treatment technology, Munters has developed service programs that extend the life of our equipment, optimize its performance and assure continuous operation. As a result, our Service Department will support the installation of a Munters Zeol system in five important ways:

Factory Service Organization
Our technicians know your equipment comprehensively and can guide you with current technical information, perform complete maintenance services, or troubleshoot any problem. Service technicians are based near your facilities and certified through rigorous training programs. For international customers, we offer service technicians based on five continents.

ServiceCaire Maintenance Programs
Field experience has repeatedly shown that customers who employ planned maintenance can substantially extend their equipment life. By eliminating failures before they can occur, customers maximize both the utilization of Munters equipment and also lower the overall cost of ownership. The program includes a pre-determined number of visits and defined scope of work for specified equipment, or custom programs can be tailored to specific needs.

Replacement Parts Support
Replacement parts are inventoried at our Massachusetts manufacturing facility. In most cases, we can ship the part you need the same day you call.

24 Hour Emergency Service

We can dispatch emergency service crews, provide troubleshooting by phone, or run diagnostics by dial-up connection.

Start Up Programs
Munters startup service ensures that equipment has been installed properly and is commissioned to operate according to specifications. It allows the customer to receive appropriate maintenance guidance and training for their particular installation.

Munters technicians are factory trained and available 24 hours a day to support your equipment.
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