



DECTM
Dynamic Environmental Corporation

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technologies & solutions for a sustainable tomorrow



DEC.SRUTM

Solvent Recovery
Units



DEC.RBCTM

Rotary Bed
Concentrators



DEC.RTOTM

Regenerative Thermal
Oxidizers



DEC
— HOLDING —



DEC
Dynamic Environmental Corporation

✓ 2500⁺

Projects Delivered

... since 1946 ...



about us

DEC • Dynamic Environmental Corporation™ is a multinational Group headquartered in Milan (Italy, IT), focused on engineering and supply of turn key sustainable industrial VOC and HAP emission control systems for the flexible packaging, chemical, petrochemical and pharmaceutical industries.

Backed with **75+ years** of global experience, thanks to products of the highest quality, patented and/or innovative processes, with thousands of systems in operation, we are facing the global challenges, focusing on innovative sustainable technologies and research.



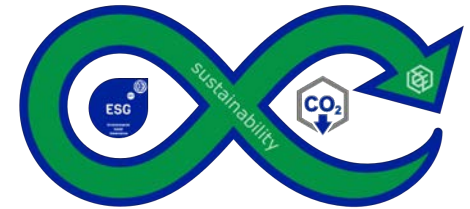
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sustainability & decarbonization

In our increasingly polluted world, protecting our climate is essential. Emissions of Volatile Organic Compounds (VOCs) and Greenhouse Gases (GHGs) are a major global threat. International agreements aim for a drastic reduction in these emissions by 2030.

DEC • Dynamic Environmental Corporation is dedicated to helping clients worldwide decarbonize their processes, comply with the latest environmental regulations, and reduce air pollution, contributing to a cleaner, healthier planet. By delivering VOC emission control systems, DEC plays an active role in achieving these sustainability goals.



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Solvent Recovery Units

SRUs also known as Solvent Recovery Plants (SRP) or Solvent Recovery Systems (SRS), are employed in solvent-based manufacturing processes to control air emissions of solvents (VOCs Volatile Organic Compounds and HAPs, Hazardous Air Pollutants from solvent-laden air or vapor) to comply with global, regional and local environmental regulations and directives.

DEC.SRUs are packed with cutting-edge technologies and processes that keep air emissions clean and within legal limits. This means industries can meet strict regulations and reduce harmful VOCs in the air. Not only does this benefit the environment by creating a cleaner, healthier atmosphere for nearby communities, but it can also save businesses up to 90% on solvent costs!



DEC.SRU™

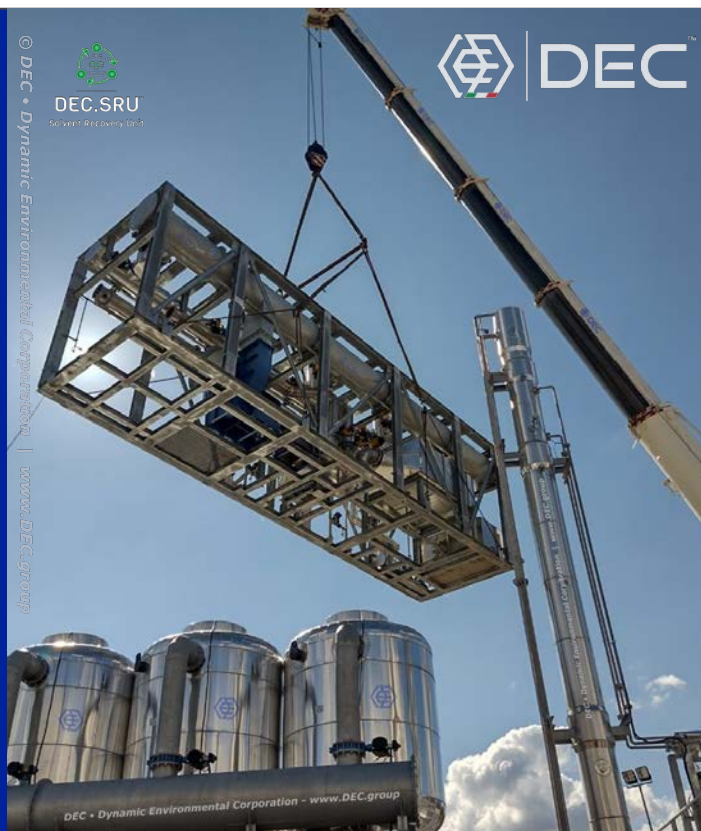
Solvent Recovery Unit



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DEC.SRU™
Solvent Recovery Unit



DEC.SRU™ allows for the efficient recovery of your solvents (both mono and multi-solvent, including Esters, Alcohols, Ketones) from vapors/fumes of evaporated/exhausted chemicals (such as inks, adhesives, coatings, lacquers, and varnishes). The recovered solvents can be indefinitely reused for dilution at a purity equal to or greater than that of newly purchased solvents.

Key factors when considering SRUs:

- reliable and safe design;
- proven technology (TRL=9, ISO 16290);
- maximum operational flexibility;
- quick Return on Investment (ROI);
- favorable CapEx and OpEx over the entire plant life.

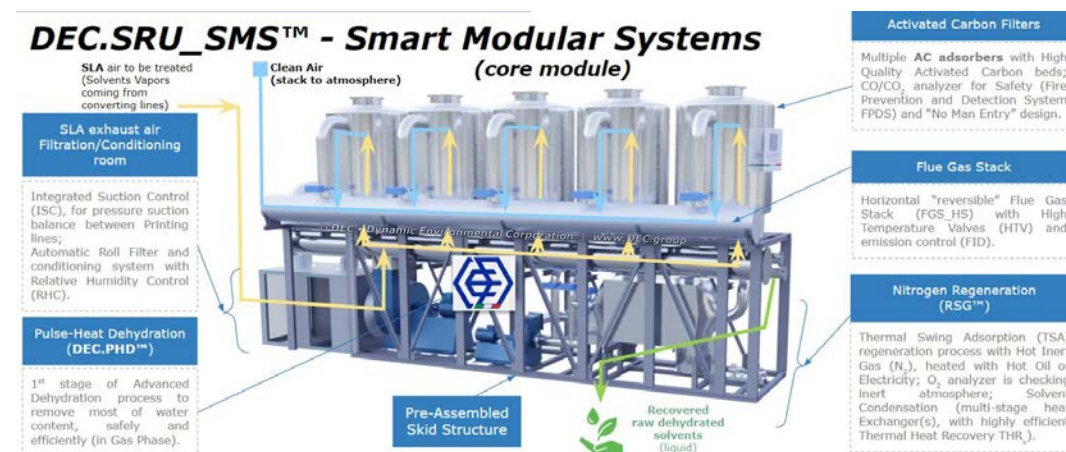
Recovering Solvents allows you to:

- increase Profit;
- VOC emission control;
- GHG/CO₂ minimization.

DEC.SRU™ (SMS™ platform)

- Return On Investment (ROI), typically < 1,5 year;
- compact layout;
- minimal complexity;
- ease of maintenance;
- innovative and highly efficient (DEC.ULP™ | UltraLoop™).

DEC.SRU_SMS™ - Smart Modular Systems (core module)





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DEC.SRUTM

RSG • TSA

Solvent Recovery Unit
nitrogen regeneration



DEC.SRUTM

Solvent Recovery Unit



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DEC.SRUTM
Solvent Recovery Units





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DEC.RSVTM

SRU • TSA

Solvent Recovery Unit
steam regeneration



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Advanced Dehydration Modules



DEC.ADMTM

Advanced Dehydration
Modules



DEC.MSUTM

Molecular Sieves
Unit



DEC.UDSTM

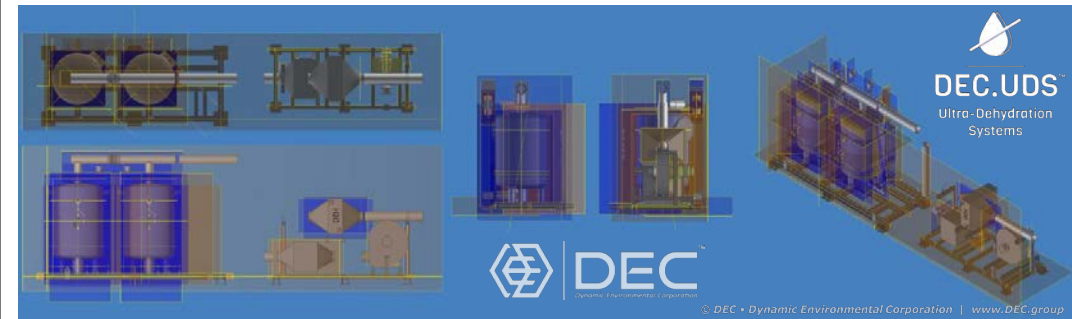
Ultra-Dehydration
Systems



DEC.ADMTM • Advanced Dehydration Modules

DEC.ADMTM dehydration systems are compact, cost-effective industrial processes that efficiently remove water from organic solvents (e.g. esters and alcohols). They produce fully dehydrated solvent streams often exceeding virgin solvent purity.

Zeolite based dehydration systems utilize porous crystalline materials (MZATM) with precise pore sizes (3Å), capable of selectively adsorbing water molecules while allowing the solvent to pass through.



This technology is essential for various applications, as water traces can significantly impact product quality and process efficiency.

DEC.ADMTM dehydration systems | configuration:

- *DEC.RHCTM • humidity low adsorption;*
- *DEC.PHDTM • pulse heat dehydration;*
- *DEC.WPATM • gas phase dehydration;*
- *DEC.MSUTM • gas phase dehydration;*
- *DEC.UDSTM • liquid phase dehydration;*
- *DEC.PSDTM • pressure swing dehydration.*

key features

- *High Efficiency*
- *Customizable Design*
- *Energy Savings*
- *Compliance Ready*

Advanced Separation Modules



DEC.DST™

MPD™ • SPD™

Distillation Systems



DEC.DST™ • Distillation System

Distillation is the most widely-used method of separating fluid mixtures on a commercial scale, it is thus an important part of many processes industries, including the packaging, chemical, oil and gas, and pharmaceutical sectors.

DEC.DST™ industrial solvent distillation systems are specifically designed to break down solvent mixtures into their individual components. This process allows for the recovery and reuse of valuable solvents, while also generating high-purity products for various applications.



The DEC.DST™ distillation systems are coupled with the solvent recovery units (DEC.SRU™), in order to separate the mix of "raw" recovered solvents. If the solvents are soluble (totally or partially) with water, in order to increase the overall efficiency, the use of our dehydration systems (DEC.ADM™) will increase the yield, removing the residual water content in the raw recovered solvent, before feeding the distillation plant.

DEC.DST™ distillation systems | configuration:

- *DEC.DST-a™ • atmospheric distillation;*
- *DEC.DST-p™ • pressure distillation;*
- *DEC.DST-v™ • vacuum distillation;*
- *DEC.DST-e™ • extractive distillation;*
- *DEC.DST-r™ • reactive distillation;*
- *DEC.DST-re™ • hybrid reactive-extractive distillation.*



DEC.XTO™

Thermal Oxidizers



DEC.DTO™
Direct-fired Thermal
Oxidizer



DEC.RTO™
Regenerative Thermal
Oxidizer



DEC.CTO™
Catalytic Thermal
Oxidizer

e-RTO™
full electric

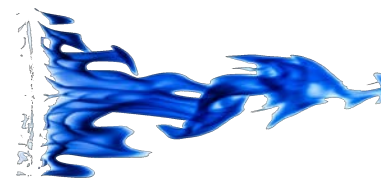


DEC™
Dynamic Environmental Corporation

DEC.XTO™ • Thermal Oxidizers

Thermal Oxidizers (also known as thermal oxidisers, thermal incinerators, fume incinerators, or afterburners) are air pollution control devices commonly employed in chemical industries: DEC.XTO™ operates by decomposing hazardous gases, at high temperatures (typically around 590°C to 980°C), releasing the resulting gases into the atmosphere.

DEC.XTO™ Thermal Oxidizers primarily target odors, volatile organic compounds (VOCs), or other hazardous air pollutants (HAPs) present in industrial air streams: these pollutants, undergo thermal combustion, converting them into carbon dioxide (CO₂) and water (H₂O) through chemical oxidation.



By removing exhaust pollutants, the company meets regulatory requirements and avoids harmful emissions. Thermal Oxidizers provide a cost-effective solution for this crucial abatement process.

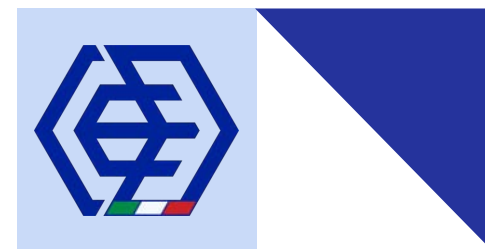
Investing in a Thermal Oxidizer necessitates a trade-off between initial capital costs [equipment, shipping (DLV), installation] and ongoing operating expenses [oxidized solvents, fuel, electricity, compressed air, maintenance].

However, the optimal selection of the available oxidizers is dictated by the specific pollutants and the characteristics of the process air (SLA, volume and oxygen concentration).



Regenerative Thermal Oxidizers

DEC.RTO™ (Regenerative Thermal Oxidizer) is a specific configuration of the thermal oxidizer systems (**XTO™**): in the RTO, multiple towers configurations are used to achieve efficient and effective air pollution control. Typically three (3) or more towers configurations are utilized in parallel: the exhaust gases flow alternatively between these towers, allowing at the same time energy recovery and gas oxidation with the removal of pollutants.



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DEC.RTO™ • Regenerative Thermal Oxidizer

In a RTO the VOCs are oxidized in the combustion chamber. The thermal energy released from oxidation is stored through the ceramic media bed in one tower and in the meantime the hot exhaust gases cools down, as they exchange thermal energy with ceramic media themselves. The cooled gases are then discharged to the atmosphere through the FGS stack.

The process of accumulating and exchanging energy allows the RTO to operate at a higher thermal efficiency (up to >97%) than direct thermal oxidizers (DTO™), often with self-sustaining operation (with no auxiliary fuel usage). Under certain condition it is even possible to recover excess heat from the outgoing gases (WHR™).

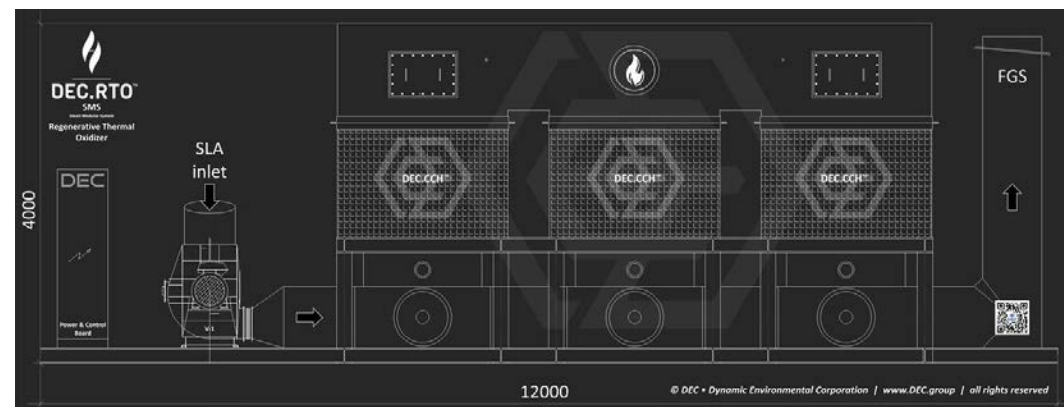


Key factors when considering a RTO:

- *self-sustaining operation, even at low concentrations of VOC;*
- *ultra-low production of secondary contaminants (i.e. NOx, CO).*
- *minimal consumption of auxiliary fuel;*
- *low maintenance costs;*
- *flameless configuration, full electric (e-RTO™);*
- *optional Waste-Heat Recovery module (WHR™);*
- *optional Waste-to-Energy module (WTE™);*
- *modular design, allowing for expansion in the future;*
- *high VOC abatement efficiency (up to >99,8%).*

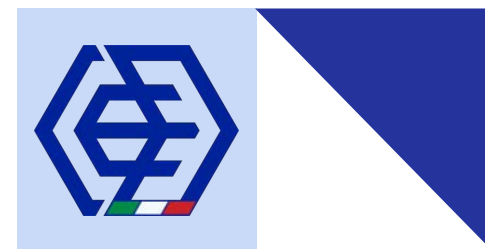


Regenerative Thermal Oxidizers (RTO SMS™) are based on the award winning DEC Smart Modular Platform (skid mounted, SMS™). Unlike larger traditional RTOs requiring extensive on-site assembly, the compact RTO arrives fully integrated and rigorously tested, significantly reducing installation time and costs.



RTO SMS™ is designed for easy installation and portability (easy to move and relocate):

- *space-saving;*
- *quick installation;*
- *easy to move.*



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NEN

DEC.N2X™

N2L • N2G
nitrogen supply

NEN

DEC.N2L™

liquid
nitrogen

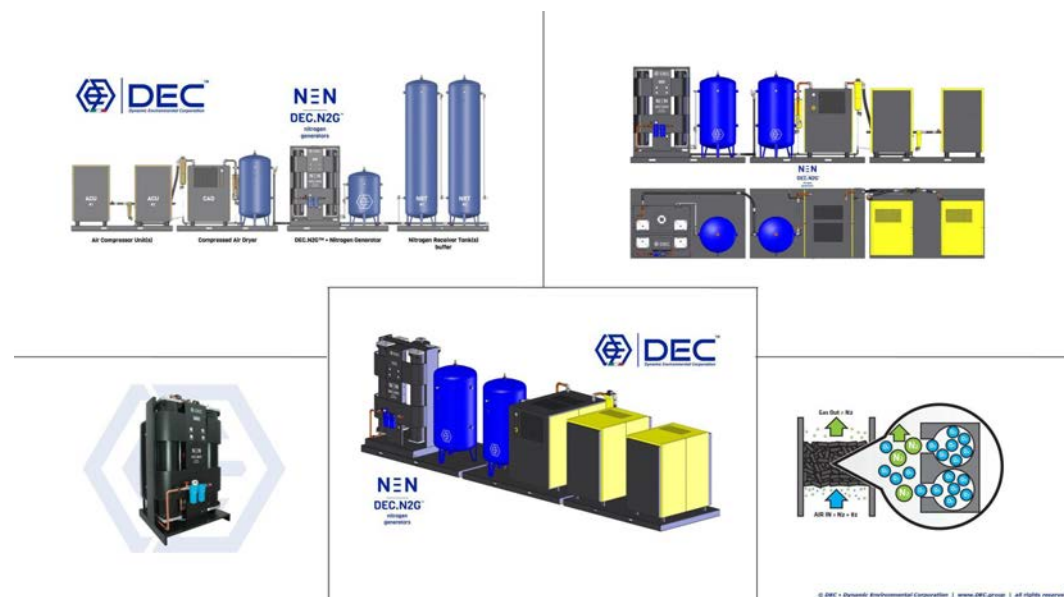
NEN

DEC.N2G™

nitrogen
generator

DEC.N2G™ • Nitrogen Generator

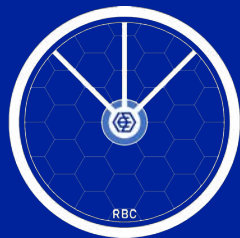
Nitrogen (N₂) plays a crucial role in the activated carbon Solvent Recovery Units (SRUs) by serving as the regeneration (desorption) media (DEC.RSG™ and/or DEC.RTV™ processes). However, in certain regions, the availability and convenience of liquid nitrogen (N2L) can be a challenge: as a result, we have implemented on-site nitrogen generation solutions (DEC.N2G™) to feed the Solvent Recovery Units (SRUs). The on-site nitrogen generators utilize a special adsorbent called DEC.CMS™ (Carbon Molecular Sieves) and leverage the Pressure Swing Adsorption (PSA) process.



By employing state-of-the-art analytical controls, our systems have the capability to produce nitrogen of exceptionally high purity. If required, DEC.N2G™ can achieve high purity levels (up to 99.9X%). Moreover, our nitrogen generation systems offer outstanding reliability, low operating costs, and an extended operational lifespan.

DEC.N2G™ nitrogen gas generators are conceived in a modular design, skid mounted, allowing standardized layout and constant performances: typically, higher will be the demanded throughput, higher will be the numbers of installed modules.

Rotary Bed Concentrators



DEC.RBC™

Rotary Bed
Concentrator



DEC.RBC™ • Rotary Bed Concentrator

DEC.RBC™ (Rotary Bed Concentrator) is an auxiliary air pollution control device that works alongside the main VOC treatment system, such as a Solvent Recovery (SRU™) or a Thermal Oxidizer (XTO™).



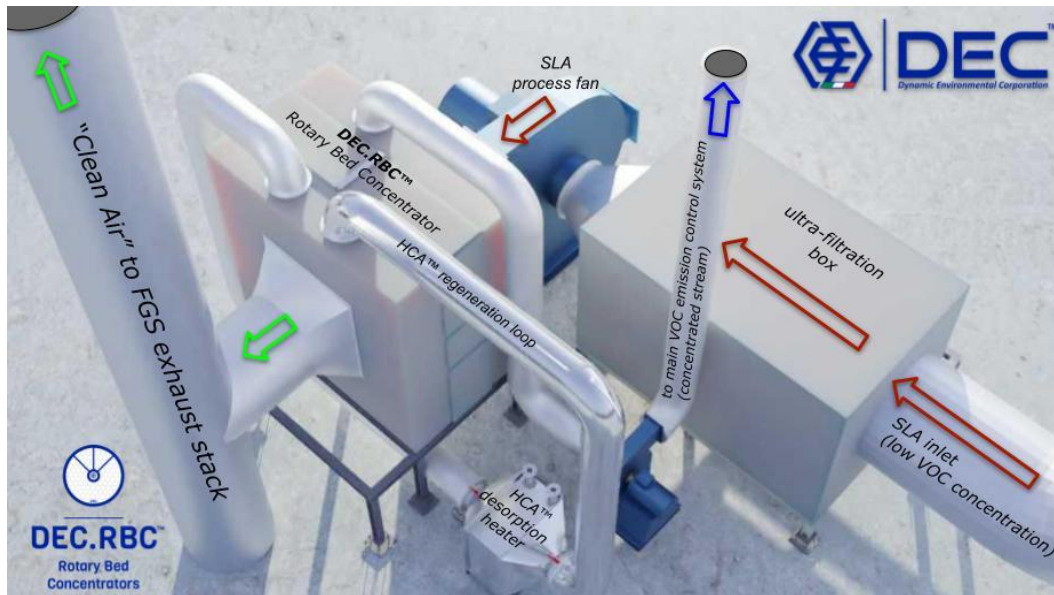
RBC™ is a pre- or post-treatment device that concentrates VOCs. When installed upstream, it allows the main abatement system to be smaller and more efficient by treating a highly concentrated stream. When installed downstream, it serves as a buffer to treat final stack emissions, helping to manage emission overloads or meet stricter regulatory limits.



Roto-concentrators concentrate volatile organic compounds (VOCs) from low-concentration air streams, making them ideal process for reducing fugitive emissions.

The Solvent Laden Air (SLA) passing through the slowly rotating wheel, comes into contact with the absorbent material (DEC.HCA™ • Honeycomb Coated Adsorbent), where the VOC are retained, while purified air is exhausted at the stack.

The DEC.RBC™ unit is built in different diameters, pre-assembled or partially assembled at the Customer premises.

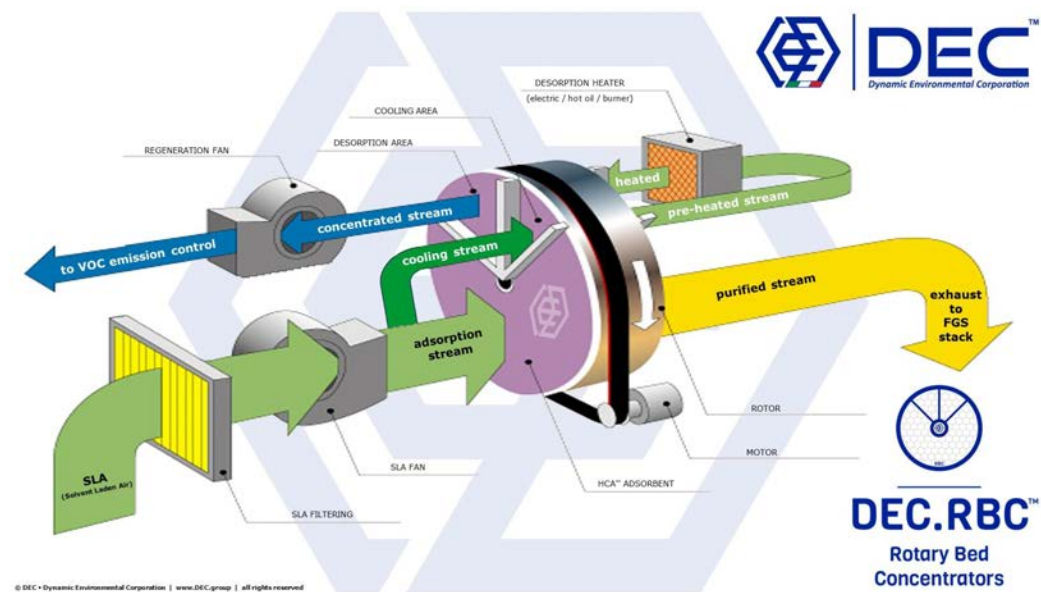


During the rotation (1÷4 rph), the wheel passes through a regeneration section where hot air desorbs and concentrates the VOC in a flow stream much smaller than the original SLA stream.

The RBC wheel is split into adsorption, desorption, and cooling zones (typically 8:1:1 to 10:1:1 ratio).

DEC.HCA™ are honeycomb-like structures coated with adsorbent materials. The adsorption performance of the adsorbent depends on its structure, type, and composition: activated carbon and zeolite are the most widely used adsorbents.

The adsorption is typically handled at +20÷35°C. Desorption through the regeneration air (typically heated at 180÷220°C, or above 300°C for specific applications), while the cooling zone aimed to cool down the Honeycomb Coated Adsorbent to ~50°C (or lower) so as to facilitate VOCs adsorption, once back to adsorption phase. Once concentrated (typically <25% of LEL), the SLA can be efficiently treated in a VOC emission control system (SRU™ / XTO™).



Key factors when considering RBCs:

- *low pressure drops to reduce power usage;*
- *modular design allowing for expansion in the future;*
- *lowest overall operating costs for large airflow applications;*
- *small footprint;*
- *minimal moving parts to minimize maintenance costs;*
- *high efficiency.*



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DEC SERVICE is specialized in the provision of after-sales technical support services (DEC.TSS™), ranging from Help Desk Services (HDS™) to on site Diagnostic Maintenance Services (DMP™, including MRO™ - maintenance, repair, and operations), auditing (ADT™), optimization, extension (EXR™), upgrade and retrofitting (RFT™) of existing installations supplied by DEC or any other vendor.



Our service center, through our centralized warehouse facility (located in Milan, Italy), is acting as a one-stop shop for all spare parts and consumables buying.

Throughout the world, DEC SERVICE is enhancing the performances and extending the life of VOCs & HAPs emission control systems: when we design and build these systems, whether it is part of our pre-engineered range or produced specifically for a customer application, we back the product with a service that starts with the purchase order and continues throughout the life of the installation.

DEC SERVICE™ • your maintenance partner

We understand the unique conditions and circumstances that prevail in the wide diversity of industries in which we operate. We profoundly understand VOC & HAP emission control systems, no matter who made it or who installed it, and we will apply the same care and insight to protecting and prolonging its productive life. Through expert maintenance and the use of certified parts and carefully planned upgrading, that life can be surprisingly long.

Our aim is to do everything in our power to keep your plant operational and free from unscheduled stoppages. We work alongside your own personnel, training your staff and building a partnership that lasts throughout the life of the equipment. During that time, we can carry out regular monitoring, inspection, servicing and repairs.



We can advise on upgrades or retrofits, and carry them out at the most convenient time. We can maintain a meticulous installation and service record, an invaluable tool in planning and ensuring the future safety and reliability of the equipment.

Every DEC SERVICE supervisor or engineer working on-site has the whole of DEC's global expertise to draw on.

DEC SERVICE is a response to your needs. We will always offer you the most cost effective, long-term and technically excellent solution to the problems of ageing plant or changing conditions.



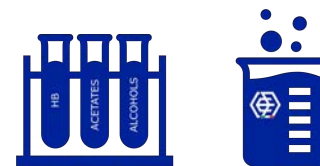
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DEC LAB



DEC LABTM • analytical and auditing services

DEC LAB is a modern full-service analytical laboratory network that offers a complete range of environmental laboratory and auditing services to DEC group of companies, with expertise in different areas.



areas:

- *environmental auditing services of air, water and solvents;*
- *analytical method development;*
- *sampling, field and mobile laboratory services;*
- *technical consultancy;*
- *program management and data management.*

gas analysis

- *flow-rates (m³/h);*
- *speed (m/s);*
- *temperature (°C);*
- *humidity (gH₂O/m³);*
- *GC analysis (Gas Chromatography);*
- *FID analysis (Flame Ionization Detection);*
- *PID analysis (Photo Ionization Detection);*
- *adsorption analysis on activated carbon cell (UNICHIM).*

adsorbent analysis

- *thermogravimetric analysis (TGA);*
- *adsorption properties (CTC index);*
- *hardness;*
- *mesh size.*

liquid analysis

- *GC analysis (Gas Chromatography);*
- *spectrophotometry;*
- *coulometry (determination of traces of water in solvents);*
- *COD values (Chemical Oxygen Demand);*
- *BOD values (Biochemical Oxygen Demand).*



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Local Sales Partner

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