

# Gas Cleaning and Liquid Separation Technologies

for the Chemical, Petrochemical & Pharmaceutical Industries



# Carbon Adsorption Solvent Recovery, Separation, and Purification

Dürr Megtec carbon adsorption and distillation systems are widely used in the petrochemical and pharmaceutical industries.

Carbon adsorption, both regenerative and non-regenerative, are used to capture vapor-phase emissions of VOC (volatile organic compound) solvents from solvent-using processes, stopping them from being emitted to the atmosphere, thus meeting environmental laws and regulations.

In a regenerative carbon adsorption system, the solvents are adsorbed on activated carbon. When the carbon is saturated, it is regenerated with steam, which is then condensed, which makes it possible to remove the solvent. Non-water miscible solvents can frequently be reused without further processing. Water miscible solvents can often be distilled and purified to make them suitable for reuse.

A Dürr Megtec solvent recovery system creates two benefits to its customers, compliance with environmental laws and regulations, and reduced costs through the reuse of the solvents.

Dürr Megtec also provides stand-alone distillation systems to purify waste water to make it suitable for disposal, eliminating high disposal costs, or to separate solvents and purify them.



Steam regenerated adsorption to recover dichloromethane from pharmaceutical batch manufacturing plant



Adsorption skid to recover HFCs and CFCs from aeration tanks



Distillation system at pharmaceutical plant



Duty and stand-by adsorbers for mixed VOCs from batch manufacturing plant



Solvent recovery plant recovering 440 lb/hr (200 kg/hr) of dichloromethane from 18,500 SCFM (440 Nm<sup>3</sup>/hr)



Toluene recovery plant handling 222,000 SCFM (350,000 Nm<sup>3</sup>/h) and 5,500 lb/hr (2,500 kg/hr)



Acetone recovery plant recovering 330 lb/hr (150 kg/hr) from 5,100 SCFM (8,000 Nm<sup>3</sup>/hr) including distillation

Thermal oxidizers and wet electrostatic precipitators (WESP) from Dürr Megtec have been used extensively in chemical, petrochemical, and pharmaceutical industry applications.

Dürr Megtec thermal oxidizers are used to abate vapor-phase VOC emissions to meet the most stringent global environmental emission limits and regulations.

Thermal oxidizers (multiple bed, flame-based regenerative, single-bed flameless regenerative, and direct thermal systems) have been used to abate VOC compounds released from batch emissions from vessel reactors, tablet coating, primary and secondary pharmaceutical manufacturing, chemical, and petrochemical processes.

Our supply and installation capabilities include turnkey operations such as:

- Vent collection systems
- Vent conditioning with LEL dilution control
- Pre- and post-oxidation scrubbing (packed tower and venturi scrubbers) for acid gas removal
- Flame arrestors
- Explosion relief
- Particulate removal
- CEMs (continuous emission monitoring systems), with the associated project HazOp
- SIL reviews
- Project documentation packages



*Injection of fluid streams into RTO combustion chamber*

Our wide range of solutions spans virtually any industry requiring pollution control. Dürr Megtec is a single-source supplier of reliable solutions for projects of all sizes and complexities, as well as for new or upgrade configurations.



*WESP for particulate control from calcining kiln*



*RTO with heat recovery for steam generation*



*RTO and tail gas HCl scrubber*



*Detonation arrestor and double shut-off valves*



*Redundant VOC concentration level control*



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