

# Biogas Purification Systems

Capture and purify methane to pipeline quality natural gas



# Biogas Purification

Our biogas purification system uses only water to remove H<sub>2</sub>S, CO<sub>2</sub>, light siloxanes and O<sub>2</sub> (optional) from digester, wastewater treatment, landfill, or other biogas streams.

Designed to capture more than 98 percent of the methane and purify it to pipeline quality natural gas, the system uses a self-regenerating desiccant dryer to dry the product gas to a dew point of -40°F. The system also delivers low methane slip to 1.5% or less.

If required, Dürr Megtec can provide a flameless regenerative thermal oxidizer to treat tail gas.

Dürr Megtec water scrubbing systems include a high-pressure packed stainless steel media bed, chemical-free operation, and air stripper to remove CO<sub>2</sub> and H<sub>2</sub>S with minimal methane loss. And to reduce water usage, the wash-water system is regenerative, as opposed to a single-pass system.

## Fast, Simple Installation

Each biogas purification system is skid-mounted and modular in design, which requires a smaller operational footprint and allows greater integration flexibility at the application site. Stainless steel wetted system components are factory assembled and tested to performance parameters.

System components are packaged, pre-assembled, prewired, pre-piped and tested to the extent possible at the factory. All equipment ships on commercial trucks. This shortens the installation timeframe and helps ensure an effective start-up.

We can also provide full turnkey installation and startup services, preventive maintenance, and fulfill future service/parts requirements.

## Operational Reliability

The system practically runs itself. An advanced electronic control system automatically optimizes the system for high gas yield.

## Advanced Telemetry

Each system is also equipped with a virtual private network (VPN) for trending, monitoring, and remote diagnostics. A wide range of performance information is available to the operator for analysis, troubleshooting and optimization. The user interface is intuitive and maximizes ease of use.

## Long-Lasting, Cost-Effective Performance

Designed specifically for the harsh environment, each system incorporates corrosion-resistant materials. Combined with its low operating costs, Dürr Megtec is able to provide a reliable system that is truly cost-effective.



Installed 1,500 SCFM system with post-compression system.

# Tail Gas Treatment

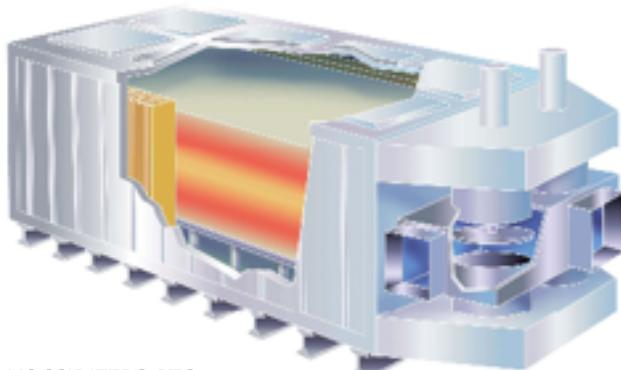
Dürr Megtec can provide a tail gas treatment system for all popular biogas upgrading technologies, including water scrubbing, pressure swing adsorption (PSA) and membrane systems. Our systems are designed to handle a wide range of methane content and in most cases, run fuel-free utilizing the tail gas as the energy source.

## Dürr Megtec VOCSIDIZER®

The VOCSIDIZER® is a flameless thermal oxidizer developed specifically for tail gas treatment. This system utilizes our patented flameless single-bed thermal oxidation process.

The system has the ability to operate at lower oxygen levels, down to 3%, compared to burner-based systems. It also has negligible thermal NOx generation due to its flameless operating system. Additional features include:

- Electrically heated operation, which requires no gas injection and the opportunity to run self-sustained
- >97% thermal efficiency, for low operating costs
- An operating temperature range of 1,625°F-1922°F, which ensures efficient destruction
- Effective odor destruction.
- Compact skid-container system design that minimizes the footprint and site requirements.



VOCSIDIZER® RTO

## Dürr Megtec MILLENNIUM

The MILLENNIUM® regenerative thermal oxidizer (RTO) from Dürr Megtec combines cost saving metallurgies with heat recovery capabilities. The MILLENNIUM comes complete with O<sub>2</sub> sensors to control the necessary dilution air and operates with natural gas injection for additional fuel savings.

The MILLENNIUM RTO redefines the economics of clean air compliance in low-flow applications. This compact system is designed specifically for the process air flows extending to 80,000 SCFM, while providing the efficiency, effectiveness, and reliability at very affordable capital, installation and operating costs.

## Dürr Megtec Ventura

The Ventura oxidizer from Dürr Megtec features an innovative venturi-shaped ceramic burner that can safely and economically process exhaust streams with hydrocarbon concentrations above 40% LFL.

The tail gas mixture is combusted at the exit point of the Ventura and is combusted to flame temperatures near 3,000°F before being quenched to a minimum of 1,400°F at the exit of the ignition tube. The post-combustion mixture is then held at a minimum 1,400°F for 0.5 seconds to ensure destruction of the VOCs.

The design is simple and effective and has been proven in operation for over 30 years. Advantages of the VENTURA burner include:

- Uses the fume/exhaust gas stream as the fuel source, which lowers clean-up time and fuel costs
- Uses ceramic, Venturi shape burner tile which eliminates the possibility of flashback and increases burner life

# H<sub>2</sub>S Treatment

Dürr Megtec has partnered with world-class developers of two systems for H<sub>2</sub>S treatment. The collaboration enables Dürr Megtec to provide a complete biogas purification system. This cost-saving approach ensures the viability of the entire system and all its related components.

## Liquid System (non-biologic) H<sub>2</sub>S Treatment, BgPur™ - Biogas Purification System (non-biologic)

The BgPur™ (Bio Gas Purification System) from Eco-Tec consists of a two-tank arrangement, each containing a patented removal system. This system is capable of handling a wide (and high) range of H<sub>2</sub>S concentration, with no consumable media or packing.

Elemental sulphur, which forms in the liquid solution, is lifted by the gas bubbles rising through the solution and forms a flotation layer on top of the liquid. This overflows into a chamber in the air vessel. A pump feeds the sulphur slurry to the filter press for solids removal.

The filtrate is returned to the gas contact vessel. Periodically the sulphur filter cake is automatically washed, dried, and discharged from the filter press into a collection bin. The absorption solution in the contactor is continuously regenerated.

## Media-based H<sub>2</sub>S removal

The H<sub>2</sub>SPlus™ system from MV Technologies is a combination of high-performance, BAM™ iron sponge media and a proven system design that provides cost-effective and consistent H<sub>2</sub>S removal from landfill gas and biogas streams.

H<sub>2</sub>SPlus systems are most cost-effective for projects with annual H<sub>2</sub>S removal requirements between 30,000 to 350,000 pounds per year.

Additionally, H<sub>2</sub>SPlus systems are guaranteed to meet target outlet concentrations, regardless of occasional short-term fluctuations of H<sub>2</sub>S inlet parts per million by volume (PPMV). An increase in H<sub>2</sub>S concentration only affects the rate at which the sulphur-removal media is consumed and not the performance of the system.

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