



Bio-trickling Filters

Innovative Solutions for Superior Performance

ERG has developed an innovative biological technology for odour control using its BioCure™ media. The media is synthetic and structured with engineered flow channels that is specifically designed to comfortably achieve the highest degree of performance exceeding 99% removal rates through the design life of the system.

Wastewater plants and collection facilities have high potential to generate toxic odours that includes Hydrogen Sulphide (H_2S), Ammonia (NH_3), Mercaptans and a variety of soluble organic compounds. ERG Bio-trickling filters operate on the principle of fixed film absorption and biological oxidation of air contaminants by micro-organisms. The contaminated air passes through the wetted BioCure™ media cells, where it contacts the biomass residing within the biofilm surrounding the media substrate. The biological degradation occurs in two steps:

- 1.** Odour causing compounds are dissolved in the biofilm surrounding the media matrix.
- 2.** These compounds are oxidised by micro-organisms into stable, non-odorous by-products.

The BioCure™ media operates at a pH profile, ranging from 1 at lower media sections to 7 at upper media sections. Each pH range promotes a different bacteria type where each treat specific odour-causing compounds. The BioCure™ media is designed to ensure rapid development of the odour neutralising bacteria which colonise the bio-media substrate.



Experience and Commitment to Research and Development

With more than 45 years of the design and operational experience in the industry, our engineers has developed the science behind engineered flow channels mass transfer in a systematic research and development program aiming to solve odour challenges that can't be easily solved using conventional bio-trickling filters. Installed and tested in many pilot plants, the BioCure™ media is proven to have superior performance and unique specifications that result in safe, durable and reliable bio-trickling system for the design life of the plant.

ERG has major reference projects with key end-users in the Middle East, where the supplied bio-trickling filters were designed to meet stringent standards on effluent air exceeding 99.9% H_2S removal efficiency.

ERG (Air pollution control) LTD

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Key advantages

1. Outstanding Performance

Supplied with the BioCure™ media, ERG's bio-trickling filters consistently provide high performance at inlet H₂S loads exceeding 1,000ppm. Through maintaining optimum operating parameters, the filters are highly versatile to varying inlet loads and can easily handle peak variations, shock loads and process upset conditions. ERG's engineered BioCure™ media has the following strong, unique and favourable characteristics:

- Excellent bio-film attachment.
- Optimum mass transfer rates.
- Uniform air flow channels.
- No flow channelling.
- High porosity, void fraction reaching 93%.
- High specific surface area reaching 900m³/m².
- Anti-blocking and minimum fouling resistance.
- Remarkably easy to install, operate and maintain.
- Chemically stable under operating conditions with a 20 years design life.

2. Full Bespoke Design and Fabrication Services

All of ERG's bio-trickling filters are designed to meet process requirements and in a complete functional system includes the installation of:

- BioCure™ media.
- Liquid irrigation and drain system.

- Micro-nutrients dosing system.
- Air extraction fans, interconnecting ductwork, supports and dampers.
- Process instrumentation and control.
- Electrical control panel.

3. Cost Effective

The BioCure™ media enhanced design features result in cost saving of initial investment, operation and maintenance.

4. Small Footprint

The unique characteristics of the BioCure™ media allows for a small footprint compared to conventional bio-trickling filters.

5. Ultimate Flexibility

The media has the design features to run either once-through or recirculation.

With a wide range of designs to suit the most challenging odour problems in industrial wastewater as well as municipal wastewater, ERG has hundreds of bio-trickling filter units installed around the world. The units are supplied in cylindrical or rectangular assemblies, state-of-the-art as a standard or bespoke to project specific requirements.



Case study

Doha South Terminal Pumping Station

Location: Central Doha, Qatar

Air Flowrate: 120,000m³/hr

Design inlet H₂S concentration: 335ppm

Design H₂S removal efficiency: >99.98%

The terminal pumping station is located 12km south of central Doha, Qatar. The odour control unit was designed, manufactured and commissioned by ERG (APC) Ltd. in 2022.

Solving the real challenge to operators, regulators and surrounding communities, the effectiveness of the biological filters has exceeded the required performance, achieving 99.8% H₂S removal efficiency over the range of inlet H₂S loads reaching to Zero outlet. The complete system has reduced the H₂S concentration to the TLV 0.00047ppm(V) for more than 99% of the time.

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