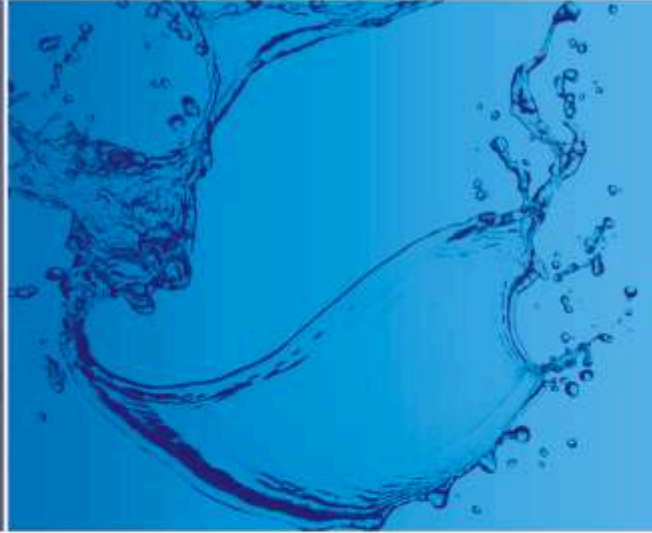




Fenix BioClean Technologies  
Environmental Solution  
Control VOCs & Odour



## BioClean Technology

Bioscrubber Technology - *FXBioScrub*<sup>™</sup>

Biotrickling Filtration Technology - *FXBioTrickle*<sup>™</sup>

Biofiltration Technology - *FXBioFilter*<sup>™</sup>

Bioreactor Membrane Technology - *FXBioMembrane*<sup>™</sup>



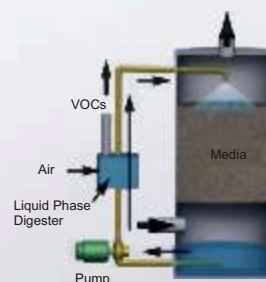
## Clean Environment: Controls VOCs & ODOUR

“

For the first time in India Fenix™ has introduced BioClean™ Systems providing state-of-the-art solutions with performance assurance by offering a series of proven biological treatment systems for volatile organic chemicals (VOC) and odor control for the safe and effective destruction of a wide range of commonly used solvent contaminants and odoriferous compounds. Fenix has been successful in developing these four industrially important systems and introduce the technology in the Indian market through a collaborative research with premier Indian R&D organization.

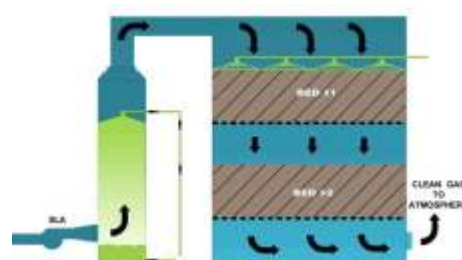
### **FXBioScrub™** Bioscrubber Technology

- ▶ Operational stability
- ▶ Good control of pH and nutrients
- ▶ Low pressure drops
- ▶ Addition of emulsifying agents (silicone oil, phthalate) help in better elimination of less soluble compounds



### **FXBioFilter™** Biofilter Technology

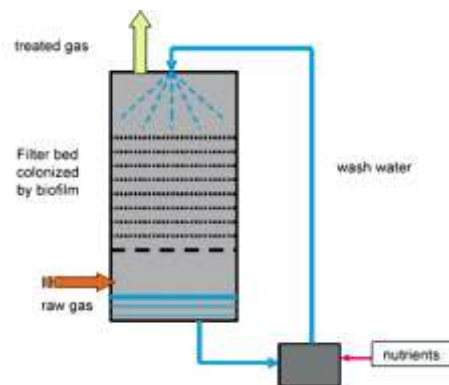
- ▶ Low investment & operational costs
- ▶ Convenient disposal of biodegradable components
- ▶ Low pressure drop and Less effluent water
- ▶ Little waste material (only replace filter material)
- ▶ Wide range of compounds can be treated



## **FXBioTrickle™**

### Biotrickling Filter Technology

- ▶ Recirculation of liquid continuously
- ▶ Recirculating liquid controls
  - pH
  - Concentration of nutrients
  - Metabolic end-products
- ▶ Synthetic packing material provides surface for biofilm attachment



## **Pilot systems**

- ▶ Operation of tailor made pilot plant
- ▶ Demonstration of Technology and process guarantees
- ▶ Proof of concept at site
- ▶ Design, erection and commissioning of full scale plant



## Advantages :

- Operational stability
- Good control of bio parameters such as pH, nutrients concentration etc.
- Low pressure drops
- Low energy consumption
- Low space requirements
- Competitive capital cost, low operational costs
- Modular systems
- Facilitate treatment of a wide range of industrial emissions
- Comply with legislation
- High efficiency

We have BioClean installations in these industries:

**Chemical**

**Pharmaceutical**

**Printing**

**Fibreboard**

**Aquaculture**

**Water Treatment**

## Applications :

Fenix addresses a wide range of commonly used solvents including but not limited to :

- Alcohols
- Esters
- Amines
- Aldehydes and Ketones
- Aliphatic, Aromatic and Halogenated Hydrocarbons
- Odoriferous compounds
- Hydrogen sulfide
- Ammonia

## Comparison : Conventional & Fenix Systems

### Conventional Systems

- Physico-chemical methods
- Energy intensive
- Contaminants transferred from one phase to another

### Fenix BioClean Systems

- Biotechnology methods
- Low energy consumption
- Degrades contaminants to innocuous or less contamination entities
- Microbes convert hydrocarbons mainly to CO<sub>2</sub> and H<sub>2</sub>O

Representative:

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