



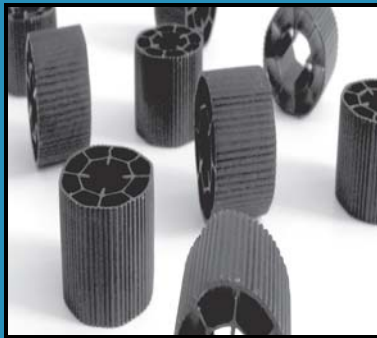
*“Technical Value  
is Performance”*

## ***BIOLOGICAL TREATMENT*** **AEROBIC SYSTEM DESIGNS**

### LCM



### MBBR



### MBR



## **APPLICATIONS**

**BAKERY  
BEVERAGE  
BREWERY  
DAIRY  
FRUIT**

**FOOD PROCESS  
MEAT  
MUNICIPAL  
PETROCHEM  
PHARMA**

**POULTRY  
PULP & PAPER  
SEAFOOD  
VEGETABLE  
WINERY**

### **Aerobic Treatment for Soluble Organics**


Aerobic bacteria are a microbe which uses free oxygen to decompose waste material and grow. The design of an aerobic treatment process for the soluble organics is made to fulfill the biological requirements of a stable targeted bacteria colony. In order to flourish, the nutritional and oxygen requirements for metabolism must be met. Bacteria must have a source of energy, carbon for synthesis of cell material and inorganic elements (nutrients) such as nitrogen and phosphorous. The absence of a nutrient will inhibit growth.

Most biological treatment systems are populated by complex interrelated, mixed biological bacteria. Each bacteria type has its own growth curve. And that curve is derived by the specific ecosystem in which the organism resides. By controlling the environment of the microorganisms, the decomposition of wastes is assured.

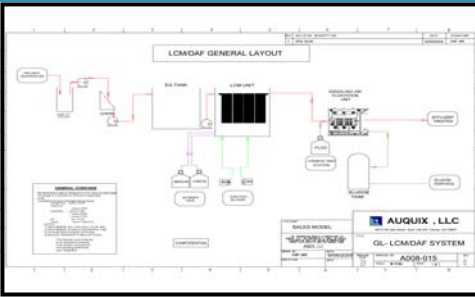
**Auquix** provides three well established and successful design solutions for aerobic biological treatment of wastewater. They are the **Loop Cord Media Filter (LCM)**, **Moving Bed BioReactor (MBBR)** and **Membrane BioReactor (MBR)**. Each has its place and Auquix can suggest which may be best for your application.



## Loop Cord Media Filter– LCM.....



**ADVANCED BIO SYSTEM**  
**LOW CAPITAL COST**  
**ECONOMY OPERATION**



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The **Loop Cord Media Filter (LCM)** has been developed as a fixed film system providing a large surface area for entrapment and holding of wastewater digesting microbes. The system is designed to maximize treatment capacity in a small footprint using a vertical orientation. Manufactured columns of **LCM** which consist of specially treated, chemically resistant filaments, are built on a corrosion free stainless steel racking system that is submerged in the wastewater being treated.


This flexible design feature allows for a small foot print at new installations or upgrades to existing systems. The several installation options ensure maximum exposure of activated sludge to the waste stream. The bacteria adhere to the media while digesting waste from plant effluent streams. The result is a resident population of biomass that removes BOD efficiently. The **LCM** can be further used in nutrient applications for nitrification/denitrification.

## Moving Bed BioReactor– MBBR.....

The **Moving Bed BioReactor (MBBR)** is a stand alone wastewater treatment system used for the reduction of soluble organics and nutrients. The key to the system is the plastic media which provides a suitable home for biological colonies of bacteria and protozoa to grow and flourish. The **MBBR** technology is a straightforward flow through design with no sludge recycling or backwashing necessary. The media are contained within the tank(s) and mixing energy is applied via coarse bubble aeration. If denitrification is necessary mechanical agitation will be applied in place of aeration. The **MBBR** is a flexible biological platform with easy future expansion– just add media.

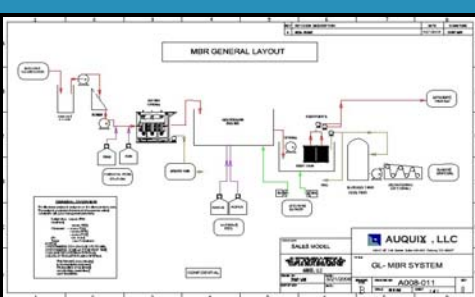
Operational control parameters are relatively simple. All that is required is monitoring of DO (keep above 2ppm) in the reactor via continuous automated control; test the daily organic COD feed (proxy for BOD); and dip strip check the nutrient levels in system.

**COMPACT BIO SYSTEM**  
**MAX OPERATING RANGE**  
**SHOCK RESISTANT**





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## Membrane BioReactor– MBR.....



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**MANY INSTALLATIONS**  
**BEST NTU RESULTS**  
**WATER REUSE CAPACITY**

In the **Membrane BioReactor (MBR)**, membranes may be directly immersed in the aeration tank or mounted adjacent to the aeration tank. By using a pump, a vacuum is applied to a header connected to the membranes. The vacuum draws the treated water through the membranes. Permeate is captured and sent for further disinfection or discharge. Turbulence of the fluid passing through the membrane helps scour the surface of the membrane. This scouring action transfers rejected solids away from the membrane surface.

**MBR** technology effectively overcomes the problems associated with poor settling of sludge in conventional activated sludge processes. **MBR** technology permits bioreactor operation with higher mixed liquor solids concentrations than conventional activated sludge systems that are limited by sludge settling. Higher mixed liquor concentrations allow for effective removal of both soluble and particulate biodegradable material in the waste stream.