

EnviroOrg® Process for high biodegradable organics and O&G effluent treatment

a breakthrough in ecofriendly totally biological process for treatment of effluents high in organics

The Envirosource EnviroOrg® Process employs a process configuration that maximizes breakdown of organics and removal of nutrients (especially ammonia-N) even under fluctuating flowrates, such as at wet markets, food courts and food & beverage (F&B) industries. Wet markets effluents are characterized by fluctuating flowrates and concentrations of organics, oil and grease, detergents, ammonia and suspended solids. The COD may fluctuate from a few hundreds to a few thousands. Such fluctuations of concentrations of each pollutant, and their ratios to each other, require a treatment process with in-built robustness so as not to succumb to typical consequences of fluctuations, such as bulking and biomass washout. Another characteristic of effluents from wet markets, food courts and F&B industries is that the flowrate from each location may be as small as several m³/day, to several hundreds m³/day. The system has to be one that can be downsized without affecting its effectiveness.

The Envirosource's EnviroOrg® reactor employs the EMM media, a tough carrier media made of PP designed to last at least 20 years, with housing cavities designed to protect acclimatized bacterial species for biodegradation of recalcitrant organics and nitrifiers for ammonia oxidation, so that they will not be washed out when contents of organics are low, or when contents of detergents and flowrates are high. The EnviroMixerMedia (EMM) is designed for self-mixing and self-cleaning so that no maintenance is required.

Stable biofilm layers build up over time on the media surfaces, especially the inner surfaces which are less subjected to shearing. The layers are bounded together by biopolymers and thus will not be subjected to bulking, a condition common in F&B ETPs. As the colonies of bacteria are carried in EMM housings, they freely circulate inside the effluent; as the EMM media density has been adjusted to be similar to that of suspended flocs. The EMM media is designed to rotate under currents, enhancing intimate mixing between bacteria and pollutants. The reactor may be small or large, without affecting its effectiveness. For large ETPs the EnviroOrg® reactor design ensures no short circuiting, and inbuilt settlers facilitate clarification while ensuring a compact system.



Bacterial biofilm layer on EMM® media magnified 5,000X using electron microscope

The EnviroOrg® Process has been successfully employed in several wet markets, including the Terengganu old Pasar Chabang Tiga, Pasar MPAJ Kuala Ampang, Pasar MPAJ Pandan Jaya, Pasar MPAJ Tasek Tambahan and another one is being constructed at Pasar MPAJ Pekan Ampang.



Before Treatment:
Cloudy, very smelly effluent, with oily sludge on top.



After treatment:
Clear, odourless and colourless effluent.



Treatment of wet market effluent using EnviroOrg® process at Pasar Chabang Tiga (old market), Kuala Terengganu.

EnviroOrg® Effluent Treatment Systems (ETS) at other wet markets and other industries are shown below:






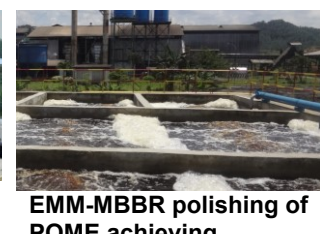
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			Under Construction Expected Completion 2020
MPAJ Kuala Ampang wet market	MPAJ Pandan Jaya wet market	MPAJ Tasek Tambahan wet market	

	Treatment of Wet Market Effluent at Pasar MPAJ Pandan Jaya (completed July 2019) employing the EnviroOrg® Treatment System to obtain reusable Class II water.
 <p>Initial Results:</p> <p>Raw wastewater, After EMM/MBBR Aeration, After EnviroPhosfat, After Sandfilter, After pressure filter</p> <p>Results on 22/8/2019</p> <p>EnviroOrg Process Treatment of Pandan Jaya Wetmarket Wastewater</p>	

Other EMM-MBBR Processes successfully treating complex effluents:

			
Enviroammanox LTP at Ampang - Hulu Langat Bt.14, Selangor, Malaysia (1998)	Enviroammanox LTP at Bentong, Pahang, Malaysia (2014)	MBBR-EMM Aeration tank at LTP Bentong (2014)	Dark leachate biologically decolourised without any chemical usage at Bentong LTP
			Other applications: - In green STP so that grainy sludge generated can be composted and reconstituted to biofertilizer. - In Pretreatment of polluted river water before Intake. - Industrial ETPs
LTP Langkawi (Completed 2018)	LTP Simpang Renggam (Completed 2019)	EMM-MBBR polishing of POME achieving consistent BOD<20mg/l (Completed 2015)	