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Medicinal Chemistry 2020: Application Biofilm Technology in Wastewater Treatment: Low Energy consumption - Noama Shareef- International Center for Developing and Migration

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Abstract

The increase of the demands on efficiency and cost of waste water treatment and reuse, leads to new interest in the biofilm technology. However, since long time, Biofilms technologies are used in wastewater treatment plants, to degrade organic particles and to improve the nitrification & de-nitrification processes in the waste water treatment units. Increasing demand for water and limited resources are major barriers to economic and social development in many counties in the Middle East and North Africa. Therefore treated wastewater can be important alternative water resources for irrigation. This increases the demand of economic wastewater treatment and reuse in the region.

Compact wastewater treatment unit has been designed and developed primarily for countries which are seeking solutions of problems related to wastewater and sewage handling and treatment in tourist areas. This is due to the small size and easy to handle of such wastewater treatment plants.

The compact, containerised wastewater treatment pilot unit has a nominal capacity of 200 PE, and is designed for small villages and similar dry communities. The intention is to have the unit installed and operated under the supervision of educated experts in a foreign country. The idea is to monitor and test the functionality of all plant components under real-life local conditions and verify the effectiveness of the wastewater treatment process. Based on the results and experience gained in the testing phase, the technology will be applied for full scale applications.

Therefore the aim of this paper is to demonstrate and evaluate the wastewater treatment efficiency of the small wastewater treatment plant which is based on a combination of an aerated submerged fixed bed biofilm in nitrification stage and an anoxic moving bed for de-nitrification stage GEA-Solution. This leads to demonstrate a new concept on a pilot scale with a capacity of 200 PE and typical municipal waste water type in the MENA region. Natural wastewater treatment systems play a major role in improving water quality and human health. Therefore, this chapter briefly discusses various biochemical approaches, especially biofilm technology, the development of biofilms in various filtration media, the factors that affect their growth and their formation and function. It also examines various common and advanced methods for studying the composition, diversity and strength of biofilms. This information is important for improving the efficiency, durability and durability of biofilm based water treatment technologies. A brief introduction will be given to the basics of biofilm behaviour and methods to eliminate and modify pollutants, along with a long history of biofilm-based wastewater treatment.

The principles of a bed-to-bed (MBBR) delivery system and their use. The Advantages and limitations of such solutions are provided along with the evaluation of emerging MBBR applications. The basis of biofilm processes and the characterization of the biofilm layer based on the dispersed oxygen gradient are discussed. Organic organisms thrive in a protected bio carrier environment, where oxygen layers form aerobic, anodil, and anaerobic fractions that allow a combination of nitrification and DE nitrification as an MBBR (nitrification, nitration, autotrophic and heterotrophic DE nitrification). The combination of MBBR with activated sludge, continuous flow (CFIC®) and anaerobic digestion enhances the potential utilization of MBBR for improved performance and recovery and is partially discussed as case studies (COD, ammonium and solid removal). . Biofilm durability and scale control may be important for MBBR performance. The type of carriers, filling qualifications and operating conditions play a major role in the operation of the process; therefore, the impact of those structures is demonstrated. Wastewater is waste water that must be purified before it is discharged into another body, without further contaminating water sources. Wastewater comes from various sources. Everything that drains your toilet or cleans the sink is dirty water. Rain water and runoff, as well as various pollutants, cause road debris to fall off and eventually end up in a wastewater treatment plant.

Sewage can also come from agricultural and industrial sources. Some waste is harder to handle than others; For example, industrial wastewater is difficult to clean, and domestic wastewater is easy (although domestic waste is difficult to manage, due to growing ce products and personal care products available in domestic wastewater.) For The more information on emerging pollutants, see Emerging Paper Contaminants or Water Read Canadian Press, Check Ontario

Chemicals, told Ontario).The Membrane Biofilm Reactor (MBFR), an existing technology for water and pollution management, relies on compression organs that provide an underground biofilm organ forming outside the embryo. MBFR biofilms behave differently from conventional biofilms because of the resistance and cross-linking of surfaces. MBfRs are particularly suitable for many therapeutic applications, such as removing carbon and nitrogen when oxygenated, and reducing oxidized pollutants when donating hydrogen. The main advantages are high efficiency, low power consumption and efficient use of small reactor feet. The first commercial MBFR was recently released and its success is likely to lead to the growth of other programs. The development of the MBfR still faces challenges such as biofilm administration, the creation of a scalable reaction planner, and the identification of less expensive markers. If future research and development continues to address these challenges, MBfR could be a major contributor to the next generation of sustainable therapeutic programs. A novel fibre biofilm electrode reactor (PBER) has been developed and its denaturation process has been analysed by investigating the effect of DE nitrification, extracellular polymeric materials (EPS) and microbial community. The results show that palm fiber is an embedded and efficient electrode material. The Almost 100% of nitrate removal based on any nitrate and ammonium accumulation. In addition, less power consumption was obtained. It has been concluded that nitrate can be reduced by the transfer of external electrons by the use of saturated organic matter such as humic acid, such as EPS. Also, EPS indicated biofilm elasticity and microbial activity in a large current area. In addition, for hydrogen autotrophic denitrifying and highly dispersed electrical bacteria, this study proposes an effective BER for the treatment of contaminated waste water and provides a method for assessing the DE nitrification process in bio electrochemical systems

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