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GRANULAR BIOMASS AND BIOFILM FOR GROUNDWATER TREATMENT

The present invention describes the process of obtaining aerobic granular biomass and biofilm for the potabilisation of groundwater contaminated by nitrates and other phytosanitary substances in oligotrophic environments

Technology for Licensing

Keywords:

denitrifying granular biomass, biofilm, groundwater treatment, oligotrophic environments, granular sludge, drinking water

Description:

The extensive application of pesticides and phytosanitary products represents an emerging problem because it produces high levels of nitrates and pesticides in groundwater in agricultural areas.

In this sense, the use of aerobic granular technologies has proven to be an efficient alternative in wastewater treatment, however, they have never been used on a full scale in this type of water because they present a low amount of nutrients causing degradation and decomposition of the granules.

The new proposed procedure describes the production of compact aerobic granules that operate without being degraded, as well as the operational conditions for biofilm formation and the microbial populations necessary for the production of granular biomass that can be used as inoculant for the rapid start-up of full-scale bioreactors.

These established operational conditions achieve no loss of biomass, resulting in greater compaction and the production of the exopolysaccharides necessary for granule stability. Thanks to the compact morphology of the granules obtained, aerobic and anaerobic processes are carried out simultaneously, allowing the elimination of all types of pollutants without the need to use a different bioreactor in comparison with other biological systems.

Advantages and Benefits

- Cost saving and versatility
- Increased effectiveness and efficiency
- Standardization of the procedure

  This methodology allows inoculation and rapid start-up of a new generation of bioreactors.
- Simultaneity of processes
- New applications

  The process allows the generation of granular biomass in waters with low organic material.
- High performance

  This technology reaches levels of 100% nitrogen elimination, 70% phosphate elimination and 100% organic matter elimination.

Actuación en el marco del Proyecto OI-Booster: Plan de intensificación de acciones de Transferencia de Conocimiento en Entornos de Innovación Abierta. Objetivo prioritario OP.01 "Refuerzo de la investigación, el desarrollo tecnológico y la innovación".

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