Denitrification in anoxic rotating biological contactors

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Rotating Biological Contactors (RBCs) constitute a very unique and superior alternative for biodegradable matter and nitrogen removal on account of their feasibility, simplicity of design and operation, short start-up, low land area requirement, low energy consumption, low operating and maintenance cost and treatment efficiency, as well as easy scalability. It is well known that the performance of this type of reactors is controlled by a high number of design parameters. In this sense, the work of this group has been focused on the study of the performance of anoxic bench-scale RBCs to treat synthetic wastewaters using different carbon/nitrogen (C/N), carbon sources and hydraulic retention times (HRT) as well as varying organic and nitrate influent concentrations.

As municipal landfill leachate is considered one wastewater with the greatest environmental impact mainly due to its high nitrogen content, it has also been an aim of our work to use AnRBCs for denitrification of a landfill leachate rich in nitrate. The same operational parameters above mentioned have been also assayed.

Presently, we are testing leachate pre-treatments by Fenton oxidation, ozonization or by ultra sounds, in order to reduce the COD load and in this way to increase the process leachate biodegradability.