

**DESIGN, CONSTRUCTION AND EVALUATION OF A ROTATING BIOLOGICAL CONTRACTOR (RBC) SYSTEM FOR MUNICIPAL WASTEWATER TREATMENT AT PILOT SCALE**

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**ABSTRACT**

In this study, a pilot scale domestic wastewater treatment plant based on rotating biological contactors (RBC), was designed, built, and evaluated. The demand of sources of water in semi-arid zones causes wastewater reuse in agriculture even without any treatment. RBC are an aerobic treatment system carried out by microorganisms attached to discs that rotate slowly through a stream of wastewater. Among the advantages of the system it can be mentioned, the potentially high levels of efficiency, the small footprint, and that can be expanded modularly; however, they are expensive systems to implement, due to the high cost of imported discs. In this study, one side rough polystyrene was chosen due to its local availability and it was verified that it is a suitable means for microorganisms to adhere. The maximum efficiencies reached by the RBC once acclimatization period was concluded, were: 81%, 75% and 85% for the removal of TCOD, SCOD and TSS. The overall efficiency of the system consisting of a primary settler, a 3-stage RBC and a secondary settler, reached levels of 68-79% for total COD, 68-77% of dissolved COD and 81-99% of TSS. Treatment levels are within the limits established in Bolivian legislation for wastewater discharge, so scaling up of this technology in climatic conditions similar to those of this study is recommended.

**Keywords:** RBC, Efficiency, Pilot, Wastewater, Compact WWTP, Aerobic Treatment, Bolivia.

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