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## TREATMENT OF NYLON PRODUCTION WASTEWATER BY BIOLOGICAL ANAEROBIC FILTER IN COMBINATION WITH A/O PROCESS – A CASE STUDY

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### Abstract

This paper presents the full-scale treatment of nylon production wastewater in a wastewater treatment plant in Henan province, Central China. In this case, a 9600 m<sup>3</sup>/d capacity wastewater treatment plant was installed to treat the wastewater generated from the production of nylon-66 salt, based on the biological anaerobic filter (BAnF) combined with an anoxic/oxic (A/O) process. The performance of the biological combined system was monitored over a 75-day period. The results revealed that the main pollutants, expressed as chemical oxygen demand (COD), nitrate nitrogen (NO<sub>3</sub>-N), and ammonia nitrogen (NH<sub>3</sub>-N) could be removed satisfactorily. The average removals of COD, NO<sub>3</sub>-N, and NH<sub>3</sub>-N reached 95, 99, and 92%, respectively. The quality of the final effluent met with the required discharge standards for nylon production wastewater. The BAnF packed with volcanic scoria and porous polyurethane foam played a significant role in the combined system. About 50–60% of COD and about 90% of NO<sub>3</sub>-N were simultaneously removed by denitrification in the BAnF. An economic analysis indicated that the chemical and energy costs incurred during the wastewater treatment were low. The total cost amounted to \$ 1567/d (i.e. \$ 0.20 per m<sup>3</sup> nylon production wastewater).

*Key words:* A/O process, biological anaerobic filter, full-scale treatment, nylon production wastewater

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