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

Haiming Huang1*, Qianwu Song2, Jianrong Qi3, Wenjun Wang2,
Shaowei Wu2, Chunlian Xu2, Jiankun Dai2

1Hebei Key Laboratory of Applied Chemistry, School of Environmental and Chemical Engineering, Yanshan University,
Qinhuangdao 066004, PR China
2Center for Environmental Engineering Design, Chinese Academy of Environmental Sciences, Beijing, 100012, PR China
3Beijing Santai Zhengfang Environmental Protection Technology Co., LTD, Beijing, 100085, PR China

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 m³/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 (NO3-N), and ammonia nitrogen (NH3-N) could be removed satisfactorily. The average removals of COD, NO3-N, and NH3-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 NO3-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 m³ nylon production wastewater).

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

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* Author to whom all correspondence should be addressed: E-mail: huanghaiming52hu@163.com; Phone: +86 10 84935398; Fax: +86 10 84935653