

ANALYSIS OF THE POSSIBLE APPLICATION OF DEAMMONIFICATION TECHNOLOGY IN THE MUNICIPAL WASTEWATER TREATMENT PLANT IN ZABRZE

Grażyna PEĆCIAK-FORYŚ^a, Krzysztof BARBUSIŃSKI^b, Krzysztof FILIPEK^c

^a MSc; Zabrze Water and Sewage Enterprise Ltd., Wolności Str. 215, 41–800, Zabrze, Poland

*E-mail address: gpeciak@wodociagi.zabrze.pl

^b Prof.; Faculty of Energy and Environmental Engineering, The Silesian University of Technology, Konarskiego Str. 18, 44–100 Gliwice, Poland

*E-mail address: krzysztof.barbusinski@polsl.pl

^c PhD; Water and Wastewater Advisory Company, Siemianowice Śląskie, Poland

*E-mail address: k.filipek@fdkf.pl

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Abstract

Due to eutrophication phenomena the modern wastewater plants are obliged to apply highly effective technologies to remove nutrient, i.e. nitrogen and phosphorous, substances. The biological methods to remove nitrogen in the processes of nitrification and denitrifications are successfully used in the main technological line (mainstream). It has been observed, however, that in technical design of activated sludge bioreactor the additional ammonia nitrogen load coming from fermented sludge dewatering effluents was not sufficiently considered. This load, of ca. 20–30% of a total nitrogen inflow, could interrupt the nitrogen removal process. Therefore, the sidestream ammonia nitrogen removal technologies have been widely applied. The operating problems and the ways to solve them in the “Śródmieście” WWTP in Zabrze, resulting from additional nitrogen load, coming from dewatering and thickening effluents, are described in the presented paper. Moreover, preliminary calculations of the DEMON[®] reactor volume, on the basis of actual nitrogen concentrations in the leachate, in order to implementation deammonification technology in the sidestream on a technical scale were also presented.

Keywords: Deammonification; Reject water; Nitrogen removal in the sidestream; DEMON system.