

Case Study - Nitrification

Restoring nitrification after prolonged biological treatment failure

A Belgian meat processing facility restored stable nitrification by combining optimised pretreatment with Bioremove™ AM.

KEY RESULTS

Nitrification
restored

By week 7

Effluent NH_4^+

70 ppm → 0 ppm

Additional
treatment

No extra step required

INTRODUCTION & PROBLEM

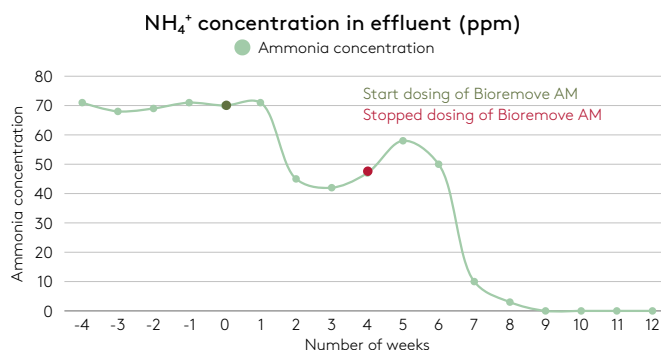
At a Belgian meat processing facility, nitrification in the biological treatment had been reduced for more than six months. Effluent parameters increasingly exceeded the limits of the environmental permit, and the usual natural recovery of nitrification did not occur.

After reviewing the full treatment plant, OQEMA identified two improvement routes: reduce COD, solids and toxic load entering the bioreactor through better primary treatment, and rebuild a more robust nitrifying and denitrifying biomass.

OUR SOLUTION

The primary treatment used a DAF unit with conventional coagulation-flocculation. OQEMA changed the customer from an amphoteric flocculant solution to a cationic flocculant, which markedly improved turbidity reduction and stabilised the water quality feeding the bioreactor.

Once the pretreatment was stabilised, dosing of Bioremove™ AM began. The specialised blend of nitrifying and denitrifying microorganisms was selected to establish a stronger culture that could better withstand toxic shocks and changing operating conditions, including exposure to biocidal cationic surfactants used during mandatory disinfection



RESULTS & CONCLUSIONS

The improved primary treatment reduced the load of toxic compounds entering the bioreactor and improved the nutrient balance. After Bioremove™ AM dosing started, nitrification activity returned immediately under difficult conditions. During the following weeks, the biomass was reinforced until the microorganisms reached critical mass in the sludge.

By week 7, ammonia levels were below the effluent limits of the environmental permit; by week 9, the chart records 0 ppm. Nitrification and denitrification were fully restored and, according to the case data, no comparable failure has occurred since.

Combining the right pretreatment with Bioremove™ AM avoided changes to the customer's operating conditions and the need to invest in additional treatment steps.

KEY TAKEAWAY

Optimising the pretreatment first created the conditions needed to rebuild a resilient nitrifying biomass. The combined approach restored stable nitrification without an additional treatment step.

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