

FILTRATION OF COKING WASTEWATER THROUGH GRANULAR ACTIVATED CARBON FILTER SEEDED WITH BIOMASS

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INTRODUCTION

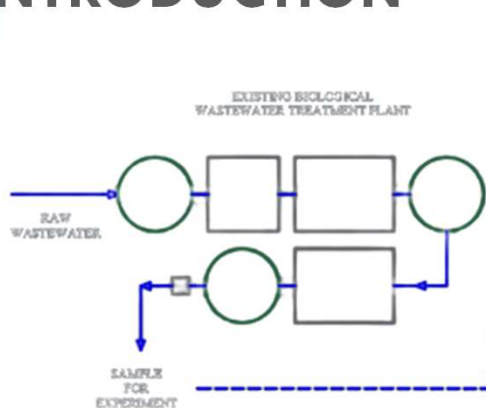
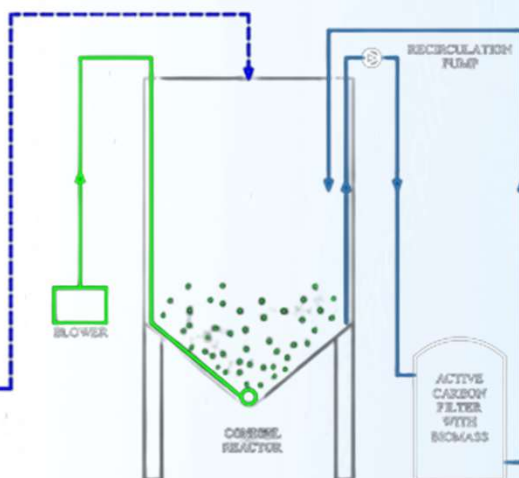


Figure 1 Block scheme of process



Advantages of GAC:

- high specific surface area
- porous microstructure
- low production cost



Figure 2 GAC

Granular activated carbon (GAC) was used as a support for biomass growth in biological filtration process treating coking wastewater with the aim of reducing ammonia concentration. Wastewater after treatment in a two-stage biological plant, using activated sludge technology is subjected to biological filtration. The wastewater enters a conical reactor, volume 15 L, which is aerated via a perforated tube and a blower, from where it is recirculated to the activated carbon column seeded with activated sludge from municipal wastewater treatment plant. Kinetic experiments were performed for 24 hours, and samples were collected through that period.

Table 1 Initial conditions of process

Initial conditions	
pH-value/-	7.8-8.3
T/°C	20.3-23.3
EC/mS/cm	7.18-7.98
Size/mm	0.5-0.7



Figure 3 Red GAC seeded granules

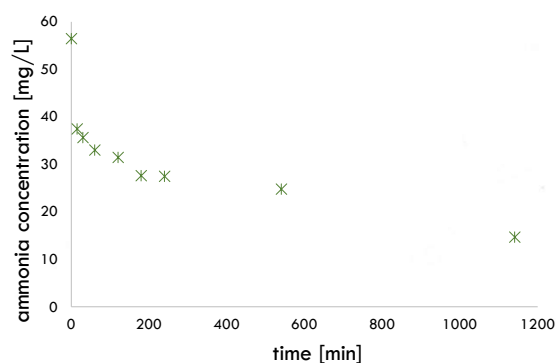


Figure 5 Results of kinetic experiment 1

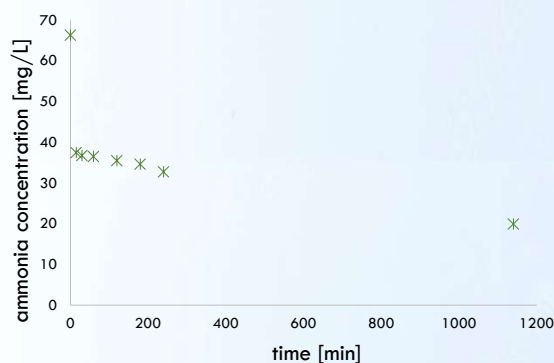


Figure 6 Results of kinetic experiment 2



Figure 4 Pilot plant

Literature:

Z. Wenjie, W. Huaqin, D.R. Joseph, J. Yue, *Global NEST J.* 17 (2015) No 3.