In this study, activated sludge from two experimental full-scale membrane bioreactor (MBR) systems (microfiltration and ultrafiltration) working in parallel has been used to determine $Y_H$ and $b_H$ in a batch respirometer. Both systems were equipped with a pre-denitrification stage and followed the same configuration: anoxic bioreactor, aerobic bioreactor and MBR. Nowadays, describing a conventional or MBR biological process cannot be understood without determining the values of several bio-kinetic parameters describing biomass growth and decay. The aim of this study is to evaluate the influence of several operational parameters related to MBR systems such as sludge retention time (SRT), hydraulic retention time, organic load, sludge temperature and aerobic bioreactor height over the heterotrophic decay coefficient ($b_H$) and the heterotrophic yield ($Y_H$), whose values ranged from 0.0088 to 0.31 d$^{-1}$ and from 0.40 to 0.88 mgCOD/mgCOD, respectively. Average sludge temperature and SRT have statistically significant effects on $b_H$, whose value increases as the temperature increases and SRT decreases and related to $Y_H$, also organic load influences it, getting lower values of $Y_H$ for higher SRT or organic loads and for lower temperatures.

Keywords: Respirometry; Kinetic parameters; MBR

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