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Original Articles

# Use of Optical Monitoring to Assess the Breakage of Activated Sludge Flocs

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DOI:

10.1080/02726351.2014.990656

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pages 412-417

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## Abstract

Optical monitoring with a charge-coupled device camera was used to assess the breakage of activated sludge flocs obtained from three different activated sludge plants: two municipal and one industrial. In this method, the samples were processed through the imaging unit and recycled back to a beaker using a centrifugal pump which causes the breakage of flocs together with hydrodynamics forces. Based on the image analysis results, the breakage models of the activated sludge flocs vary between the plants. The major breakage model in the two municipal plants was surface erosion whereas it was large-scale fragmentation in the industrial plant. A larger amount of filaments in the industrial plant most likely caused the large-scale fragmentation. Furthermore, the effect of the addition of a cationic polymer on the strength of activated sludge floc was studied in one sample. When the cationic polymer was used, the flocs started to grow at the start of the breakage process. However, they broke up at the end of the process and remained small, as found in flocs not exposed to any chemical treatment. Based on the results, the optical monitoring seems to be suitable for analyzing the breakage of flocs.

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