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Abstract

The aim of this work was to study the impact of reduced mixing time in a full-scale CSTR biogas reactor from 10 to 5 and to 2 Minutes in half an hour on the distribution of DM, acetic acid and FOS/TAC as a measure to cut electricity consumption. The parameters in the digestate were unevenly distributed with the highest concentration measured at the point of feeding. By reducing mixing time, the FOS/TAC value increases by 16.6%. A reduced mixing time of 2 minutes lead to an accumulation of 15% biogas in the digestate.

1 Introduction

At the end of the year 2016, a number of 9,004 biogas plants (German Biogas Association 2016) are in operation in Germany. Although there is no precise information available about the technical setup of those biogas plants, it is known that most of those biogas plants are based on continuously stirred tank reactor (CSTR) and mechanical agitation units have been widely established. As there are a wide range of mixers available on the market, the plant operators rely on equipment specified by the manufacturer of biogas plants. The most common agitation units are slowly operated