

**TEKNOLOGI PENGOLAHAN LIMBAH CAIR INDUSTRI KECIL TAHU
MENGUNAKAN PROSES AN-AEROB DENGAN STARTER EM4 DALAM UPAYA
MENDAPATKAN ENERGI YANG RAMAH LINGKUNGAN DENGAN VARIABEL**

Hidrolic Retention Time (HRT)

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ABSTRACT

Adiwerna Soybean's Cluster in Tegal, gets much attention from environmental aspect because of high organic material and untreated waste that cause in pollution. Waste water treatment technology which is develop there is using an-aerobic process by adding EM4 starter to produce biogas as green alternative technology. This research purpose in finding HRT for optimal anaerob process in soybean waste water treatment in Adiwerna Soybean's Cluster, Tegal using parameter COD decrease efficiency and biogas production. In the first research, adding of EM4 starter in 500 mL waster water is done with 5 EM4 variety comparison (0 mL, 0,25 mL, 0,5 mL, 0,75 mL, 1 mL) and 5 HRT variety (0 hari, 6 hari, 8 hari, 10 hari, 12 hari). The most optimal comparison in COD decrease will use to the next biogas production research. The most optimal comparison in COD decrease is the 5th comparison variety (500 mL waste : 1 mL EM4) with efisiency 82, 56 % at 12 day HRT. At the 5th camparison variety, COD decrease is calculated until 22 days HRT to find COD decrease and biogas production trend. Base on data analisys, the most optimal HRT in COD decrease dan biogas production is 10 hari with efisiency 78 % and TSS decrease is about 64 %. Biogas product include of 71,23% CH₄, 21,12 % CO₂, with heating value is 4199,47 kal/gr. Anaerob process effluent is higher than standart Perda Jateng no 10 tahun 2004. But this treatment can increase waste water quality. Volume of digester, fixed dome type with diameter 3,8 meters, high 1,9 meters with kerucut high 1,09 meters and diameter 3,8 meters is the most optimal design base on the research. From the data analisys result, conclude that optimal EM4 concentration is 0,2% (500 mL water : 1 ml EM4) and optimal HRT is 10 days, and biogas characteristic is included of 71,23% CH₄, 21,12 % CO₂, with heating value is 4199,47 kal/gr.

Key words : EM4 consentration, Hidrolic Retention Time (HRT), COD decrease, and Biogas volume.

