EFFECT OF CONTINUOUSLY FLOW ELECTROCOAGULATION ON TOTAL SUSPENDED SOLID LEVEL IN ARAU RIVER

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(Amirul Mukminin bin Zaidi)

ABSTRACT

Effect of Continuously Flow Electrocoagulation on Total Suspended Solid Level in Arau River

In this work, a lab scale Continuously Flow Electrocoagulation, CFEC were developed to treat raw sample from Arau River that contains approximately 1704.33 mg/L TSS. The different between common EC treatment with CFEC is it made with flowing mechanism which allow the sample flow and treated simultaneously. In CFEC, aluminium electrode used to trap the suspended solid during electrocoagulation through flocculation process. For the testing method, there a few experiments which has been made on CFEC which is different flowrate and voltage apply to the prototype. From the observation, the removal of TSS using CFEC is possible with 50-90% efficiency without needed any physical filtration process. Nevertheless, there a few conditions needed to be followed make sure this lab scale CFCE to increase the efficiency in removing TSS such as optimum voltage and flowrate. The inadequacy of CFEC in removing TSS are the suspended solid will settle at the bottom if longer time is needed. Furthermore, the longer the CFEC run the more flow will be produced causing the floc overflow. Future study is needed because there's a lot of space for improvement and modification and if given the opportunity it would have commercialised value.

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Protecting the environment and conserving fresh water supplies are the two fundamental goals of water and wastewater treatment (Reid et al., 2019). Water or river carried nutrients and minerals to transport locations all over the places in this world. They are important to the water cycle because they serve as drainage pathways for surface water. According to the researchers Box et al. (1937) said that "rivers drain almost 75% of the earth's land surface". The river is very important to because it provides excellent habitat and food for many of the earth's organisms (Snelgrove et al., 1997).

According to Thomas (1997) found that "particulate matter in water can include sediment especially clay and silt, fine organic and inorganic matter, soluble coloured organic compounds, algae, and other microscopic organisms". It may suffocate aquatic species, limit light to aquatic vegetation, and transport toxins and infections including as lead, mercury, and germs (Bashir et al., 2020). Turbidity affects the pace of development of algae (micro-aquatic plants) and other aquatic