



Transfer of Electrocoagulation Technology Knowledge for the Treatment of Petroleum Based Industrial Wastewater

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Abstract

This programme is aimed to transfer the knowledge and technology of electrocoagulation to treat industrial wastewater. Every kind of industry will release wastewater either in small or large amount depending on size of industry. Concentration of organic and inorganic contaminants is commonly high in industrial wastewater and various type of treatment is being used based on the concentration and types of contaminants. The focus of this knowledge transfer programme is to treat petroleum based industry wastewater using electrocoagulation. Petroleum based industry is chosen because this industry is one of important industry in Malaysia especially in East Coast region. For this programme, electrocoagulation reactor system will be enhanced in order to transfer the technology to MY Synergy Factors (M) Sdn. Bhd. Then, knowledge transfer training will be organized for the industry personnel to introduce them appropriate optimum operating parameters and Standard Operating Procedure (SOP) in handling the new electrocoagulation reactor for wastewater treatment. This knowledge transfer program will bring benefit in term of economic gain to the industry. Other than that, the collaboration between industry and university will become closer.

Keywords: Electrocoagulation system, Petroleum Industry, Transfer knowledge

1. Introduction

The petroleum industry affects the lives of consumers, even if they do not vigorously buying gasoline or oil for use in their vehicles. Hence, due to this, the production of petroleum based products increasing from day to day and same goes to the

wastewater produce during the production. However, awareness toward the waste that produced during the production of products is so little. This includes the way to disposal the waste or the treatment that can be done before discharge the waste.

Wastewater treatment is a crucial part that faces by every industry. Growing of demand for petroleum based products and growing of petroleum based industry, lead to the increased of wastewater from the petroleum based industry. Generally, a series of physical, chemical and biological treatment will be employed in a plant in order to treat the wastewater produced.

There are a lot of conventional technologies used for the wastewater treatment whether physical, chemical or biological methods. But, some large cost needs to be spent on the treatment. So, alternative technology needs to be developed for mutual benefit for people and environment. Other than that, the strict regulation by Department of Environment (DOE) Malaysia requires an efficient and cost effective treatment. This programme is a golden chance for broaden new treatment method. Electrocoagulation is a novel technology that gaining attention in water and wastewater treatment. It is been used in other industry as well. This type of electrochemical treatment seems to be a promising treatment method because of its effectiveness, environmental friendly, lower maintenance cost, and rapid result achievement and only few labour required. We already made studies using current electrocoagulation reactor that we have.

Electrocoagulation (EC), is carrying out with the passing of electric current through water, has been prove that it's very effective in the removal of contaminants from water. Electrocoagulation systems have been in existence for many years using a variety of anode and cathode geometries, including plates, balls, fluidized bed spheres, wire mesh, rods and tubes.