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Sustainable energy used in wastewater treatment. Removal of dyes

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Contamination of rivers with industrial dyes has a strong impact over their flora and fauna by reducing the amount of solar radiation that reaches the surface of plant leaves, due to its absorption. Also, dyes can be absorbed by the flora, fauna and aquatic sediments. Due to decreasing amount of available solar radiation photosynthesis is diminished affecting food chain and breathe of aquatic flora and fauna. Process waters of consumables for printers and copiers industry are contaminated, mainly with ink pigments from the washing of toners and toner cartridges. Decontamination is difficult due to increased solubility of the pigments. A decontamination method is the adsorption of the pigments on different materials but this leads to large amounts of solid waste and hence the problem of storage and handling. Electrocoagulation with soluble anode is, instead, an efficient treatment method, generating a relatively small amount of solid waste and reducing operating costs. In this paperwork, we have done studies on the effectiveness of using electrocoagulation with soluble anode in cleaning pigment contaminated wastewater. Electricity required this process is obtained from solar energy using more efficient photovoltaic panels and electric accumulators coupled with DC/AC and AC/DC converters.

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