

Study and development of a new process for the treatment and purification of industrial effluents contaminated by metals by electrodeposition

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Abstract : Currently, Electrochemical methods find wide application in the treatment of industrial effluents to reduce their organic matter content, in inorganic sulfur compounds and nitrogen, or in harmful metals for the environment. Electrochemistry is not only applied to wastewater, but also on contaminated soils, incineration residues or sewage sludge wastewater from the metallurgical industry. Electrochemistry has proved its effectiveness, which allowed him to integrate the environmental industry. Environmental electrochemical technologies allow to control pollution, to recycle materials, to carry out the rehabilitation of sites, monitoring (monitors and sensors for gases and liquids), the efficient conversion of energy, the prevention of corrosion, removal of contaminants and disinfection of water. Electrochemical processes can therefore be efficient and economical when properly designed, and they integrate harmoniously with the environmental industry. These processes require compact installations and can thus integrate into existing industrial waste treatment chains. The present work aims so the elaboration of an electrochemical process of treatment and purification of industrial effluents contaminate with metals. Indeed, the use of this technique can allow both the elimination of these metals by electroplating on a cathode, a recovery of metals, a saving of precipitation reagents and a reduction in the amount of sludge to be removed, as well as surface treatments where the applications concern gold recovery, silver, copper, cadmium, nickel, zinc, iron and lead ... etc. The metal that can be recovered in the form of valorizable cathodes, which allows the depollution of the environment. This work requires in-depth studies of design considerations and the development of an electrolytic cell.

Keywords : electrochemical, environment, pollution