

## **Feasibility of utilizing solar energy to provide cathodic protection systems for oil and gas pipelines buried in soil, the method applied**

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### **Abstract**

Cathodic protection method is most applied in oil and gas industry, in order to prevent corrosion of oil and gas pipes buried into the earth. Cathodic protection based on impress Current consisted of development of a electrolysis system in which Anode and Cathode electrodes are created by direct electric generator, so that there is one or more Anode made of cast iron installed adjacent to a structure, also the structure and anode are be connected to negative and positive electrode of the generator, respectively. In this study, considering the actual data and information of a region soil, mechanical specifications of oil pipeline and its coverage in Ahvaz-city, as well as computational formulas and presented Handbooks regarding to various type of anodes and various types of solar cells and batteries available on the market, it was dealt with the design of solar Cathodic protection devoted to the region. According to the performed calculations, the best type of solar cell is AT50 and the number of panels, voltages, and productive currents are obtained 42, 52.2 V, and 40.04 A, respectively. The suggested batteries were Sealed Lead Acid which the number of them, its voltage and current are 4, 48 V, 250A, respectively

**Keywords:** corrosion, cathodic protection, impress current, solar energy.