Preliminary Process Design and Economics for AChlorine and Caustic Soda Plant

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In this report the uses of chlorine and caustic soda are mentioned.Twoelectrolytic processes for the production of these products, namely the mercury cell and the diaphragm cell process have been described and compared. The diaphragm cell process has been opted for after considering pollution effects inherent in the mercury cell process, and the quality of caustic soda as required by industries in Tanzania still being satisfied by the diaphragm cell products. The diaphragm cell process has been described in details together with the capital investment, production costs and other necessary data.The capital investment for a plant producing 30, 000 tons and 68,000 tons per year of chlorine and 50% caustic soda respectively will be about Tsh. 101 Millions. The total production costs are about TSh. 82 million in the first year of operation (Assumed to be 1978).The selling price for chlorine and caustic soda (based on 100% NaOH) has been taken asTSh. 1680/= per ton of each product (which is the Norwegian market price in 1978). With these selling prices the break-even point was found to be 57% of plant capacity and the shut-down point at 15% of plant capacity. The payback time was found to be about 3 years. These prices are comparatively lower than the existing prices of about Tsh. 7, 900 and
Tsh. 2, 950 for imported chlorine and 100% causticsoda respectively.[28] Hence the values of the break even point and shut-down point may be varied by altering the selling price of the products which will depend on the markets available at the time of production. Here it is assumed that the markets are
available.