

CHAPTER III

Design of Experiment

The mechanism which was used in this experiment consisted of an electrical insulated column having an outside diam. of 16 cm. and a height of 56.5 cm. Inside this column has a couple of copper nickle alloy plates, on the upper part. Between the plates there is a dielectric materials such as oil. The electric current has to pass the primary of an isolation 220/220 volts transformer before applying to the electric field column to prevent an electrical shock, inducing at the outlet of the column. The electric field column has been fed by a complex wave generator which was operated at 400 to 500 volts. The energy was applied to the electric field column in form of complex waves which were the combination of fundamental and harmonic waves of difference amplitudes and phase shifts. The wave was transformed by the complex wave generator and transverse in perpendicular to the diaphragm into the liquid mass.

The unit was operated by passing a well water into the column at the lower part and flowed toward the diaphragm before overflowing out of the column into the sedimentation tank as shown in the fig. 11.

Required Equipment

1. An Isolation Transformer
2. An Electric Field Column

3. A Complex Wave Generator
4. A Wattmeter
5. Sedimentation Tank.
6. A Filter.

Methods of Analysis

The method of analysis of raw water and effluent water are shown in table III.

Table III Methods of Analysis

Items	Method	References	Remark
Alkalinity	Methyl orange alkalinity	Standard-method	
pH	pH meter	-	
Fe	Photometric-analyzer	-	see appendix
Temperature	Thermometer	-	
Hardness	EDTA Method	Standard-method	

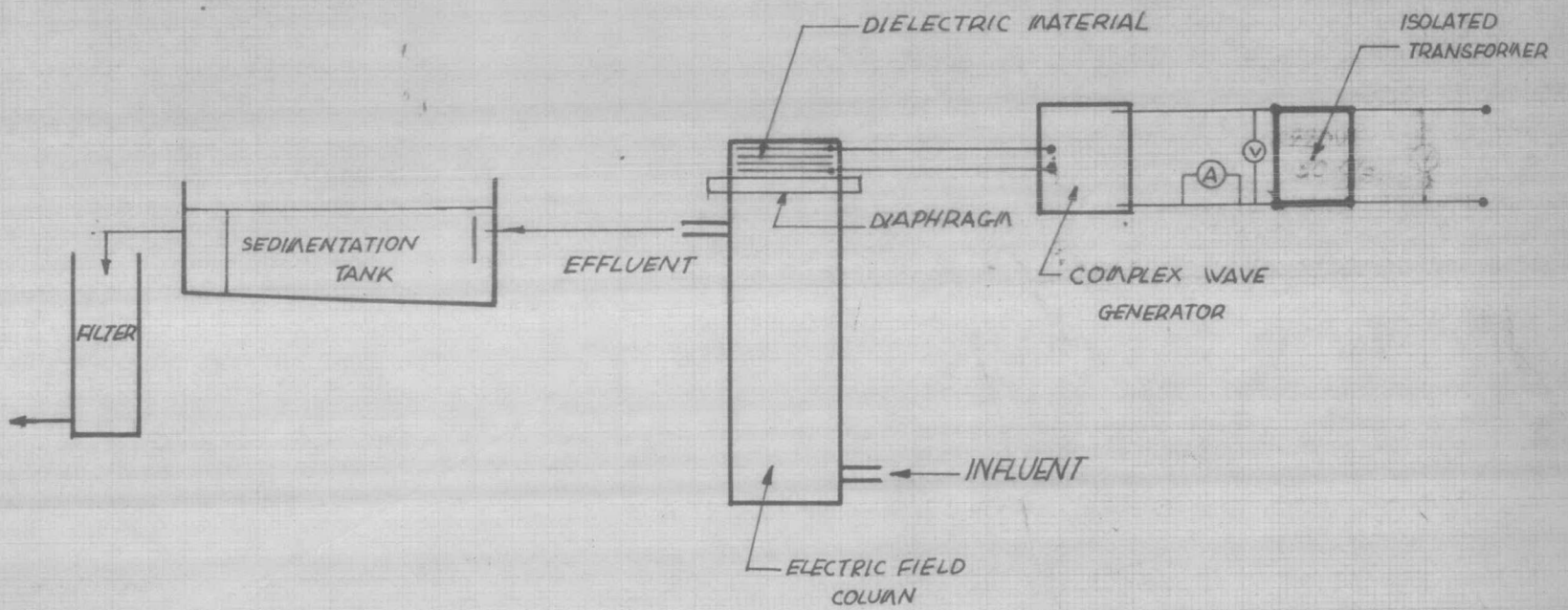


Fig.11. Schematic Diagram of the Fe Removal by Electrical Means.

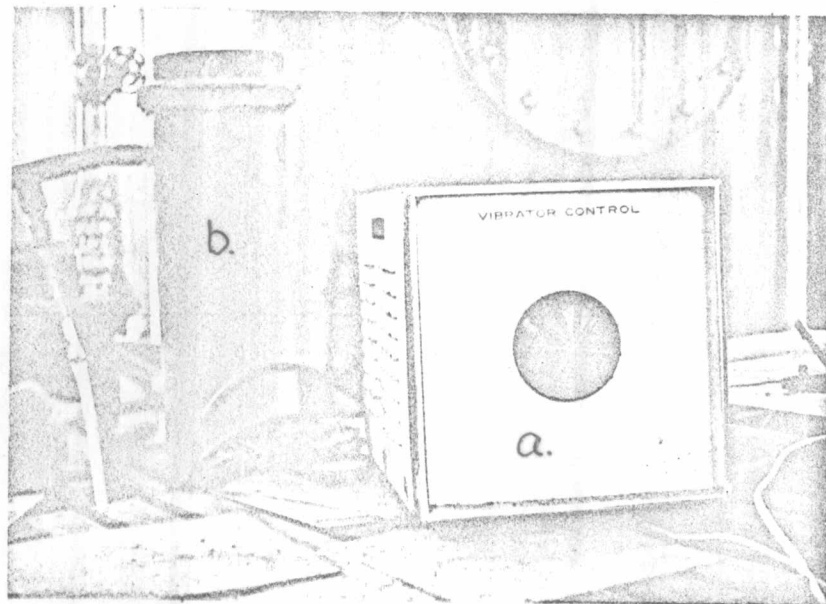


Fig. 12. a. Vibrator Control
b. Electric Field Column



Fig. 13. Isolated Transformer

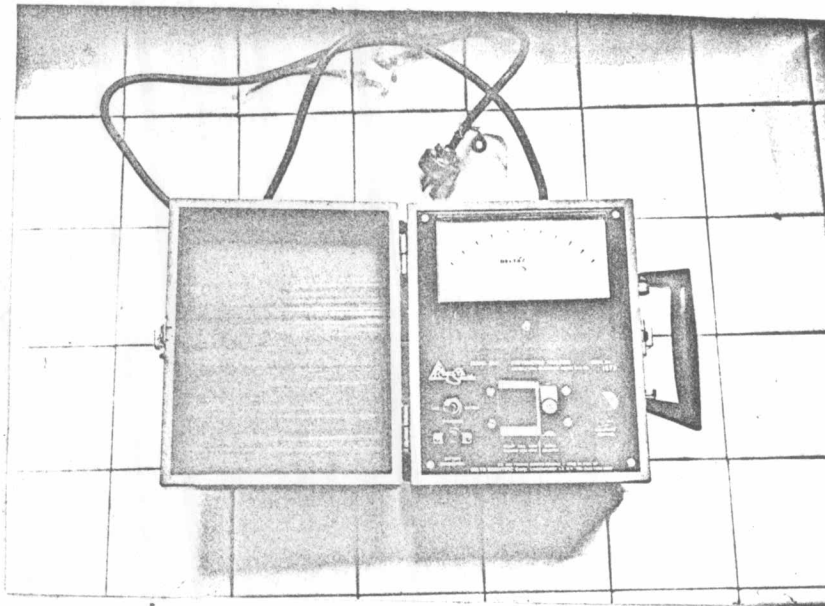


Fig. 14. Photometric Analyzer Model 260

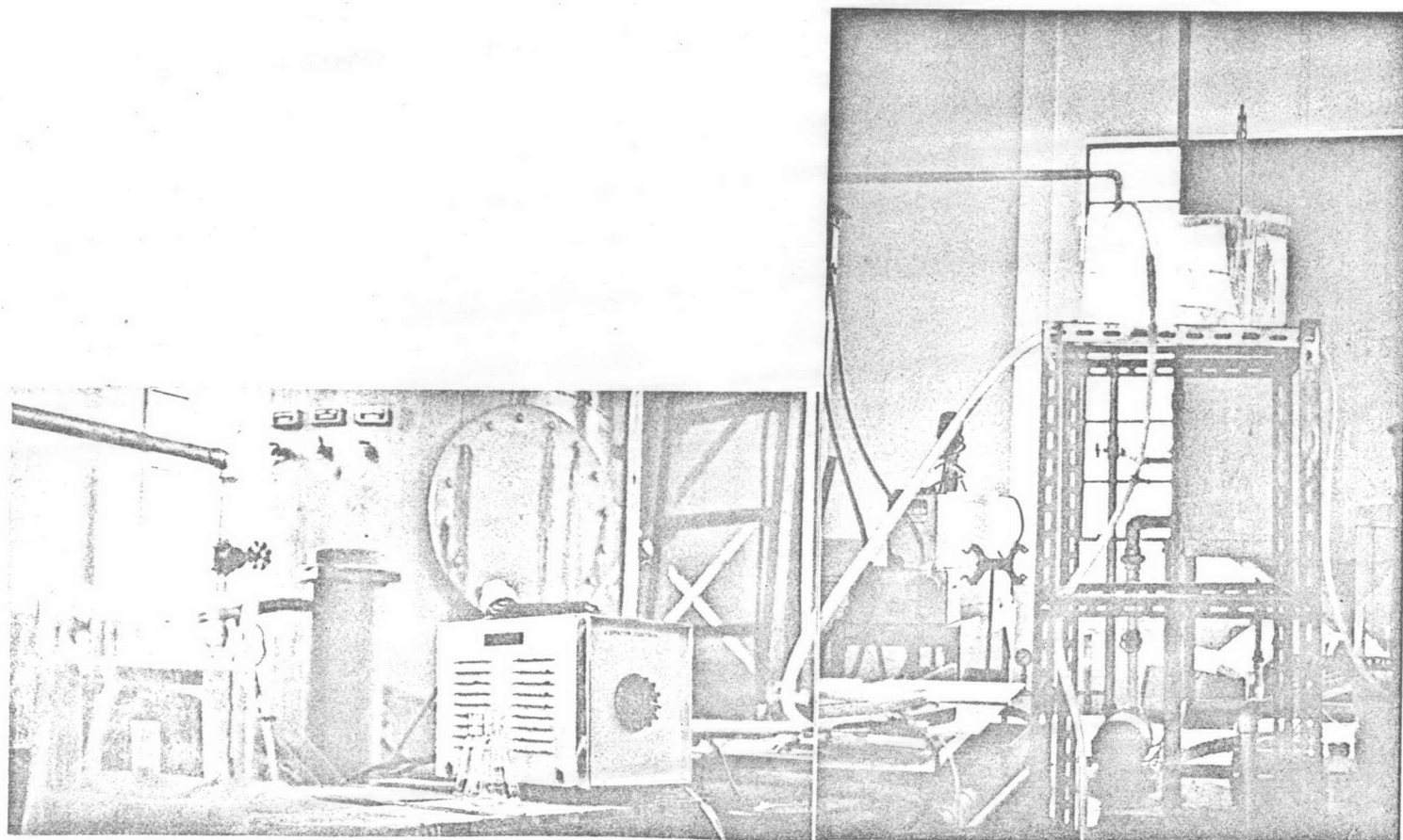


Fig. 15 Laboratory Scale Plant.