

TREATMENT AND RE-USING OF BOILER BLOWDOWN IN THERMAL ELECTRIC POWER PLANTS

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ABSTRACT:- This work studied the utilization of a pilot plant of ion exchange as a treatment method and re-use for blowdown water in South-Baghdad electric power plant. The pilot plant consisted of two columns of QVF (4.75 cm internal diameter & 90 cm long); cation and anion exchangers' together form the demineralization process. The study is divided into two parts; the first part is to study the effect of flow rate, bed depth, silica concentration on breakthrough time and adsorption capacity for ion exchange pilot plant. The second part is to study the effect of pH with the range of 4.5 to 10 on breakthrough time and adsorption capacity by using two kinds of cation (strong and weak cation resins

The experimental data collected were represented by two dimensional figures and fitted to a second order polynomial mathematical model, with correlation coefficient about 0.98.

The best operating condition attaining maximum breakthrough time and higher adsorption capacity at flow rate (12.46 L/hr) and maximum bed depth (50 cm) with minimum silica concentration (0.1ppm) .The system of WAC resin and SBA resin was more effective than a system of SAC&SBA resin in treating boiler blowdown water.

The cost estimation is saving 274560 \$ by treating boiler blowdown water due to elimination of some processes such as coagulation, filtration and R.O processes, and also reduction in chemicals consumption.

Keywords:- Re-using wastewater, Boiler blowdown .

INTRODUCTION

Industrial wastewater presents a complex and challenging problem to the community welfare; because of this it is important to find a solution to this problem, such as: re use of