CONDUCTIVITY OF COOLING WATER IN INDUCTION OVEN

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ABSTRACT

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The conductivity of cooling water in induction oven was ascertained. The values of conductivity of cooling tower and to control the reading of conductivity were determined. The method that using to achieved the objective is by using chemical liquid to add up into the cooling water. The conductivity sensor is used to detect the value of conductivity in order to prevent the worst case may occur. Once the conductivity of cooling water is greater than 800µS/cm, the chemicals were added up into the water to reduce the reading of conductivity. The other function of chemicals is as anti-rust, anti-bacteria and scaling. So, in order to less use in chemical liquid, the solution that we found is by using tap water that supplied from SYABAS. This is because the conductivity of taps water which is 100µS/cm still in the range of induction oven requirement which is less than 800µS/cm.

CHAPTER 1

INTRODUCTION

1.1 Background

The conductivity of water is the measurement of the ability of an aqueous solution to carry the electrical current. An ion is an atom of an element that has gained or lost an electron which will create a negative or positive state. Besides, the conductivity of a substance is defined as the ability or power to conduct transmits heat, electricity or sound. Its units are Siemens per meter (S/m) in SI and millimhos per centimeter (mmho/cm) in U.S. customary units. Its symbol is k or s.

For example for the sodium chloride (table salt) consists of sodium ions (Na^+) and chloride ions (Cl^-) held together in a crystal. In water it breaks apart into an aqueous solution of sodium and chloride ions. This solution will conduct the electrical current. An equation which shows this is:

$$Na \text{ (atom)} + Cl \text{ (atom)} = Na^+ Cl^- \text{ (ionic crystal)}$$

$$Na^+ Cl^- \text{ (in a water solution)} = Na^+ \text{ (ion)} + Cl^- \text{ (ion)}$$