

Chapter 1 - INTRODUCTION

1.1 Rational

Electroplating is a common metal finishing process with several industrial applications, ranging from the purely cosmetic to the application of protective coatings. The process, which uses electric current to drive ions towards receptive metal surfaces, is sensitive to multiple key parameters and careful control is crucial to achieving desired plating effects. Several components, including the concentration of ions in the plating bath, the bath temperature, and the electric current density, can be adjusted to affect the final outcome. The process of electroplating has produced many rules of thumb for proper operation but by replacing conventional rules with pH measurement, quantitative feedback can be used to guide electroplating process control for improved product consistency and efficient waste treatment.

Process like deposition ,doping, electroplating creates the toxic gases in the processing plant. This gases are used as a catalyst in the process. This gases sre surely enabler in the processing but are highly toxic and can cause concussion when inhaled. Additional acids like HCL are also used in these companies for similar purpose fumes can cause irritation & affect the respiration of the inhaler Whether these gases are used for manufacturing or byproducts of any process in a facility it becomes very important to monitor and control them

Therefore detection system can be easily integrated into existing system & equipment of a company, allowing easy detection of leakages that can result in several catastrophe. Quick action can hence be taken to prevent the spread of gas over a wide region. These systems are an essential commodities in such industries. Since the allow them to detect the leakage of noxious and explosive gases maintain proper oxygen level for workers

1.2 Problem definition

The problem given by the industry is that in the electroplating plant of the industry there is a need of a system which require to monitor a parameters in the electroplating bath such as electrolyte solution PH value,Methane and carbon monoxide gases content of electroplating bath container not only monitoring but the want the data to be fetched in their plant office(manager's) wirelessly

1.3 Abstract

An appropriate conditions are required within the electroplating bath for its smooth operation. In order to achieve the reliable product finishing on the electroplated product

it is necessary to keep the stable parameters in the electroplating bath. Those parameters are PH value and temperature of the electrolyte solution ,Gases such as methane, carbon dioxide and various oxides coming out due to the process of deposition in the electroplating bath. So it is important to keep continuously checking this parameters in order to maintain them within the specified required values. As a slight change in the value causes lowering the product finishing, increase in the gases and fumes in the plant due to deposition reaction and most important loss of the raw material used and final product

So by automating the data acquisition process of this parameters which are govern by the electroplating bath, allows the information to be collected at higher frequencies with less labour required. The motive of the project is to simple easy to install (handy) microcontroller based circuit to monitor and record the value of temperature PH and gases such as methane , hcl fumes carbon dioxide, etc that are continuously modified and controlled in order to optimize them to achieve maximum product finishing . the project includes microcontroller which communicate with the various sensor module in real time in order to monitor the parameters and send it wirelessly through transmitter in managers office. An integrated Liquid Crystal Display (LCD) is used at the receiver end to display the real time status of parameters in the bath. Also the use of easy available components reduces the manufacturing and maintenance cost. The design is quite flexible as a software can be changed at any time. It can be tailor-made to the specific requirements of the users. This makes the proposed system to be an economical, portable and low maintenance solutions for the electroplating plant application. Especially for the small scale industry

1.4 Objective of the project

Flexible system -: System should be so flexible which will easily adapt the electroplating plant environment.and can be easily transferred to another container. Also if require it can be modified as per further requirement(which includes switching action of the inlet and outlet valve of the electroplating bath,diluting the electrolyte solution etc)

Wireless system:- This monitoring system should be wireless because at the actual project implementing site there is no such place to carry the wires towards office

Alarm provision -: System should have the alarm provision which will inform that bath parameters has cross the threshold value.

Compact Size -: System should be compact so it can be attached at at the site and can easily be carried to another bath if required .

1.5 Scope of the project

Chapter no 1 -: This chapter consist of introduction, briefing of the project which includes Rational, Problem definition, abstract and objectives of the project

Chapter no 2 (System Model)-: This chapter consist of the system objectives. On this objectives the design of a system model will be depend.

Chapter no 3 (system design)-: This chapter will show the hardware designing of the system on the basis of the analysis the done for designing each part of the system for eg transducer, controller and transmitter interfacing analysis.

Chapter no 4 (components description)-: this part will give the descriptive information and specification of the of the components used in the system circuitry.

Chapter no 5 (software designing)-: The software description regarding the programme ,programe-editor and microcontroller environment ide will be consist in the 5th chapter

Chapter no 6 (system operation)-: Chapter will give the operating procedure and information of the system. It will also include the precaution while using the system and terms related to calibaration of the transducers

Chapter no 7 (future scope)-: This chapter consist of all about the scope available in future and the amendment and advancement in the project