Department : **Mechanical**

Year : **2014-2015**

Group No: **4**

Guided By

PROF. M. D. PATEL

SMT. S. R. PATEL ENGINEERING COLLEGE, UNJHA

Project Title

TO IDENTIFY CAUSES AND REMEDY OF CORROSION AND EROSION ON INJECTION SCREW OF PLASTIC MOULDING EQUIPMENT

Abstract:

This project is a combination of mechanical engineering and sustainable development in developing countries. Plastic injection moulding machine is use for manufacturing part of plastic product. The main part of this machine is "Injection Screw". Its function is to feeding melt plastic raw material. Plastic raw materials melt in injection moulding machine. Injection screw is made of EN41B steel material.

Corrosion & Erosion problem produce on Injection screw, when PVC raw material use for produce plastic product in injection molding machine. When CPVC (Chlorinated polyvinyl chloride) material use for produce plastic product then more corrosion & erosion problem produce on Injection screw. The root causes of corrosion and erosion is a temperature and chlorine. The major percentage in CPVC is chlorine. The chlorine is chemically react with injection screw and is produce FeCl2 & FeCl3, which is responsible for corrosion. Temperature is also affect for the growth of corrosion.

This type corrosion is reduce by apply heat treatment process and coating on a surface of injection screw material. There are many coating available, but CrN (Chromium nitride) coating, WC (Tungsten carbide) coating and hard chromium plating are better to resist corrosion and wear. Also HDP (High Density Polymer) process is use to remove chlorine which is apply on the surface of injection screw. So indirectly reduce corrosion which is produce on the surface of injection screw.

For reduce corrosion and erosion problem such ways, Take three 50mm dia. and 50mm length round bar of EN41B stainless steel specimens. On one specimen has induction hardening. Another has Induction hardening and WC (Tungsten carbide) coating. And Last one has no any type of disturbance. then, this All three EN41B specimen are carried for corrosion test and take reading of corrosion test. Conclude that, we get solution by experimental reading on EN41B specimen.

The study aim is to reduce corrosion and erosion problem on the injection screw and improve the quality on injection screw.

Prepared By:

Sr. No.	Student Name	Enrollment No
1	MEHULSINH B. VAGHELA	110780119063
2	PRATIK P. PRAJAPATI	110780119076
3	MEHUL M. PRAJAPATI	110780119077
4	SAGAR C. PATEL	120783119028