

# MATERIAL HANDLING IMPROVEMENT FOR QUALITY MANUFACTURING

N.Rishi Kanth, L.Rasidhar

**ABSTRACT:** This paper investigates the increase of quality of a handling a manufactured component by implementing small modifications to the present working system. In these different materials in the place of metals was tested so that the scratches on the surface of the component due to metal to metal contact should be reduced and surface finish should be maintained within the limit. With this system the surface finish of the manufactured component was good and maintain the quality of the component

**KEYWORDS:** Surface finish, locating pins, rest pads

## 1 INTRODUCTION

After finishing operation of a component there are some other operations to be performed after completion of finishing operation and passing through checking stations according to that the surface finish of that component damages by contacting the finished component surface with the metal locating pins, rest pads and moving on metal rollers from station to station. Material handling is one of the important tools for quality, if surface finish of joint face is poor that leads to leakage between cylinder head and cylinder block. It leads to improper wear between any two parts and the components get rejected in quality checking station. This may leads to increase in defective components.

Some of the problems Identified in the machine shop due to which a component may get rejected

The remedy taken for the above problems are.

- 1) Scratches on the surface due to metallic rollers.
- 2) Impression on the joint face due to metallic locating pins.

Impressions on the joint face due to metallic rest pads.

- 1) Scratches on the surface due to metallic rollers.

For rectifying the above problem all the metallic rollers are converted to PU coated rollers so that the scratches which cause the surface damage were reduced, another demerit sudden stopping is not possible i.e. after a conveyor stops the component moves to some distance on metallic rollers due to less weight. But with PU coated rollers the component stops suddenly due to more friction between component & roller



FIG .1 METALLIC ROLLERS WITHOUT & WITH RUBBER COATING

- N. Rishi kanth, presently working as Associate professor in the Department of Mechanical Engineering at Guntur Engineering College, Guntur, nuthi.rishi@gmail.com, 8186083608
- Dr.L.Rasidhar, Professor, Mechanical engineering in GEC, India, PH-8977222949. E-mail: lankarasidhar@gmail.com

The above shown is the modification of metallic rollers to the PU coated rollers so that the surface finish is not damaged and the gripping of the component is also very high.

2) Impression on the joint face due to metallic locating pins. Due to the clamping pressure and sudden placement of the component on the metallic locating pin, the surface that rest on the metallic locating pin is gets damaged



Fig.2 damage on the surface due to metal locating pin



Fig. 3 metal locating pins

The metallic locating pin is replaced with Teflon material so that it will withstand the weight of the component, give perfect strength as metallic locating pin and the clamping pressure will be the same, surface finish will not damage.

3) Impressions on surface due to metallic rest pads.

Another problem identified which damages the surface finish was the operator will keep the component very hardly and moves the component on the rest pads and locating pins due to check whether the location of the component is perfect or not. While doing this operation he does not see whether the component is rubbing on metallic rest pads and locating pins or not. Due to this the surface of the component is damaged.



Fig.4 metal locating pins changed to Teflon material

In the above figures the locating pins are metallic in which the surface finish is damaged as shown and to avoid this kind of damages we provide Teflon locating pin. While selecting the Teflon locating pin, the strength of the material was tested and it is as strong as the metal and by using this back pressure for clamping also doesn't vary and the clamping of the component is also set easy without any hard work by the operator.

Fig.5 Before and after PU rest pads inserted on fixture



While placing a component on the fixture the operator will move the component on metal rest pads to confirm the component is placed properly or not due to these scratches occurs on the surface. So to arrest this beside the metallic rest pad a rubber rest pad is provided with 1mm height more than metallic rest pad, so that the surface of the component rest on this rubber rest pad and then due to the clamping pressure it rest on the metallic rest pad so that due to movement of the component scratches will not occur on the surface and during clamping the clamping pressure moves the component 1<sup>st</sup> towards rubber pads, later the metallic rest pad and the clamping pressure remains same. The shore hardness of rubber rest pads is 50±5A. In this we have seat check confirmation by back pressure of air if the back pressure of the component increased or decrease the component is not clamped so for that purpose we have selected the rubber rest pads. The above three are the precautions taken for reduce the scratches on the surface of the component

## CONCLUSION

With converting the metallic rollers in to the pu coated rollers the friction between the component and the roller increases and scratches decreases sudden stopping of component is achieved. With replacing the metal index with Teflon metal the impression on the metal surface is removed and the surface finish does not disturbed With replacing a rubber rest pad beside the metal rest pad the impression on the component by metal rest pad is removed and the surface finish does not disturbed

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