

Design of Fixture for Horizontal Machining Centre

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Abstract: In this project we discussed about the invention and modification of hmc fixture. The fixture is work piece holding device the hold also tool. The fixture is very expensive so it will handle very carefully. some time fixture not work in complicated work piece so that time new advance fixture is innovate, first we design the fixture part by cad drawing, analyse each and every part, solve problem of fixture, minimize deflection those thing are include in modification so they are important, all these thing we done and Understand in grandeurs engineering pvt ltd. We work under the skill operator of industry and finally design the new part drowning on the computer aided drafting, we do analysis and get result. The new fixture has improve stability, productivity, and reduces the deflection. It gave efficient performance

Keywords: Fixture, Improve Accuracy, Productivity, Stability, Reliability.

I. INTRODUCTION

Fixture is special and important to holding the work piece in during the operation for holding, locating, supporting .the fixture eliminate or reduces some factor like non uniform quality, frequent checking, marking, and location etc. Fixture increases the productivity and reliability. The setup planning phase considers fixture designing is important factor.it must be done in proper way. They improve the quality, productivity, accuracy and so far. The unnecessary things like marking deflections are reduce. In existing fixture set up is done in manually on lathe. The Moto of this project is the conventional fixture replace with advance modified fixture to improve productivity, timing factor etc.

A fixture contains set of clamping members. They used to determine location. They clamp against locator that will be plan at the first stage means designing stage. The fixture is also a tool to support hold the work piece during operation and fixed it rigidly.

II. LITERATURE

N. P. Maniar and D. P. Vakharia

Said in this research paper Several areas associated to fixture are already been termed by well-known writers, still there is an vital need to apply all these research works to engineering application. A fixture is designed which can be mounted on Horizontal Machining Centre and Lots of money saved as these processes can now be executed on Horizontal Machining Centre using the designed fixture.

V. R. Basha

In manufacturing, fixtures have a direct influence upon Quality product, efficiency and cost, research fixture design is an important factor and proper commitment should be set. A literature survey of fixture design over the past decade is proposed. First, an introduction is provided on the Design of fixture on Horizontal Machining centre. Then, design & analysis,

Types of HMC fixtures, tools & platform and Advantages & disadvantages are discussed.

Sandeep Soni

An integrated approach to the design process of machining fixtures has been adopted in this research. The basic aim was to formalize a methodology to facilitate the automation of such design process. The proposed methodology for fixture design process will fulfilled researcher production target and enhanced the efficiency, Horizontal Machining Centre reduces operation time and increases productivity, high quality of operation, reduce accidents.

Mr. Ahmed Mohammad Ali Hammadi

Flexible systems like HMC fixture presented in this paper allow a variety of individual parts to be said during machining, thus minimizing cost to produce each dedicated fixture, and reducing storage of Different fixtures. With typical costs of dedicated fixtures amounting to 10-20% of the total manufacturing costs, the economic impact of modular HMC fixture could be affected.

Mr. Chetan M. Patel

The efficiency and reliability of the HMC fixture design has enhanced by the system and the result of the fixture design has made more reasonable. To decrease cycle time required for loading and unloading of part, this approach is useful. Fixture layout and dynamic clamping forces optimization method could decrease the deformation and uniform the deformation most efficiently. The proposed fixture will fulfil research production target and enhanced the efficiency.

III. PROBLEM STATEMENT

In a industries, the recent fixture works on general lathe or conventional lathe machine. This process is economically bad and also time consuming. In this process work piece produces only 10 piece in a one shift. Only 30 piece in one day. Some oprations are included like drilling, milling, VMC etc.



Fig 1: Conventional Lathe Machine

IV. OBJECTIVE

It is the operational transformation of convetional to advance or automation of machine by using the the new fixtures, [NHX 6300]

As follows:

- Material handle by fixture.
- Its hydraulic cylinder of ATLAS COPCO.
- The cast iron there used



Fig 2: hydraulic cylinder for ATLAS COPCO

Some operation does not perform on lathe so there we will design new for HMC machine. Their multiple operation perform on new fixture.

Operations as follows:

- Drilling operation (boring, threading etc.)
- Milling operation
- Facing operation

V. HORIZONTAL MACHINING CENTRE [NHX 6300]



Fig 3: HMC machine

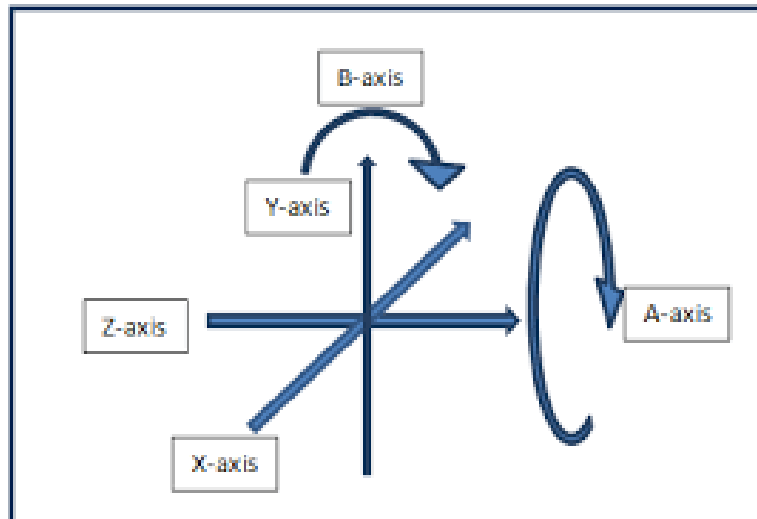


Fig 4: axis diagram of fixture

Specification of fixture:

- New options are A- axis and B-axis.
- 6 axis freedom
- 80 tool holder ring provide.
- Multiple operation perform.

VI. DESIGN OF FIXTURE

Considerations while designing the fixture:

- Work piece geometry.
- Capacity of machine.
- Available clamping.
- Safety consideration.

Design of fixture:

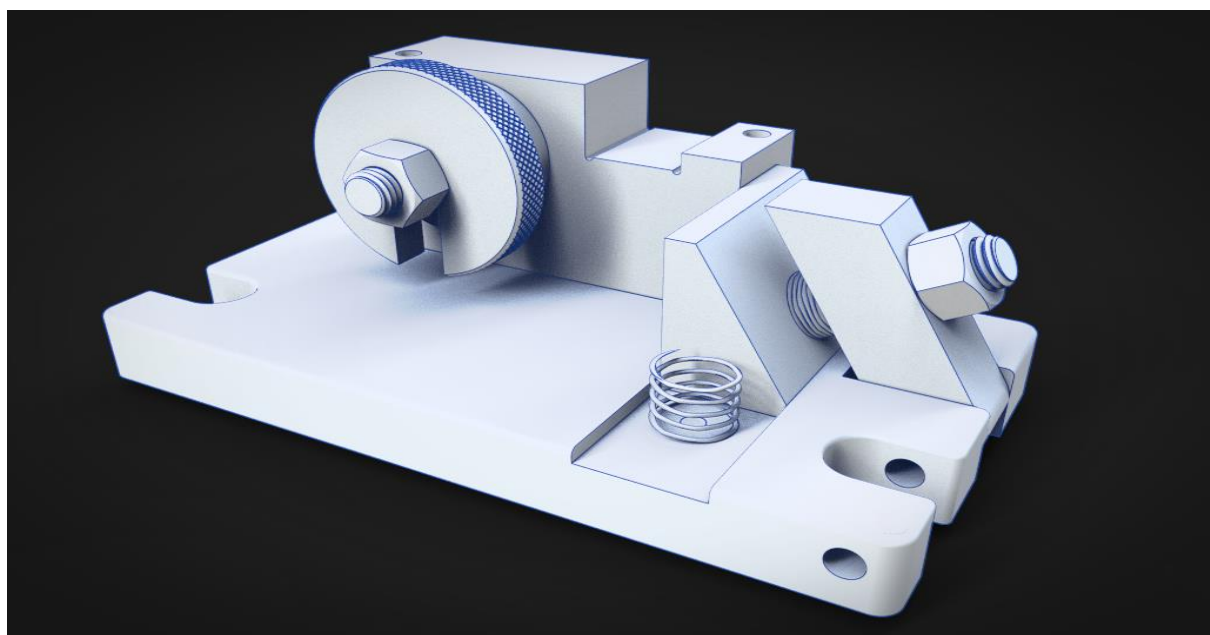


Fig. 5: Actual CAD Drawing

VII. ADVANTAGES AND DISADVANTAGES

ADVANTAGES

- Time consumption is less.
- Productivity high.
- Accuracy is high.
- High surface finish.

DIS ADVANTAGES

- Effective handling required.
- It is expensive.
- Safety required.

VIII. CONCLUSION

- The productivity and dependability of the fixture design has strengthen system and design of fixture made cost friendly.
- we have completed all the procedure of fixture design and all the trials are concluded.
- by applying this fixture design, production rate of workpiece enhanced.
- this process is fully automated so, elimination of human error.
- the operation require less time to complete.

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