PROTABLE VERTICAL VERTICAL MACHINE

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ABSTRACT-

Portable Milling Machine plays an Important Role in Micromanufacturing process. The micro-factory is a small dimensioned manufacturing system which is suitable for a small production system. A mini Milling machine is widely used in producing micro slot and keyways in Automobile and Aeronautical parts. In this work, we design and develop a portable vertical milling machine for the micromachining process. The machine is designed by AutoCAD drawing software and fabricated by small components. After Fabricating Machine would be conducted by machining performance test and Vibration Test. This machine implements the sustainable manufacturing system such as Economic, Environment and social.

Keywords: Portable, milling machine, Development, Alignment, Vibration

I. INTRODUCTION

1990 Milling is the process of machining using rotary cutters to remove material([1] by advancing a cutter into a work piece. This may be done varying direction on one or several axes, cutter head speed, and pressure.llingcoversawidevarietyofdifferentoperationsandmachines,onscalesfromsmallindividualpartstolarge,heavyangmillingoperations.Itisoneofthemostcommonlyusedprocessesformachiningcustompartstoprecisetolerances. Millingcanbedonewithawiderangeofmachinetools.Theoriginalclassofmachinetoolsformillingwasthemillingmacne(oftencalledamill).Aftertheadventof computer numerical control(CNC) inthe1960s,millingmachinesevolvedinto machining centers: millingmachinesaugmentedbyautomatictoolchangers,toolmagazinesorcarousels, CNC capability,coolansystems,andenclosures.Millingcentersaregenerallyclassifiedasverticalmachiningcenters(VMCs) orhorizontalmachiningcenters(HMCs).Theintegrationofmillinginto turning environments, and vice-versa, began with live tooling forlathesandtheoccasionaluseofmillsforturningoperations.Thisledtoanewclassofmachinetools, multitaskingmachines(MTMs),whichrepurposes-builttofacilitatemillingandturningwithinthesameworkenvelopes. The small-scaled process is featured by facilitation, convenience and lowE Emerging miniaturization technologies are potential key technologies of the future that will bring about completely different ways people and machines interact with the physical world. Micro-milling technology can meet many of those demands of miniaturized components in fields that include aerospace, automotive, biomedical, electronics, information technology, optics, telecommunication industries, jewelry, watch-making, etc. However, it is expected that micro milling components and applications will undergo exponential growth in the following years.Biomedical: Microtools for surgery, molds for medical components (micro-dosage systems), lab-on-chip, molds for orthodontics (dental brackets), molds for biotechnology applications (microchip electrophoresis devices, polymeric BIOMEMS devices, accelerating polymerase chain reaction for modular lab-on-a-chip systems), cataract lenses, retinal micro-tacks, etc.Watchmaker and jewelry: manufacturing and engraving of watch base plates, molds for rings and pendants, etc.Information technology: Test membrane for PC chip manufacturing

II. EXPERIMENTAL DETAILS

Fig .1

III. SPECIFICATION

Spindle capacity	: 0.2 – 8 mm
Accuracy	: 1 micro
Net Weight	: 20 kg
Space Required	: 150 X 150 mm
End mill size	: 0.5 mm dia X 45 mm length
Table size	: 120X 120 mm

IV. RESULTS AND DISCUSSION

Vibration analysis is a measurement tool which is used to identify and predict present failures in the portable tabletop micro milling machine. The vibration measurement is done by picking up signals from machines by means of vibration. The signals are then processed using VIB ANALYSER to obtain the frequency. The results are mainly interpreted by relating the measurement frequencies with relevant causes such as misalignment, bearing defects and resonance. Fig 4.1 shows that maximum acceleration of 7.470 m / sec 2 is developed in misalignment of the motor shaft coupled with the spindle of the milling head in Initial condition of rotation. The minimum acceleration of 0.5 m / sec2 developed in the medium speed of milling vertical spindle. This portable micro milling machine which produces lower vibration during End milling operation and does not affect the micro-milling process performance.

Harmonic response analysis was used to determine the response of the structure of micro milling machine due to harmonic loads, Due to the presence of rotating members in the structure. There exist unbalance forces which vary harmonically. These unbalanced forces given by the various elements in the structure was calculated and applied on the structure at their respective location. Harmonic response analysis was carried out by the mode superposition method.The unbalanced centrifugal force due to the motor for drilling machine is calculated as followsIt as

V. CONCLUSION

By converting plastics to fuel, we solve two issues, one of the large plastic seas, and the other of the fuel shortage.

This dual benefit though will exist only as long as the waste plastics last, but will surely provide a strong platform for us to build on a sustainable, clean and green future.By taking into account the financial benefits of such a project, it would be a great boon to our economyIt also could be concluded, that thermal pyrolysis of plastic waste leads to the production of fuel oil, valuable resource recovery, and reduction of the waste problem.Thermal pyrolysis of waste plastic waste has also several advantages over other alternative recycling methods. It has been shown that the conversion at a lower temperature in the presence of catalyst into liquid is a feasible process.An important difference is that the oil obtained relatively with greater volume and low boiling range in the presence of a catalyst as compared to pyrolysis in the absence of a catalyst.

The total pyrolytic oil can be blended with the gasoline or kerosene. Consequently, evaluation of plastic waste by catalytic pyrolysis is very important from an economic and environmental point of view. However, further studies are necessary to utilize pyrolytic oil as liquid fuel or feedback

VI. REFERENCES

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