

Quesiti Prova Orale

A – Descrivere gli utensili per tornio conosciuti, definendone le modalità di utilizzo a seconda della lavorazione e del materiale da processare.

B – Descrivere gli utensili per macchina fresatrice conosciuti, definendone le modalità di utilizzo a seconda della lavorazione e del materiale da processare.

C – Descrivere le modalità conosciute per la realizzazione di filettature su parti meccaniche, sia con macchina fresatrice che con tornio, argomentando le soluzioni menzionate a seconda del materiale da lavorare, in particolare per leghe di acciaio, alluminio e rame.

D – Ipotizzando di dover lavorare internamente, con un tornio, un oggetto di forma cilindrica di dimensioni approssimative 150 mm (altezza) x 50 mm (diametro) descrivere le scelte più idonee (in termini di selezione della tipologia di tornio, utensili e parametri di lavoro della macchina) sia nel caso dell'acciaio che nel caso della lega Al 6082 (o Anticorodal). Si ipotizzino liberamente la geometria interna e le finiture superficiali interne ed esterne.

RP

C.V.

IP

PT

Review on Advance Automation of Conventional Lathe Machine

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Abstract — now a day, products can be produced by modern technology, which uses computer software, hardware and firm ware in industries. It is needed to use CNC lathe machine to get more accurate dimensions and irregular shape. So, CNC machines are becoming more and more important in modernized industrialization. There are many conventional lathe machines in our country. To build a new modern developed country, it is required to convert these conventional lathe machines into semi-automatic control lathe machine by retrofitting. Developing and changing into semi-automatic control lathe machine, there are three required portions, namely, mechanical electronics and hydraulic. In this project we convert the convention lathes which have 5ft bed length in to the semi-automatic lathe. In mechanical side we replace the ball screw in place of lead screw for better accuracy and remove some unnecessary component like gears for providing space for motors. We add an extra plates or structure for installation of motors. Also provides a hydraulic circuit for coolant. In electronic side we used a servo/ stepper motor for both Z and X axis and provide controller for the efficient operation.

Keywords—Automation, Retrofitting, CNC Turning Center

I. INTRODUCTION [7]

Retrofitting refers to the addition of new technology or features to older systems this definition gives an almost all information about the word retrofitting. When we say that retrofitting related to some component that mean we try to upgrade that component and improve their efficacy through a present technology. But here we only talks about the retrofitting in lathe machine at time Retrofitting is the process of replacing the CNC, servo and spindle systems on an otherwise mechanically sound machine tool to extend its useful life. Rebuilding and remanufacturing typically include a CNC retrofit. The anticipated benefits include a lower cost investment than purchasing a new machine and an improvement in uptime and availability. But there are often other unanticipated benefits to retrofitting including lower energy costs, higher performance and a new level of manufacturing data accessibility.

Justifying the retrofit investment is similar to any other kind of investment. Considering all the financial costs and benefits allows you to calculate an ROI for a comparison with other investment opportunities. By considering all the financial and non-financial benefits associated with the project, you will be able to decide if the retrofit makes sense for your business. Assuming the machine tool is generally in good shape mechanically, CNC retrofitting is typically the lowest cost solution to improve the overall performance of an older machine tool. Though some electrical subassembly is often performed at the retrofitter's business location, most of the work can be completed at the machine site, avoiding costly machine rigging and transportation costs, and minimizing the time that the machine is out of commission. Rebuilding typically includes the repair or replacement of some worn mechanical components such as ball screws, lubrication pumps, safety interlocks, guards, hoses, belts and electrical wiring. The rebuild is typically performed at the rebuilders facility, so there may be additional transportation and rigging costs.

Remanufacturing goes a step further to repair or replace mechanical components to the original, as new, factory specification. It is likely that the machine will be completely disassembled, cleaned, inspected, repaired and painted. All pneumatic, hydraulic and electrical systems will be updated. The machine may also be modified or have mechanical accessories added to re-purpose it for a new application. Practically without exception, remanufacturing will take place at the remanufacturer's site. Deciding whether to retrofit, rebuild or remanufacturer depends on the current condition of the machine and the anticipated benefits from the investment. Reviewing maintenance records and part yield statistics may help understand the state of the machines mechanical systems. A ball bar analysis can also be used to diagnose mechanical problems. Retrofit, rebuild and remanufacturing companies will also be able to evaluate the current condition of the machine and recommend the appropriate solution.

The main objective of the retrofitting in lathe machine is to improve the existing conventional lathe machine to provide it features of CNC machine with very lower cost than the new CNC machine.

Rather than above main objective there also several objectives of the retrofitting which is given below

- To Increased productivity and improved control of machine.
- Far superior repeatability.
- To reduced machine downtime.
- Fast machining cycles.
- High accuracy, high feed-rate.
- To increased accuracy and part finished due to controller.

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