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Study about the analysis of grinding machine operations

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ABSTRACT

The Process of analysing the grinding machining operation for determining the course in machining operation, surface, finish, power consumption, temperature induces and tool life on the machining. When machining are in working condition effect on work piece and tools.

Keywords: *High surface finish with low forces, High removable rate of material.*

1. INTRODUCTION

Machining is a essential process of finishing by which job as are produce to the desire dimensions and surface by gradullay removing extra material from the work piece in the form of the chips with help of cutting tools.

2. MECHANISM OF CHIP FORMATION

When the force is applied by using tip of the tool on the work piece material, the work piece material is started deforming plasticity and sliding over the tool and producing shear stresses in the layer of work piece material, On further application of force by using tool tip, the plastic deformation is the layer is increasing, shear stress is also increasing. At some point the shear stresses inducedin the layer will have greater than and equal to ultimate shear stress of the work material know the shearing or cracking is started talking palace at the tip of the tool and which is propagating to what the surface of work piece is called as a shearing action.

Note: From the above mechanism by which the chip formation is talking palace shearing and tearing action.

During Materail remove on shoft and hard material:

During machining of soft work piece material because of higher thoughness, the energy wave will be absorb by material and getting this appearing somewhere in the material therefore the continute of the small part of work piece or abrasive will be maintain.

During the hard work piece because of lower thoughness, the energy wave or crack wave can propogate up the surface very easily and gain high surface finish on work piece.

3. PROCESS PARAMETER

1. Cutting velocity –Relative velocity between work piece and tool for the calculation of the (rpm) of the job.it is always require to take the maxi diameter to which the tool is response for machining can be used the cutting velocity is given by the

Cutting velocity m/sec)

2. Feed- linear distance travel by the tool per revolution along the length of the work piece is called as a feed

F=X (mm/min)

3. Feed velocity: F = F (mm/min)

4. Deft of cut: The deft by which of tool has got penetrate into the work piece surface.

5. Machining Time:

Time = Distance/velocity

4. METHOD MEASUREMENT

Force induced in machine: By connecting dynamometer tool work piece, the force induced during machine will be major continuously, whenever there increasing in course from the initial value is greater than 20 to 25 percentage. It is assume that tool has been failed.

Surface finish: during starting of machine operation the micro line surface (better surface is produce in the component) after some time of machine it is found that these micro line generating the precision size of surface finish because we creating again and again surface than gain high surface finish

Colors of Abrasive: As the power consumption in machine increasing heat generation and temperature are increasing therefore the color of the abrasive will be changing. Whenever the color the abrasive and chips are observation that the tool has been failed.

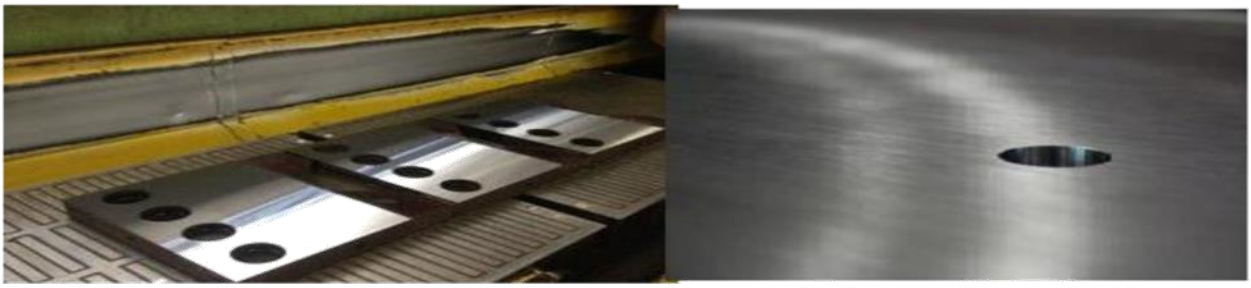

Fig: Surface finish on work piece

Table: Surface roughness chart

RA	RA INCHES	RMS	RT
0.025	1	1:1	0.3
0.05	2	2:2	0.5
0.1	4	3:3	0.8
0.2	8	4:4	1.2

Surface finish units

RMS = Root mean square in micro inches

RA = Roughness Average in mm

RT = Roughness tool in mm

5. RESULT

During machine operation if is possible to ensure that the shear stress induced in the layer of work material is just equal to ultimate shear stress of the work material the corresponding amount of work work done in machine operation is consider as a maximum work done or minimum energy. Grinding is used to finish workpieces that must show high surface quality (e.g., low surface roughness) and high accuracy of shape and dimension. As the accuracy in dimensions in grinding is of the order of 0.000025 mm, in most applications it tends to be a finishing operation and removes comparatively little metal, about 0.25 to 0.50 mm depth.

However, there are some roughing applications in which grinding removes high volumes of metal quite rapidly. Thus, grinding is a diverse field.

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7. REFERENCES

[1] Doman DA, Warkentin A, Bauer R. Finite element modeling approaches in grinding. International Journal of Machine Tools & Manufacture 2009; 49:109-116.
[2] Malkin S, Guo C. Thermal Analysis of grinding. Annals of the CIRP 2007; 56:760-782.
[3] Mamalis AG, Kundrák J, Manolakos DE, Gyáni K, Markopoulos A, Horvath M. Effect of the workpiece material on the heat affected zones during grinding: A numerical simulation. International Journal of Advanced Manufacturing Technology 2003; 22:761-767.
[4] Mamalis AG, Kundrák J, Manolakos DE, Gyáni K, Markopoulos A. Thermal modelling of surface grinding using implicit finite element techniques. International Journal of Advanced Manufacturing Technology 2003; 21:929-934.
[5] Morgan MN, Rowe WB. Implementation of Thermal Models in Grinding. Key Engineering Materials 2007; 329:3-8.
[6] Ravi Prakash Sharma Vocational Training at HMT Ltd Ajmer.REF:/MTA/TC/2015/VT04788

