

## BURNISHING

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Burnishing is a chipless cold work process, which consists of plastic deformation the surface layer of the workpiece through the indentation of a tool, accompanied by other simple motions that ensure machining along the desired area. The pressure generated by the indenter exceeds the yield point of the material and flattens the asperities from previous machining process. This causes also strain hardening of the surface layer and induces compressive stresses into it. Finally, the result is a smooth hardened surface, with some improved mechanical properties.

For this demo, burnishing of a hardened steel component will be performed. The equipment employed consists of:

1. CNC lathe
2. Hydrostatic burnishing tool with ceramic ball
3. Hydraulic high pressure unit
4. Rotating union
5. High pressure hoses
6. High pressure tubing
7. Other accessories: coolant tank, electric panel, fittings, bracket, adapting plate

■ The constant factors were as follows:

1. The workpiece material is a constant, due to the fact that it is provided as-it-is.
2. The tool is a constant due to the fact that it is provided as-it-is.
3. The system stiffness is a constant belonging to lathe's stiffness.
4. The lubricant is a constant; its main property is to be pressure stable.

■ The variables were as follows:

1. The normal load, which directly determine the amount of deformation in the surface layer as well as the flattening effect.
2. The feed, which has a major role in the final roughness.
3. The speed, with influence on the final roughness.

The parameter to be measured is the roughness parameter Ra.

