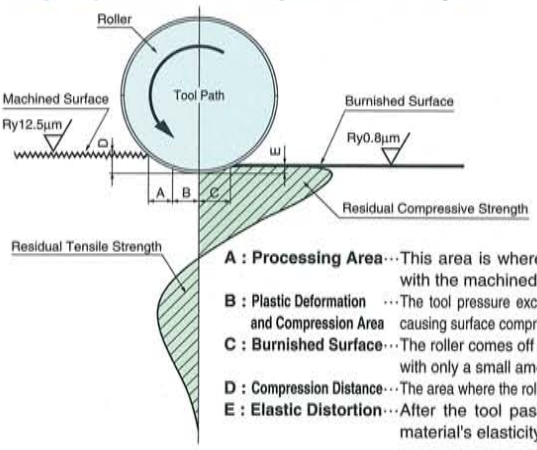
## How it Works

The roller burnishing process creates a "mirror" finish in a single pass by plastic deformation and compressing the high points of a given surface, This process is similar to compressing asphalt in the construction industry.
This plastic deformation is limited to the surface of a feature. This in turn creates more precise finishing, higher productivity rates and an increase in tensile strength and surface hardness.

### 【Synopsis of the Superoll Principle】

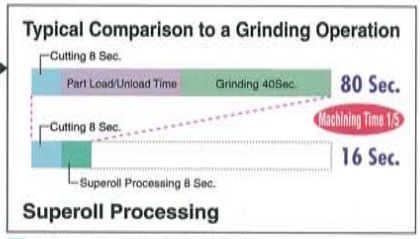



**A : Processing Area**···This area is where the rollers make contact with the machined surface.
**B : Plastic Deformation and Compression Area**···The tool pressure exceeds the material yield strength causing surface compression and elastic deformation.
**C : Burnished Surface**···The roller comes off the working surface smoothly with only a small amount of elastic restoration.
**D : Compression Distance**···The area where the roller leaves the machined surface.
**E : Elastic Distortion**···After the tool passes over the surface, the material's elasticity returns.

## Processing Effects

### Cycle Time Reduction

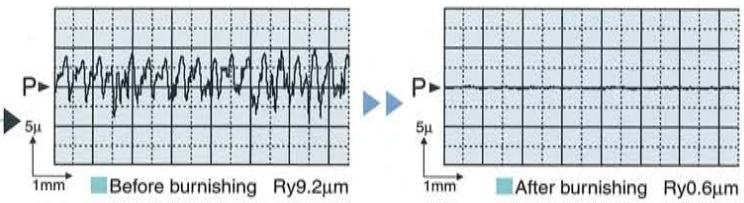
Cycle times can be reduced by 1/5-1/20 of the time of a grinding operation. The work piece can be finished in a single operation on a CNC lathe or CNC machining center.




Typical Superoll Operation

### High-Speed Burnishing

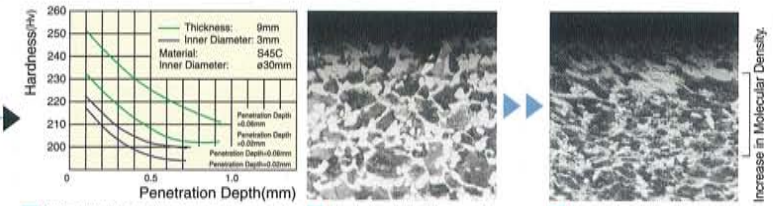
Superoll provides Ry.004"~.032"μinch [Ry0.1-0.8μm] surface finish in one pass. This process is ideal for mating or seal surfaces.




Before burnishing Ry9.2μm　　After burnishing Ry0.6μm

### Improves the Abrasion Resistance of a Surface.

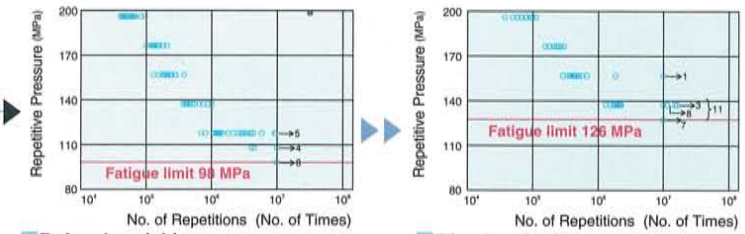
The molecular organization is so dense after the burnishing process that it actually increases the surface hardness, which in turn improves abrasion resistance.




Surface Hardness after Superoll Processing　Molecular Organization before processing　Molecular Organization after processing

### Increased Tensile Strength

Residual compressive stress is produced during the burnishing process increasing the surface tensile strength by more than 30%. Improved tensile strength affords design engineers the flexibility to design lightweight components.




Before burnishing　　After burnishing

### No Sludge Produced

Since the burnishing operation produces no sludge or by-products, no special waste treatment procedures are required.


Typical Superoll Process　　Typical Grinding Process