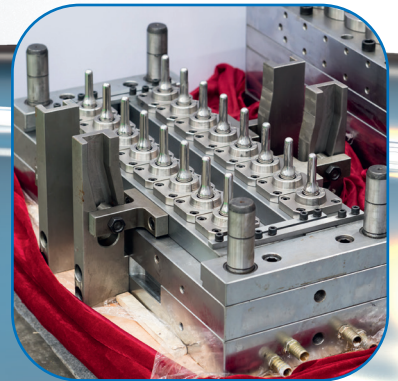
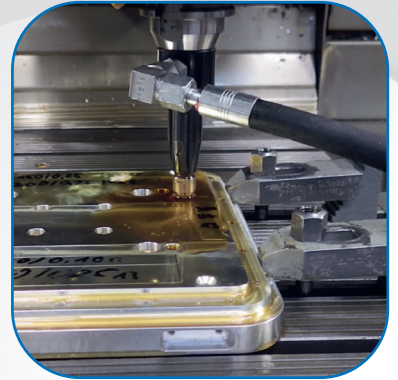


ECOROLL

surface matters



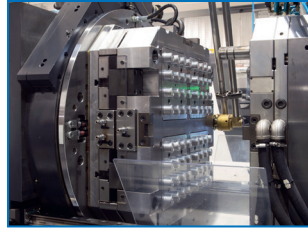
ECO *mold*

Solutions for tool and mold construction

Industries / Applications

Industry-specific areas of application:

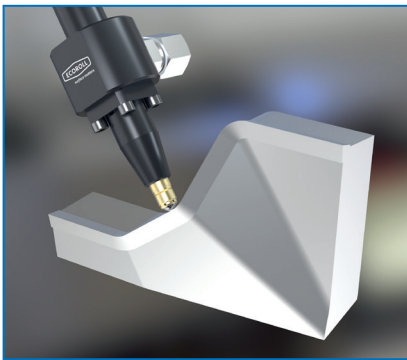
Punch and forming technology | Injection molding | Die casting | Die-forging technology



Requirements for workpieces:

Surface quality / roughness | Hardness | Wear resistance | Fatigue strength

Applications



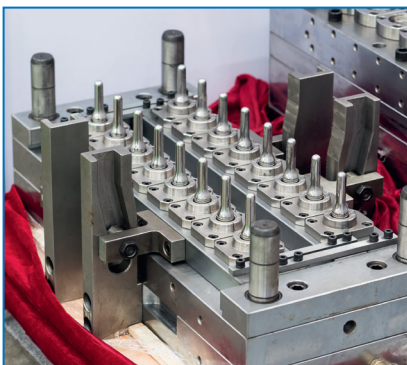
Cutting tool



Body panel



Car body shell



Forming arbor



Preform



PET bottle

More areas of application



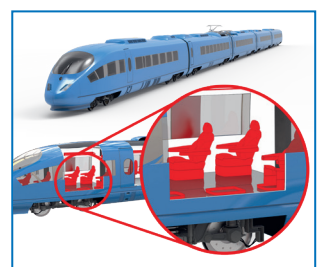
Mold segment



Reflector



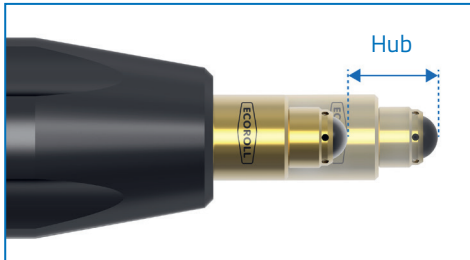
White goods



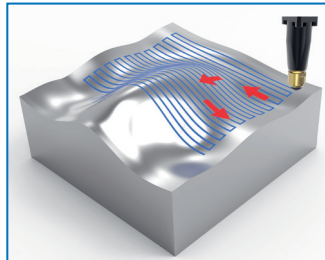
Interior

Operating principle of hydrostatic tools

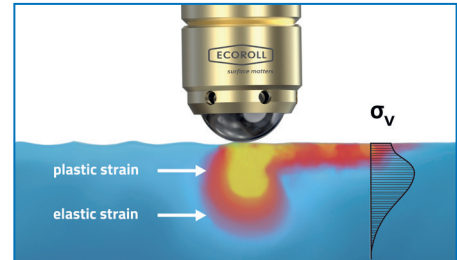
A major cost factor in die and mold construction is surface finishing. In many cases finishing is performed manually and the result depends highly on the experience and skill of the operator. ECOROLL offers a solution specifically for surface finishing using hydrostatic roller burnishing tools. Thereby the manual process is substituted by CNC machining or finishing with the aid of a robot.



Following system

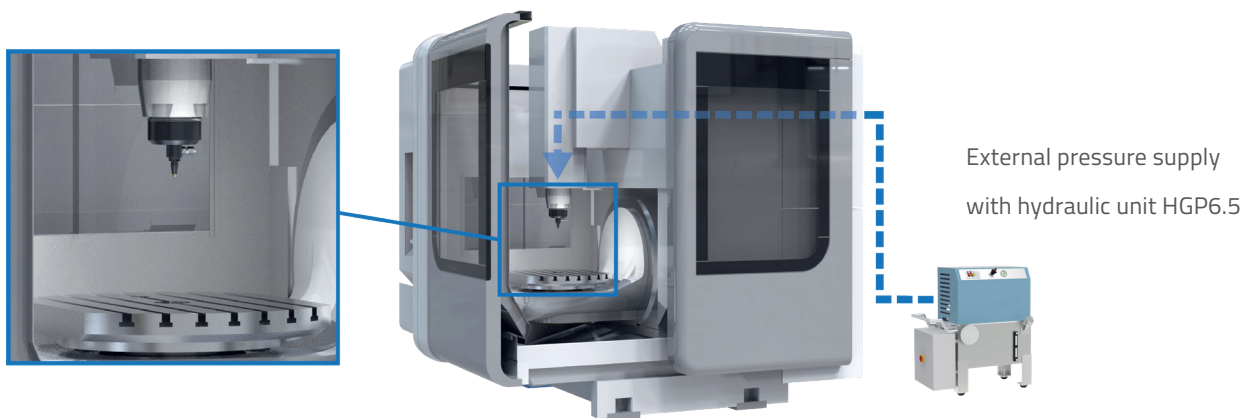


3D rolling of free-form surfaces

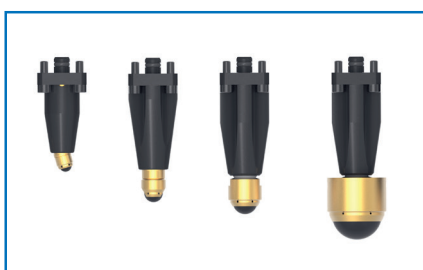


Influence on the surface layer

An essential characteristic of hydrostatic tools is the self-aligning following system with a hydrostatically loaded ball in a rolling element. The tool is mounted in the machine spindle of a machining center and activated through the supply of high pressure coolant-lubricant or compressed air. For burnishing free-form surfaces the tool moves line by line over the workpiece surface controlled by CNC, which achieves a roughness lower than $R_z = 1 \mu\text{m}$ or $R_a = 0.1 \mu\text{m}$. The tool following system ensures automatic adaptation to the workpiece surface at a constant rolling force. This system is applicable for material hardness up to 65 HRC, requiring coolant-lubricant pressure up to 250 bar.



For activating the tool by high pressure either an externally connected hydraulic unit or an internal high pressure pump can be used. For operating with MQL (minimum quantity lubrication) a solution using compressed air is available. Depending on workpiece geometry various combinations of ball inserts and following systems are available, enabling to reach not only large workpiece sections but also smaller sectors and radii.



SK | HSK | Capto | KM

HG system, modularly combinable with burnishing elements of varying size

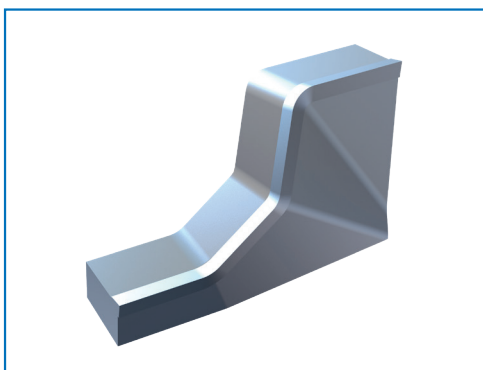
Cost savings potential in tool and mold construction by substituting polishing

Polishing is time and money consuming – Solution > Reduce polishing

- Develop reproducible process strategies
- Reduce polishing time

Success Story

Task



Improving the surface quality of a cutting tool for aluminum/ steel sheets

Workpiece: Cutting tool (car body)

Material: 1.2358

Tensile strength: 1.000 N/mm²

Hardness: 56 HRC

Solution



Process: machining the surface line by line
(with stationary machine spindle)

Machine: 5-axis machining center

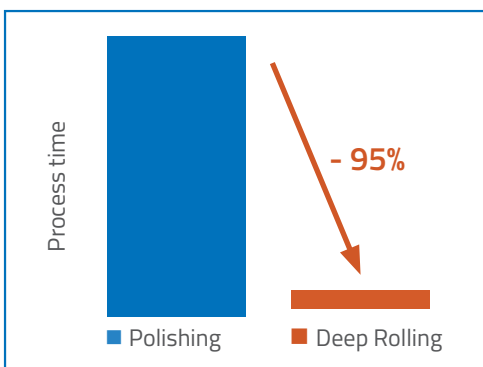
Tool: Hydrostatic tool HG6-19

Speed: 10 m/min (rapid traverse of the machine)

Line offset: 0.05 mm

Rolling force: 375-500 N (150-200 bar)

Customer benefit

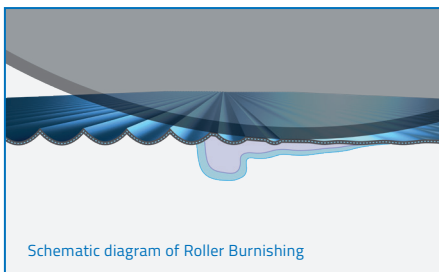
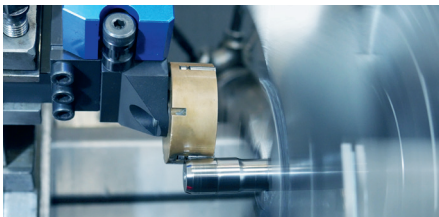


- Substituting manual polishing
- Significant reduction of process time by 95%
- Reproducibility by using a deep rolling tool
- Surface quality: R_z 1,4 μ m
- Less flakes and burrs

ECOROLL AG Werkzeugtechnik



ECOROLL AG Werkzeugtechnik is the leading supplier of tools and machines for mechanically improving the surfaces of metal components. In close cooperation with our customers, demand-oriented tools and machines for **burnishing** and **deep rolling** as well as **processing cylinders** are designed, manufactured and marketed throughout the world.

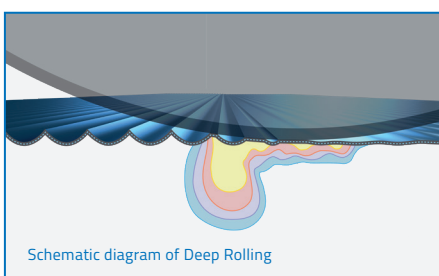


Roller Burnishing

The economic alternative for producing high-quality component surfaces

Reducing the initial roughness by up to factor 20

- Produces mirror-finish or pre-defined surfaces
- Can be used with any conventional or CNC-controlled machines
- Complete processing in one setting
- Short cycle time and elimination of set-up and auxiliary processing time
- Increased surface hardness
- Increased wear resistance
- Can be used with minimum quantity lubrication

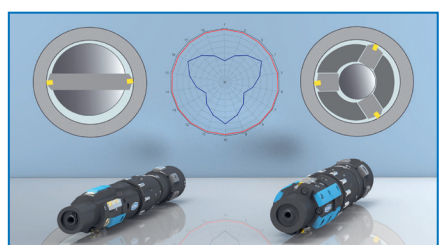
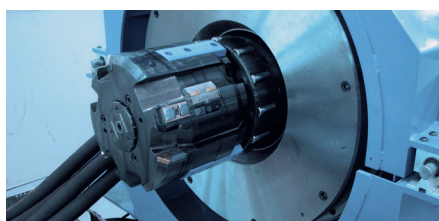


Deep Rolling

Smoothing, cold work and induction of residual compressive stresses in a single process

Increasing the service life by up to factor 5

- Complete processing in one setting
- Can be used with any conventional or CNC-controlled machines
- For a wide range of work pieces
- Prevents or hinders stress corrosion crack formation or growth
- Significantly increases service life and fatigue strength
- Extraordinary increase of fatigue strength



Processing Cylinders

Fast and efficient internal machining

Reducing process time by up to 90%

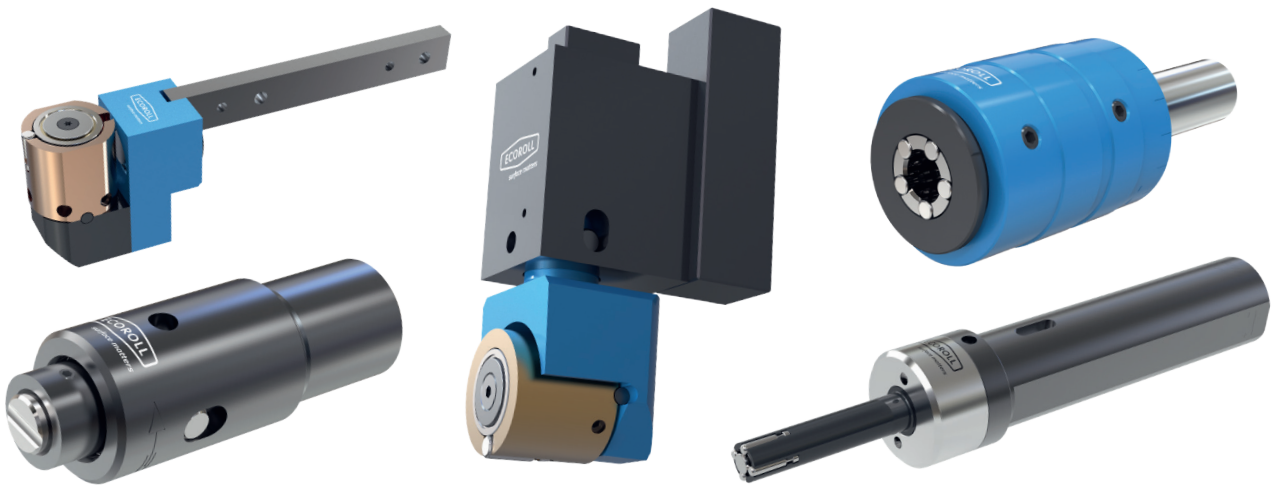
- Produces surfaces with very low residual surface roughness, reduced friction and less wear
- Notably decreases irregularities in circular form
- Suitable for cold drawn or hot rolled tubes
- For diameter range 28 to 800 mm
- Possible processes: Combined boring – skiving – roller burnishing, skiving on lathes

ECO compact

Designed for the smallest workspaces



As technology leader in roller burnishing and deep rolling ECOROLL AG Werkzeugtechnik expands their portfolio with the new product range **ECO compact**. ECOROLL keeps pace with component miniaturization and launches a product line adjusted to the requirements for smaller workpieces. Ideal applications for **ECO compact** tools are especially on machine types as automatic long-turning lathes, Swiss lathes or automatic rotary indexing machines, which offer a limited workspace.



ECOROLL AG MechKon App



Solutions | Catalogue | Applications

Tool Box with sample videos

Contact with integrated snapshot-function

Calculator | 10-X CostSaver

Android



iOS



ECOROLL AG Werkzeugtechnik

Hans-Heinrich-Warnke-Str. 8 | D-29227 Celle

Phone: +49 5141 98650 | Fax: +49 5141 881440

Mail: mail@ecoroll.de | www.ecoroll.com