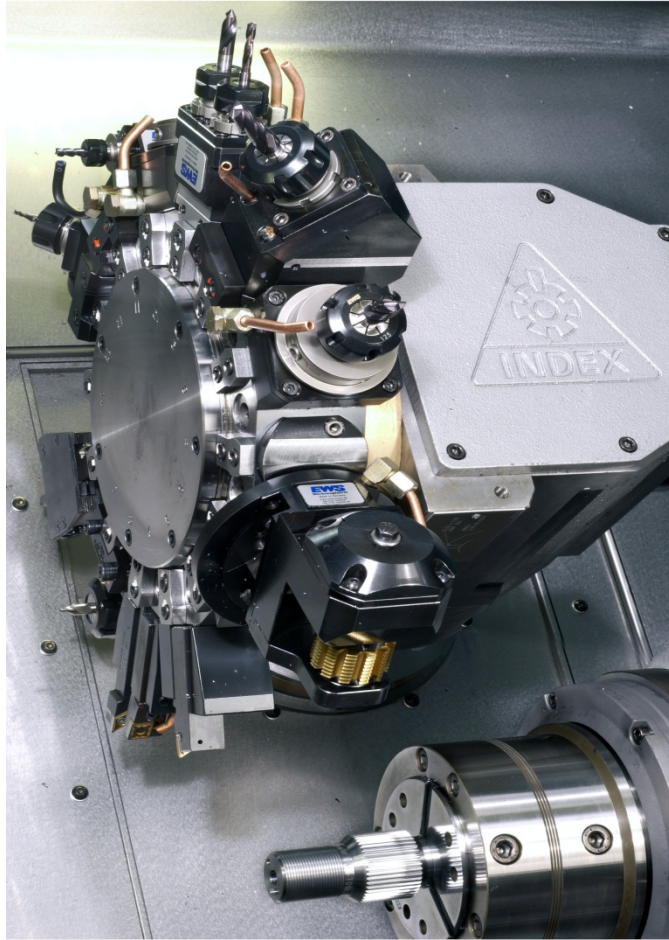


Reduce Cost and Increase Machining Capabilities

Innovative Tool Technology



In these difficult economic times machine shops will have to quote new products to compensate for lost business. Many shops shy away from quoting certain parts because they don't think they have the capability to make them competitively. However in some cases the right application of special and innovative tooling can give you additional capability at relatively low cost.

Command Tooling Systems, as part of the EWS group in Uhingen Germany and headquartered in Ramsey MN, is the American source for innovative tooling. Since Command was acquired by EWS in 2008 product innovation/application has become the number one priority for Command. It is important that the right tools are used within the capabilities of the machine tools where they are applied.

The Command/EWS engineering "Think Tank" recently presented the **Multiform** system to the market. With this tool customers can produce square, hexagon and other shapes on a turning center with live tool capabilities, which were not possible in the past. No secondary operations will be required adding to the cost of the part, and all of the features are now possible in one operation. What is behind this?

Command/EWS Multiform uses a custom internal cam disc unit. For conventional geometry like squares or hexagons there are standard cam discs available. The cam forces the cutting

tool to follow a path in order to get the desired geometric shape. Of course you cannot defy the laws of physics which means that there will be a small radius on the edges. The multiple new possibilities however will allow engineers to come up with new processes for manufacturing. ID and OD slots, offset squares and straight polygons are examples of an endless list of opportunities. To see what shapes are possible all that needs to be done is verify with Command/EWS application engineering.

Slot Broaching and Gear Hobbing on a Turning Center

A second building block in the innovative product offerings is the Command/EWS "slotter", which transforms the rotating movement of the driven tool motor on live tool machines into a linear movement that cuts on the in-feed movement and lifts the broaching tool during the reverse stroke. With this tool it is possible to cut key ways up to 8 mm wide and 30.5 mm long in seconds. Internal and external splines can be manufactured with the tool and this is particularly beneficial when teeth are needed over a certain segment of the ID/OD, partial of 360 degrees, since it can be done in one operation. The orientation of these features is easily controlled by the C axis feature of the machine control. The cycle time for a key way 6 mm wide, 30 mm long and 4 mm deep is less than 5 seconds.



Gear Milling without Y-B axis

Gear Hobbing on Turning Centers used to be possible only on machines equipped with Y and B axis. Command/EWS has been marketing a new Gear Hobber which has the B axis integrated in the tool allowing gears to be manufactured on turning machines without the B-axis option. But there are limits on where these tools can be applied. For instance, the surface quality is anywhere between 9 and 11 depending on the material and the turning center used for the operation.

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Usually the parts need other operations such as a hardening process and grinding before mating parts can be put together. The Tools are available for the following Turret mounts: VDI25/30 BMT55, VDI40/BMT65 and VDI50/BMT85. The gear modules to be machined are between 1.5 and 2 depending on the part size. To the contrary of the Command/EWS Multiform and the Push Slotter, for which no additional control options are needed, the Gear Hobber requires a control option to synchronize the Turret drive and C axis to avoid form errors during the process. Highly advanced Tool Technology and innovative applications always show us new Horizons in Manufacturing!

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Command Tooling Systems is the technology leader in toolholder manufacturing for high-precision machining operations serving many industries, including automotive, aerospace, computer, defense, electronic, job shop and medical equipment. Command is committed to providing tooling solutions of the highest quality, with immediate availability.