

Press Release

## INDEX CNC Lathe ABC

### Making good things even better

The INDEX CNC lathe ABC is a synonym for modern automatic turning with high productivity and precision, because more than 3000 of these machines have already been sold worldwide. So the pending revision of the INDEX ABC had very specific goals. The result is an ABC that retains the essential features of its predecessor but is significantly more productive with performance-enhancing modifications – especially on the drive and control side.



The design of the INDEX CNC lathe ABC with two tool turrets, of which the upper carries the synchronous spindle for rear end machining, has proven itself many times. This lathe manufacturer headquartered in Esslingen, Germany, sold this machine more than three-thousand times since its launch on the AMB 1994. During those 20 years, users have created countless programs and workpiece-specific setups that still run today on the machines in the field – an asset that INDEX wants to preserve for its customers also in the revised ABC. Therefore, the developers changed only little on the original concept, focusing instead on critical factors for productivity such as the control, and spindle and tool drives.

## **Main spindle with 65 mm bar capacity**

A major modification of the new ABC was made to the main spindle. It has a bar capacity of up to 65 mm and is driven by a synchronous motor instead of the previous asynchronous motor. This makes it more efficient and faster. Its maximum speed is 6000 rpm, providing 27 kW of power (40% DC) and 145 Nm of torque (40% DC). Air cooling has been retained, since the switch to liquid cooling would have required an additional cooler and thus more space. This in turn would have contradicted a requirement that the development department had imposed itself: the previously uncompromising small footprint of the ABC should not increase under any circumstances. By keeping the current dimensions, INDEX responds to all those customers who have already several INDEX ABC machines – partly located in a tight line – who want to replace some of these machines with the new, considerably more productive ABC.

## **Upward compatibility for tool holders**

The developers also thought about existing ABC users in terms of tool carriers and tool holder systems. As a result, their arrangement in the work area and the equipment of the tool carriers are the same. Only the possibilities of the upper turret have been extended: besides the traditional VDI25 tool holders, it now can accommodate also W-serrated holders. Developed by INDEX and proven successful in other INDEX lathes for approximately eight years, these tool mountings enable high change accuracy during setup and are frequently used in particular for angled tools (e.g., drills).

The user now has the choice to use the W-serrated mountings supplied with the new machine. But there is no need to do away with the existing VDI tool holders, because they can still be used on the upper turret. INDEX has also retained the dovetail mountings in the lower turret. This allows the user to use even tooling systems that come from the ABC's predecessors, the INDEX cam-controlled machines.

## **Three tools engaged simultaneously**

The upper turret – equipped with a tool drive (max speed 6000 rpm, power 4.3 kW; torque 7.5 Nm at 25% DC) and accommodating seven tools as well as a synchronous spindle – is used mainly for I.D. machining. The lower turret with its six stations is mainly used for O.D. machining. All tool stations in both turrets can thus accommodate live tools. There is a practical innovation in this respect as well: while the lower tool carrier was limited previously to a maximum of 4500 rpm, this limitation has been lifted in the new ABC and the performance has been raised to a maximum speed of 6000 rpm (power 3.8 kW, torque 7.5 Nm at 25% DC) – the same as on the upper turret.

The synchronous spindle in the upper tool carrier (max speed 4500 rpm, power 5 kW and torque 10 Nm at 25% DC) allows machining of workpieces completely from the back with up to five available back-boring stations.

Two of these back-boring stations can have a separate tool drive with up to 6000 rpm, 4.1 kW of power and 6,5 Nm of torque (at 25% DC).

Simultaneous centric machining of workpieces with the upper turret on the main spindle as well as one of the three stations of the back-boring unit with the synchronous spindle is possible at the same feed rate on the main and synchronous spindles.

In addition, the lower turret can be used at the same time on the main spindle, so that workpieces can be machined synchronously and highly productively with up to three tools.

## **Options**

The INDEX ABC production lathe is equipped with a gantry-type removal unit with which the finished parts can be removed gently during main time from the synchronous or main spindle towards the right out of the machine. Bar remnants can be discharged from the main spindle in this way using a separate tray.

The use of the INDEX LMI loading magazine, suitable for bar stock up to 3.2 m length, saves valuable time. The storage tray of the bar support is approximately 300 mm, allowing it to accommodate up to six D50 bars.

Furthermore, a thread milling and polygon turning unit are available with a separate drive (6000 rpm, 5 kW power at 25% DC). This INDEX development is particularly vibration-absorbing, because the power is transmitted via a toothed belt. Also the polygon turning tool head made of heavy metal ensures largely vibration-free running through its high inertia. This allows a hexagon bar to be produced with high-quality surfaces in a fraction of seconds even in steel for which cutters would need much more time.

## **Easy to use and process-reliable**

Like all newly developed INDEX machines, the ABC will also be equipped with the INDEX C200 sl control generation, which is based on the Siemens Sinumerik 840D sl (solution line) and an 18.5" touch-sensitive wide-screen monitor. The control panel concept developed by INDEX reduces the complexity in using the control by integrating numerous rotary and tip switches on the machine control panel directly on the touch-screen.

The operating panel can, however, do more than just operate the machine. It features a second input which INDEX uses for its Virtual Machine (VM) option. On the push of a button, the operator can switch to the so-called "VM on Board", for example, to use the simulation independently from the running machine operation. The Virtual Machine, which can be run purely with CNC code, works with a VPC box installed in the control cabinet that offers many additional possibilities.

Other VM features developed by INDEX include "CrashStop" and "RealTime". CrashStop allows the advance simulation of workpiece programs on the machine. RealTime allows

the simulation of the machine program simultaneously on the control panel, providing a real-time view of the machining sequence.

Another new feature is the openness for information technology through the XPanel® operating concept included as standard. The machine operator can also use the control panel to obtain information from the corporate network, such as component drawings to set up the machine.

### **Cost reduction through full-featured packages**

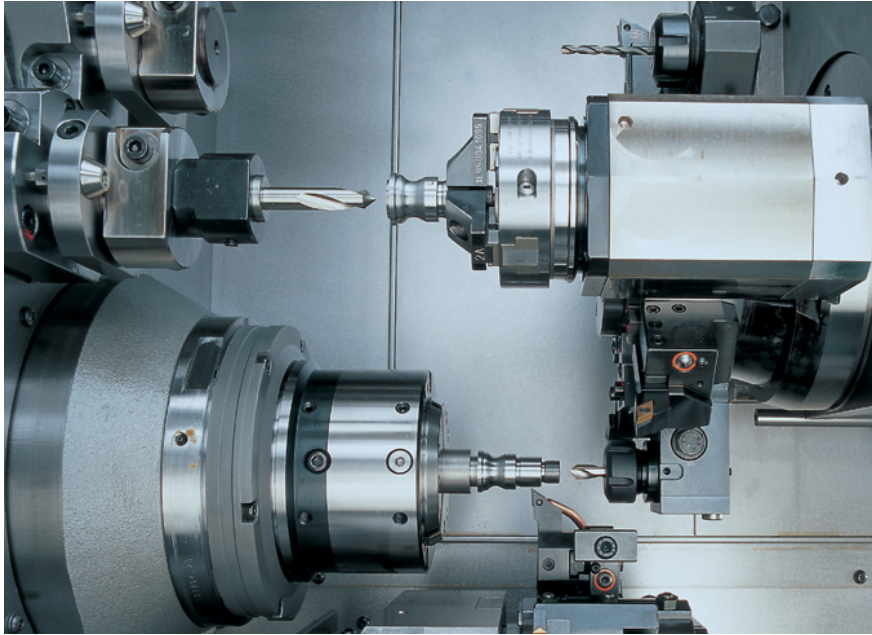
For more than a year, INDEX has provided the ABC also as full-featured package solutions which offer the machine including selected equipment features and options.

The advantage of this package idea is better planning of production, as well as quantity effects, which reduce cost. INDEX passes these savings on to customers as significant price advantages.

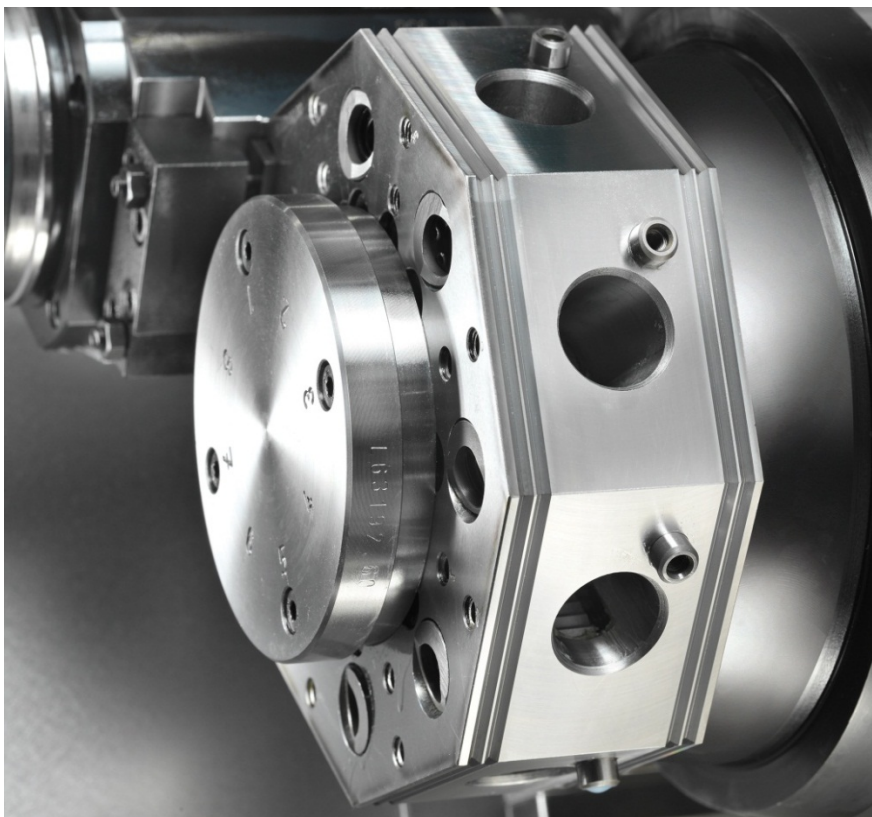
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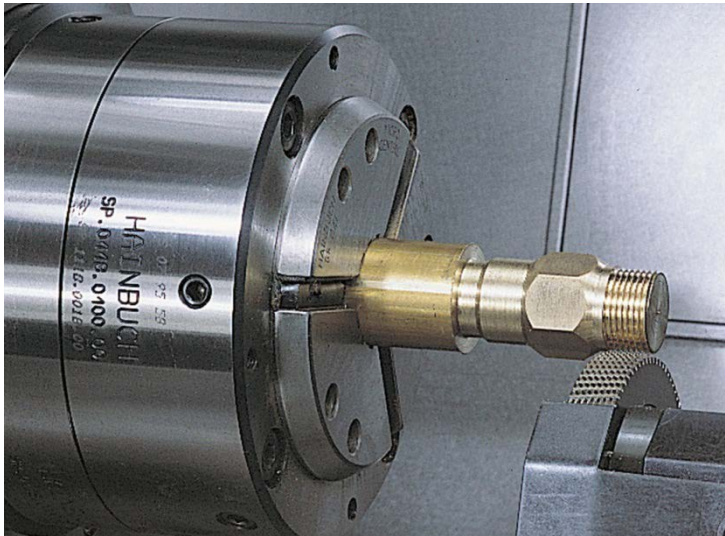
**Figure 1:**  
Revised production lathe ABC: more speed and flexibility in production



**Figure 2:**  
High performance density:  
up to three tools can be used simultaneously on a small footprint.



**Figure 3:**  
Tool carriers: besides the traditional VDI25 tool holders, the upper turret now can accommodate also W-serrated holders.  
One station is reserved for the synchronous spindle.



**Figure 4:**  
Thread milling and polygon turning unit produces hexagon bar in the fraction of a second.



**Figure 5:**  
Future-oriented operation using the INDEX C200 sl control generation, based on the Siemens Sinumerik 840D sl (solution line) and an 18.5" touch-sensitive wide-screen monitor: the latest capacitive touch technology allows even an operation with gloves. In addition, the control panel can also be used for Virtual Machine (VM) developed by INDEX.