

## Press information dated 9/18/2018

### Better than good

**or: Extremely flexible with maximum productivity**

For many modern metalworkers, 'done-in-one' machining has progressed from being a competitive advantage to a necessity. Current trends – smaller lot sizes to accommodate part variants, higher power density with smaller dimensions, increased quality requirements – leave companies with almost no other options than pursuing complete machining in a single setup. Hardly any other machine tool manufacturer has addressed these customer needs with innovative machine concepts as consistently as INDEX-Werke GmbH & Co KG with its G and R series.

While the G series has been extremely successful within the market, advancements in machine tool design and manufacturing have provided the opportunity to improve some aspects of the basic design of the machines, especially in the larger diameter range. As a result, INDEX has implemented a new design to create an innovative special class of turn-mill center, the INDEX G420.

The machine incorporates a polymer bed in monoblock design. The selected geometry and design provides such extraordinarily high inherent stability that the machine can be removed from the hook during installation and installed on its three-point support without requiring a foundation. With a machine weight of approximately 22 t and a footprint of around 15 m<sup>2</sup>, this concept offers the best deflection resistance of any comparable machine on the market and, along with the generously dimensioned linear guides in the X and Z axes, ensures very good stability and damping properties. In addition, a greater than 5-1 ratio of static masses to moving masses not only provides excellent stiffness, but also enables brilliant dynamic properties with very low vibration.

The G420's design is also unique in that it features a vertical working area in conjunction with 2 turrets at the bottom that have no inclined stem, thus ensuring excellent chip flow. Thanks to the polymer bed and despite the high machine weight, a very favorable ratio of working area to external dimensions has been achieved. In addition, the chip conveyor can be mounted on the left or right, depending on application requirements, so that a manufacturer can optimize use of existing floor space.

Much attention was paid to ergonomics in the new design. All relevant components, such as main and counter spindle, turret, motorized milling spindle, and tool magazine, are easily accessed by the operator. The low interfering edge, in connection with the selected

low spindle position, not only corresponds to the latest ergonomic findings, but also ensures a technically favorable center of gravity. In addition, the loading and unloading area for setting up tools for the motorized milling spindle has been ergonomically positioned at spindle height.

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The Z axis slides with the motorized milling spindle and the Y/B axis with hydrodynamic bearing support are symmetrically designed as a gantry and located above the axis of rotation. The INDEX G420 incorporates a high-performance drive (max. 26 kW, 110 Nm and 12,000 rpm) and a B axis driven directly by a torque motor and featuring hydrodynamic bearing support. This allows an incredibly diverse range of drilling and milling operations to be carried out. A Y stroke of +/-170 mm, B axis swivel range of +/- 115 degrees and large X travel of 750 mm allow an operator to produce any geometry easily and productively with up to five-axis machining.

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With the motorized milling spindle and two turrets, the INDEX G420 can access a total of three tool carriers, a unique feature within the market. The milling spindle operates with a single or optional double-row tool magazine, which provides space for 58 or 116 tools (HSK-T63 or Capto C6). Tools weighing up to 10 kg and with a maximum length of 500 mm can be used as standard. Enabling the use of long projecting tools proves particularly beneficial for multi-axis machining.

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The Y/B quill is moved by a torque motor with a direct measuring system. Since each turret is equipped with 12 tool locations, more than enough tools are available to cover even demanding tasks without requiring additional setup. This is for a strong benefit, even for the smallest batch sizes. The two turrets are equipped with VDI 40 tool mountings and each turret provides 12 stations, all of which can be equipped with live tools. The two tool carriers provide 7.5 kW, 35 Nm and speeds up to 5,400 rpm. Both turrets can be moved +/- 70 mm not only in the X and Z directions, but also by means of a linear Y axis.

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For effective complete machining of long or shaft-type workpieces, up to 3 tool carriers – all with a Y axis – can be used. A turret steady can also be mounted on the turrets as an additional tool.

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Thanks to the large working area and the distance between the main and counter spindles, simultaneous machining can be conducted with the motorized milling spindle and the tool turrets at the main and counter spindles with no risk of collision. By moving the tool turrets down, away from the collision zone, each tool carrier can machine freely on both spindles.

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Both the main and counter spindles are fluid-cooled and provide a clearance of 102 mm. A size 340 clamping device can be used as standard. The maximum chuck size is 400. The maximum turning length of 1,600 mm allows economical machining of a very wide range of parts. The motorized main and counter spindles allow productive turning

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operations through their high dynamics, power (34 kW) and torque (35 Nm).

Optionally, a 2-axis handling unit can be integrated for loading and unloading parts weighing up to 20 kg, as well as removal of remnants. In short, the INDEX G420 is exceptionally designed for low-manned or, in some cases, unmanned operation.

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The control system is an adapted Siemens 840D SL, which is operated via the Index iXpanel system. Thanks to the full-surface touch-sensitive interface, iXpanel provides the user with extremely convenient setup and control via softkeys.

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Figures:



90 **Figure 1:**  
INDEX G420 – Turning and Milling in new dimensions



95 **Figure 2:**  
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**Figure 3:**

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