



The Adaptive Drilling Control (ADC) technology cycle, developed by DMG MORI, enables even the most demanding drilling processes to be reliably managed when used in combination with botek deep-hole drilling tools. For extremely small bore diameters ranging from 2 mm to 50 mm, ADC achieves results in terms of process reliability, productivity and bore quality that were previously considered unachievable.



Adaptive Drilling Control (ADC) ensures maximum safety and quality during deep-hole drilling through continuous process monitoring

A new benchmark for deep-hole drilling

ADC sets a new standard with botek deep-hole drilling tools on DMG MORI universal machining centres

To mark the DMG MORI in-house exhibition 2026 in Pfronten, the machine tool manufacturer DMG MORI and botek, one of the world's leading suppliers of deep-hole drilling tools, carried out extensive test series on the use of the newly developed Adaptive Drilling Control (ADC) technology cycle in conjunction with botek 113HP tools on a DMG MORI 5-axis DMC 80 U duoBLOCK machine featuring an innovative flow control system. The results achieved demonstrate impressively

productivity and quality. Whereas in the past a constant coolant pressure of at least 80 bar was required for reliable chip removal, ADC now allows drilling to be carried out at much lower pressures. The intuitive operation of this adaptive technology, combined with cutting data recommendations from the botek app, makes it easy even for inexperienced users to carry out reliable drilling operations with optimum results. Via a dialogue-guided input process, the parameters for pilot drilling are first defined, with the subsequent entry into the pilot hole possible either in a stationary or rotating position. During horizontal and vertical deep-hole drilling with Adaptive Drilling Control (ADC), the optimum coolant flow rate is continuously monitored in the background and maintained at a constant level through automatic adjustment of the coolant pressure. No specific requirements or adjustments regarding the coolant used are necessary. When tapping and drilling to the end position, or during drilling interruptions, a user-defined feed adjustment can also be programmed in extended feed mode.

The adaptive coolant flow and feed rate control – for example, when reaming cross-holes – detects deviations from the set-point and automatically corrects them. By specifically adjusting the coolant flow and feed rate, chip jamming is prevented and the risk of tool breakage is significantly reduced. Furthermore, changes in material structure and the end of tool life are detected, and the drilling process is automatically adjusted or stopped accordingly. Continuous visualisation of actual and target values throughout the entire drilling process ensures maximum transparency. The user retains control at all times over the key process parameters such as pressure, flow rate, pump capacity and feed rate, and can thus significantly improve process reliability in the long term.

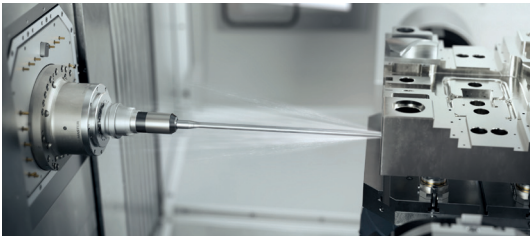
Thanks to the demand-based regulation of coolant pressure, there is no longer any need for the pumps to operate continuously at full load. The resulting energy savings, as well as the reduced wear and tear on machines and tools, lower operating costs whilst simultaneously making a significant contribution to sustainability.



„When used in conjunction with botek deep-hole drilling tools, ADC significantly extends the limits of a safe deep-hole drilling process at low pressure on machining centres.“

Magnus Teschner
Applications Engineer,
botek GmbH

Simple operation, reliable processes, reduced costs and outstanding bore quality make ADC, in combination with botek tools, an essential component of the DMG MORI MX strategy. By integrating a wide variety of manufacturing processes such as milling, turning, grinding and drilling on a single machine, set-up times are minimised, processes are simplified and the cost-effectiveness of production is sustainably improved.



The results of the test series carried out show that both the botek deep-drilling tools of type 113 for extremely small drill diameters down to 2 mm, and those of types 01, 02 and 110 for drill diameters between 10 mm and 50 mm, are optimally designed for the use of ADC on DMG MORI machines. Monitoring and control of the drilling process is carried out via ADC, whilst the botek tools, for their part, guarantee reliable processes and optimum drill hole quality in terms of centre alignment and surface finish. The limits of a safe deep-hole drilling process are significantly extended by the combination of Adaptive Drilling Control (ADC) and botek single flute drills. This technology enables drilling with significantly reduced coolant pressure, thereby opening up areas of application that were previously only feasible to a limited extent, if at all.

Specifications of the series of experiments

Machine:	DMG MORI 5-Axis-Maschine Type DMC 80 U duoBLOCK, IKZ 80 bar
Tool:	botek-ELB Type 113HP Form C
Material:	42CrMo4
Coolant:	Fuchs Ecocool AFC-IDM, Conc.10%
Nose Grind:	SA0486 and SA0503
Coating:	XT

how the continuous monitoring of coolant flow and its automated regulation via variable coolant pressure significantly broadens the range of applications for botek single flute drills, whilst at the same time substantially improving process reliability,

Results of the series of experiments: Coolant flow rate and coolant pressure in comparison

Drill diameter (mm)	Drilling depth	V _c (m/min)	f (mm/U)	V _f (mm/min)	up to the recommended value	ADC-Value
2	40xD	80	0.07	891	4l/min & 95 bar	0.7l/min & ~27.8 bar
2	40xD	80	0.10	1273	4l/min & 95 bar	0.7l/min & ~27.8 bar
4	30xD	80	0.13	828	8l/min & 80 bar	1.05l/min & ~6 bar
4	30xD	80	0.20	1273	8l/min & 80 bar	1.96l/min & ~21 bar
4 (Overdrilling)	30xD	80	0.06	832	8l/min & 80 bar	1.96l/min & ~21 bar



botek Deep-hole drilling tool
Type 113 HP, Type 01, 02, 110

You will find the exhibition stand of DMG MORI at the AMB in Stuttgart in Hall 10, Stand E10.

The exhibition stand of botek is located in Hall 1, Stand H50.

Further information:
www.dmgmori.com
www.botek.de