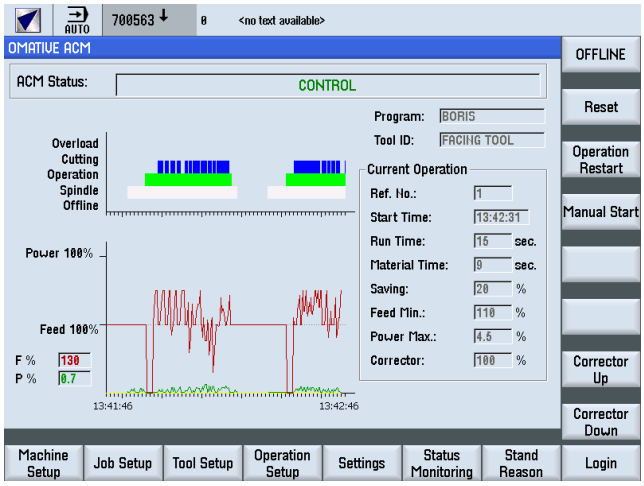
Product Information

Adaptive control system as integrated software solution for the SIEMENS 840DSL



Description	OMATIVE ACM (integrated solution) is an adaptive, real-time control system integrated with the SIEMENS 840DSL controller, working with the Siemens software on the machine, available either as a Windows-based and Linux-based system.
Applications	Machining (single items as well as mass production) with varying cutting conditions, such as dimensional variations on castings or forgings, fluctuating material hardness and material structure, contours with fluctuating depths of cut, difficult to machine materials (for example stainless steels, tool steels); heavily varying surfaces (hard casting skin, saw cuts), and cutter wraps
Feed control	The starting point is always the programmed feed, which corresponds to 100%. ACM systems use the measured load values from the work spindle to calculate the optimal feed under the current cutting conditions, and then regulates the feed rate up or down (for example, 80% or 150%).
Hardware and software requirements	• SINUMERIK 840D PCU50 or higher • SINUMERIK 840D NCU 572.x or 573.x or higher • SINUMERIK 840D NCK software version 06.05.00 or higher • SINUMERIK 840D HMI software version 06.03.15 or higher • Compile cycle "Integrated Adaptive Control Technology" as loadable ELF file • IMD-Base version 02.02.00 or higher
Operating modes (optional)	• Adaptive feed control and tool break detection • Monitoring and tool break detection • Event recording
Monitorable tools	Basically all, as long as the power consumption differs during the processing of the idle power
Number of monitorable (driven) spindles	Up to two processing channels can be monitored (each channel can have up to 3 milling spindles or turning spindles)

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Options for starting the control system	• ACM “start” command from the NC program • ACM tool change • CNC tool change
Considered factors for optimizing the feed	• Monitored power consumption • Workpiece material (from materials library or learned) • Tool type (from tool library or learned) • Cutting depth, workpiece diameter, and cutting angle • Programmed feed • Programmed speed
Feed electives	From 0 to 150%
Load measurement (power consumption of each work spindle)	Power signal is transmitted internally by the CNC
Control feed information	Passed internally to the CNC
Detection of tool overload	If the maximum load limit is exceeded
Time until reaction (if tool overload)	Machine-dependent programmable control cycle (typically 4-8 milliseconds)
Possible reactions to tool overload (selectable)	• Immediate stop of the machine • Warning lamp for the operator • Stop after completing the editing process • Stop as soon as the tool is in the air
Possible reactions to a heavily worn tool (selectable)	• Display of the wear status • Warning lamp after completing the machining process • Stop at program end
Detection of tool breakage	Learning cut + one production pass must be made first
Reaction to tool breakage	Stop the machine
Report options	Results of individual operations can be read on the display of the CNC. More extensive evaluations are possible with OMATIVE-Pro software.
Data entry / administration	Using the keyboard and mouse of the CNC On a PC, the data transfer can then be done across a network

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