AC Progress VP

+GF+ AgieCharmilles

AC Progress VP2

Advanced wire electrical discharge machine with high degree of precision and quality

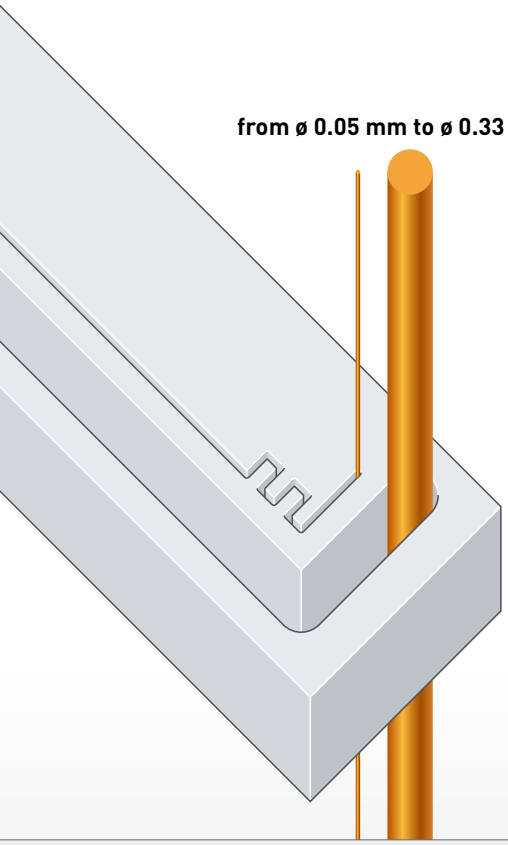
Contents

AC Progress VP3

AC Progress VP4

Highlights

High performance and productivity for high tech applications



from ø 0.05 mm to ø 0.33 mm

Thin wire

To extend the application range of the AC Progress VP systems, an optional kit for using wires with diameters of down to 0.05 mm can be fitted. With this option, shapes requiring an internal radii of just 32 µm can be achieved.

Smoothsurf: Perfectly smooth erosion surfaces

The quality is much better with Smoothsurf. The work of polishing manually during the machining processes for injection moulds, die-casting or extrusion tooling is very much reduced and in some cases even superfluous.

Smart Threading - threading in small holes in maximum safety

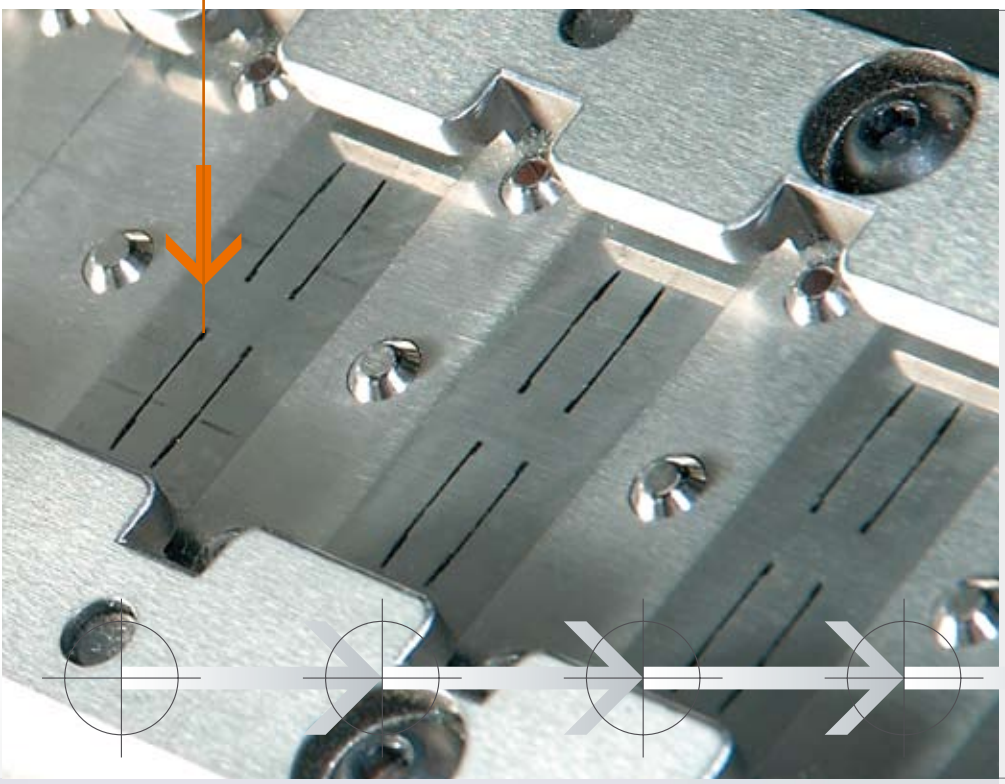
Using wires with small diameters means that the production parts must have very small initial holes. With the Smart Threading option the minimum threading diameter for wires measuring 0.10 to 0.05 mm corresponds to the diameter of the wire plus 50 micron. Smart threading is the ideal accessory for the process of producing fine blanking dies for precision blanking, lead frames and dies for the electronic sector.

Cutting PCD

The new module is available as an option and allows to cut economically a vaste quality range of PCD (polycristalline diamond).

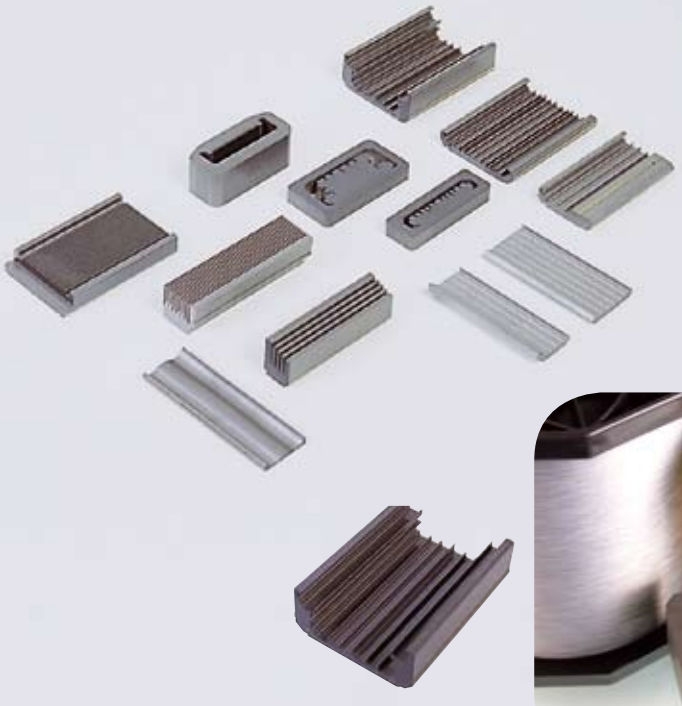
High quality surface finish

A surface finish of Ra 0.2 µm is reached as standard on all AC Progress VP. Roughness Ra down to 0.1 µm can be reached with the SF module option.



Continual positioning precision

The high degree of precision of the AC Progress VP is achieved by perfectly combining major elements, such as the machine's high static rigidity, measuring system that includes both transducers and optical scales, and the control unit.
This means all individual elements works to their strenghts under a bespoke control designed specifically for EDM.

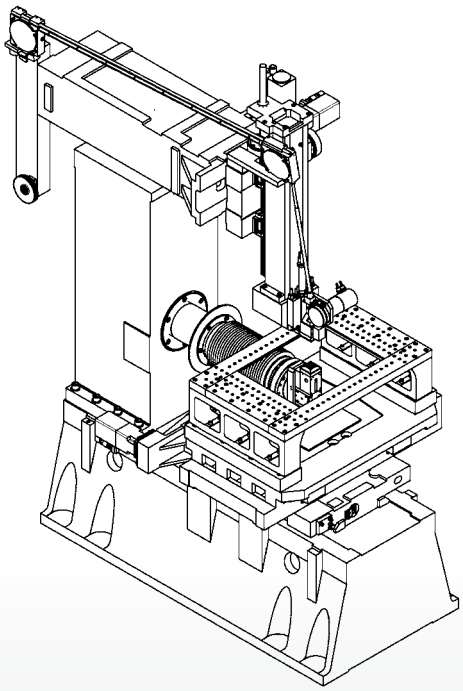


The advantage of using 2 different wires on a single-wire system

The AC Progress VP's unique wire drives system allows a very special function in which two wires can be used in a single contour. Duotec in itself can massively reduce the time taken and running cost's normally attributed to finer wire jobs. After carrying out the main cut on a larger diameter of wire a finer diameter wire is used to detail corners and provide the final trim cuts. Other benefits of Duotec includes a more robust process as the majority of the material removal is completed on a larger diameter wire.

Certified precision

The mechanical concept for maximum precision and repeatable results

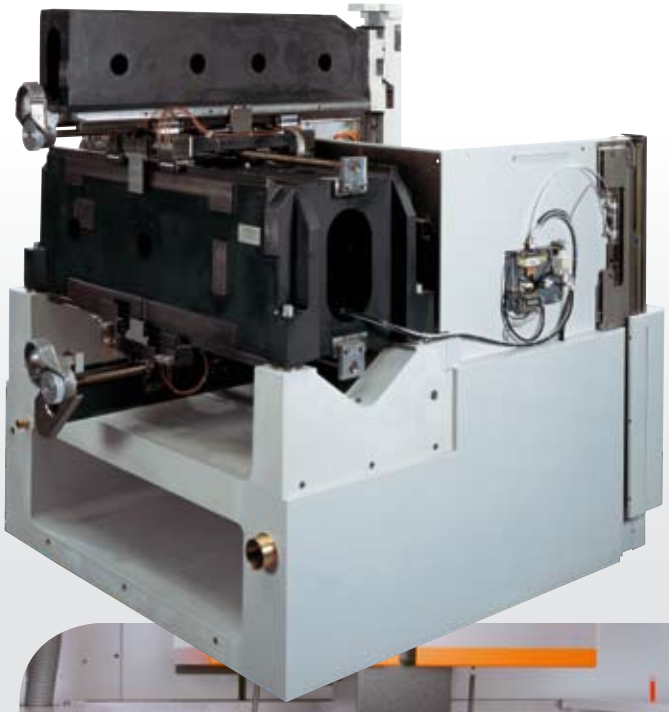


Mechanic's - the foundation of performance, AC Progress VP2 and VP3

The solid cast iron structure with a C construction concept guarantees high static and dynamic rigidity, making it possible to achieve a high degree of positioning precision. The work area can house considerably large pieces or various multiple tightening systems.

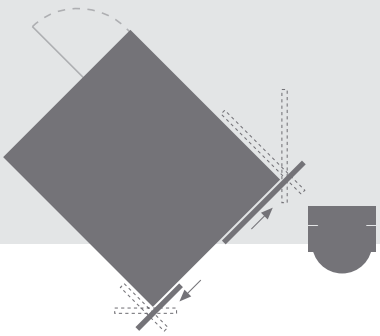
AC Progress VP4

Predestinated for highest workpiece weights on a fixed table. X, Y, U and V axes as slides and arms with the wire guides. Taking in account of their long travel paths, the axes are arranged in accordance with the principle of best positioning accuracy achievable. The entire work area can be used for small detail machinings on large workpieces or for multiple clampings.



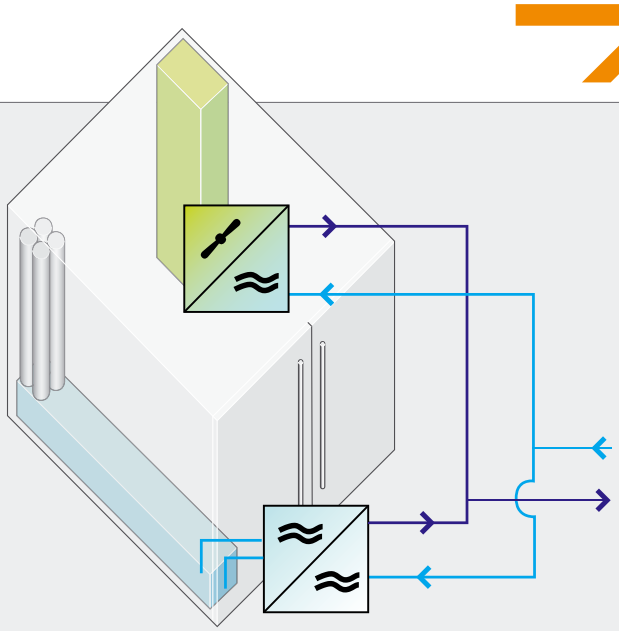
Because space is important

GF Agiecharmilles machines ensure the minimum footprint but at the same time provide the maximum profitability for that floor space. With a sophisticated opening mechanism, access to the work area is orientated around been ergonomic, and providing the operator with the most comfortable workspace possible.



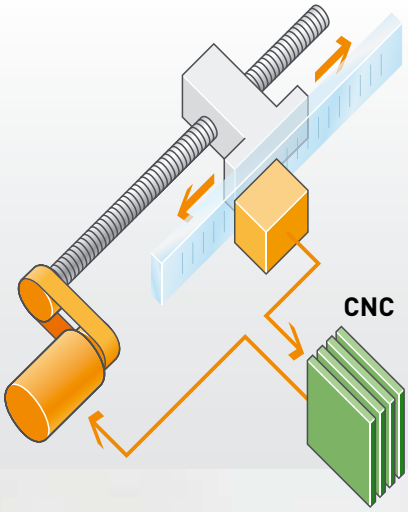
Optimal temperature stability

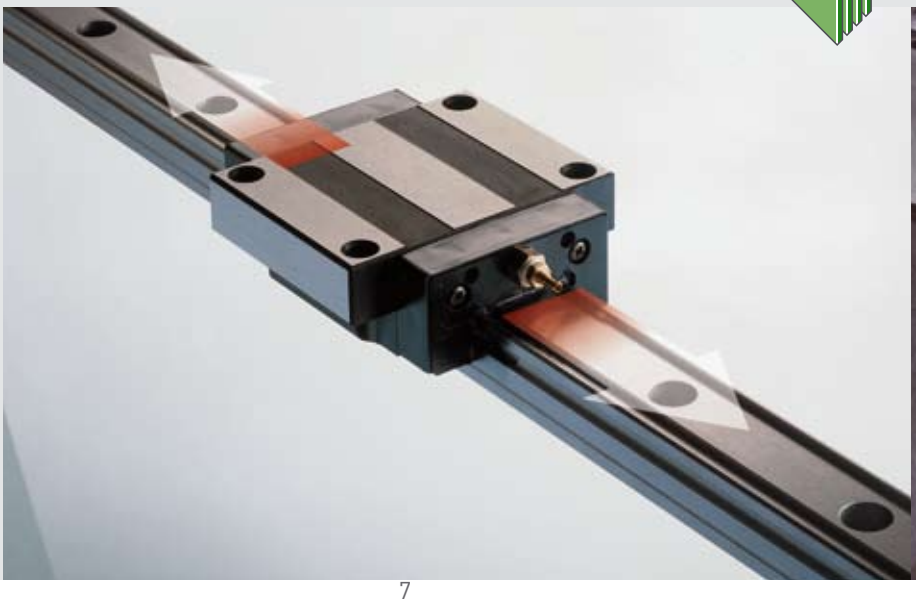
All the heat generated in the system is dissipated by cooling water. The cooling of the generator, control system and dielectric unit is regulated by heat exchangers.

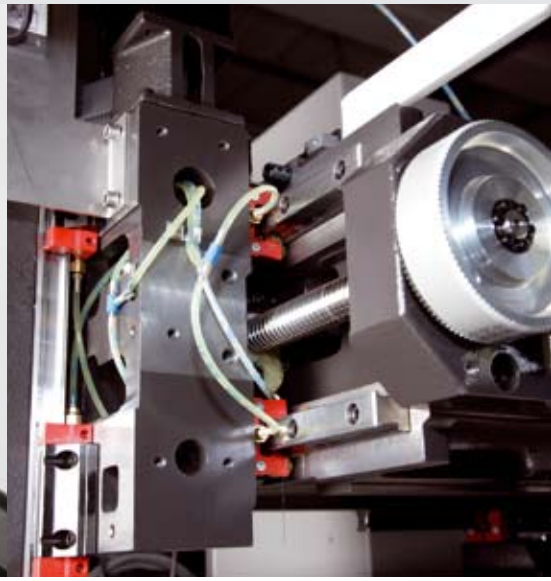


Dual measuring system

With two independent measuring systems, a precision in the µm range is achieved on the workpiece. Shaft encoders guarantee high dynamics and optimum process control. Glass scales continuously monitor and optimise the axis positions.







High degree of autonomy

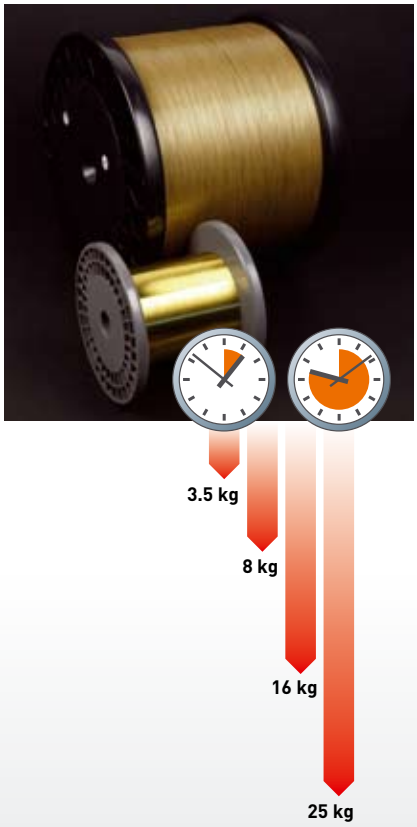
Exploiting the wire electrical discharge machine potentiality to the full

Rapid wire reel replacement

Replacing the wire spool is quick and easy. An automatic device conveys the wire from the back of the system to the work area in just a few seconds. The speed of change of wire is particularly important when using the Duotec functionality. It is quick, simple and can be done with one programme.

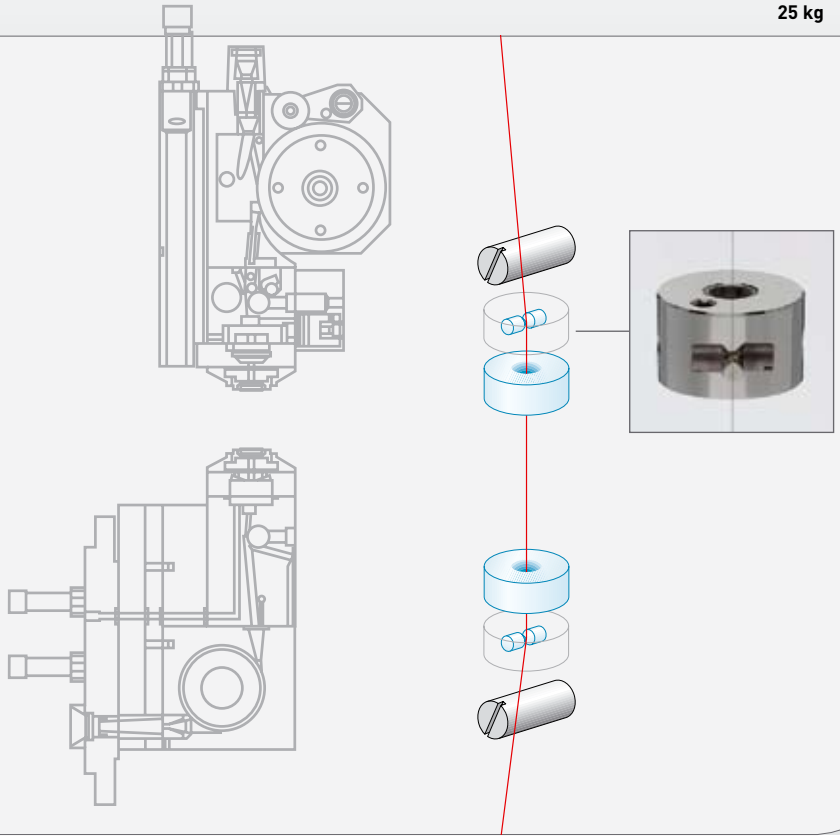
Autonomy

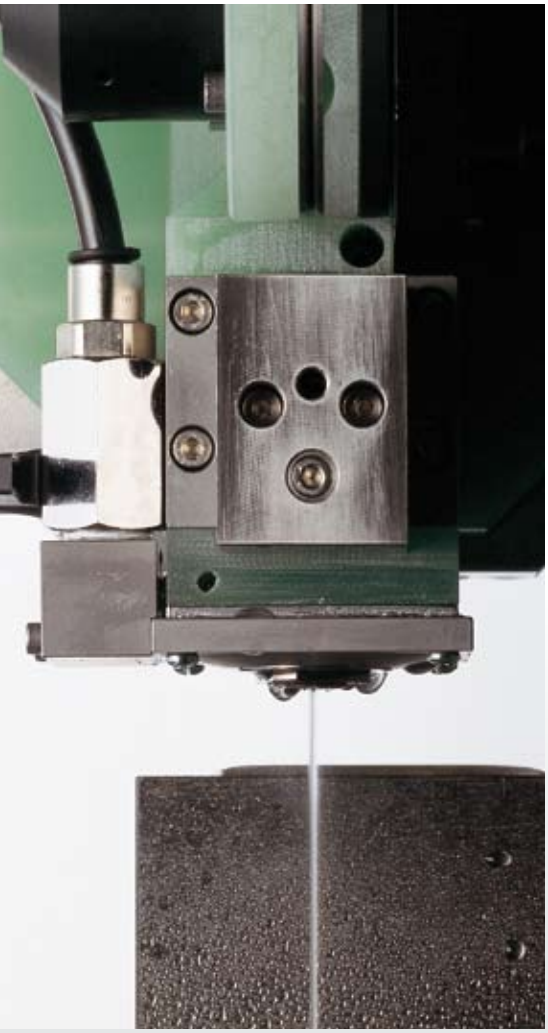
With all components, like standard wire spools up to 25 kg as well as unmatched running time for wear parts, real long term machining (machining hours) is achieved.

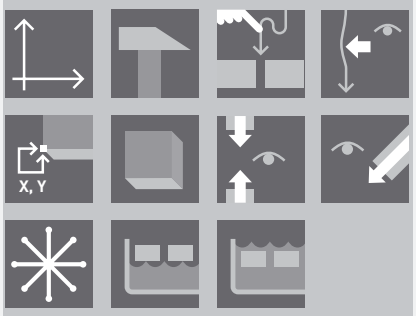


A guide for all diameters

Changing wires is quick and easy without having to change difficult and time consuming mechanical components. The GF Agie-Charmilles wire guide system can in fact be used for any diameter of wires. As well as the obvious benefits the system allows Duotec wire functionality – a cheap wire for roughing and a high quality wire for finishing.







Convenient setting up

All important control functions are available and grouped in Agiejogger, the handbox with its electronic handwheel and LCD display. All phases of setting up can be carried out conveniently.

Reliable wire threading

The machine can be used to full capacity in reliable night and weekend operation. Agiejet threads reliably in all cases such as multiple clampings, of multiple openings in one workpiece or in the rare case of a wire break (even wires of 0.05 mm diameter). A prerequisite for real autonomous, automated ED wire-cutting operation.

Filtering system autonomy and intelligence

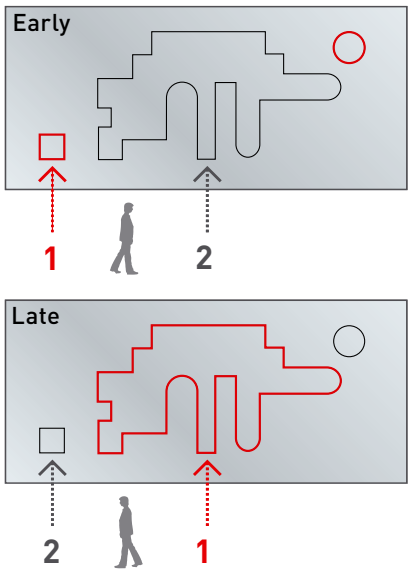
The AC Progress VP has a high degree of autonomy due to its smart filtering. The system will automatically reduce the erosion parameters if the filters begin to get clogged up. This allows the work in progress to complete ensuring none of the frustration of finding a part finish job after out of hours running.

Versatility and Flexibility

Exploiting the system to the full

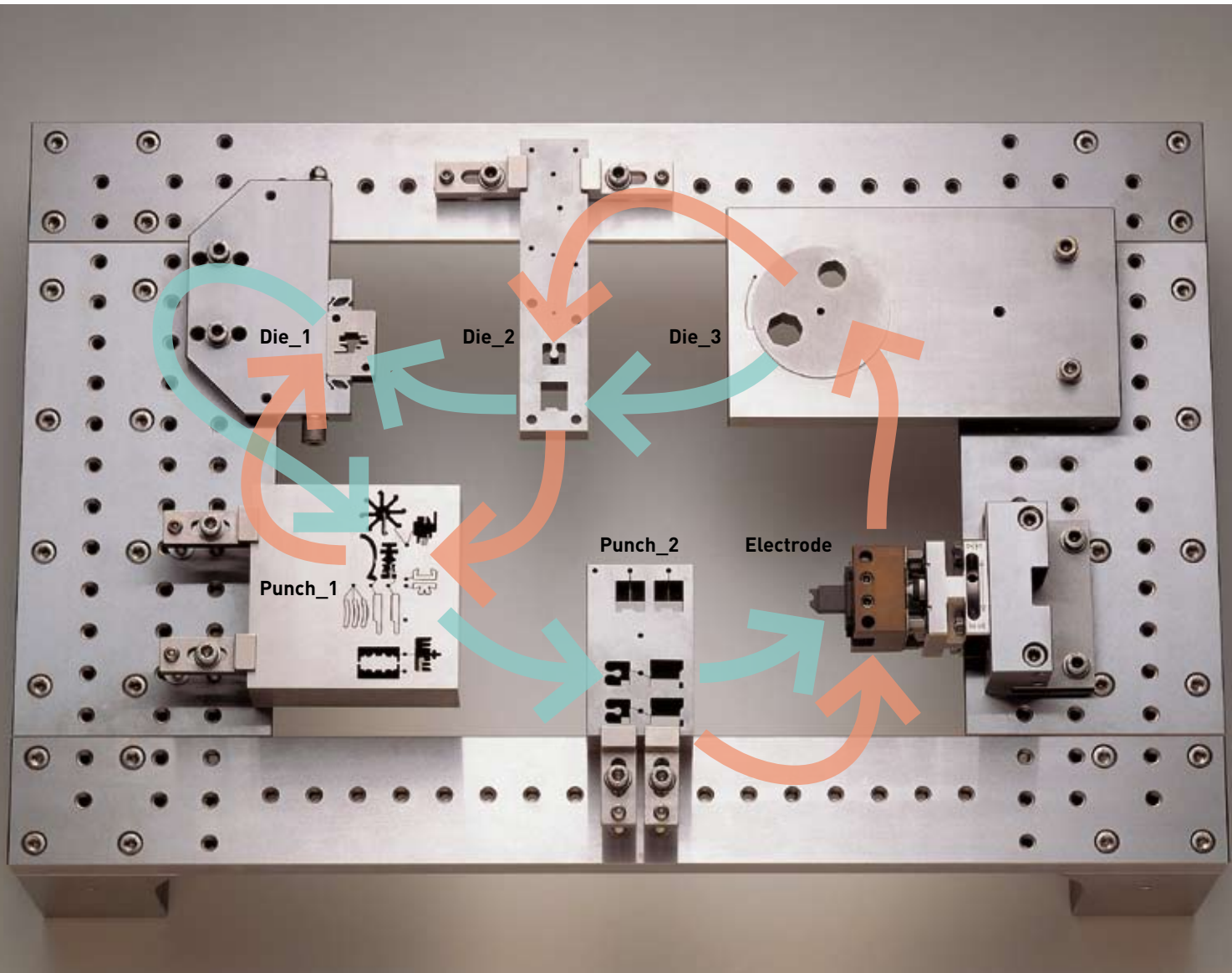
Flexible priorities, independent from external CAD

Arrange and select individually the cutting sequences for workpieces. Directly on the machine and without the need of an external CAM system. Even during ED machining, the Early/ Late function, allows to alter cutting sequences in accordance with time criteria (e.g. EDM start in the evening and removal of drop-out parts in the morning) or any combination thinkable.



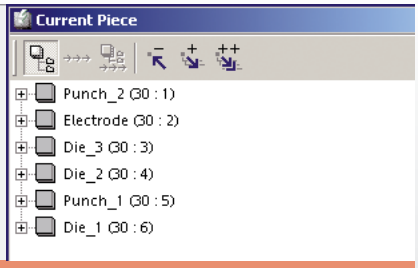
Making the most of the work area

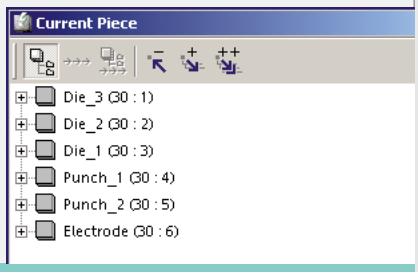
The work area allows 360 degrees of workpiece positioning, but this is just the start of the Progress VP inherent flexibility. Once inputted the component can be edited, strategies changed, geometry altered, automatically measured, rotated and batched together with other workpieces, aligning the process with Agiesetup 3D. In fact the control system employed is renowned as been the most flexible, easy to use and production orientated on the market place.



Subcontractor count, easy to calculate costs

Agieplanning, the ideal module for planning without complicated calculation of contour lengths or cutting rates. Handled by means of a simple job description directly on the machine or on a PC, the machining time, the wire consumption are at hand for cost/planning calculations.



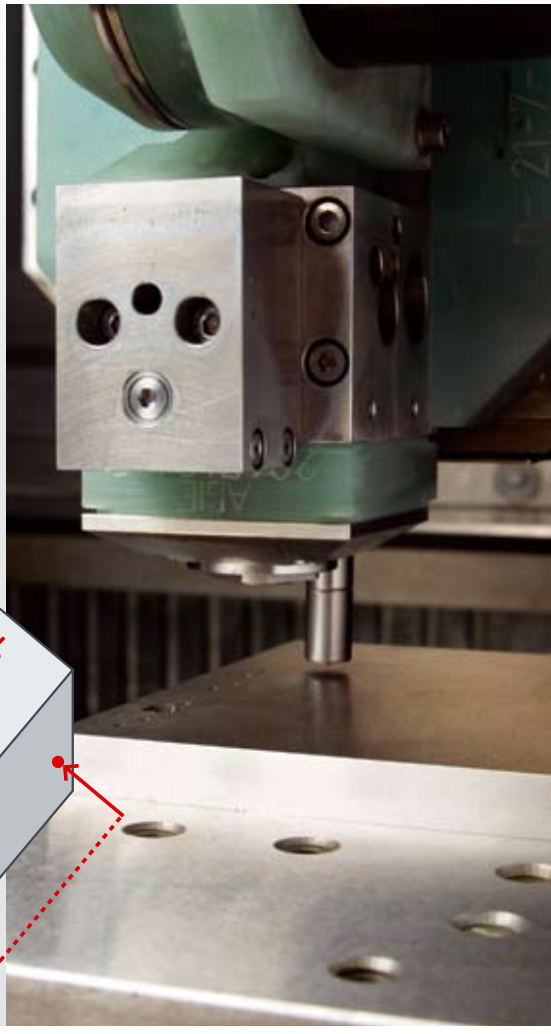


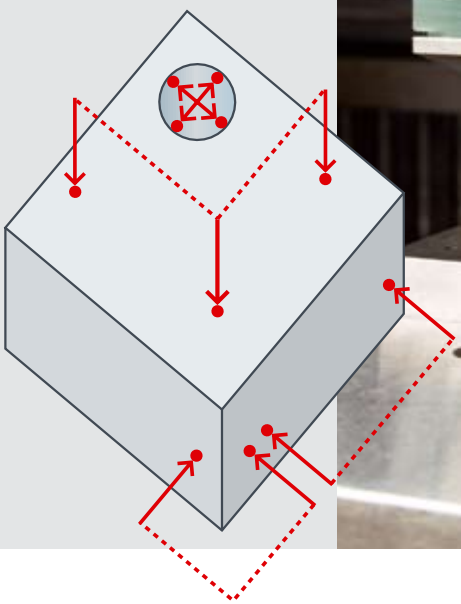
EDM-specific Job Management System

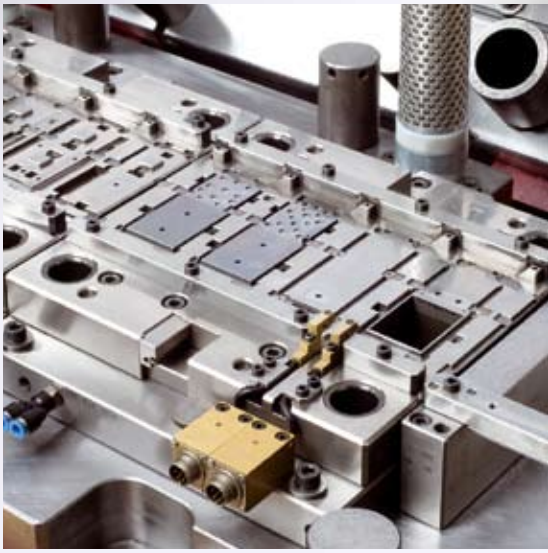
Optimally manageable machining without reprogramming by a CAM-station. The batch function combines several Jobs in one. With Agievision, priorities and sequences can be set flexibly and changed at any time.

No manual alignment

Automatic three-dimensional workpiece location with Agiesetup 3D in the work area, using the EDM wire and a touch probe. The control system takes account of any possible offset in space and independently assigns the new reference values to the geometry program.







Achieve more...

AC Progress VP

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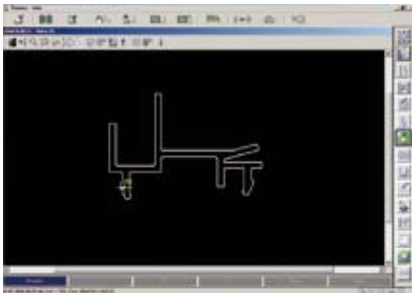
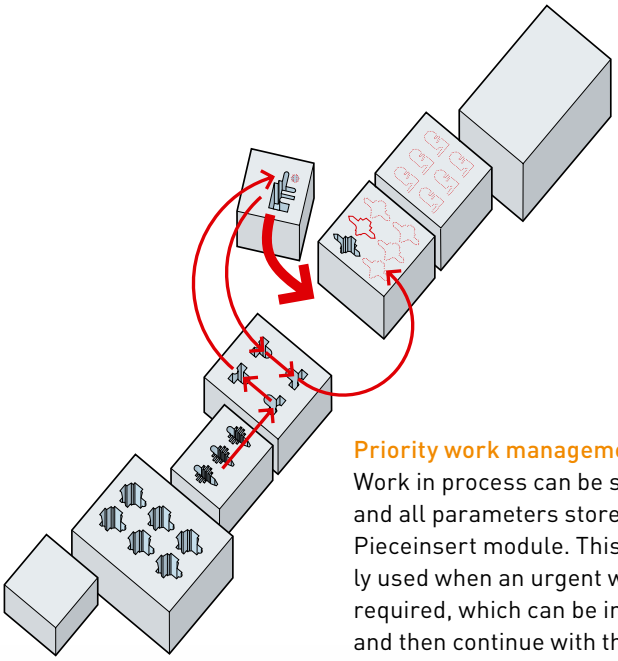
Versatility and Flexibility

For practical workshop requirements



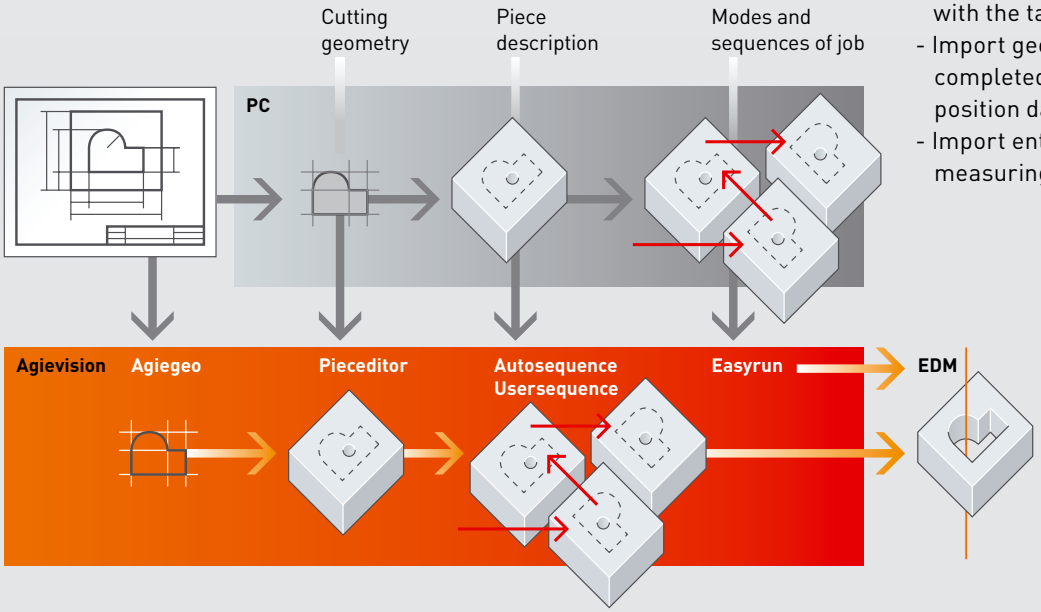


Agiegeo
Importing and exporting files in DXF and IGES. With this software, 2D-geometries can be modified directly on the machine.

Graphic machining check
Two or three-dimensional presentation of the Job to machine with Grafi-check. Machining sequences can be simulated, the feasibility verified and the current state of machining visualised graphically.

Priority work management
Work in process can be suspended and all parameters stored with the Pieceinsert module. This is commonly used when an urgent workpiece is required, which can be inserted, cut and then continue with the original work exactly where it was left off in complete confidence, without changing or adding other data.

Data input adapted to organizational conditions
Flexible data input in accordance with the infrastructure of the workshop. With Agievision, the data input can be carried out flexibly:
- All data input entered directly on the machine.
- Import geometries and complete with the target data on the machine.
- Import geometries and target data, completed with measuring and position data on the machine .
- Import entire job data, including measuring and position data.



Target-oriented data input

Automatic generating of machining technologies and sequences with Easywork. It only requires surface quality, geometry, contour tolerance, workpiece material and height, as well as the wire type.

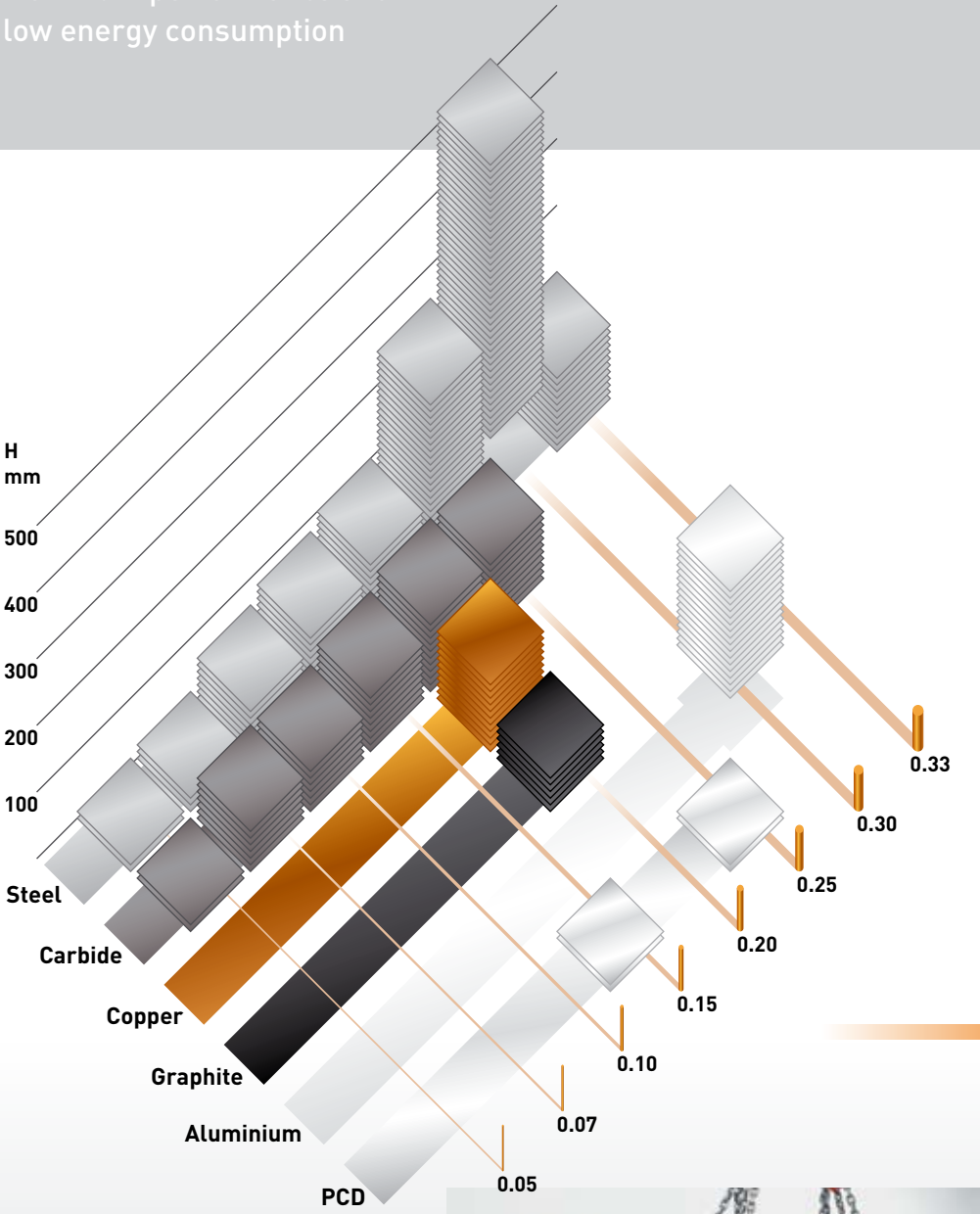
Generator for all demands

Maximum performance and low energy consumption

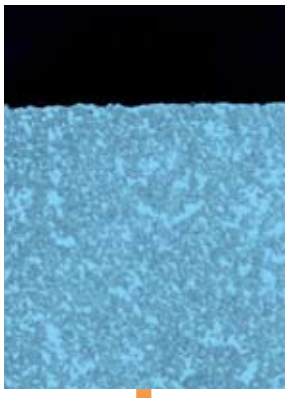
Intelligent generator
Increased EDM output, more powerful electronics, efficiently controlled EDM process. With IPG-VPC an improvement in the form factor of the pulses and a reduction in the pulse duration are achieved.

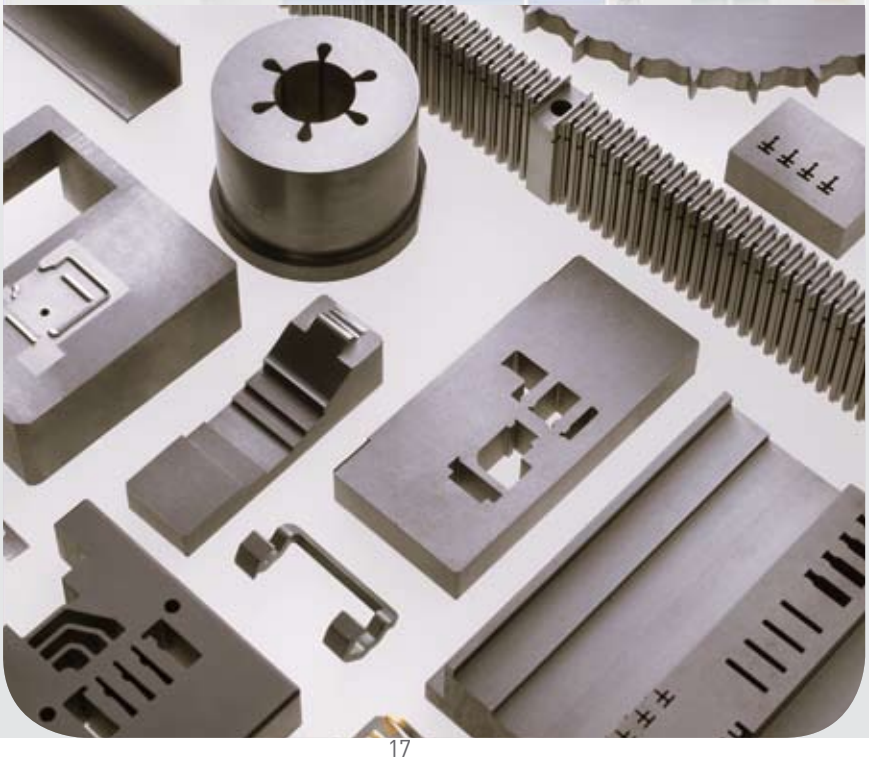
Technologies for all requirements
All common conducting materials can be processed to the best with the IPG-VPC generator using any type of wire. It also can handle exotic materials such as Ti and Iconel as well.

Maximum productivity minimum time
Prodtech is a new technological package for high speed cutting. It is designed to achieve good quality and precision, with speed and minimum running cost as its priority. It is achieved with an innovative type of discharge pulse, minimizing the number of cuts and therefore consumable usage.



PCD technology
The optional PCD module, produces tooling that sets new standards in edge definition, this increases the service life and gives far greater accuracy in form geometry.
Many types of PCD can be processed owing to a vast range of on board technologies, be if differing grade or particle size.





High precision in taper cutting

The option Agieconic Plus opens new horizonts of precision at conical machined surfaces with AC Progress VP.

Automatic process optimisation

Teccut is a powerful instrument making it quick and easy for the operator to automatically select the best parameters to suit their particular. To generate the technology the operator enters a description of the effective characteristics of the piece, such as the height, shape, material used, surface quality and texture that is required. This is done by a conversational method with the control prompting the user for information it requires. Teccut then selects a match for the workpiece but also offers alternatives if for example a priority should be set for surface finish accuracy or speed.

Quality of eroded surfaces

The quality of eroded surfaces is crucial for the longevity of the life of tools in punch and die applications. The IPG-VPC generator, designed to be the platform of generator evolution in years to come, ensures:

- Elimination of the affected lager in steel.
- Perfect surface integrity in carbide.

Advanced functions for EDM

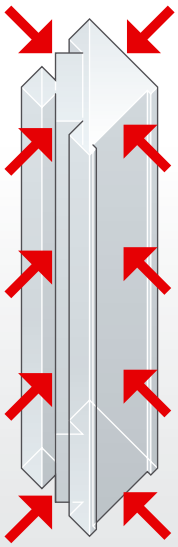
Erosion experience on the machine totally at user's disposal

Physical and process-determined influences are continuously regulated and optimised by the control system. The efficiency of the pulses is converted specifically into precision-leading results. In combination with the IPG-VPC heavy duty generator, these exclusive functions increase the accuracy on the workpiece.

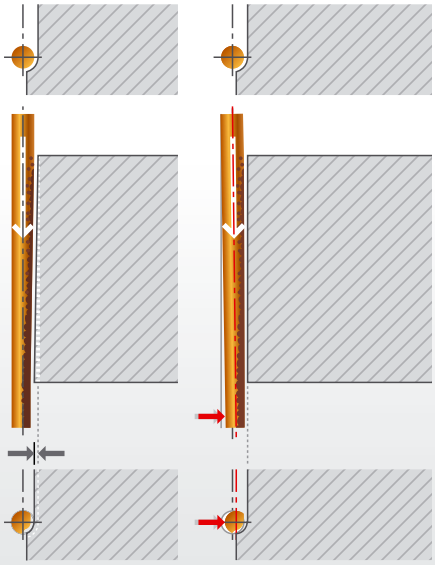
Constant speed in all contours

Precise full cuts at maximum speed. Dynamic Corner Control continuously corrects physically determined contouring errors. The wire path is dynamically optimised. As a result, the quality of the geometry in full cuts improves so that trim cuts can be carried out faster, reduced or even avoided.

Perfect contour accuracy and cylindricity



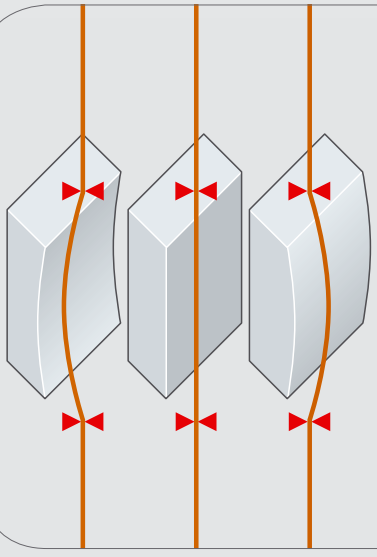
Without AWO **With AWO**



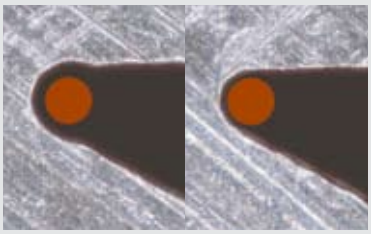
DCC

Accurate linearity

Perfect contour accuracy and cylindricity. With AWO (Advanced Wire Offset), the influences of wire wear and flushing are technologically compensated.



Without WBC **With WBC**

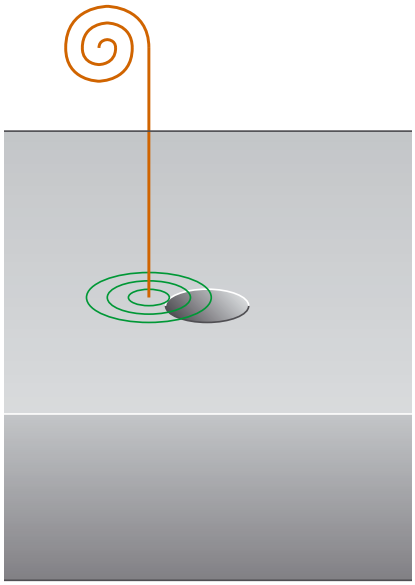


Highest form accuracy

Best accuracy and linearity are achieved on the whole contour. Wire Bending Control determines the lateral wire deviation, caused by the process, in real time and is corrected with the process control, even at high cutting rates. At every point of the contour cut, WBC reliably implements the precision and roughness target entered in the control system – both in the case of cylindrical and tapered and also stepped workpieces.

Eroded surfaces perfectly smooth with Smoothsurf

The quality of eroded surfaces is very important in machining processes for injection moulds, pressure die-casting and extrusion tooling. The Smoothsurf module offers the possibility of achieving a high degree of surface evenness and smoothness. Higher quality can be achieved with Smoothsurf as the manual polishing operation is reduced and in some cases even superfluous.

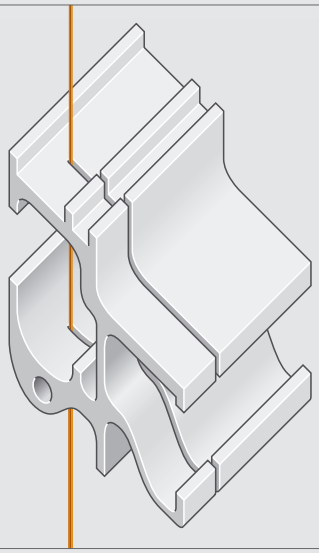


Automatic search for the initial hole with Smart threading

Using wires with small diameters means that the production parts must have very small initial holes. With the Smart Threading option the minimum threading diameter for wires measuring 0.10 to 0.05 mm corresponds to the diameter of the wire plus 50 micron. Smart threading is the ideal accessory for the process of producing fine blanking dies for precision blanking, lead frames and dies for the electronic sector.

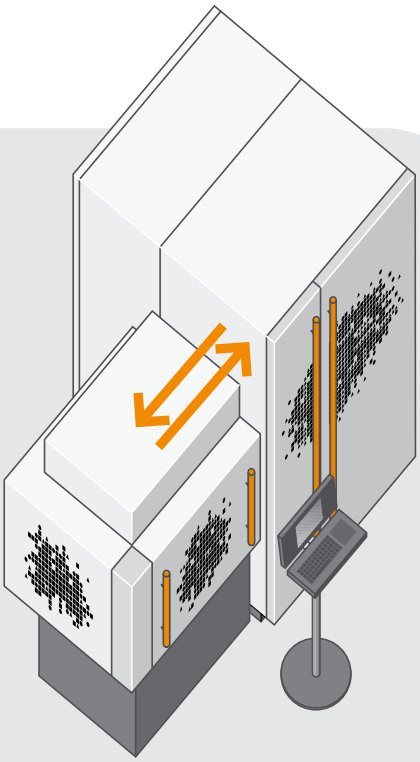
Automatic power adjustment

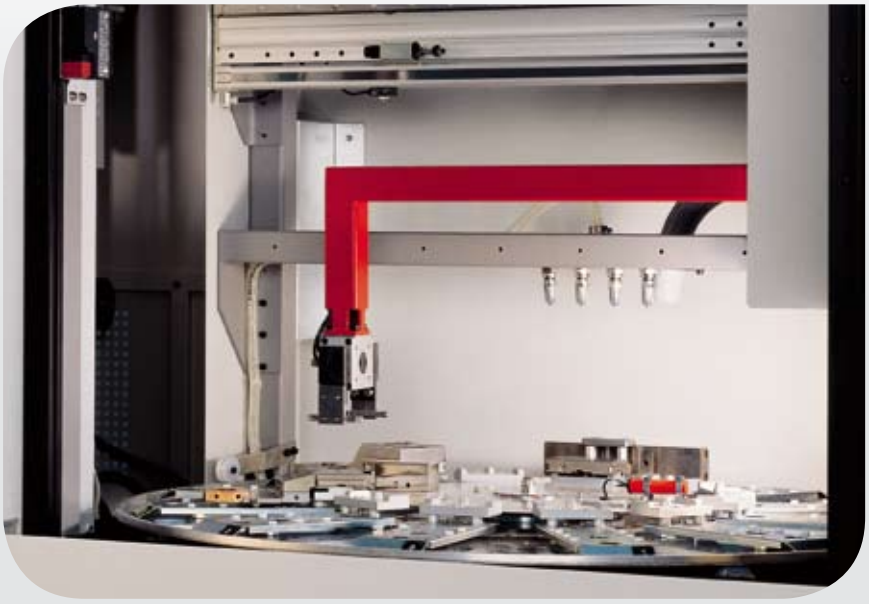
Power is automatically adjusted to changing conditions. With Variocut, stepped workpieces or workpieces provided with openings can be cut at optimal speed as the cutting cross section is continuously monitored.
Variocut cuts an optimal homogeneous surface and a perfect linearity.

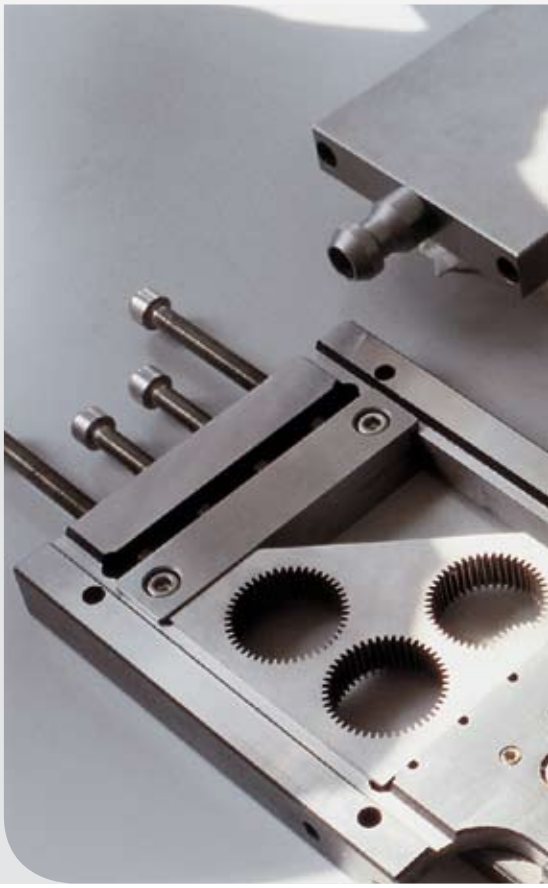


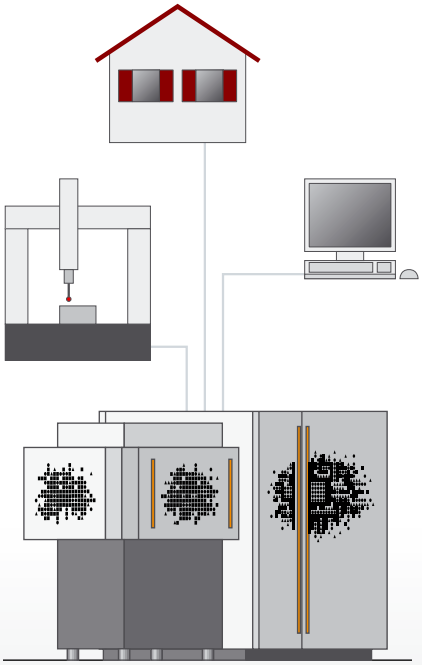
Efficient automation

Flexibility and highest exploitation of the machine









Integrated autonomy as a requisite for robotized machining processes

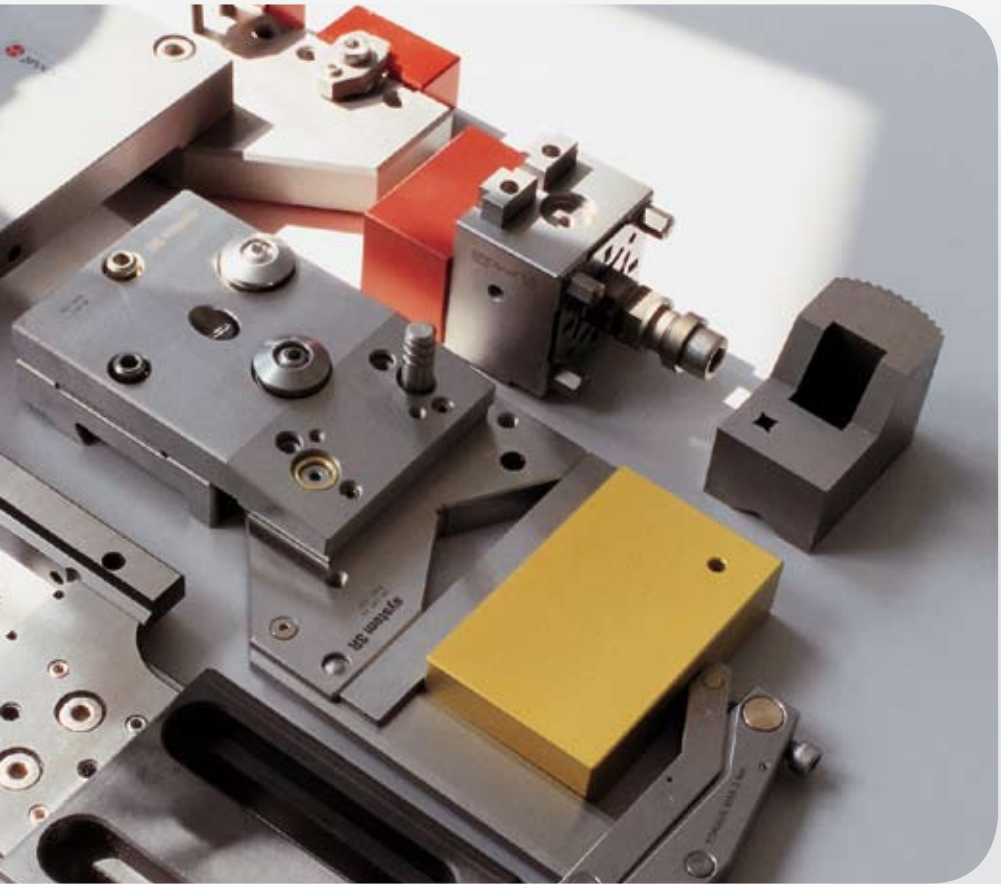
Extended out of hours running comes easy with AC Progress VP due to:

- 25 kilo wire reels;
- long working life of the filtering and deionizer system;
- long service life of the guides
- automatic re start-up after blackout;
- reliable immediate results thanks to advanced technologies;
- long service times

The electrical discharge machine system

The wire AC Progress VP2 is designed for all levels of automation expansion. The AC Progress VP2 is perfectly prepared for automation with the AC Pal or other system for loading pieces, thanks to the programmable bath level for a piece height of up to 250 mm and a clearly defined interface.

- The AC Progress VP2 has the ideal system for controlling the work of automated wire electrical discharge with Agievision control.
- Automated working cycles can be rapidly created for the system with Easyrun.
- With Robotcommand the AC Progress VP2 is equipped with a clearly defined interface, which can be used to connect handling instruments and robots.



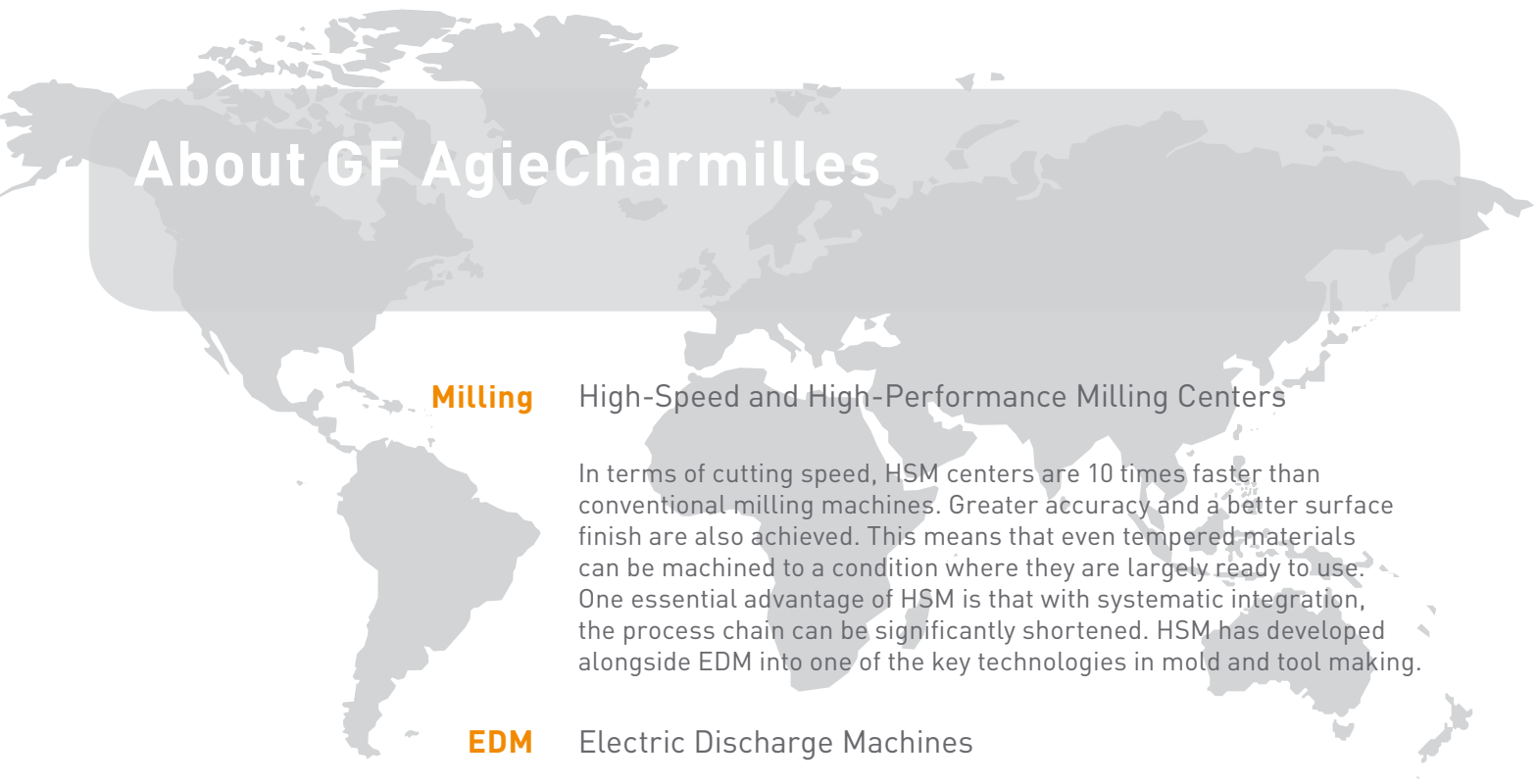
Input of measurement data

The clearly defined interfaces allow the import of measuring machine data into Agievision by Network or USB stick.

Remote monitoring

The status of the system and the works in progress can be monitored from home or office at any time by using a special module.
The AC Progress VP2 is prepared for remote monitoring with respective Software such as e. g. Remote Access Ultra VNC.

About GF AgieCharmilles



Milling High-Speed and High-Performance Milling Centers

In terms of cutting speed, HSM centers are 10 times faster than conventional milling machines. Greater accuracy and a better surface finish are also achieved. This means that even tempered materials can be machined to a condition where they are largely ready to use. One essential advantage of HSM is that with systematic integration, the process chain can be significantly shortened. HSM has developed alongside EDM into one of the key technologies in mold and tool making.

EDM Electric Discharge Machines

EDM can be used to machine conductive materials of any hardness (for example steel or titanium) to an accuracy of up to one-thousandth of a millimeter with no mechanical action. By virtue of these properties, EDM is one of the key technologies in mold and tool making. There are two distinct processes – wire-cutting EDM and die-sinking EDM.

Automation Tooling, Automation, Software

Tooling for fixing workpieces and tools; automation systems and system software for configuring machine tools and recording and exchanging data with the various system components.

Spindle HSM Spindle Technology

Development, production and sale of the motor spindles that form the core components of modern HSM centers. The spindles rotate at speeds between 10 000 and 60 000 rpm.

Service Services and Consumables

Service, maintenance, spare parts and consumables for EDM, milling and HSM systems as well as for other machine tools; consumables include filters, wire, graphite, copper electrodes and special resin.

259.804.362

Contact

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Technical Data
AC Progress VP

		AC Progress VP2	AC Progress VP3	AC Progress VP4
Travels				
X/Y/Z axes	mm in	350x250x256 13.77x9.84x10	500x350x426 19.7x13.77x16.8	800x550x525 31.5x21.65x20.67
max. speed X/Y	m/min. ft/min.	3 9.84	3 9.84	3 9.84
U/V axes	mm in	±70 ± 2.7	±70 ± 2.7	800/550 31.5/21.65
Max. taper angle <°/height	mm in	30°/100 30°/3.93	30°/100 30°/3.93	30°/500 30°/19.68
Dual measuring System for X/Y axes		standard	standard	standard
Work area				
Max. workpiece dimensions L x W x H	mm in	750x550x250 29.5x21.6x9.8	1050x650x420 41.3x25.6x16.5	1300x1000x510 51.9x39.3x20
Max. workpiece weight, with bath (without bath)	kg lb	200/450 440/992.08	400/800 880/1763.70	3000 6613.86
Accessibility		front	front/top	front/top
Frontal drop door		manual	manual	manual
Universal clamping frame for best utilisation of the work zone		standard	standard	standard
Machining in bath	mm in	250 9.84	420 16.5354	525 20.669
Wire threading system				
Agiejet Threadable height	mm in	Up to 250 9.84	Up to 420 16.5	Up to 525 20.67
Threading nozzle	ø mm in	2 0.07	2 0.07	2 0.07
	ø mm in	1 0.039 option	1 0.039 option	1 0.039 option
	ø mm in	0.6 0.0234 option	0.6 0.0234 option	0.6 0.0234 option
Wire threading in small holes and start hole search	function ≤0.10 mm	option	option	option
Wire guides, Standard equipment	ø mm in	0.15-0.33 0.0059-0.0129	0.15-0.33 0.0059-0.0129	0.15-0.33 0.0059-0.0129
Kit 70, Extension kit	ø mm in	0.07-0.10 0.0027-0.0039	0.07-0.10 0.0027-0.0039	0.07-0.10 0.0027-0.0039
Kit 50, Extension kit	ø mm in	0.05-0.10 0.0196-0.0039	0.05-0.10 0.0196-0.0039	
Combination wire guide system	"V" guide	cylindrical up to 2°	cylindrical up to 2°	cylindrical up to 2°
	Toroid guide	2° up to 30°	2° up to 30°	2° up to 30°
Increased accuracy in tapered cut Agieconic Plus	option	option	option	
Wire drive, wire spool	kg	up to 25	up to 25	up to 25
Wire disposal		chopper	chopper	chopper
Generator				
High power generator IPG-VPC integrated	~ A	60	60	60
Wide range of tested tech. for common users work	piece materials	standard	standard	standard
Max. cutting rate with CCS Ø 0.33 mm wire	mm^2/min. in/h	> 500 47	> 500 47	> 500 47
Finishing quality, best roughness	Ra µm µin	0.2 8	0.2 8	0.2 8
Best Ra with SF modul, finishing power module	Ra µm µin	0.1 4 option	0.1 4 option	0.1 4 option
Duotec, technology for the use of two wires type in a single contour		standard	standard	standard
PCD Module, machining of PCD disks or cutting tools		option	option	option
Smoothsurf, best surface homogeneity, uniformity of the eroded surfaces		standard	standard	standard
Correction of the cylindrical residual error, AWO (Advanced Wire Offset)		standard	standard	standard
Dynamic path optimisation and process adaptation in the radii DCC		standard	standard	standard
Real time detection and correction of the wire bending WBC		standard	standard	standard
Automatic power optimisation Variocut		standard	standard	standard
Prodtec: technology for highest productivity		standard	standard	standard

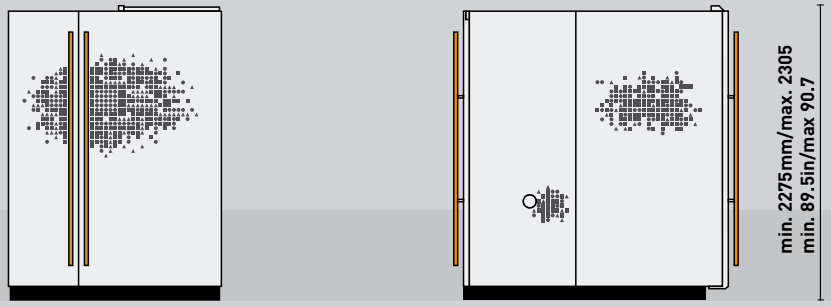
		AC Progress VP2	AC Progress VP3	AC Progress VP4
Dielectric conditioning unit				
Dielectric conditioning unit integrated	l us gal	750 200	1000 264	1600 423
Filter cartridges 4 canisters with 8 cartridge filters		standard	standard	standard
Filtrate quality	µm µin	5 197	5 197	5 197
Deionizing				
Deionizing bottle charge volume	l us gal	10 2.64	10 2.64	10 2.64
	l us gal	30 7.92 option	30 7.92 option	30 7.92 option
Cooling				
Generator and control unit				
with air/ water, and dielectric with water/ water heat exchanger		standard	standard	standard
System				
System dimensions L x W x H	mm in	1640x2040x2220 64.5x80.3x87.4	1940x2300x2600 76.4x90.5x87.4	2900x3050x2850 114.2x20.1x112.2
Net weight	kg lb	2580 5688	3460 7628	6000 13228
Weight ready-to-run	kg lb	ca. 3350 7385	ca. 4200 9260	ca. 11000 24250

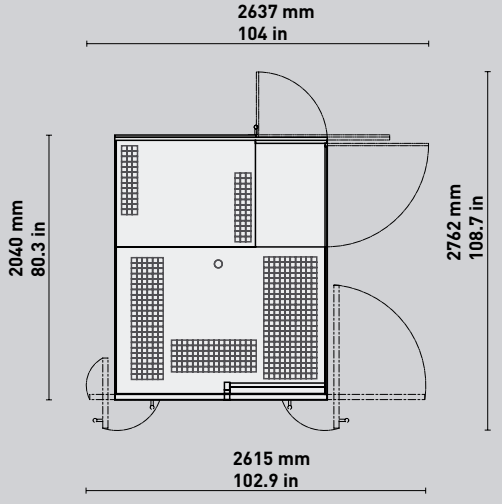
Control unit integrated, modules and functions	
Remote control with all setup functions	Agiejogger with electronic handwheel and LCD display
Operator interface system	15"-LCD-display, Keyboard and mouse
Control unit integrated	Agievision object oriented man-machine interface
Operating system	Multitasking Windows XP
Operating mode	Multiprocessor
CPU's	Pentium for CNC and operator interface
Servocontrolled axes	X/Y/Z/U/V
Supplementary servocontrolled axis	A axis
Smallest programmable step	0.0001 mm (0.000004 in)
Easy preparation of machining programs	Easywork
Automatic pickup cycles	Agiesetup 3D, for automatic determination of workpiece plane and position
Automatic technology selection based on machining objectives	Teccut
Import of job-specific data from CAD/CAM systems	Camlink
Predefined machining strategies	Autosequence
Predefined and user defined machining strategies	Usersequence
Simple 2D on-board geometry programming	IGES files Agiegeo with import of DXF and IGES files
Import in Agiegeo of third party ISO codes	Agiegeo Isoconverter
Quickly insert rush orders without effort	Pieceinsert
DNC port with Xon/Xoff and LSV2 protocols	DNC
Help functions, explanations with text and graphics	Help and online manual
Machining simulation 2D and 3D view	Graficheck
Automatic instructions and commands execution	Easyrun
Automatic machining sequence definition	Lotto for multiple workpieces clamping
Rethreading on wire break/on «no- thread» detection restart after power failure Rescue strategies	
Languages	English, CN, CZ, DE, DK, ES, FR, HU, IT, JP, NL, PL, RU, US, SE
Storage capacity	> 40 GB HD, 1 GB Ram
Interfaces	2 x RS232C, 1 x parallel, 1 LAN (Local Area Network), 1 USB
Data storage media	CD/DVD Rom for updates and on line manual, floppy-disk, USB

Interface for automation (only Progress VP2)	
Basic equipment for handling devices	Automation
Communication interface for handling devices	Robotcommand
Communication interface for cell computer connection	Hostcontrol

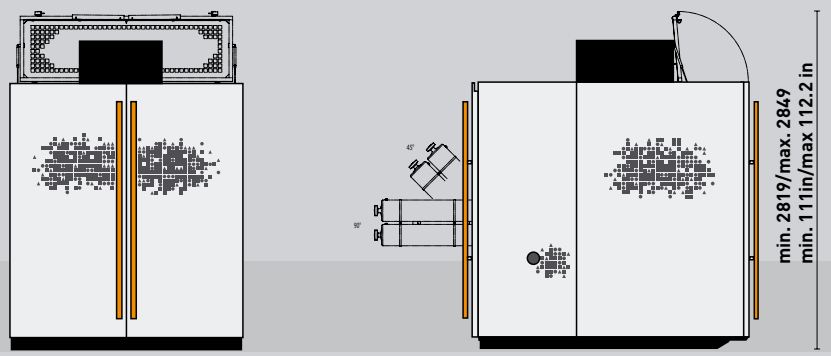
Connections	
Line power	12.1 kW
Line voltage	3 x 400 V
Compressed air	6 bar, 5 m^3/h (85 psi, 6.54 yd^3/h)
Cooling capacity required	9-11 kW

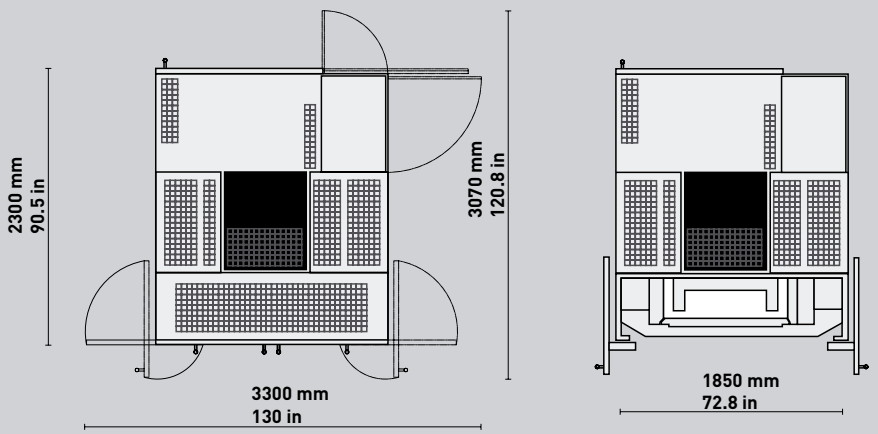
AC Progress VP2





AC Progress VP3





AC Progress VP4