Customized ED wire cutting
Agiecut Challenge V machines with dual measuring systems, a lowerable work tank and proven V-Tech generator are ED wire-cutting machines which optimally combine high precision with high productivity:

**The models for high productivity and precision**

**Designed for automation**
With a lowerable work tank, programmable bath level for workpiece heights up to 250 mm as well as a clearly defined interface, Agiecut Challenge V2 and V3 are outstandingly suited for automation with Agie WorkPal or another workpiece loading system.

**Built-in autonomy**
Agiecut Challenge V machines have optimal autonomy available – also as a pre-requisite for automated sequences:
- 25-kg wire spools
- long service lives of the filter and deionising system
- long working life of the power feeds and wire guides
- restart after a power failure
- results on the workpiece achievable with certainty and straight off thanks to mature technologies
- planable maintenance and service intervals.

**Intelligent generator**
With IPG-V (Intelligent Power Generation Vertex), an increase in the form factor of the pulses and shortening of the pulse duration are achieved. In this way, the EDM output is increased and, thanks to more efficient electronics, the EDM process can be efficiently controlled.

**Finest surfaces**
A surface quality of Ra 0.2 µm is achieved as standard by all Agiecut Challenge V machines.

**Highest positioning accuracy**
With dual measuring systems, the smallest tolerances on the workpiece are achieved by continuous measurement and correction of the axis positions so that punches and dies have a 100 percent fitting accuracy to one another.

**Well-directed planning**
With the AgiePlanning function, Agiecut Challenge V2 and V3 have an optimal instrument for job planning at their disposal.

**Latest hardware**
With version 5 of Agievision, Agiecut Challenge V machines have a control system with high-speed and powerful processors with state-of-the-art electronics.

**Functional software**
With intuitive icons, additional text explanations and a clear form of presentation, the user surface of Agiecut Challenge V is in keeping with the PC user’s habits. The user’s guide is resident in the hard disk storage.
Considerable reduction of non-productive times

Dual measuring system
ED wire cutting

for high productivity made to measure

Expandable productivity
All the functions, technologies and performances of the machine, control system and generator, taken as a whole, give an ED wire-cutting system which can be optimally expanded into an automated EDM cell:
- With the Agievision control system, Agiecut Challenge V machines have the ideal job management system for automated ED wire cutting.
- With Easyrun, automated machining sequences can be quickly created on the Agiecut Challenge V2 and V3.
- With Robotcommand, Agiecut Challenge V machines have a clearly defined interface at their disposal by means of which handling devices and robots, such as e.g. Agie Work-Pal, can be connected.
- With automated Agiecut Challenge V2 and V3 machines, hourly rates become a competitive advantage.

Shortened non-productive times
With a selectable threading mode:
- Highest speed (8 - 15 seconds), highest reliability or a combination of both. With a selectable positioning mode: Depending on the application, one or more possibilities of optimisation can be used. Agiejet threads reliably in the case of multiple clampings, several contours in a workpiece or in the case of a wire break [also wires of 0.07 mm diameter], thus creating the prerequisite for autonomous, automated ED wire-cutting operation.

Simple wire change
With the combined wire-guide and threading system for all wire diameters, no further, expensive wireguides are needed for other wire diameters. Wire changes can be carried out without mechanical aids.

Less power consumption
With the IPG-V generator, the energy requirement sinks strikingly.

No manual fine adjustment
With Agiesetup 3D, the workpiece location in the work area is determined automatically by measuring cycles by means of the EDM wire and a touch probe. The control system takes account of any possible offset in the area and allocates the new reference values to the geometry program independently.

Problem-free job insertion
With Pieceinsert, in order to execute an express order, first of all the actual situation of the current machining job in progress, including the cutting sequences, is recorded and, after completion of the express job, this is then continued exactly there where it was interrupted. Without changing or inserting data records.

Balanced profitability
With eCut-technologies, wires of 0.1 to 0.15 mm diameter can be used and thus high cutting speeds can be achieved. eCut-technologies reduce the use of filters and resin strikingly, cutting the consumption of both coated wires and brass wires. Fewer deposits of material from the wire on the workpiece reduce the trim cuts. The areas cut on workpieces have a homogeneous surface in accordance with the roughness value.

Example

<table>
<thead>
<tr>
<th>Wire Diameter</th>
<th>Voltage (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 0.15 mm</td>
<td>Vsm 5.8 mm/min</td>
</tr>
<tr>
<td>Ø 0.25 mm</td>
<td>Vsm 4.0 mm/min</td>
</tr>
</tbody>
</table>

Quality target: Ra 0.80 - 0.09 µm
Speed: With Ø 0.15 mm wire up to 1.5 times faster compared with Ø 0.25 mm wire
Wire consumption: 40% less
Filter and resin consumption: 40% less

Agiecut Challenge V2 and V3 have numerous standard and optional features at their disposal which improve the productivity of the ED wire cutting:
Considerable reduction of non-productive times.
ED wire cutting for high precision made to measure

Numerous functions and technologies increase the high standard precision of Agiecut Challenge V2 and V3 even further:

**High-speed machining**
With IPG modules of the proven, fully-digitised Vertex generator, rough pulses are optimally adapted to the wire diameters. As a result, fine roughnesses and high speeds can be achieved.

**Constant position accuracy**
With the interaction of dual measuring systems, the control system and the mechanism, a precision concept is realised on Agiecut Challenge V that also meets the special requirements in the case of high and large workpieces.

**Accurate linearity**
With AWO (Advanced Wire Offset), the influences of wire wear and flushing are technologically compensated. The contour accuracy and cylindricity become nearly perfect as a result.

**Increased precision of the angle accuracy**
With Agieconic Plus, new toroids act on the Agiecut Challenge 2V and 3V allowing increased wire tension in the case of tapered cutting, thus benefiting the form accuracy and surface quality.

**Constant form accuracy**
With Wire Bending Control, the laterally, process-induced wire deviation is determined and corrected by process adjustment at every point of the cut contour – both in the case of cylindrical workpieces and on tapered and stepped ones.

**Automatic power adjustment**
With Varicut, stepped workpieces or ones with apertures can be cut at an optimal speed in that the cutting section is recorded continuously and the output adjusted automatically to the changed conditions.

**Unbraked through contours**
With Dynamic Corner Control, corners and radii can be cut precisely in full cut at maximum speed. Contour errors in the wire in the direction of cutting, caused by physical forces, are continuously corrected and the wire path is dynamically optimised. As a result, the quality of the full cuts is improved so that trim cuts can be carried out more quickly and reduced in number.

With a few workpiece details, wire type and machining target, a precisely matching machining technology is generated.
AIGO Advanced Wire Offset is optimized on the upper and lower wire guide with correction values.

Agiecut Challenge V with Agieconic Plus offers 3D wire cutting that opens up a new dimension in precision for tapered machining jobs.
The data on technology and function

Agiecut Challenge V 2 and V 3 have been integrated into the high precision concept of the Vertex series. ED wire-cutting machines for µm-accuracy, even in the case of large workplace dimensions. Also for new fields of applications, which seem futuristic, but tomorrow will take place in daily life.

Travel
- X/Y/Z axes
- U/V axes
- Max taper angle = height
- Max. speed X/Y

Table

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Workpiece</td>
<td>Max. workplace dimensions, Max. workplace weight, U/V axes</td>
</tr>
<tr>
<td>Performance</td>
<td>Maximal cutting rate with wire Ø 0.33 mm (0.013 in)</td>
</tr>
<tr>
<td>Manufacturing quality</td>
<td>Best flatness, up to 45°</td>
</tr>
<tr>
<td>Threading system</td>
<td>AGIE CHV, Threading nozzle, Diameter</td>
</tr>
<tr>
<td>Wire guide system</td>
<td>Wire guides, Standard equipment, Wire diameter</td>
</tr>
<tr>
<td>Workpiece</td>
<td>Max. workpiece dimensions, Max. workpiece weight, U/V axes</td>
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Dielectric conditioning unit
- Integriert
- Charge volume, Filter cartridge filter, Filter quality

Cooling
- Generator and control unit with air/water, dielectric with two water/air heat exchangers

System
- System dimensions, Length x width x height, Weight
- Mass, Weight ready-to-run
Agiecut Challenge V machines are supplied as a whole on a frame with rollers. Thanks to the small floor requirement the Agiecut Challenge V finds easily its place in narrow rooms.

### Convenient setting up

With Agiejogger, all phases of setting up can be conveniently carried out. The Handbox with its electronic hand-wheel and LCD display has all the important control functions available.

### Reliable wire chopper

With the wire chopper integrated into the system, used wires can be safely disposed off and electromagnetic radiation is avoided.

### Good accessibility

With a well-thought layout, all the modules relevant for maintenance and wear are easily reachable. Therefore the filters, deionising resin, wire cutter, seals, valves are easily replaceable in the shortest time.

### Ergonomic console

With a 15-inch LCD screen, keyboard and mouse, the flexibly installable consoles of the Agiecut Challenge V make a fatigue-proof input of data possible.

<table>
<thead>
<tr>
<th>Machine</th>
<th>Dimensions (mm)</th>
<th>Weight (kg)</th>
<th>Stroke / Feedrate</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agiecut V 2</td>
<td>300 x 250 x 256</td>
<td>470/1000</td>
<td>36 dév.</td>
<td>±70 mm</td>
</tr>
<tr>
<td></td>
<td>(11.77 x 9.84 x 10.12)</td>
<td></td>
<td></td>
<td>±70 mm</td>
</tr>
<tr>
<td></td>
<td>30/100 mm</td>
<td></td>
<td></td>
<td>±30°/100 mm</td>
</tr>
<tr>
<td></td>
<td>3 mm/rev.</td>
<td></td>
<td></td>
<td>3 m/min.</td>
</tr>
<tr>
<td>Agiecut V 3</td>
<td>900 x 350 x 256</td>
<td>3000</td>
<td>20 dév.</td>
<td>±70 mm</td>
</tr>
<tr>
<td></td>
<td>(35.43 x 13.77 x 10.12)</td>
<td></td>
<td></td>
<td>±70 mm</td>
</tr>
<tr>
<td></td>
<td>30/100 mm</td>
<td></td>
<td></td>
<td>±30°/100 mm</td>
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<td></td>
<td>3 mm/rev.</td>
<td></td>
<td></td>
<td>3 m/min.</td>
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</table>
Control unit integrated, modules and functions:
- Remote control for manual axes movement, setup functions for zero lines, work tank and pickup cycles.
- Operator interface system.
- Control unit integrated.
- Operating system:
  - Multitasking Windows XP
  - Multiprocessor.
  - CPU's:
    - Pentium for CNC and operator interface
  - Servocontrolled axes: X/Y/Z/U/V.
  - Supplementary servocontrolled axes: A, B
  - Smallest programmable step: 0.0001 mm (0.000004 in)
  - Max. path correction: 6 mm (0.236 in).
- Easy preparation of machining programs.
- Pick-up cycles for automatic determination of workpiece position: AGIESETUP 2D.
- Pick-up cycles for automatic determination of workpiece plane and position: AGIESETUP 3D.
- Automatic technology selection based on machining objectives: TECCUT.
- Predefined machining strategies: AGIEVISION.
- Predefined tool user defined machining strategies: AGIEVISION.
- chatte 2D on-board geometry programming and import of DEF and Defi files: AGIEVISION.
- Report in Agiecut of best parameter values: AGIEVISION.
- Oiling issued rash without effort: PRECISE.
- DNC.
- Help functions, explanation with text and graphics: HELP and online manual.
- Machining simulation 2D and 3D view: GRAFICHECK.
- Maximum safety through continuous data input: FORMALCHECK.
- Easy preparation of job templates: WORKMODEL.
- Automatic instructions and commands execution: EASYRUN.
- Automatic machining sequence definition for multiple workpieces clamping: LOTTO.
- Ballasting on non breaking “no-throw” detection restart after power failure: Rescue strategies.
- Standard languages:
  - English, Chinese, French, German, Italian, Portuguese, Spanish, Swedish,
  - 20 languages: 512 MB Flash.
- Interface:
  - 2 x 10/100 Base-T x gigabit 1 WAN (Local Area Network), 1 USB.
- Data storage media:
  - CD/DVD Rom for updates and on line manual, floppy-disk, USB.
- Interface for automation:
  - CONNECTION interface for handling devices.
- Basic equipment for handling devices: AUTOMATION.
- Connection interface for handling devices: HOSTCONTROL.
- Interfaces:
  - Line power: 13.5 kW.
  - Line voltage: 3x 400 V.
  - Compressed air: 6 bar (90 lb/in, 0.4 bar/psi).
- Cooling capacity required: 1.5-7.5 kW.

According to 
- AGIE setting values
- Standard
- Variant: not retrofittable
- Option: at choice

Exemplary in operation and convenience.

Agiecut Challenge V 2 and V 3 optimally combine precision and productivity at a high standard.