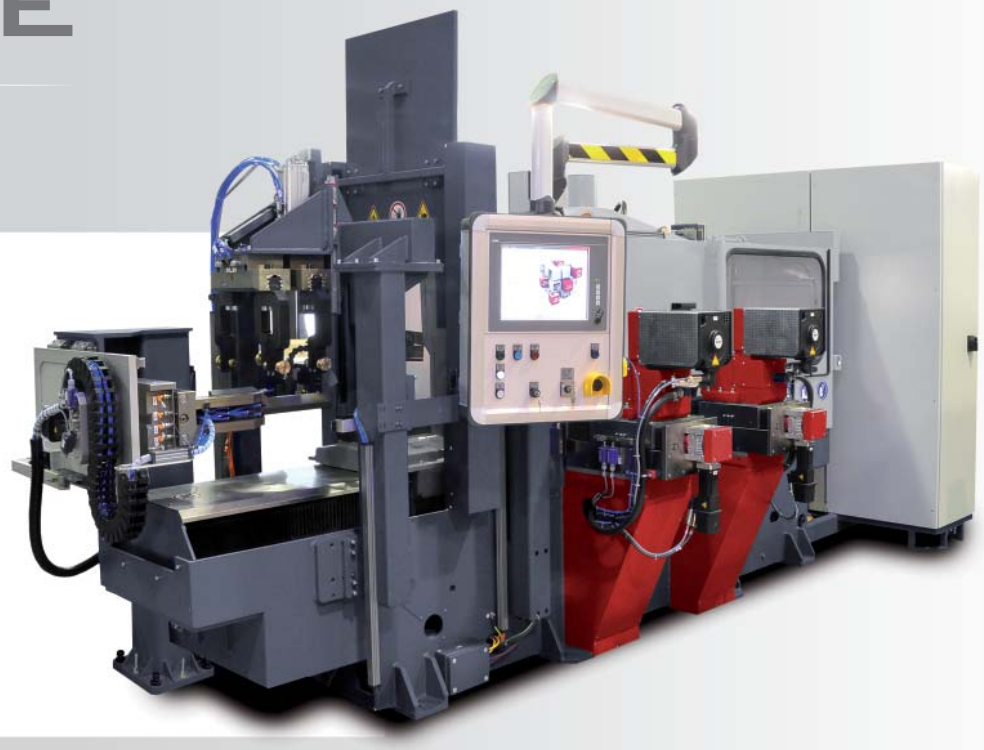
ARNOLD GRUPPE

SINCE 1950



72|855

COMBINED SURFACE & CHAMFER GRINDING MACHINE

The 72/855 is suitable for grinding of the lateral surfaces of squared mono- and multi crystalline silicon work pieces in the format 125 x 125 mm and 156 x 156 mm, with four parallelly arranged grinding aggregates (2x pre- and 2x fine grinding). Work piece lengths of 180 up to 500 mm can be processed.

The fully automatic machine excels by following advantages:

- highly flexible machine concept for mono & multi Si
- fully automatic machine concept
- adaptive Grinding Process Control
- automatic change of work piece format (125/156)
- equipped with two loading zones for manual and fully automatic loading, for instance with the help of an industrial robot
- geometric correction by parallel arrangement of grinding aggregates
- very high repeatability
- fully automatic pneumatic clamping and centering of work piece
- squared ingot/brick can be processed without preparation
- automatic wheel correction
- high process stability
- high machine availability 97% acc. to SEMI E10
- automatic adjustment of grinding tools with block detection for optimized cycle time by using high-resolution measuring systems
- detection and evaluation of the work piece specific quality data after grinding, for instance geometric measures, angularity etc.
- high throughput, even when a high removal is achieved by using 4 grinding disks and separate pre- and fine grinding processes

Specifications surface / chamfer grinding:

- arithmetical surface roughness Ra <= 0,1 µm[1] / 0,15 µm[1]
- average surface roughness Rz <= 1,0 µm[1] / 1,5 µm[1]
- geometric toleranzes +/-0,05 mm by process capability index >=1,67[2]
- angularity 90° +/-0,05° / +/-0,1°

Throughput:

- cycle time <= 12 Minuten (incl. loading, truning and unloading)
- rough size 157,00mm x 157,00mm x 300mm (width x height x length)
- final size 156,00mm x 156,00mm x 300mm (width x height x length)
- chamfer width of 2mm

[1] sufrace quality depents on used grinding wheel diamond sizes [2] In a long-term test with more than 1,000 workpieces we were able to demonstrate that we deliver at a geometric tolerance of +/-0.05 mm (height/width), a process capability index (Cpk) of higher than or equal 1.67. This means that of more than 1,000,000 workpieces, less than 1 worpiece is outside the tolerance range.

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