G 250

generating and profile grinding machine
New G 250
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The Samputensili G 250 is based on established concepts of the best-selling Samputensili S 250/400 G machine, which have been further enhanced and improved. The result is an innovative, compact and extremely flexible gear grinding machine.

The Samputensili G 250 has been especially developed for very low cycle times and for top-quality and efficient mass production of gears with outside diameters up to 250 mm and shafts with lengths up to 500 mm.

The G 250 features dual work spindles that eliminate non-productive times almost completely.

Particular attention has been paid to the state-of-the-art solutions that allow a fast tool change.

The machine can equally use form and worm grinding wheels, both in ceramic and in electroplated CBN.

Simple design concepts in terms of tooling and dressing technology, fast automation and amazing user-friendliness are the strengths behind this unique machine.
X  Radial movement tool column  
Y  Tangential movement tool head  
Z  Vertical movement tool head slide  
A  Swivel tool head  
B1  Rotation tool spindle  
B2  Rotation movement dressing spindle  
B7  Swivel coolant nozzle  
C1  Rotation workpiece spindle 1  
C2  Rotation workpiece spindle 2  
C3  Rotation worktable  
C4  Rotation checking unit  
W  Vertical movement tailstock positioning  
W1  Vertical movement tailstock 1  
W2  Vertical movement tailstock 2
Dual work spindles concept for maximum productivity and flexibility

The G 250 machine features an innovative dual work spindle concept, which eliminates non-productive auxiliary times almost completely, thus raising the efficiency of your production in an unprecedented way.

By means of the dual work spindles, the loading/unloading process of a workpiece is carried out in masked time, while simultaneously the manufacturing process proceeds on another workpiece.

Unlike other applications, the gear meshing is conveniently carried out directly in the grinding position for better accuracy purposes and very high change-over flexibility. Indeed, only in this position the meshing can be achieved with a micron-level accuracy.

at a glance

+ Loading/unloading of the workpiece in masked time
+ Optional automatic workpiece loading/unloading
+ Optional tool change
The grinding spindle with its specifically large tool capacity allows the use of long grinding worms to raise the tool life of single or combination worms of roughing and finishing tools employing electroplated CBN or ceramic bound grinding worms and wheels. So you can always rely on the most efficient technology or the most beneficial combination to complete your grinding task.

Due to the extremely high rotational and linear accelerations with their appropriate absolute speeds the machine guarantees excellent cycle times and is perfectly suited to benefit from future developments on the grinding tool sector.

| Optimised direct drives for tool and work spindle with independent refrigerating circuits. |
| Large tool capacity |
| New enlarged workarea capacity |
| Electroplated CBN and dressable corundum tools |
| Grinding worms and wheels on one spindle |
| Standard tool clamping systems and workpiece fixtures |
| Tool usage determination by power input control |

**at a glance**

- Tailored solutions for each application
- Grinding of every kind of workpieces and complex geometries
- Power and speed reserves for future tool developments
- Simple, stable and flexible workholding solutions
- Automatic balancing unit integrated in the tool holder

Universal quick change clamping systems for mass production environments allow rapid tool change so valuable grinding time is never compromised.
Dressing for flexible efficiency via standard profile dressing rolls

The profile dressing unit consists of a standard profile diamond dressing roll mounted on a dedicated spindle, which is located on the rotating table structure. An optional diamond OD dressing stick can be mounted on the dressing unit structure, in order to have the necessary flexibility to dress the OD of the grinding wheel. If the tooth root diameter must be ground as well, a tip radius dressing roll is applied to create the required tip radius on the grinding tool. When required, the dressing unit is automatically brought into the working position by the rotating movement of the worktable. This guarantees an extremely precise and rigid positioning, which is of fundamental importance in order to obtain an excellent result. The dressing movements are actuated by the interpolation of the axes.

The possibility to use generic profile dressing rolls on the machine allows you to save money and guarantees a fast supply of dressing tools. You may employ both single and double flank dressing rolls, as well as multi-rib type.

Option: Fast and simple profile dressing via dressing gear

Non-productive dressing times can be reduced considerably by dressing via a diamond-plated dressing gear. With its total length in contact and its ten times larger diamond-plated surface, the dressing gear dresses a lot faster and with less wear, thus much more productively than a single dressing roll. Moreover, dressing tool changes are reduced as well.

For the dressing cycle, the dressing master is transferred like a workpiece from an external station into the workarea. Consequently it always stays clean and is not affected by swarf or heat.
Automation options: maximum productivity with minimum auxiliary times

Depending on your application, the G 250 machine can be easily equipped with various automation solutions to produce parts in small and large quantities, with shorter lead times, preserving high quality at lower costs.

The G 250 can be linked for example to a robotic arm, which is normally installed next to the machine and manages the loading and unloading process of workpieces. Optionally a pallet storage solution can be integrated for a continuous workflow without any interruptions.
Integrated checking

Next to the classical geometry check of profile errors, helix angle and indexing, the checking unit also performs the analysis of the grinding stock to be removed. Additionally the checking unit can be employed to automatize the centering process between tool and workpiece and to control the concentricity with reference to the workpiece diameter.

Samputensili correction software allows the immediate correction of profile slope errors by redressing the grinding wheel.

Inspection results may be printed directly by connecting a printer to the HMI.

A hydraulically actuated swivel arm brings the checking unit into position and retracts from the workarea during the grinding process.

At a glance

+ Completely integrated process with centralised control
+ Auto-correction function
+ Direct inspection sheet print-out
+ Checking unit retracted from workarea during grinding
Latest Siemens drive technology and Samputensili menu guidance guarantee you maximum process security

- Direct networking, USB interface included
- Modular software packages including profile correction modules
- Samputensili menu-guided operator interface
- True Windows© environment
- Operator’s panel conveniently located at the centre of the machine for an easy access.

at a glance

- Faster data transfer to machine
- Easy and intuitive operation
- Fast data validation and error correction
- Safe operation
- Fast and efficient online updating and trouble-shooting
### Technical data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workpiece diameter, max.</td>
<td>mm 250</td>
</tr>
<tr>
<td>Module</td>
<td>mₙ 0.5 - 7.0</td>
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<tr>
<td>Workpiece length, max.</td>
<td>mm 450</td>
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<tr>
<td>Face width, max.</td>
<td>mm 350</td>
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<tr>
<td>Shaft length, max.</td>
<td>mm 500</td>
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<tr>
<td>Helix angle</td>
<td>degree +45° / -45°</td>
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<tr>
<td>Grinding wheel dia.</td>
<td>mm 250 / 170 or 120 / 90</td>
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<tr>
<td>Grinding wheel width</td>
<td>mm 180</td>
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<tr>
<td>Grinding speed, max.</td>
<td>m/s 80</td>
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<td>Dressing tool dia.</td>
<td>mm 120</td>
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<tr>
<td>Machine overall dimensions L x W x H</td>
<td>mm 3,800 x 2,200 x 2,700</td>
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<tr>
<td>Controls</td>
<td>Siemens 840 D Solution Line</td>
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Technical data subject to change.