

woodLine: The quantum leap in production line control

For some time now, market requirements such as full automation, simple operation, optimum plant flexibility down to batch size 1, high plant output levels and fast-changing product cycles have been gaining marketly in importance for our customers. The Homag Group is addressing these demands with machines and plants by the name of power line 1 and profi line 1. The software package woodLine is used for the central overriding control of production lines and forms a high-performance overall system in conjunction with the power control platforms PC52 and PC85.

The software package woodLine is used for central overriding control of a production line, and in conjunction with the power control platforms PC52 and PC85, forms a high-powered overall system.

woodLine applications include machines and production lines with linear part flow, such as

- Individual machines
- Edge lines
- Production cells
- Drilling lines
- Packaging lines

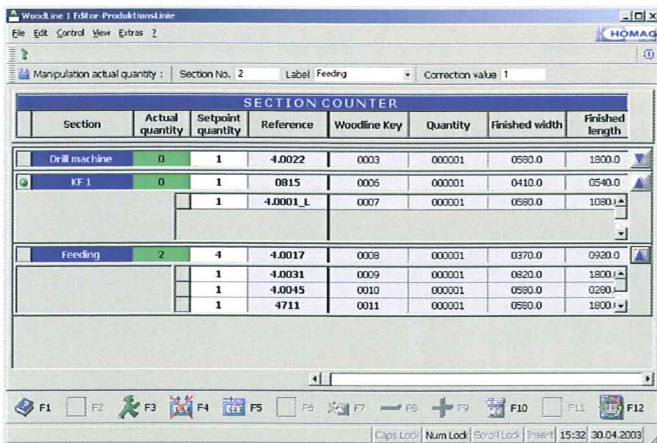


Fast, reliable control of machine lines

woodLine manages technologically relevant data for the workpieces to be produced. woodLine follows the progress of the workpieces through the plant and forwards the data in the required portions to the connected plant sections at the required time. In this way, woodLine controls and synchronises the material and information flow through the plant.

Varied woodLine interfaces

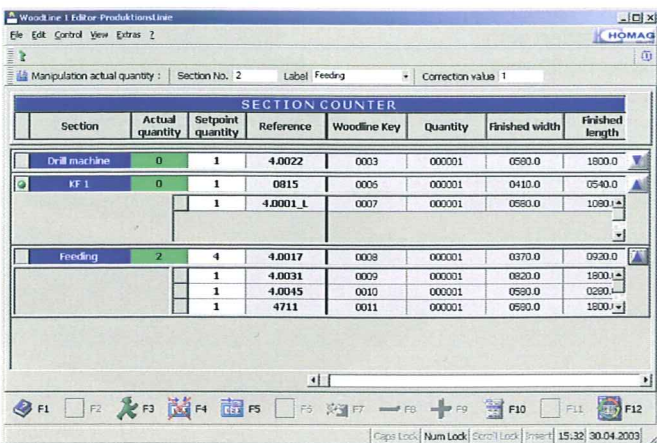
The woodLine software runs on the power control PC52 or PC85 platforms. From here, interfaces can be implemented to all plant sections. woodLine is ideally connected to individual machines which are operated using other power control systems such as PC21. However, connections are also possible to Siemens control systems, control systems with OPC interfaces or serial interfaces, e.g. printers.



Section	Actual quantity	Setpoint quantity	Reference	Woodline Key	Quantity	Finished width	Finished length
Drill machine	0	1	4.0022	0003	00001	0580.0	1800.0
KF 1	0	1	0815	0006	00001	0410.0	0540.0
		1	4.0001_L	0007	00001	0580.0	1080.0
Feeding	2	4	4.0017	0008	00001	0370.0	0920.0
		1	4.0031	0009	00001	0820.0	1800.0
		1	4.0045	0010	00001	0580.0	0280.0
		1	4711	0011	00001	0580.0	1800.0

Fast collation of production data

The woodLine production list editor permits the efficient collation and processing of a production list in the form of data records. Data records can be entered both by input of a reference number and by manual entry of the individual parameters in the production list. Input errors are excluded during this process by an automatic plausibility check of the input values. The production list is clearly displayed in spreadsheet form. Each data record is automatically displayed with a graphic indication of its current status.



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Maximum plant capacity utilisation as a result of optimum resetting gap calculation and part tracing

woodLine ensures that each machine linked to the system receives the right data at the right moment. Each machine feeds back information on its activities to the host computer, ensuring that woodLine "knows" where and in which status which part is located within the production line. woodLine also "knows" how much time a machine requires for resetting. This information is used by woodLine to calculate and control the optimum, i.e. minimum time between two different workpieces. Or put another way, woodLine only releases the part for processing when it is possible to guarantee that the units have just completed their resetting process by the time this part arrives. This ensures maximum capacity utilisation of the production line - an invaluable benefit particularly when working with small batch sizes.

Transparent production

woodLine offers facility to log dynamic production results such as resetting times for machines, actually produced piece numbers and ready signals for workpieces in a central database serving all the machines connected to woodLine. Static information such as used machine programs, processing macros etc. also form a constituent part of the logged data record. This information can be read out if required by external production management systems via the woodLine communication interface, so forming the basis for reliable indication of the progress of various workpieces within a producing operation..



Fully automatic production through bar code control

Bar code control synchronises part and data flow, so paving the way for fully automatic production. The production sequence does not need to be defined in advance of actual production. Each individual component is automatically picked up by a bar code reader in front of the plant, entered in the woodLine production list and then released for production.

Open interfaces to the customer's electronic data processing system

Management of multiple passes

woodLine multiple pass is used for the management of all processing operations necessary on a workpiece in several passes on the same machine or plant. For each workpiece, woodLine is able to manage any optional number of processing operations. For each workpiece pass, the information required for the required processing operations is fully automatically collated.

reference no.	height	pro- cessing	edge	status
4711	19 mm	1	red	✓
		2	white	✓
		3	blue	-
		4	black	-
4712	16 mm	1	blue	-
		2	brown	-
		..		
.				

In the example above, on the workpiece with reference number 4711 a red edge is applied during the first processing operation, after which a white edge is applied. The third processing operation gives the workpiece a blue edge and a black edge is applied during the fourth machine pass.

The multiple pass function can be used in two ways:

1. Automatic preselection for the required processing operation by woodLine

- Each workpiece is identified by an unambiguous reference number, which may only be used once and describes precisely this workpiece
- Prior to infeed into the first machine, the relevant reference number is entered manually or via a barcode reader.
- woodLine multiple pass automatically accesses the data from the reference number database which is required for processing this workpiece during this pass, and enters it in the woodLine production list.
- woodLine multiple pass records in the reference number database that the processing operation has taken place.
- When the reference number is accessed again, woodLine multiple pass makes available the data for the next pass.



2. Manual preselection of the required processing operation by the user

- Each workpiece or each batch is identified by a reference number which may be used more than once.
- The required processing operation must always be manually preselected by a switch or at the menu. Before infeed into the first machine, the relevant reference number is entered manually or via a bar code reader.
- woodLine multiple pass automatically accesses the data from the reference number database which is required for processing this workpiece (batch) during this pass, and enters it in the woodLine production list.

Open interfaces, online link to production management systems

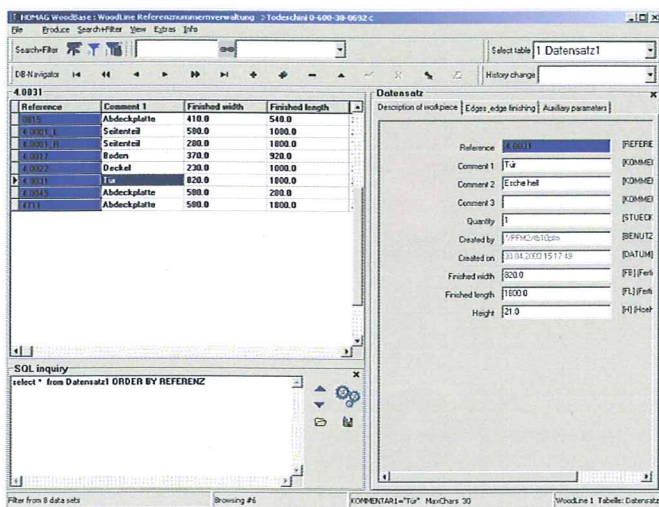
It goes without saying that woodLine is open to combination with other software products. Whether product data is transferred from external production management systems or whether it is used to pass on ready signals, woodLine offers the optimum solution for complete automation of the information flow.

Interfaces to other Homag software products such as woodBase, the software package for management of technology parameters on the production engineering PC, are also included.

Operator prompting system, selective information for the machine operator

Where no automatic actuator exist, the user prompting system integrated in woodLine ensures fast, reliable plant resetting. The new setting positions - and only these - are automatically displayed and/or printed out when resetting takes place. This means that the operator no longer needs to check all the units, only correctly position the relevant processing units on the basis of the printout and the counters. This not only provides greater reliability but also cuts down on machine downtime.

User-friendly and manageable



Reference numbers firmly in hand

In the form of the reference number editor, woodLine is equipped with an optimum tool to manage reference numbers quickly and conveniently at the machine. A reference number is taken to mean a key to a particular data record, which contains all the parameters relevant to production of a certain workpiece such as edge information, drilling and machining programs and workpiece dimensions. Information for the printer or for assembly can also be easily integrated into the data record. In individual cases, the reference number can certainly correspond to an article number which already exists in the customer's system. Data records are archived using the reference numbers in a database. woodLine offers optimum users support in their daily work in the form of efficient tools. Alongside standard functions such as creating, copying, editing and deleting data records, woodLine's capability also encompasses special functions such as searching, sorting and setting filters. Import and export functions from files and databases as well as SQL enquiries round off the functional capability of woodLine

New user interfaces

woodLine was developed especially for Windows, and makes consistent use of the performance benefits of this operating system. It offers the same degree of operating convenience as other Windows programs with which most users will already be familiar. With their "Windows look and feel", woodLine user interfaces ensure minimum time lost on system familiarisation and maximum user convenience. woodLine user interfaces are mouse-compatible and offer the user an outstanding degree of operator guidance.

A summary of woodLine highlights and new features

- New-generation production line control
- The latest PC and network technology
- Fast data printout per workpiece for batch size 1
- Fast decentral calculation of the resetting gap with visualisation of results
- Simple, convenient management of reference numbers
- Management of any optional number of machines
- Management of any optional number of parameters in a data record
- Management of an optional number of machining processes per workpiece
- Management of any optional number of data records in the production list
- Extended communication interface to external production management systems
- Database for logging production events
- Completely new Windows user interfaces
- Graphic status display of data records in the production list



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