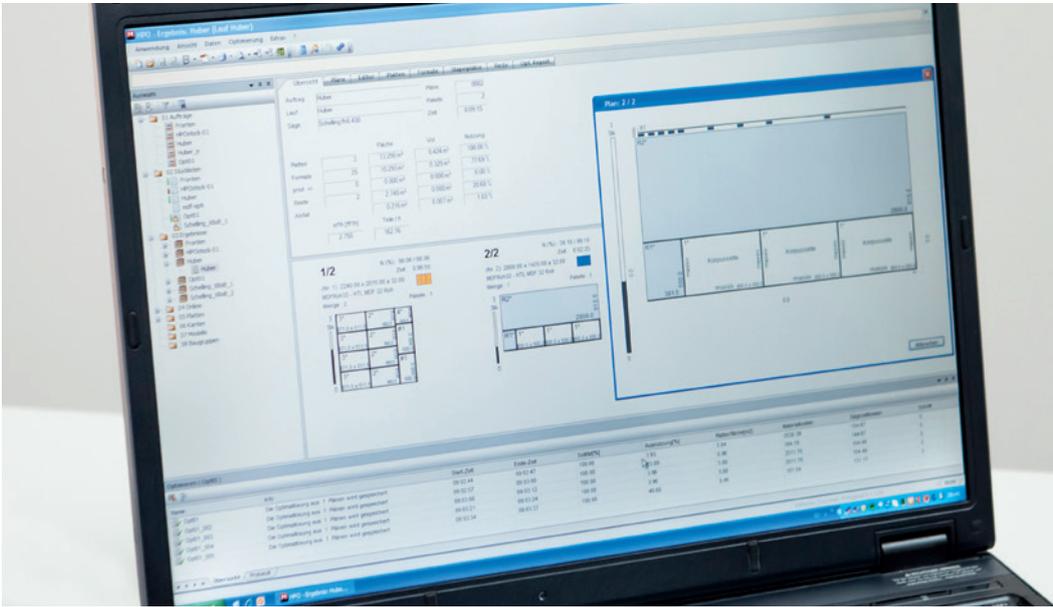


Schelling HPO

# Optimise cutting patterns.



Get the most from both material and machine.



HPO stands for High Performance Optimisation. In this case, that means the optimisation of cutting patterns. For Schelling users, it opens the door to more efficient production. Because this complex, ground-breaking and simultaneously

easy-to-use software gets the most out of both the board and your machine. Boards can be used at up to 98% of full use, and sawing times are reduced to a minimum. And whenever speed and material utilisation are at odds with one another, the program can select the most cost-effective production technique however you require. With numerous features that make work efficient and easy, and many intelligent functions added in comparison with earlier versions.

**Optimise cutting patterns and earn more**

HPO cutting pattern optimisation means money. Because it makes a direct contribution to getting more profit from material, machine and working time. And it helps you get order data under control, too.

Each Schelling saw has a simple control system as a standard feature, that does permit the cutting to size of boards to be programmed, but doesn't optimise the cutting patterns.

To save material, time and money, you need a more complex program – the Schelling HPO software. Depending on the cost of material, machine and labour, optimisation can set its focus in different places: For high-priced materials, the maximum utilisation of a board is top priority, while for high machine or labour costs the maximum output in the minimum time may be more important. When both are important, the system can optimise for total cost.

The basic prerequisite for optimisation are rectangular formats for the master boards, as well as parts lists specifying length and width and the quantity required.

In addition to optimising scrap and output, the expected cutting time is also calculated, depending on cutting heights and the portion of manual labour.

Schelling HPO can also be automated, and integrated into an automated environment.

**Automatic, continuous data flow**

The HPO optimisation program automatically creates complete NC data for all Schelling machines and peripheral components, such as automatic area storage, single-axis saws, cut-to-size plants, cut-size 1 systems and sorting and stacking plants.

HPO can also be integrated with all current ERP and PPS systems. It doesn't simply optimise, but also permits largely automated processes.

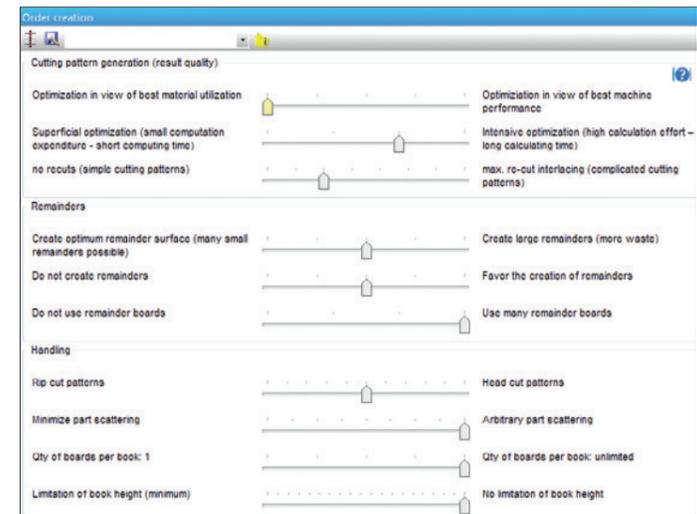
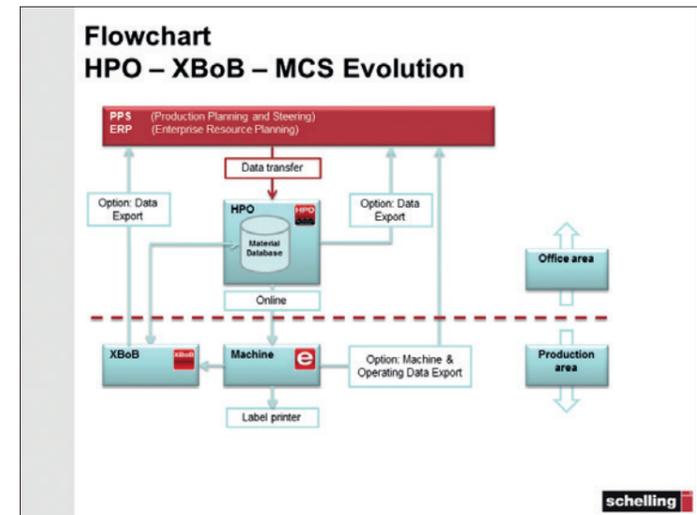
**Numerous languages thanks to Unicode**

Schelling HPO is programmed in Unicode and is therefore available in all important languages. All EU languages are offered with the standard product, but Chinese, Hebrew and Cyrillic alphabets are also no problem. All other languages can be implemented optionally.

**New: slide controls for individual adjustment**

HPO cutting pattern optimisation is preconfigured for each machine. Parameters are selected on the basis of experience with common requirements. That means that HPO can be used as soon as it is installed. "Plug and play" is the motto.

But now, with the new slide control menu, you can easily change important parameters yourself as you see fit. You don't even need programming knowledge.





# Easy-to-use software adapted to the latest hardware.

## Graphically clean and easy to understand

The experience of two decades has gone into Schelling HPO. Its look and feel are based on Windows applications and it runs on current Windows operating systems. It is easy and intuitive to operate. Even in its basic variant, the scope of functionality it provides is very broad. HPO is a total software package that can handle most application cases without the purchase of optional features.

Cutting patterns are shown graphically, and their display is configurable. Results and parts lists can be printed in colour, clearly and easy to understand.

## Fast thanks to multicore support

Schelling HPO supports the latest generations of computers. It is capable of taking full advantage of the potential of multiprocessor PCs with dual or even quad cores. Its current kernel ensures quality of results and fast calculation power for processor-intensive processes. Simultaneous (batch) optimisation allows different board types to be processed in parallel on the processor cores available.

## Extensive master data management

The optimisation program can itself be used to manage all master data – including the graphical display of sizes and of grain direction and trimming. Among other things, this includes parts lists, board data, edge data, stacking rules in combination with stacking plants – even packaging and strapping rules.

# The right license for every productivity desire.

## HPO E(x)

- Single-user version
- Associated with one PC
- Installation on the local hard drive
- Not network- or terminal-server-capable

## HPO N(x)

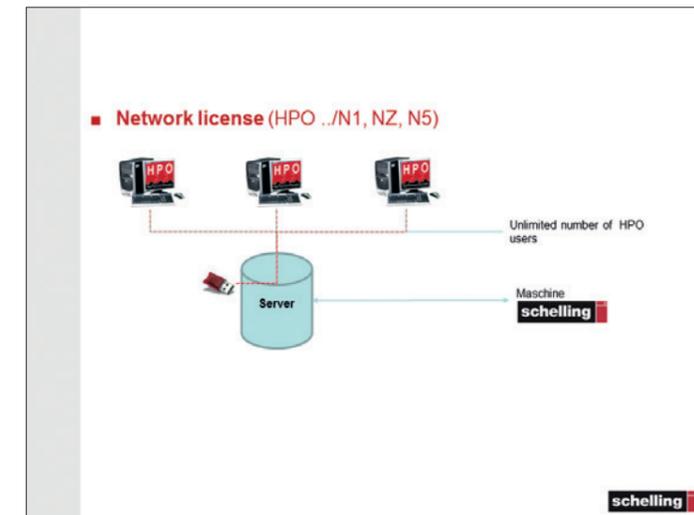
- Network version
- Optimisation is possible on any PC in the network (depending on the number of licenses)
- During the optimisation process associated to one arbitrary PC
- All additional functions are possible in parallel on any PC in the network

## HPO TS(x)

- Terminal server/remote desktop version (one license)
- Cloud computing: HPO is installed on a remote server and accessed through a network connection
- Lower technical requirements for the terminal device
- Functionality identical to HPO N(x)

## HPO optimisation on the saw

- Cutting pattern optimisation directly on the saw



The screenshot shows the HPO software interface for a project named 'Huber\_e'. The main window is divided into several sections:

- Selection:** A tree view on the left showing the project structure, including '01 Orders', '02 Part lists', '03 Results', '04 Online', '05 Boards', '06 Edges', '07 Models', and '08 Components'.
- Overview:** A central panel with tabs for 'Overview', 'Patterns', 'Editor', 'Boards', 'Formats', 'Stacking places', 'Remainders', and 'Opt. Report'. It displays project details like 'Order: Huber\_e', 'Patterns: 0002', and 'Books: 2'. Below this is a table with columns for 'Boards', 'Formats', 'prod. +/-', 'Remainders', and 'Waste', showing area and volume data.
- 1/2 and 2/2:** Two panels at the bottom showing cutting patterns for different board types. Each panel includes a title (e.g., '1/2'), yield percentage, time, and a graphical representation of the board layout with dimensions and part counts.

# Basic functions for nearly any requirements.

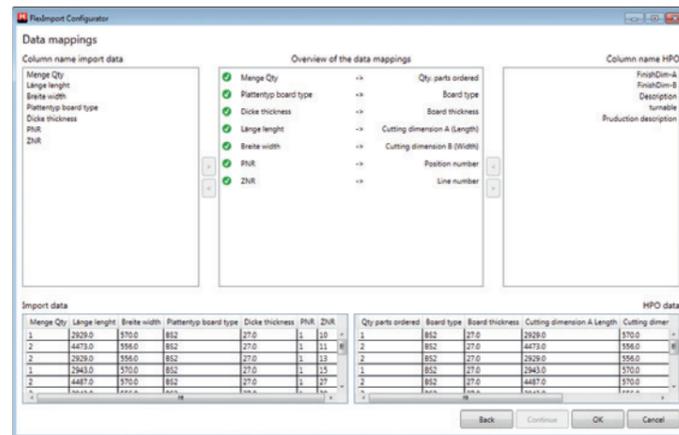
## Data import

Even in its default variant, Schelling HPO offers extensive options for importing data easily from higher-level systems, especially from PPS systems (production planning and steering systems) and ERP systems.

The basic function is the data import of parts list, board data and edge data, among other things in the MSC\_NC 4.12 format (\*.stk) and as text files in ASCII format (such as \*.csv or \*.txt).

A newly developed mapping tool allows the order of the data in the file to be mapped onto HPO parameters clearly, very flexibly and with structured, intuitive operation.

Alternatively, data can also be transferred to and from Excel tables by copy and paste in either direction.



## Cutting time

Calculating the cutting time (taking cut heights into account).

## Mixed part lists

Entry of mixed part lists, that is different board types in a single part list. Optimisation is automatically divided into individual optimisation runs for each type of board.

## Underproduction and overproduction

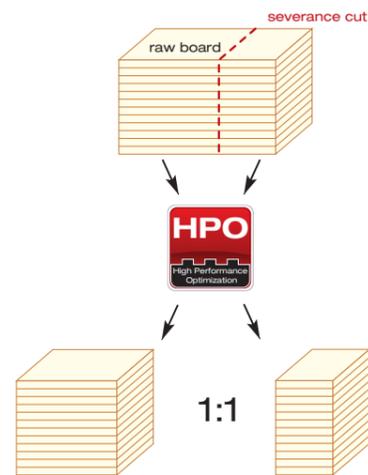
Optimisation can optionally be done by planning the exact number of parts, or with an over or underproduction.

## Filler parts

Filler parts can also be programmed in.

## Board ratio optimisation

For boards with separating cuts, the HPO can plan both parts of the board evenly.



## Stacking place optimisation

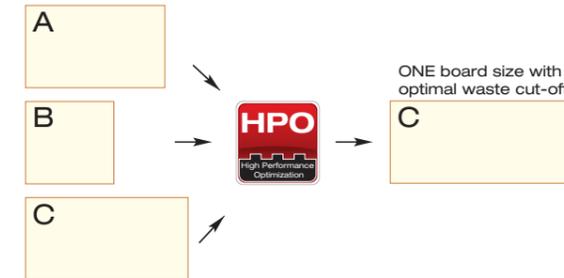
The optimisation program allows part scattering to be set up on the stacking locations available.

## Optimisation for multiple feeders

HPO also ensures additional performance increases for machines with several feeders, such as cut-to-size saws with a second DUPLUS2 feeder and systems with multiple feeders.

## Board selection

Selection of the optimum board size if different sizes are available.



## Freely configurable

Screen displays, lists and printing can be flexibly configured, that is, adapted to your individual needs. The printing of results and part lists can also be configured freely; for example, data can be printed as barcode.

## Searching, sorting and deleting

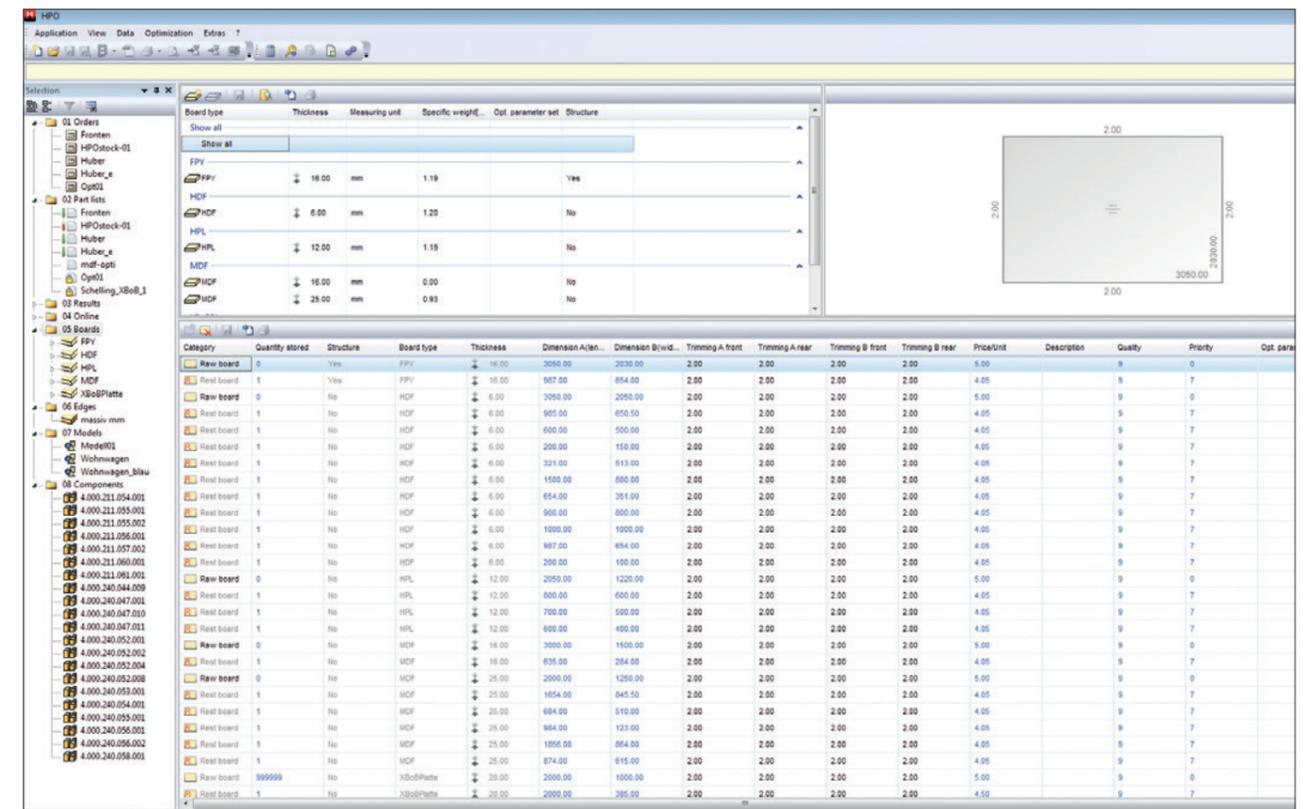
Schelling HPO has a powerful search function for orders, part lists, etc., offering a wide variety of sorting options for cutting patterns. Old orders are automatically deleted, and how that happens can be configured as well. The board database can give you a complete overview of all the entries available.

## Component management

Component management is used to create part lists without the need to enter data manually. A component is a piece of furniture or a part thereof. They are called "parts", because they need not necessarily be just formats. They can also include door handles, hinges, or the like.

## Model management

Model management is used to create part lists without manual data entry. The advantage here is that each model can be assigned any material without changing the original component. A model consists of one or more components. You can specify how many components are needed and which material should be used.



## Refined features on every corner and end.

Cutting patterns are usually complex and full of specific details. A optimisation program worthy of the name also has to provide a solution for those needs. And Schelling HPO is worthy:

### Reoptimisation of individual runs

Within a single order, individual runs can be optimised again without changing other runs.

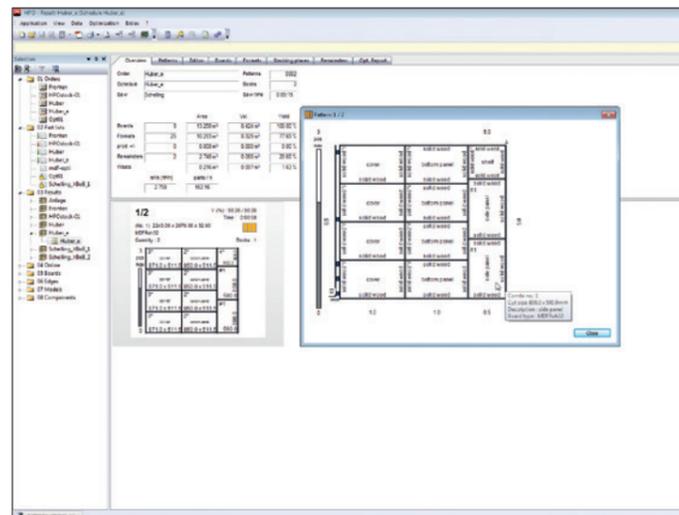
### New cutting pattern layout

Patterns are displayed in HPO with edges and tooltips. The latter are little pop-up windows with information that appears when the mouse is just on top of an object on the screen. Displays and tooltips can be arbitrarily configured with individual text information, for example to display clamping position or to show specific edge information.

### Controllable pattern complexity

The complexity of cutting patterns can be defined with the following parameters, among others:

- Number of different strips.
- Number of different parts per strip and per pattern.
- Minimum / maximum strip width.
- Minimum cross cut dimension.
- Minimum / maximum main part length and head part length.
- Head cuts yes/no.
- Recutting (third phase cuts) yes/no.
- Complexity of recutting (third phase cuts) can be configured.
- Remainder definition.



### More power in detail

- Configurable cutting pattern display.
- Detailed information about the kind of the cutting pattern and the book height.
- Filtering options for orders.
- Powerful search function.
- Error detection and handling.

1/2 Y (%) : 98.06 / 98.06  
Time : 0:06:50

(No. 1) 2240.00 x 2070.00 x 32.00  
MDFRoh32  
Quantity : 2 Books : 1

3 pcs max	3* cover 871.0 x 511.5	2* bottom panel 850.0 x 511.5	4* 500.0 451.0
	3* cover 871.0 x 511.5	2* bottom panel 850.0 x 511.5	#1 800.0
	3* cover 871.0 x 511.5	2* bottom panel 850.0 x 511.5	500.0
	3* cover 871.0 x 511.5	2* bottom panel 850.0 x 511.5	#1 800.0
0	3* cover 871.0 x 511.5	2* bottom panel 850.0 x 511.5	500.0

schelling HPO

Order: Huber\_e Schedule: Huber\_e Saw: Schelling

Result overview :

Qty. Patterns:	2	Qty. books:	2	Performance:	
Utilisation :	77.69 %	Boards :	3	Formats:	162 parts / h 66.77m <sup>2</sup> / h 2.134m <sup>3</sup> / h
Waste :	1.63 %	Saw time : [80 %]	00:09:15	Boards:	19 Boards / h 85.95m <sup>2</sup> / h 2.750m <sup>3</sup> / h
Boards:	3	13.25m <sup>2</sup>	0.424m <sup>3</sup>	100.00 %	0.00 kg 66.25
Formats:	25	10.29m <sup>2</sup>	0.329m <sup>3</sup>	77.69 %	0.00 kg 51.47
Remainders:	2	2.74m <sup>2</sup>	0.088m <sup>3</sup>	20.68 %	0.00 kg 13.00
Waste:	0.22m <sup>2</sup>		0.007m <sup>3</sup>	1.63 %	0.00 kg 1.78
Saw time:	00:09:15		00:07:42[100%]		9.25
Sums :	27 (parts + remainders)			machine + material costs: 75.50	
Cut length :	per book : 26.49m		each board : 45.38m		
cutting height :	max : 64.00 mm		min : 32.00 mm Ø: 48.00 mm		
Parts perimeter total :	65.91m				

### Colour printing

Results, part list, etc. can be printed in a clear and freely configurable manner, for example as:

- Infeed lists, that is a list for the prepicking of boards. This permits the combination and totaling of important data over several optimisation runs (number of boards used, utilisation in %, sawing time, etc.)
- Results overview
- Board requirement
- Parts overview
- Edge requirement
- Graphical or tabular cutting pattern summary
- Graphical cutting patterns
- Stacking location occupation

# Options: even more power when you need it.



Most HPO cutting pattern optimisation functions are included in the standard package, but some features are optional. They can be selected as needed.

## HPO label printing in the office (LEdit/LPrint)



This option is used to print labels and/or packing slips on the optimisation computer (usually in the office) and transfers the label data to the saw controller if the "Label printing" option is included on the saw and the saw controller requires the special transmission of label data for label printing. In many applications this can be a very convenient feature.



- Printing directly at the optimisation computer.
- Optionally in cut order or by format number.
- Different unit count controls.
- Different layouts.
- Data fields can be printed as barcodes if necessary.
- For different printer types.

## HPO Stock

With the simple HPO Stock board and remainder management program, the boards planned in optimisation can be checked out of the board database and the newly created remainders posted. HPO Stock can run on a single workstation or on the network. It is a management program that is operated off-line – there is no connection to the machine. Simple, but not as perfect as the high-performance Schelling XBoB remainders program that can manage remainders in real time.

## XBoB remainder utilisation



The optional XBoB remainder board program from Schelling makes it possible to manage and reuse remainders consistently and cost-effectively in a manual remainder storage area. With refined interfaces between control system, operator and the machine.

## HPO FlexImport

The HPO FlexImport function makes it possible to import any text file (such as \*.csv) into HPO.

## HPO AutoOpt

This tool permits the automatic import of data and then the automatic start of the optimisation process. After completion of optimisation, the data is automatically transmitted online and can be printed out.

## HPO Export



With the HPO Export function, optimised results data is exported in the form of ASCII files. This data can for example be used for additional reports (higher-order systems such as production planning systems, industry-specific packages, ERP systems). Exported files are not deleted by HPO.

By default, the following data can be exported as \*.csv files: fixed code S 01, order name, schedule name, board type, thickness, sawing time, utilisation, scrap, number of books, number of boards, number of formats ordered, number of formats optimised.

## Reoptimization on the saw

This function makes it possible to optimise orders or runs again on the machine itself in order to reuse remainder boards.

## Part list administration

From a collection of formats (the format pool), one or more optimisation parts can be created and optionally "Can" parts (= fillers) can be defined. The format pool is a database in which all formats newly imported into HPO are stored. Unused fillers are automatically written back to the format pool after optimisation. Features and options: creation of a part list from a format pool, single or multiple selection possible, division of formats into "must" and "can" parts, freely configurable display of the formats relevant for production, different status possible for the individual formats.

## Stack optimisation

The HPO stack optimisation program calculates NC data (stack data) with the aim of reducing production time for a fully-automated storing and stacking plant, in which the stack layers are composed of different packages or subpackages (such as main part / head part). The cutting patterns and the formats that appear in them are handled on a "run-oriented" basis. HPO stack optimisation works together with an automatic or a manual stacking system.

By calculating stack data for fully-automated Schelling sorting and stacking plants, production time can be minimised for the plant as a whole. Automatic stacking stations and manual stacking areas are taken into consideration, as well as storage roller tracks and storage and turning stations.

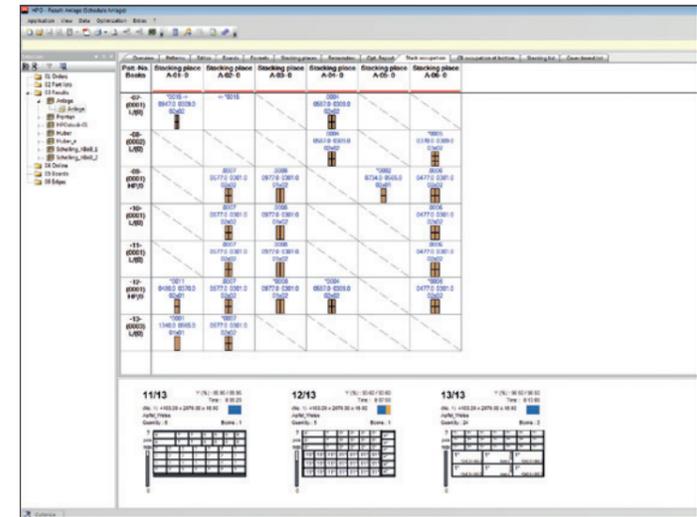
## Front optimisation (large/small part optimisation)

The formats (fronts) are planned by HPO according to the coordinates entered in order to achieve a consistent grain direction. Complex front patterns that have additional subdivisions can also be taken into consideration. Formats with and without front detection can be planned together in the same optimisation run. The front pattern is shown graphically in the part list.

Delivery date: 12.04.2013    Creation date: 12.04.2013    Measuring unit: mm

Type: 02 Part lists    Status: not optimized

pos	%	opt	Pos.no	Line no	Proc. descr.	Lbl	Edge A bottom	Edge A top	Edge B right	Edge B left	Front part	Front
0	0	IK				IK					Master part	GRU
0	0	IK				IK					Part inside the front	GRU
0	0	IK				IK					Part inside the front	GRU
0	0	IK				IK					Part inside the front	GRU
0	0	IK				IK					Part inside the front	GRU
0	0	IK				IK					Part inside the front	GRU
0	0	IK				IK					Normal part	
0	0	IK				IK					Normal part	
0	0	IK				IK					Normal part	



## Production planning

The production planning program is integrated into HPO and is used for the preparation of "multicolored" board stacks, that is, optimised stacks consisting of different types of board. After printing a stack slip with a unique stack number, the stack of master boards is created manually. The picking data is optionally transmitted either to the machine and/or to an automatic board storage system. Sorting and separation criteria include stack height, board category (remainder/master boards) and board geometry.

Globally networked, immediately on site –  
Schelling customer service

*If you have any questions concerning the machine or software, or if you require service or spare parts, contact our Schelling Service:*

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- Intensive training of machine operators
- Individual after-sales service
- Free telephone hotline for all Schelling machines
- Rapid delivery of spare parts
- 24/7 service hotline – available around the clock (on request)
- Complete maintenance of the plants



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