CutLogic 2D

USER MANUAL

1 Welcome

Thank you for your interest in CutLogic 2D, panel cutting optimization software. CutLogic 2D is a solution for finding optimal cutting layouts with minimal waste, saving your material, time and money.

Since 2002 TMachines has provided top-class software solutions in the area of cutting optimization for their customers. CutLogic 2D brings you the best of our know-how as well as many improvements inspired by our customers. CutLogic 2D is available in three editions: community, professional, and enterprise edition[14].

Today, our solutions help companies in more than 70 countries worldwide, on daily basis, to minimize costs and realize significant savings.
We believe you will be satisfied with our program and we wish you a lot of savings with CutLogic 2D.

2 Contact and support

Feel free to contact us via email in any matter related to our products and services (questions regarding pricing, ordering, licensing, or questions about program functionality and features, or suggestions about program improvements). Your inquiries will be processed and answered as soon as possible.

Email

support@tmachines.com

Website

www.tmachines.com

3 What is CutLogic 2D?

- CutLogic 2D is a top-class panel cutting optimization software for cutting rectangular material like panels, sheets or rolls in industries such as woodworking, furniture, sheet metal, glass cutting, etc.
- CutLogic 2D automatically finds optimal cutting layouts, using the most advanced optimization techniques. Its optimization engine takes advantage of Genetic Algorithms and Fuzzy Logic bringing better results than any other software.
- CutLogic 2D is a complete solution for both guillotine and non-guillotine cutting, based on IT standards with friendly user interface. It provides extensive features such as full material and remnant management, enhanced reporting functionality or multi format import and export of data for seamless integration with your existing working system and much more.

Technology our optimizers are based on

Genetic Algorithms

Genetic algorithm is an algorithm that mimics evolution and competition between individuals in natural selection. Tasks are encoded to genes of individuals and evolution produces better individuals with better solving. Neither programmer nor genetic algorithm has to know how to solve a given problem; solution is just bred. Genetic algorithms are part of wider evolutionary computation and artificial intelligence.

Fuzzy Logic

Fuzzy Logic is a truth-functional system that mimics natural thinking in a sense of dealing with the degree of truth rather than just with True and False. In Boolean logic an event can be only False (0) or True (1); in fuzzy logic an event can be sort of true - a number between 0 and 1.

4 What's new in current version?

What's new in version 6.0?

- New free time unlimited Community Edition
- New streamlined cutting layouts report with switchable sections and improved exports
- Cleaner/simpler cutting layouts
- Improved info printing in layout part pictures - position, dimensions along sides, font size
- Improved DXF export with adjustable relative / absolute font size
- Improved G-Code export - increased number of custom lines for cut prefix/suffix and code prefix/suffix
- Added export to JPG and PNG for better exporting of individual labels
- Import connection file can include SQL statement
- Custom exports can run other applications
- New auto-optimizing CutLogic 2D Server
- Fixed info printing in layout part pictures
- Fixed manual editing of cutting layouts
- Several smaller improvements and fixes

Version 5.7

- Faster optimization and simpler cutting layouts for plans with duplicate stock/part sizes
- New Custom Exports module - manual or automatic exports of entire cutting plan to xml file or (virtual) serial port
- New Custom Exports module - manual or automatic exports of any data using custom SQL query to csv file or (virtual) serial port
- New report exports to MS Word (docx) and MS Excel (xlsx)
- New improved version of report editor and viewer
- Added Note 4 to Plans and Materials, and Note 3 to stocks and parts
- Improved overall optimization
- Both maximum vertical and maximum horizontal knife counts can now be set for 2-stage cutting plans
- Trim cuts are now counted into knife counts
- Lines in G-Code before/after cut code can now be axis specific

- Several smaller improvements and fixes

Version 5.6

- Order of sub-stocks during cutting can now be set to LIFO (last in first out), FIFO (first in first out) or FIFO delayed
- New special reports for "slitting and shearing" and "slitting then shearing" cutting types
- Several improvements in data import
- Several smaller improvements and fixes

Version 5.5

- Improved optimization for large layouts, cutting from rolls and slitting

Version 5.3

- Improved import from Excel files
- Several improvements in cutting from rolls
- Improved material inventory control via new fields Minimal Level and Actual Level
- Added Polish language
- Small improvements and fixes

Version 5.2

- Added cutting setting "Maximum number of stock sizes" - allowing to limit stock sizes used in plan; optimizer will pick best stock size(s) for given parts
- Fixed optimization when limited by cutting setting "Grip"
- Small improvements and fixes

Version 5.1

- New improved help file
- Added Spanish language
- Improved cut sequence for manual and on beam saw cutting
- Option to sort part labels by creation (useful for manual and on beam saw cutting)
- Improved imports
- Small improvements and fixes

Version 5.0

- Edge Banding - entering, decrement, instruction during or after cutting, reports and statistics, export for 1D optimizer
- CNC machines & G-Code - adjustable generation of G-Code with optimized toolpath
- User can browse individual cuts in graphical representation
- Instruction for manual cuts in reports
- Switchable length/width orientation - horizontal/vertical or vertical/horizontal
- Adjustable origin of cutting layouts - left-bottom, left-top, right-bottom, right-top
- Cutting layout image can be stretched when cutting from rolls
- Function split part(s) - useful when parts are longer than stocks, e.g. when cutting plastic films
- Improved sequence of cuts
- Added German and Slovak language
- New option Part Increase - program adds this value to each side of each parts
- Optional automated loading of inventory stocks to new cutting plans
- User can copy current material cutting settings to multiple selected materials
- Program can hide cutting plans older than X days (settable in program options)
- Added completion flags in part list in cutting layout reports - indicates line in which order, length or other value is finished
- User can print part and remnant label right from cutting layout image by double click
- Improved and streamlined import and multi-material import
- Cost type can be assigned for each stock separately
- Positions, lengths and visibilities of columns in all data grids can be customized
- User can select multiple records and perform batch operations (optimizing, deleting, printing, marking, loading, etc.)
- Function to copy record (in any data grid)
- Renumber function (renumbers number column in data grid)
- Improved graphical cutting layouts and overall GUI
- New improved version of report editor and viewer
- Improved and streamlined all reports
- Multiple fixes

Version 4.0

- Manual editing of cutting layouts - once cutting layouts are automatically created by CutLogic 2D optimizer, user can fully change them in manual layout editing mode

Version 3.9

- Report "Plan Cost Detail"
- Full support for Unicode - CutLogic 2D data now can include any language specific characters

Version 3.8

- Full support for cutting from rolls and slitting & shearing
- Cutting setting "Knife count" - allows to limit number of knives / cuts (both for vertical and horizontal)
- Capabili ty to create charts in reports
- Configurable sorting of layouts and layout parts
- Several smaller improvements and fixes

Version 3.7

- Cutting setting "Minimum layout repeat"
- Several smaller improvements and fixes

Version 3.6

- Cutting setting "Cut table length" - enables to limit length of horizontal cuts
- Cutting setting "Cut table width" - enables to limit length of vertical cuts
- Improved cutting setting "Grip" - optimizer now allows also parts smaller than grip
- Closed cutting plans can be deleted now
- Material lookup table sorted by description
- Several smaller improvements and fixes

Version 3.5

- Import and export of entire cutting plan from/to CutLogic file
- Several smaller improvements and fixes

Version 3.4

- Support of feet & inches in imports
- Several smaller improvements and fixes

Version 3.3

- Export to DXF files
- Several smaller improvements and fixes

Version 3.2

- Cutting setting "Grip" – enables definition of minimum grip on both sides of each cut
- Several smaller improvements and fixes

Version 3.1

- Improved optimization engine - higher overall yield and lower overall cost and waste
- Several new 2-stage and 3-stage cutting types
- Creating multi-material cutting plans from Assemblies
- Several smaller improvements and fixes

Version 3.0

Technology

- MS Vista OS supported
- Firebird RDBMS used - more secure and reliable solution based on true SQL database for data protection like security, backup, crash recovery, etc.

GUI

- Graphical redesign and optimization of program for more user friendly look and feel
- Enhanced data grids for better navigation and data manipulation - new sorting and multi sorting features
- Enhanced filtering capabilities - possibility to define new improved filters for cutting Plans, Materials, Assemblies, Storages, Stocks, Parts, etc.

New features

- Inventory management of stocks, parts and remnants integrated with cutting plans
- Module Assemblies - can store products ororders or both
- Enhanced "Group optimization"

- Capability to copy cutting plans

Reports

- Filtering by date
- Exports embedded into Reports
- New embedded report generator and editor for customization of reports
- Improved and extended labeling systems and report sets
- Possibility to define custom defined data views and statistics
- Batch reports

Imports

- Import of multi-material data with automated creation of cutting plans
- Imports from MS Excel files, MS Access files, CSV format
- Imports from data sources (Oracle, MS SQL Server, MySQL, Firebird, etc.) via connection string
- Added "default" values and "multiply by" values when defining import
- Added filter enabling to filter import data
- Improved import, sorting capabilities for imported data

Exports

- Export to CSV, MS Excel files, PDF, XML, Open Document Text, Open Document Spreadsheet
- Send by email feature
- Improved export to TXT, RTF, and HTML

Connectivity

- Distributed connectivity enabling various scenarios in different environments (local, LAN, WAN)
- Improved support for LAN – user management, logon security, etc.
- WAN optimization - application optimized for running in WAN environment

5 Editions comparison

After installation, CutLogic 2D runs in Enterprise Edition mode for 30 days before switching to the free, time unlimited Community Edition. When you register CutLogic 2D, the Community Edition will change (depending on the license purchased) to the Professional or Enterprise Edition.

	Community Edition	Professional Edition	Enterprise Edition
Cutting plan limitations [per one plan]			
Max number of all parts	250	3000	Unlimited
Max number of different part sizes	10	50	Unlimited
Features			
State of the art cutting optimization	•	•	•
21 predefined reports	•	•	•
Max number of custom reports	2	10	Unlimited
Sharing database by multiple users over LAN / WAN		LAN	LAN/WAN
Manual editing of cutting layouts		•	•
CNC machines and G-Code		•	•
Max number of predefined edge bandings	10	100	Unlimited
Function Split parts with excessive lengths			•
Cutting types			
Nesting (best yield)	•	•	•
Guillotine (best yield)	•	•	•
Guillotine 3 stages + finishing stage	•	•	•
Guillotine 3 stages	•	•	•
Guillotine 2 stages + finishing stage	•	•	•
Guillotine 2 stages / slitting then shearing		•	•
Guillotine 2 stages simple / slitting & shearing		•	•
Cutting settings			
Horizontal / vertical saw kerf (cut width)	•	•	•
Left, right, top, bottom trims	•	•	•
Minimum size of remnants (reusable offcuts)	•	•	•
Order of cuts / sub-stocks (LIFO, FIFO, FIFO delayed)	•	•	•
Small stocks usage preference		•	•
Minimum length of roll - cutting from rolls		•	•
Limit for number of partially used rolls		•	•
Max number of stock sizes used in plan			•
Grip size			•
Part size increase			•
Cut table length - max length of hor. cuts			•
Cut table width - max length of ver. cuts			•
Group/order optimization			•

Minimum repeat of layout			•
Max number of horizontal knives / cuts			•
Max number of vertical knives / cuts			•
Remnants creation control / ratio			•
Inventory			
Automated tracking of stocks and remnants	•	•	•
Materials, Storages	•	•	•
Assemblies - copy to plan		•	•
Assemblies - copy to multiple plans			•
Import / Export			
Import from clipboard, CSV, TXT	•	•	•
Import from MS Excel		•	•
Import from MS Access			•
Import from any database via connection file (ODBC / OLE DB)			•
Export to G-Code, DXF		•	•
Export to PDF, TXT, CSV	•	•	•
Export to Excel, ODT		•	•
Export to HTML, Word, RTF, ODS			•
Export to XML file	•	•	•
Export using custom SQL data to CSV file	•	•	•
Export to (virtual) serial port		•	•
Auto export after plan optimization / close / open			•

6 System requirements

CutLogic 2D has been designed to work with Microsoft® Windows® 11, 10, 8, 7.

Minimum

- Intel® Pentium® processor or compatible
- 1 GB RAM
- Display 800 x 600
- 50 MB of free disk space
- Microsoft® Windows® 11, 10, 8, 7

Recommended

- Intel Core or AMD Ryzen processor
- 4 GB RAM
- Display 1024 x 768
- 200 MB of free disk space
- Microsoft® Windows® 11, 10

7 Download and installation

Download

You are welcome to download the free version of our software at www.tmachines.com.

Direct download link: CutLogic 2D setup file

Installation

After the download is finished, go to the download folder and locate the file (i.e. setupcl2d.exe). Double-click the file to start the installation.

8 Ordering and registration

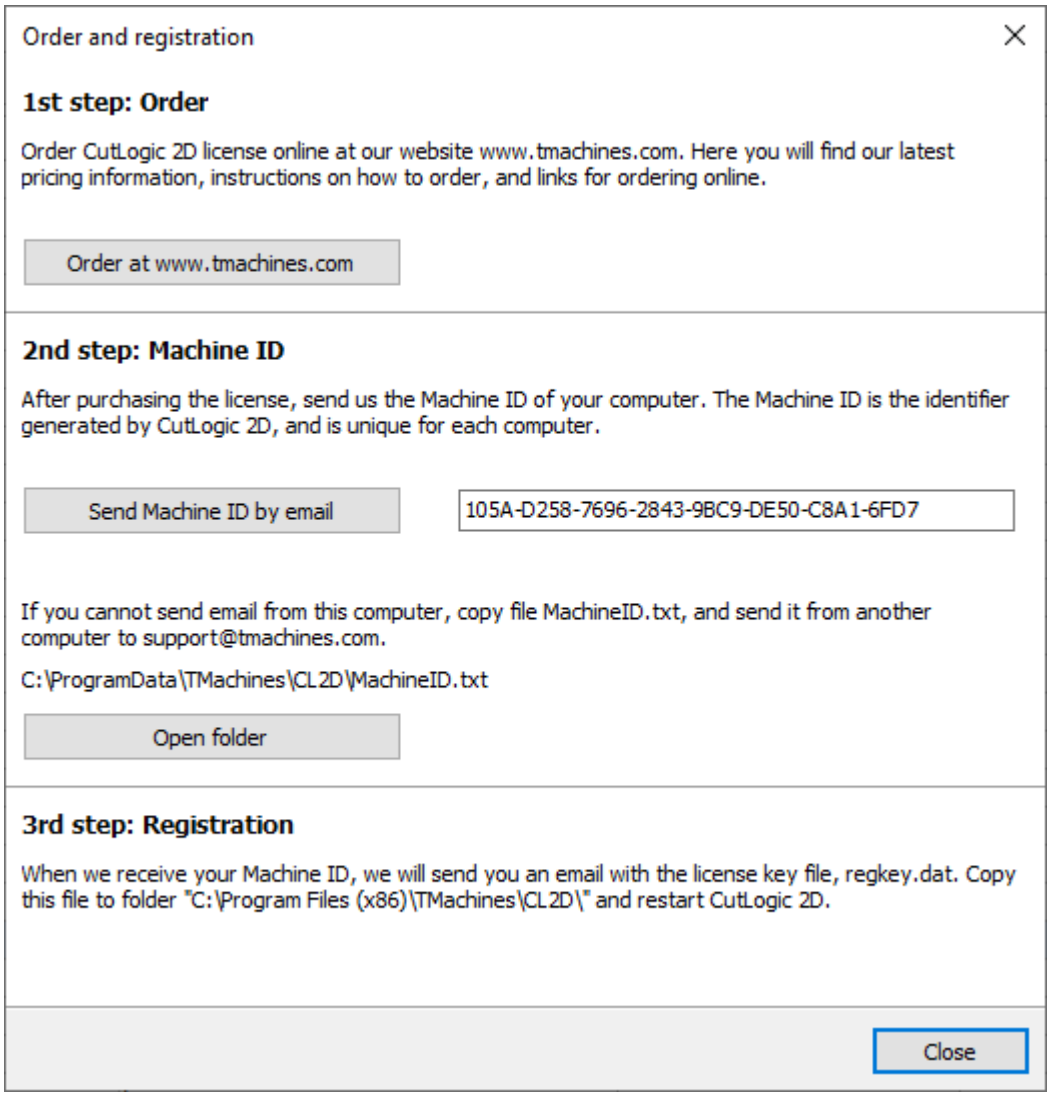
Ordering

Order the registered version of CutLogic 2D on-line at our website www.tmachines.com. Here you find our latest pricing information, instructions on how to order, and link for ordering online using a secure server.

When purchasing new license of CutLogic 2D software or upgrade from older version, you will receive support and new versions free of charge for the first year.

Registration

When you start CutLogic 2D, select the menu item *"Tools > Order and registration"* and follow the instructions.



Note: After we receive your "Machine ID", we will send you the license file by e-mail along with instructions on how to use it to register CutLogic 2D (the e-mail will be sent to the address you entered during the purchase).

9 Program overview

This chapter describes basic information about CutLogic 2D program good to know before you start to use the program.

The basic concepts and terms

This chapter explains basic concepts and commonly used terms used in the program.

Commonly used terms

Program or CutLogic 2D means CutLogic 2D software application.
Optimization is process of finding the cutting plan with the optimized cutting layouts.
Plan represents definition of cutting plan.
Stock represents material available for cutting; it is input into cutting plan.
Part represents piece of material required to be cut; it is input into cutting plan.
Remnant represents reusable rest of Stock (also called reusable off-cut).
Scrap represents useless rest of Stock.
Report represents special layout displaying the data in printable format.
Filter represents set of conditions filtering data.
Material represents definition of unique material. One plan may contain only one Material.
Assembly represents unique definition of logically grouped Parts.
Storage represents definition of unique logical or physical storage or warehouse for Materials.
Machine represents definition of CNC machine settings needed for exporting of G-Code files.
Edgeband represents narrow strip of material used to cover the exposed sides of Parts.

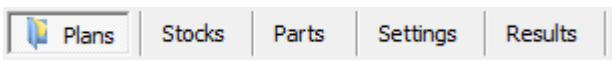
Basic concepts

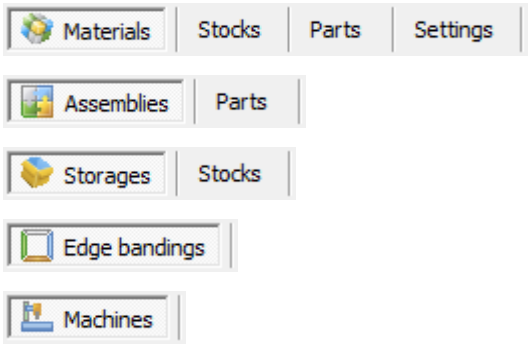
CutLogic 2D contains following sections:

Plans 51
Materials 94
Assemblies 99
Storages 102
Machines 156
Edgebands 105

You can switch among these sections by clicking one of the icons representing given section in the tool panel or from the main menu (Machines, Edgebands).

Every section consists of one master tab and may contain more detail tabs. Master tab is first tab displayed in tabs from the left and contains small icon.



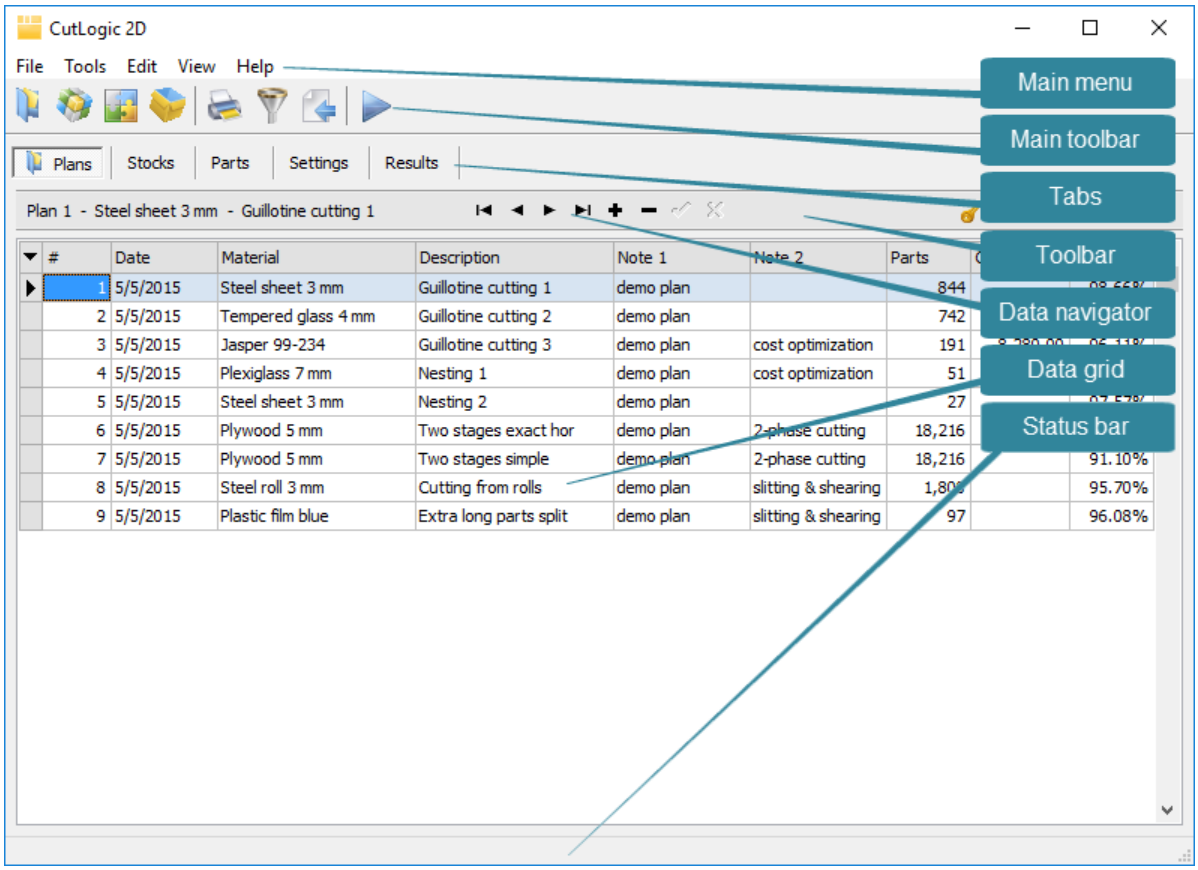


CutLogic 2D is unique in term of handling and displaying master-detail relations of data. If detail tab is applicable, following navigator is displayed in tool panel.

This navigator enables you to browse the records in related master tab while detailed information for active detail tab is displayed on the screen. This is very helpful feature enabling you better orientation among your data.

9.1 Main window

This chapter describes basic information about Graphical User Interface of CutLogic 2D.



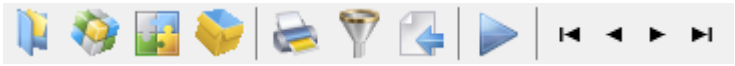
The Main window contains following segments.

Main menu

File Tools Edit View Help

This drop-down menu is basic control element for navigation and executions of logically grouped commands.

Main toolbar



The Main toolbar is a collection of buttons and other control elements providing quick access to commonly used commands.

	Plans	Ctrl+1	Activates the Plans enabling you to manage your plans, their stocks, parts, settings and results.
	Materials	Ctrl+2	Activates the Materials enabling you to manage your materials, their stocks and parts.

	Assemblies	Ctrl+3	Activates the Assemblies enabling you to manage your assemblies and their parts.
	Storages	Ctrl+4	Activates the Storages enabling you to manage your storages and their stocks.
	Reports	Ctrl+P	Displays the Reports form with list of available reports in new window.
	Filter	Ctrl+F	Displays the Filter definition form in new window.
	Import	Ctrl+I	Displays the Import form in new window.
	Start optimization	F3	Starts calculation of optimal cutting plan for given actual plan.
	Stop optimization	ESC	Stops calculation.

Following data navigator serves for navigation in given section. This navigator is displayed only if other than master tab is chosen (active). This navigator enables you to browse the master records in given section while detailed information from active detail tab is displayed.

Function of the buttons of navigator is following.

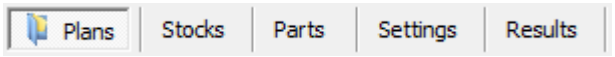
 Moves to the first record of given master data.

 Moves to the previous record of given master data.

 Moves to the next record of given master data.

 Moves to the last record of given master data.

Tabs



Tabs are graphical control elements representing master and/or detail data. Tabs shows one master and one or more detail tabs. Master tab is the first tab from the left in tabs and contains small graphical icon.

Toolbar

Toolbar displays basic information about active master data and contains data navigator and optionally displays other control elements (buttons).

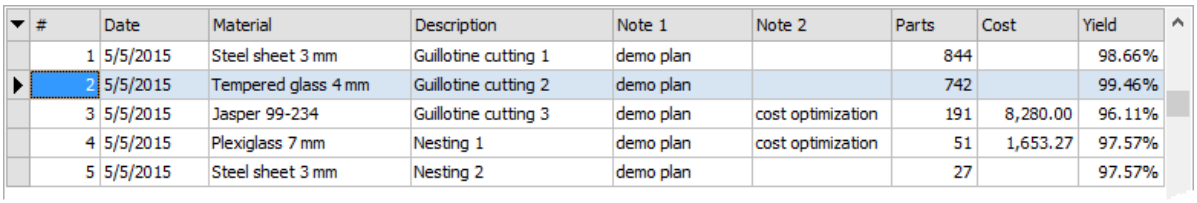
Data navigator

Data navigator serves for navigation and editing of data displayed in data grid.

Function of the buttons of navigator is following.

- Moves to the first record.
- Moves to the previous record.
- Moves to the next record.
- Moves to the last record.
- Inserts a new record.
- Deletes the current record.
- Posts changes from the current record to the database.
- Cancels changes made in the current record.

Data grid

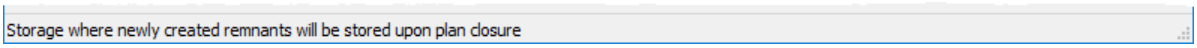


#	Date	Material	Description	Note 1	Note 2	Parts	Cost	Yield
1	5/5/2015	Steel sheet 3 mm	Guillotine cutting 1	demo plan		844		98.66%
2	5/5/2015	Tempered glass 4 mm	Guillotine cutting 2	demo plan		742		99.46%
3	5/5/2015	Jasper 99-234	Guillotine cutting 3	demo plan	cost optimization	191	8,280.00	96.11%
4	5/5/2015	Plexiglass 7 mm	Nesting 1	demo plan	cost optimization	51	1,653.27	97.57%
5	5/5/2015	Steel sheet 3 mm	Nesting 2	demo plan		27		97.57%

Data grid is the main part of the form, where you can manage your data like Plans, Materials, Storages and Assemblies. Data are usually organized in rows (records) and columns (fields).

Light blue color represents active row.
Dark blue color represents active field within selected row.
Non editable fields are displayed with grey background.

Status bar



Status bar displays information related to element you point on by mouse (e.g. input line in cutting settings).

9.2 Menus

File

Plans	Ctrl+1	Activates the Plans enabling you to manage your plans, their stocks, parts, settings and results.
Inventory		This contains following three sub-menu options...
Materials	Ctrl+2	Activates the Materials enabling you to manage your materials, their stocks and parts.
Assemblies	Ctrl+3	Activates the Assemblies enabling you to manage your assemblies and their parts.
Storages	Ctrl+4	Activates the Storages enabling you to manage your storages and their stocks.
Edgebands	Ctrl+5	Activates the Edgebands enabling you to manage your edgebands.
Machines	Ctrl+6	Activates the Machines enabling you to manage your CNC machines.
Start optimization	F3	Starts calculation of optimal cutting plan for currently selected plan(s).
Stop optimization	Esc	Stops calculation.
Reports	Ctrl+P	Displays the Reports form in new window. Enables working with available reports like printing, previewing, editing and others.
Filter	Ctrl+F	Displays the Filter definition form in new window. Enables defining filter conditions and others.
Import		This contains following four sub-menu options...
Import data from Excel, Access, CSV or connection file	Ctrl+I	Displays the Import form in new window. Enables to import data.
Import data from clipboard	Ctrl+J	Enables to import data from clipboard.
Import plan from CutLogic file (To new plan)	Alt+2	Enables to import entire cutting plan from single data file. The data are imported to new created plan.

Import plan from CutLogic file (To current plan)		Enables to import entire cutting plan from single data file. The data are imported to currently selected plan.
Export		This contains following three sub-menu options...
Export report to PDF/Excel/Word file	Ctrl+P	Displays the Reports form in new window. Enables exporting data to PDF, MS Excel, MS Word, CSV, RTF, ODS, ODT or HTML file.
Export cutting layouts to DXF files		Opens file save dialog. Enables exporting cutting layouts to DXF file.
Export cutting layouts to G-Code files		Opens file save dialog. Enables exporting cutting layouts to G-Code file format.
Export edgebands for 1D optimizer		Enables you to export edgebands of currently selected plan(s) as simple CSV (comma separated value) file.
Export plan to CutLogic file	Alt+1	Enables you to export current plan to single data file.
Custom exports	Ctrl+E	Opens Custom exports form where you can define and use your own exports.
Exit		Quits the application.

Tools

Calculator	F8	Displays the windows calculator.
Database	Ctrl+D	Opens the Database administration form in new window. Enables setup of backup and restore procedures, server connection, managing the users and shows database statistics.
Language		Enables you to change application language.
Order and registration		Displays the information how to order and register the full version. Shows Machine ID of the computer.
Options	Ctrl+O	Displays the Options form with program options in new window.

Edit

Copy record		Enables you to do copy of currently selected record.
Renumber column "#"		Automatically renumber column "#" in currently selected data grid.

View

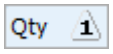
Rearrange columns		Enables you to rearrange columns (visibility and order of data fields) in currently selected data grid.

Help

CutLogic 2D help	F1	Displays the contents of this help file.
CutLogic 2D online help		Opens CutLogic 2D online help in your web browser.
Visit CutLogic 2D web site		Opens CutLogic 2D web site in your web browser.
Contact support		Sends an email to technical support.
About		Displays the information about the product name and current version. It also contains the support link and our website address.

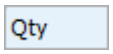
9.3 Data sorting

This feature helps you to manage your data displayed in data grid. Click the label of given column by left mouse button to sort displayed records. Records will be sorted according to data values in selected column.



First click sorts data in ascending order.

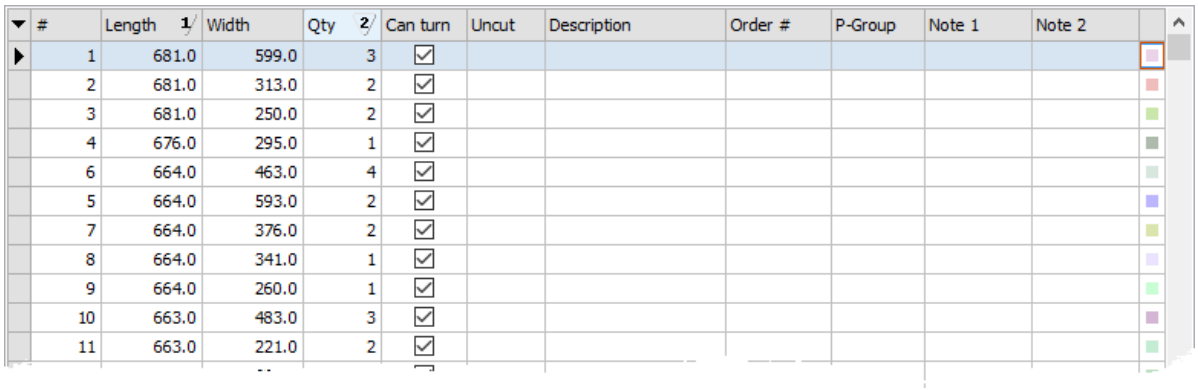
Second click sorts data in descending order.



Third click cancels sorting in selected column.

Program also enables defining of sorting over multiple columns. Hold Ctrl button and click by left mouse button on the labels of given columns to activate sorting in more columns.

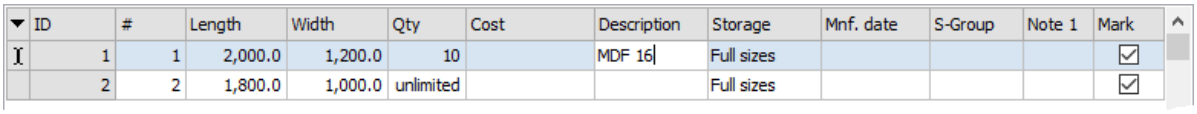
Following example shows sorting applied in Length and Qty columns.



#	Length 1	Width	Qty 2	Can turn	Uncut	Description	Order #	P-Group	Note 1	Note 2
1	681.0	599.0	3	☑						
2	681.0	313.0	2	☑						
3	681.0	250.0	2	☑						
4	676.0	295.0	1	☑						
6	664.0	463.0	4	☑						
5	664.0	593.0	2	☑						
7	664.0	376.0	2	☑						
8	664.0	341.0	1	☑						
9	664.0	260.0	1	☑						
10	663.0	483.0	3	☑						
11	663.0	221.0	2	☑						

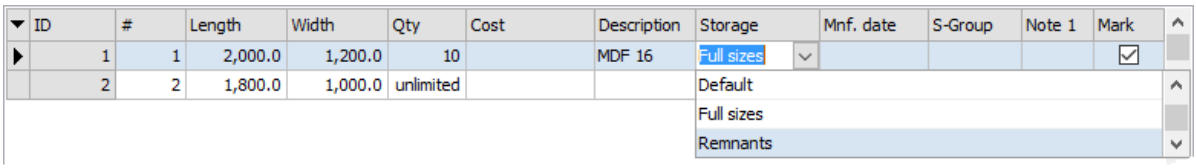
9.4 Data editing

You can use data navigator or mouse for navigation within the data grid. Single left click on active editable field or pressing Enter key switch selected field in edit mode. Edit mode enables you either to enter the data directly from the keyboard or to pass data from the clipboard. Some fields are restricted only by the length – the maximum number of characters.



ID	#	Length	Width	Qty	Cost	Description	Storage	Mnf. date	S-Group	Note 1	Mark
1	1	2,000.0	1,200.0	10		MDF 16	Full sizes				☑
2	2	1,800.0	1,000.0	unlimited			Full sizes				☑

Some editable fields are restricted by the list of predefined values. Enter the value for such field by choosing one from related pick list.



ID	#	Length	Width	Qty	Cost	Description	Storage	Mnf. date	S-Group	Note 1	Mark
1	1	2,000.0	1,200.0	10		MDF 16	Full sizes				☑
2	2	1,800.0	1,000.0	unlimited			Default				
							Full sizes				
							Remnants				

If you leave edited row new values are automatically posted into database. You can also post changes into database by clicking the post edit button ✓ in the data navigator. To cancel edit, click the button ✕ .

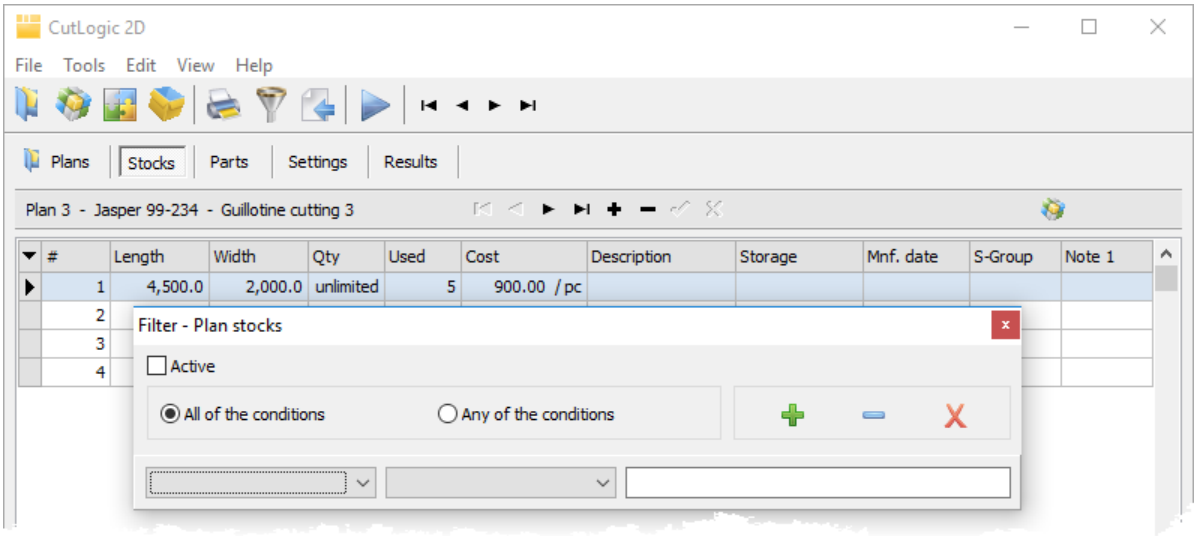
9.5 Data filtering

Filters represent powerful tool for data presentation. You can restrict displayed data by defining filtering conditions in Filter definition form. You can define one unique filter for each of following sections.

Plans
Plan stocks
Plan parts
Materials
Material stocks
Material parts
Assemblies
Assembly parts
Storages
Storage stocks
Edgebands
Machines

Filter definition

By clicking the button  in the main toolbar or by pressing keyboard shortcut Ctrl+F the Filter definition form opens in new window.



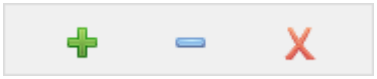
Filter definition form may contain more filtering conditions. Define logical relation among these conditions by clicking one of following radio buttons.

All of the conditions	Only data which fulfill all of the defined conditions will be displayed.

Any of the conditions	Only data which fulfill at least one of the defined conditions will be displayed.

Adding and deleting the conditions

You can add and delete conditions of filter by clicking the chosen button.

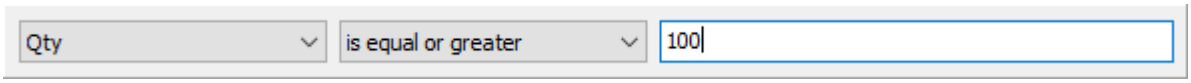


Functions of the buttons for manipulation with the filter are described as follows.

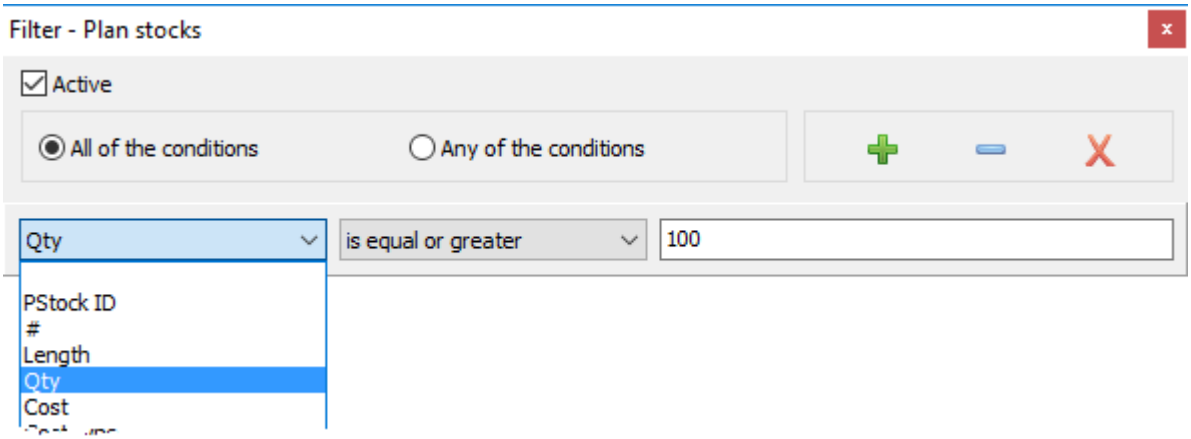
	More	New condition will be added at the end of already defined conditions. It is possible to define 9 conditions at most.
	Fewer	The last condition in the filter will be deleted.
	Clear all	All defined conditions will be deleted.

Defining and editing the conditions

You need to choose a column, operation and define the value for each of conditions.

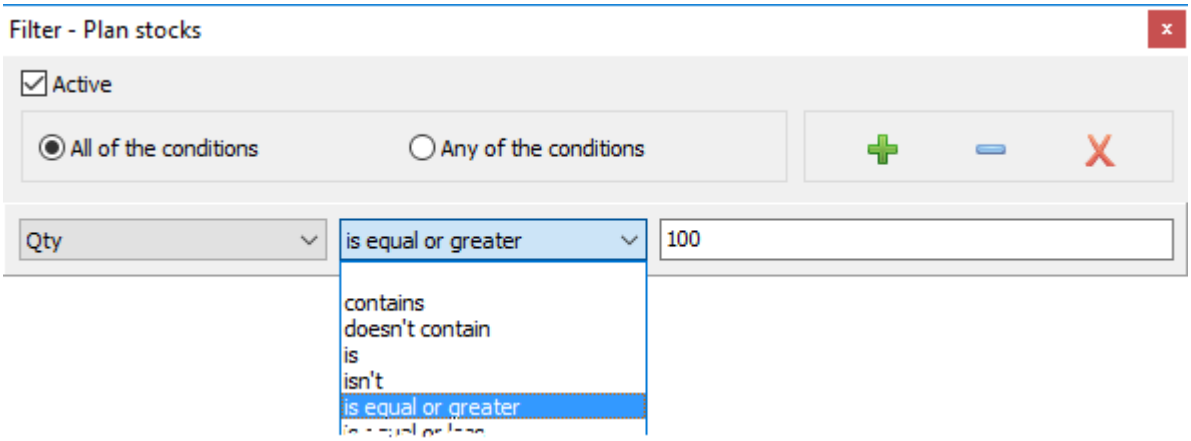


Select column from pre-defined list of available columns. You can define conditions even for columns not displayed in given data grid.



Tip: Select Any field value from the list if you need to define condition for all available columns.

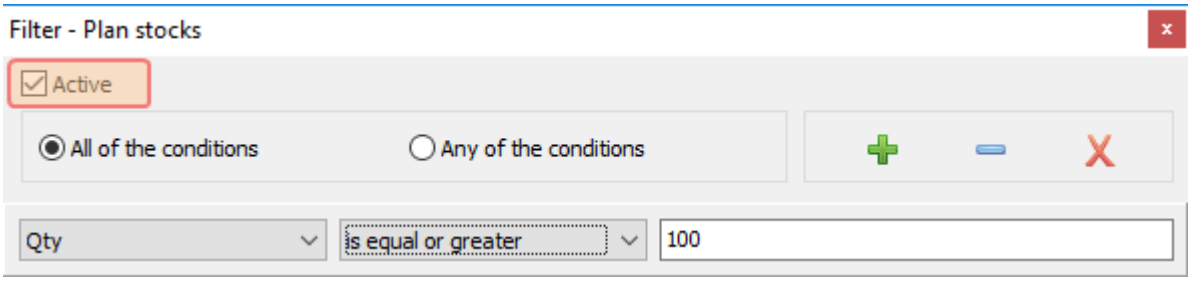
Select operation from pre-defined list of operations and enter the value for setting the filter.



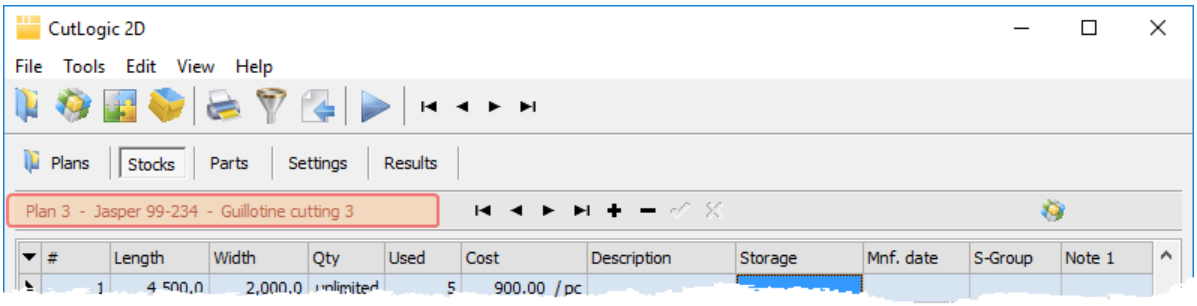
Note: Use numeric value for numeric columns like Plan ID or Qty. For other columns any string can be used.

Activation and deactivation of filter

When all conditions of the filter are set, you can activate it. For activation click the check box Active in the Filter definition form.



The filter will display only the records which fulfill defined conditions. Activation of filter is signalized by the red labeled information in toolbar.



Tip: It is possible to apply both, filter and data multiselection [32], when working with data.

9.6 Data multiselection

Data multiselection is very useful tool when working with data. You can restrict operations on data by selecting only necessary records. You can select multiple rows or multiple columns. Selected data can be bulk optimized, closed/opened (plans), copied (to plans or to clipboard), deleted, printed, exported, etc.

Selecting multiple rows using mouse

- When you click on any data row and the Ctrl key is pressed, the additional single row is selected.
- When you click on any data row and the Shift key is pressed, all the next rows are selected.

Selecting multiple columns using mouse

- When you click on column title the Shift key is pressed, the column is selected.
- Now, when you click on other column and the Ctrl key is pressed, this column is added to selection.

Selecting multiple rows or columns using keyboard

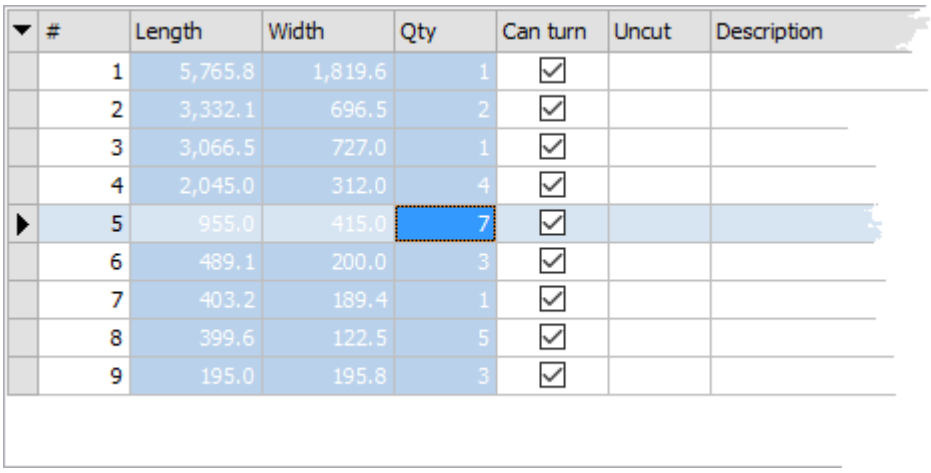
- When the Shift key is pressed and the user presses Up/Down arrow key (also PgUp/PgDn), the Rows selection is performed. When the Shift key is still held and the user presses Left/Right arrow key (also Home/End), the Rows selection is changed to cells selection.
- When the Shift key is pressed and the user presses Left/Right arrow key (also Home/End), the columns selection is performed. When the Shift key is still held and the user presses Up/Down arrow key (also PgUp/PgDn), the selection is changed to cells selection.

Tip: It is possible to apply both, filter 29 and data multiselection when working with data.

Following represents rows multiselection.

#	Length	Width	Qty	Can turn	Uncut	Description
1	5,765.8	1,819.6	1	☑		
2	3,332.1	696.5	2	☑		
3	3,066.5	727.0	1	☑		
4	2,045.0	312.0	4	☑		
5	955.0	415.0	7	☑		
6	489.1	200.0	3	☑		
7	403.2	189.4	1	☑		
8	399.6	122.5	5	☑		
9	195.0	195.8	3	☑		

Following represents columns multiselection.

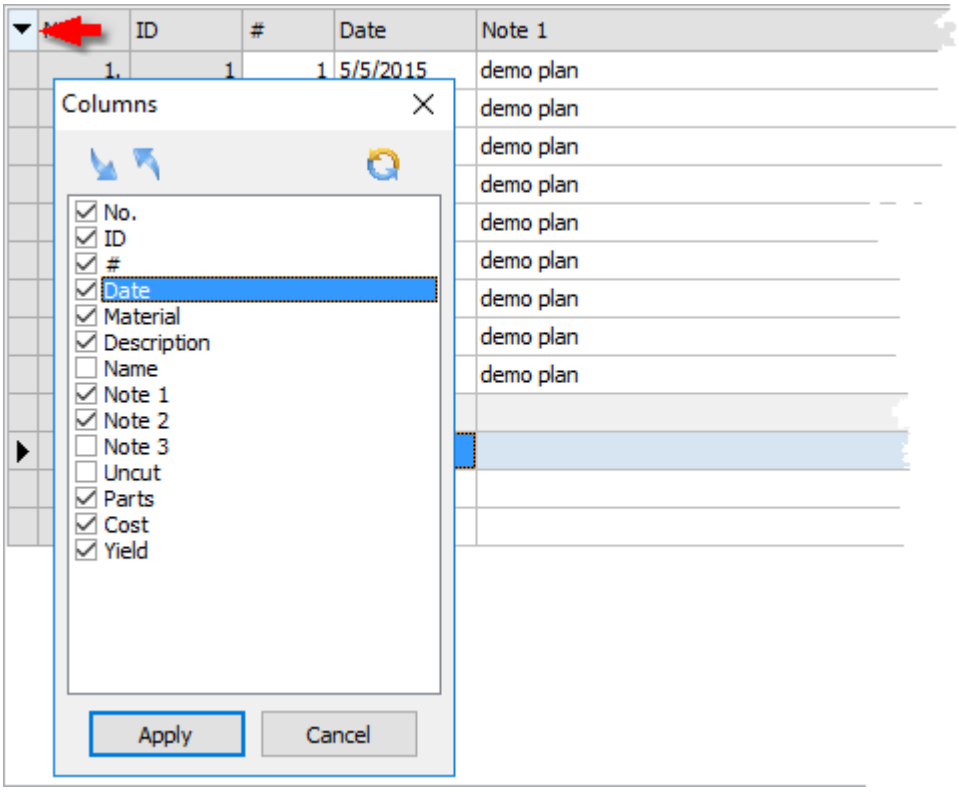


#	Length	Width	Qty	Can turn	Uncut	Description
1	5,765.8	1,819.6	1	☑		
2	3,332.1	696.5	2	☑		
3	3,066.5	727.0	1	☑		
4	2,045.0	312.0	4	☑		
5	955.0	415.0	7	☑		
6	489.1	200.0	3	☑		
7	403.2	189.4	1	☑		
8	399.6	122.5	5	☑		
9	195.0	195.8	3	☑		

9.7 Rearranging columns

It is possible to rearrange all columns in data grids. All available columns can be hidden or shown according to your individual needs. In addition, it is also possible to change their order. By hiding of unnecessary columns or reordering them, you can achieve better and clearer view of your data.

To rearrange columns, click the button  in data grid or select the menu item *"View > Rearrange columns"*. Here you can check/uncheck visibility of data fields.



Toolbar

 Moves column down. In data grid, column is moved to the right.

 Moves column up. In data grid, column is moved to the left.

 Loads default columns setting.

 Tip: Alternatively, to reorder columns directly in data grid, you can click and hold column header and drag it to left/right.

9.8 Keyboard shortcuts

Shortcuts for quick access to the program features

Tab	Moves to the next tab
Shift+Tab	Moves to the previous tab
Alt+Arrow Down	Drops down list
Ctrl+1	Opens Plans
Ctrl+2	Opens Materials
Ctrl+3	Opens Assemblies
Ctrl+4	Opens Storages
Ctrl+5	Opens Edgebands
Ctrl+6	Opens Machines
F3	Starts calculation of optimal cutting plan
Esc	Stops calculation
Ctrl+F	Opens Filter definition form
Ctrl+P	Opens Reports form
Ctrl+O	Opens Options form
Ctrl+D	Opens Database administration form
Ctrl+I	Opens Import form
Ctrl+J	Imports data from clipboard
Ctrl+E	Opens Custom exports form
Alt+1	Exports current plan to CutLogic file
Alt+2	Imports cutting plan from CutLogic file (to new plan)
Ctrl+G	Exports cutting layouts to CSV file
F8	Opens Windows calculator
F1	Opens Help
Ctrl+Alt+Arrow Down	Moves to the next plan
Ctrl+Alt+Arrow Up	Moves to the previous plan

Arrow Right	Moves to the next cut (on Results tab)
Arrow Left	Moves to the previous cut (on Results tab)
Ctrl+Shift +End	Assigns random colors to the parts of the current plan

In data grids only

F2	Edits current field / Opens pick list for current field / Switches stock qty 0 <-> unlimited
Esc	Cancels edit mode
Ctrl+Del	Deletes current record
Ins	Inserts new record
Ctrl+V	Clones current record
Arrow Up	Moves to the previous record
Arrow Down	Moves to the next record
Page Up	Moves to the previous page of records
Page Down	Moves to the next page of records
Ctrl+Home	Moves to the first record
Ctrl+End	Moves to the last record
Enter/Return	Switches between field's edit and view modes
Shift+Arrow Up	Adds the previous record to selection
Shift+Arrow Down	Adds the next record to selection
Ctrl+A	Selects all records
Tab	Moves to next field
Shift Tab	Moves to previous field
Home	Jumps to first (most left) field (only if current field is in view mode)
End	Jumps to last (most right) field (only if current field is in view mode)

Space	Moves cursor through feet -> inches -> fraction > feet when editing feet/inches value

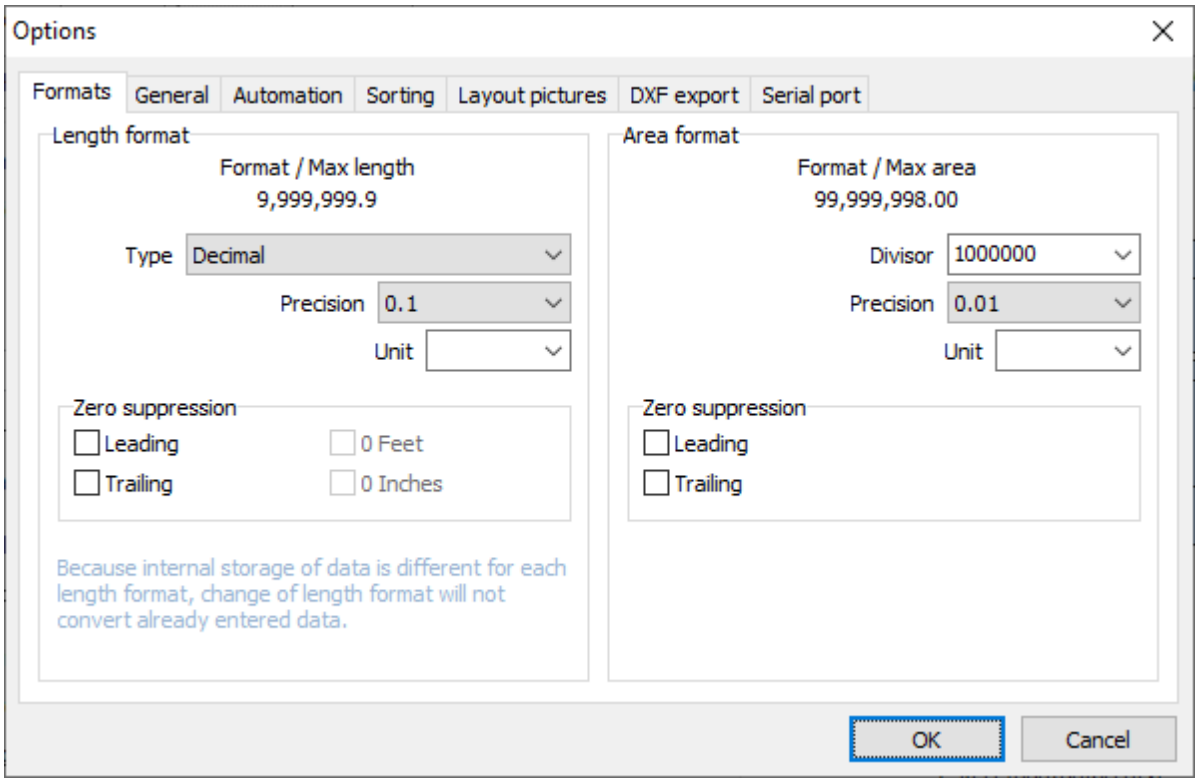
10 Program Options

To work with program Options, select the menu item *"Tools > Options"* or press Ctrl+O.

In Options you can set the main parameters of the program. Correct representation and displaying of the data in the project depends on setting of some parameters like Type, Precision and Unit. That is the reason why we recommend to set these options immediately after the first start of the program or before entering new cutting plan.

10.1 Formats

In this option you can set Type, Precision and Unit for Length and Area formats of materials.



Type

Decimal	e.g. 123,324 mm; 234,34 m; 142,2"
Feet and decimal inches	e.g. 833' 3,99"
Fractional	e.g. 324 31/32"
Feet and fractional inches	e.g. 1302' 63/64"

Precision

Here you can set the precision of entering the length format (decimal places, fractions) according to setting of the type.

Unit

Here you can set the length/area unit of material (mm, cm, dm, m, '', '/m2,ft2). This option is accessible only when the decimal or fractional type is set. When other types are set, this option is disabled. Defined Unit is shown in the length and width of material in the program and also in printing reports.

Tip: You can also set your own length unit by writing it to combo box or you don't need to fill it in at all. In this case the length unit won't be shown.

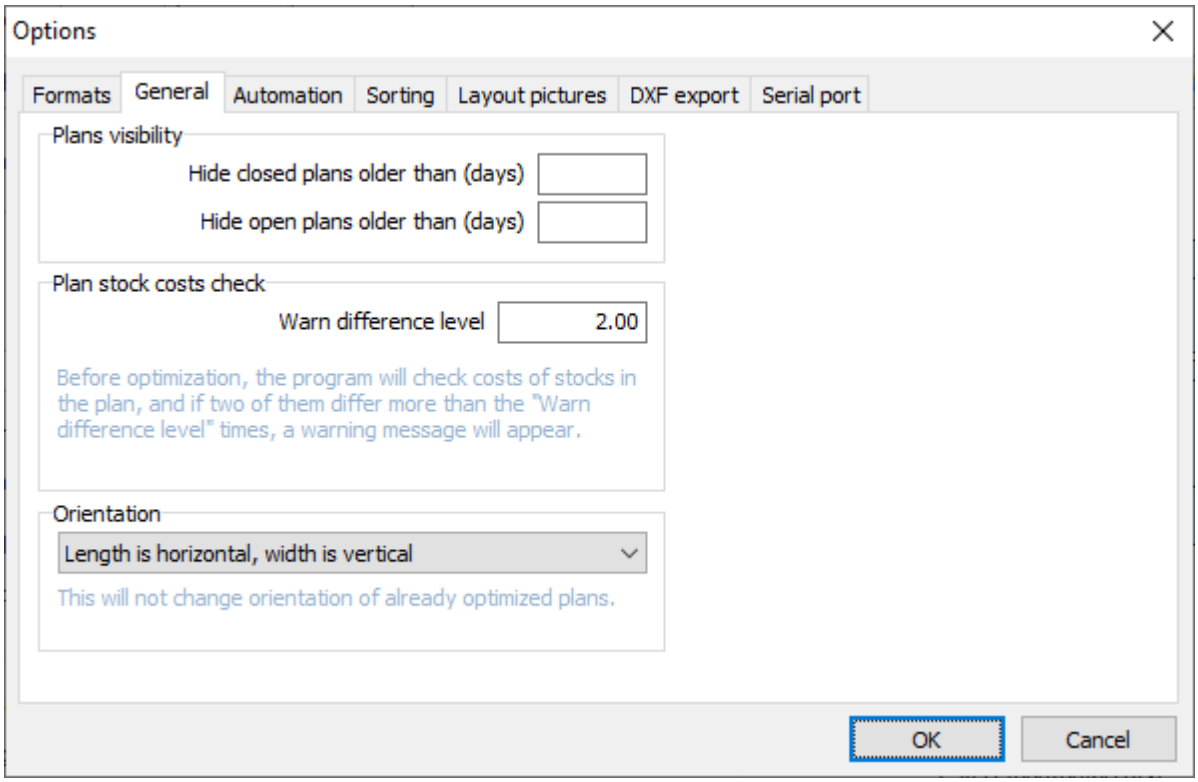
Note: Because for each length format internal storage of data is different, change of length type and precision doesn't convert already entered data. Therefore, it is necessary to consider this option carefully at the beginning of working with this program.

Zero suppression

Leading	Suppresses displaying of leading zeros in decimal numbers.
Trailing	Suppresses displaying of trailing zeros in decimal numbers.
0 Feet	Suppresses displaying of 0 feet.
0 Inches	Suppresses displaying of 0 inches.

10.2 General

Here you can set visibility of closed/opened plans, stock cost check and orientation.

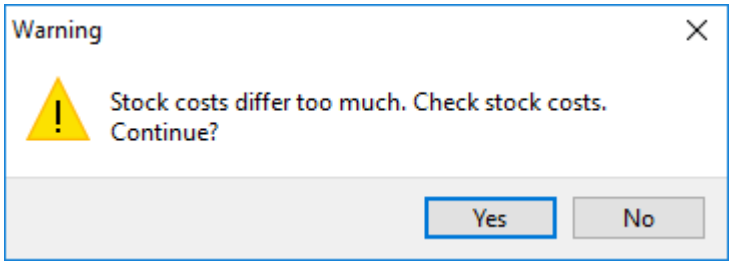


Plans visibility

Here you can set limit of days to show closed/opened plans according to plan creation date. Closed/opened plans older than entered number of days will be hidden.

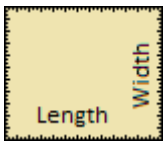
Plan stock costs check

You can also define maximal ratio between the highest and the lowest cost of stock within the plan. If this ratio is exceeded, following warning message appears.



Orientation

Here you can switch orientation of whole cutting system.



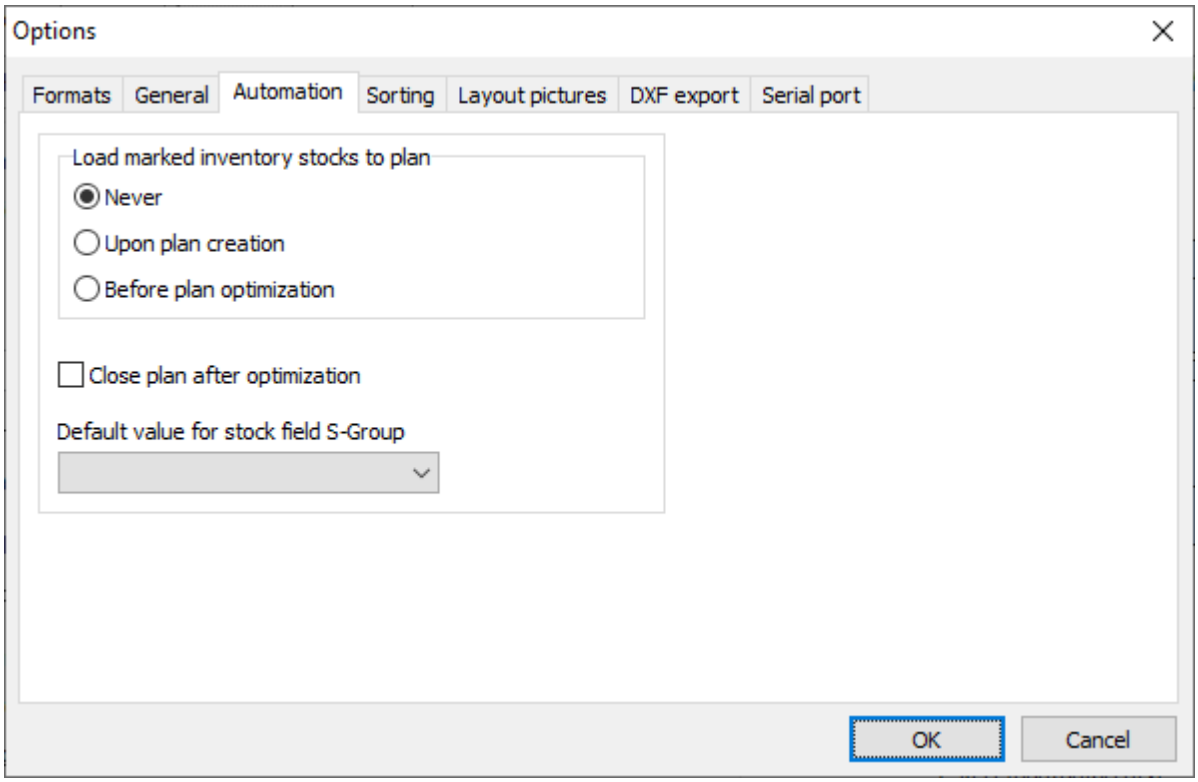
Length is horizontal, width is vertical.

Length is vertical, width is horizontal.

Note: Remember, this will not change orientation of already optimized plans.

10.3 Automation

Here you can set operations which will be executed automatically every time you create or optimize plan.



Load marked inventory stocks to plan

Never	Program will not automatically loaded stocks.
Upon plan creation	When new plan is created, all marked inventory stocks of given material will be loaded to plan.
Before plan optimization	Before running plan optimization, all marked inventory stocks of given material will be loaded to plan.

Close plan after optimization

Plan will be automatically closed after optimization and used stocks will be counted off the inventory.

Default value for stock field S-Group

Here you can set the columns used for automatic writing of its values into the S-Group field in the Plans stocks form. When Group optimization is turned on an identifier is used for grouping the stocks by value written in the S-Group field.

Nothing	S-Group won't be automatically populated
Manufacture date	S-Group will be automatically populated by Manufacture date

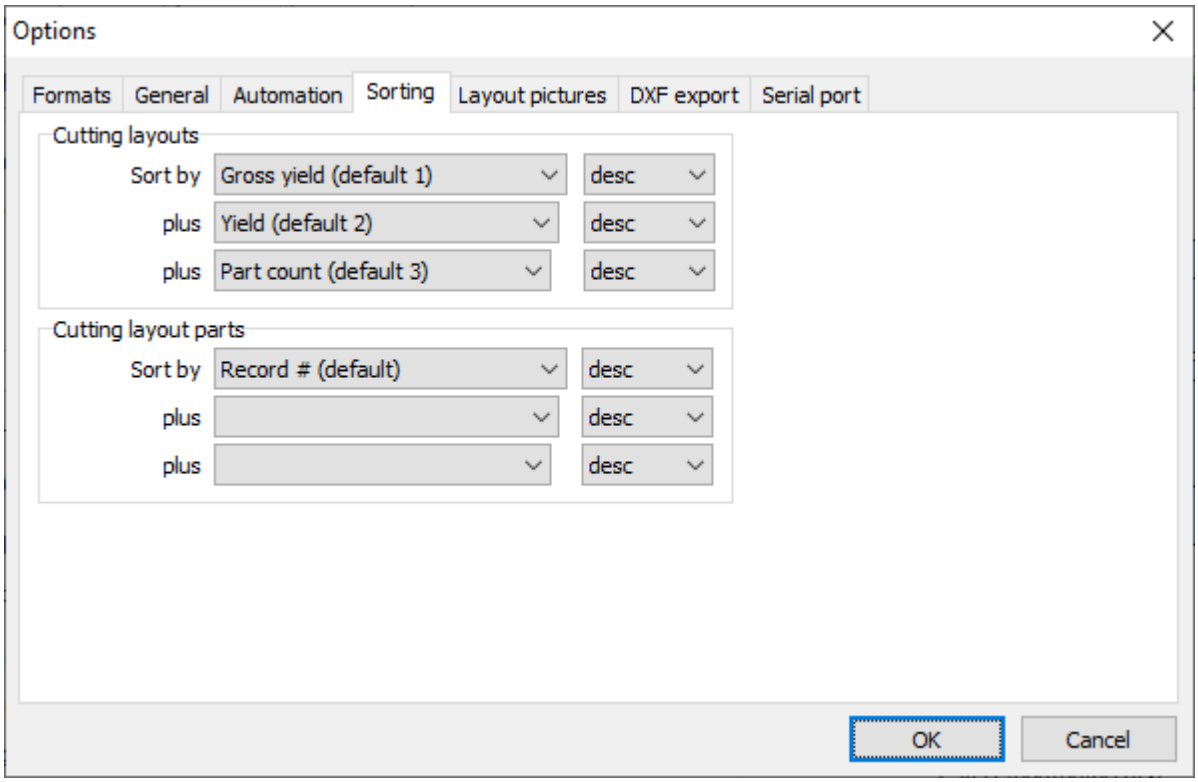
Origin ID	S-Group will be automatically populated by Origin ID
Storage	S-Group will be automatically populated by Storage
Description	S-Group will be automatically populated by Description
Note 1	S-Group will be automatically populated by Note 1
Note 2	S-Group will be automatically populated by Note 2

Note: Material's Origin ID is a value, which represents the original material ID it was cut from. E.g. remnant ID 340 cut from remnant ID 233 which is cut from stock ID 123 will have Origin ID 123, this way each remnant can be traced to its original source.

See more in chapter Entering Settings for the Plan 86 > What is Group optimization?.

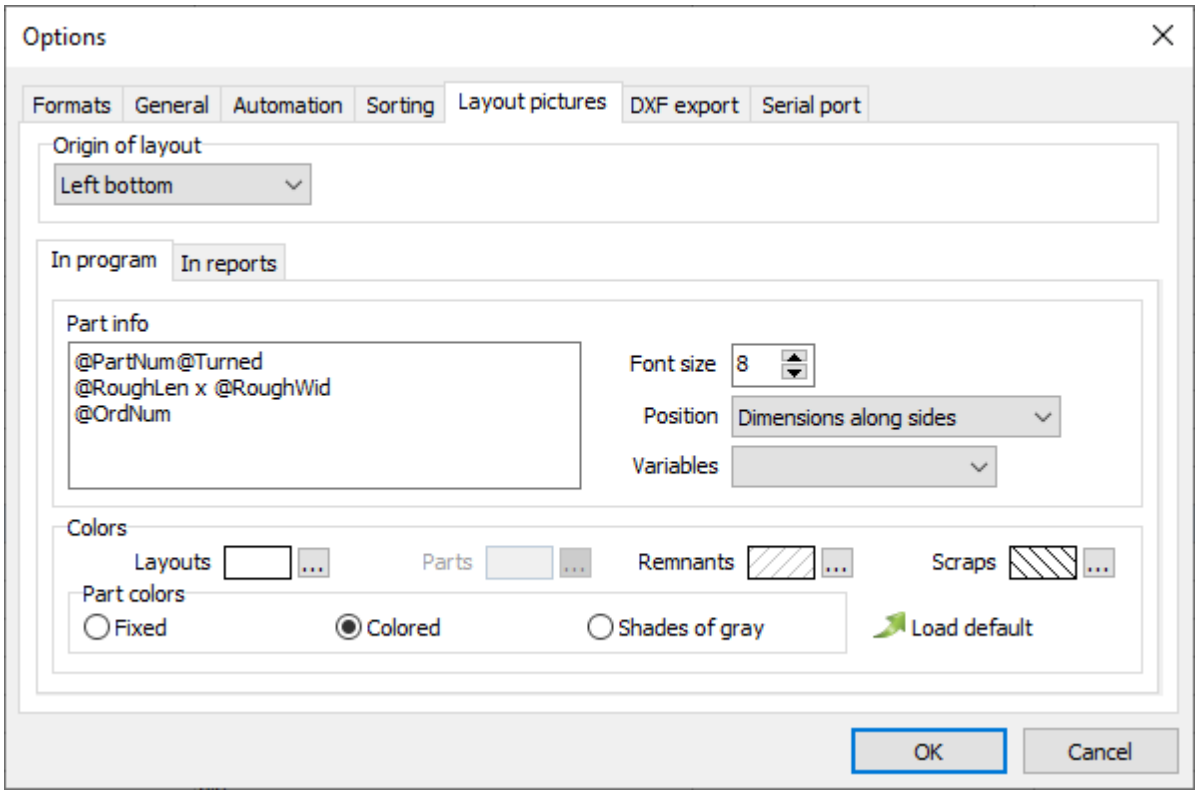
10.4 Sorting

In this option you can set sorting of cutting layouts and cutting layout parts. Each of this data can be sorted by three different fields in individual ascending or descending order.



10.5 Layout pictures

In this option you can set some properties for the displaying of layout pictures in program and reports.



Origin of layout

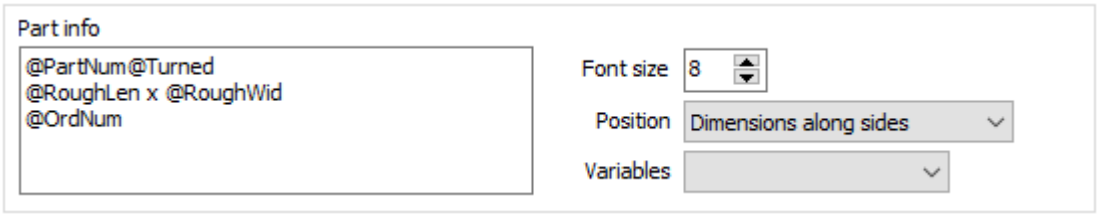
Here you can set origin of the layout.

Left bottom	Layout starts from the left and bottom side.
Left top	Layout starts from the left and top side.
Right bottom	Layout starts from right left and bottom side.
Right top	Layout starts from the right and top side.

Layout pictures in program/reports

Part info

Following text describes how to enter expression for part info in layout pictures. It is possible to enter any text, variables and tags which define font styles in script.You can also set font size and position of part info - Centered, Dimensions along sides, and Top-left.



Variables

Every variable starts with @ and it is possible to enter following variables.

@PartID	Part ID
@PartNum	Part #
@Len	Part length
@Wid	Part width
@RoughLen	Part rough length
@RoughWid	Part rough width
@XCoord	X coordinate of part (Left/Right)*
@YCoord	Y coordinate of part (Bottom/Top)*
@Turned	Indicates rotation of part
@PartGroup	Part group
@OrdNum	Order #
@Desc	Description
@Note1	Note 1
@Note2	Note 2

*According to setting of Origin of the layout in Options

Tags

<B>	Bold
<I>	Italic
<U>	Underline

Colors

Here you can set individual background color for Layouts, Parts, Remnants and Scraps in program and reports.

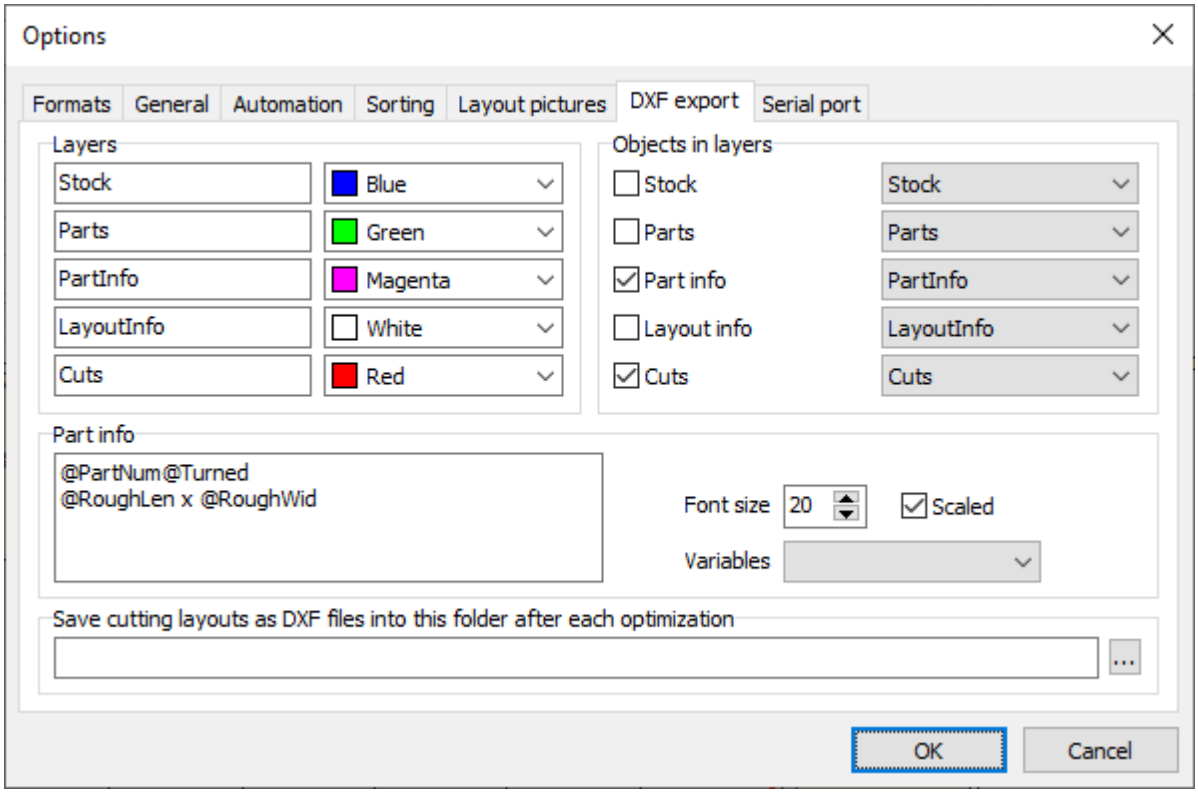
Fixed	Color is defined by user and is the same for each part.
Colored	Colors are defined by user individually for each part.

Shades of gray Shades of gray for parts are generated by the program.

Click button [Load default] if you want to load default settings.

10.6 DXF export

In this option you can set properties of DXF file which can be used to export cutting layouts in CAD exchange format (AutoCAD Drawing Exchange Format). System is designed to create one file for each layout.



Layers

In this option you can define layer names and suitable colors.

Objects in layers

Here you can set which objects (Stock, Parts, Part info, Layout info, Cuts) will be exported to DXF file. It is also possible to assign layer name to each object separately. It means, that object will be visible only in layer with appropriate layer name.

Part info

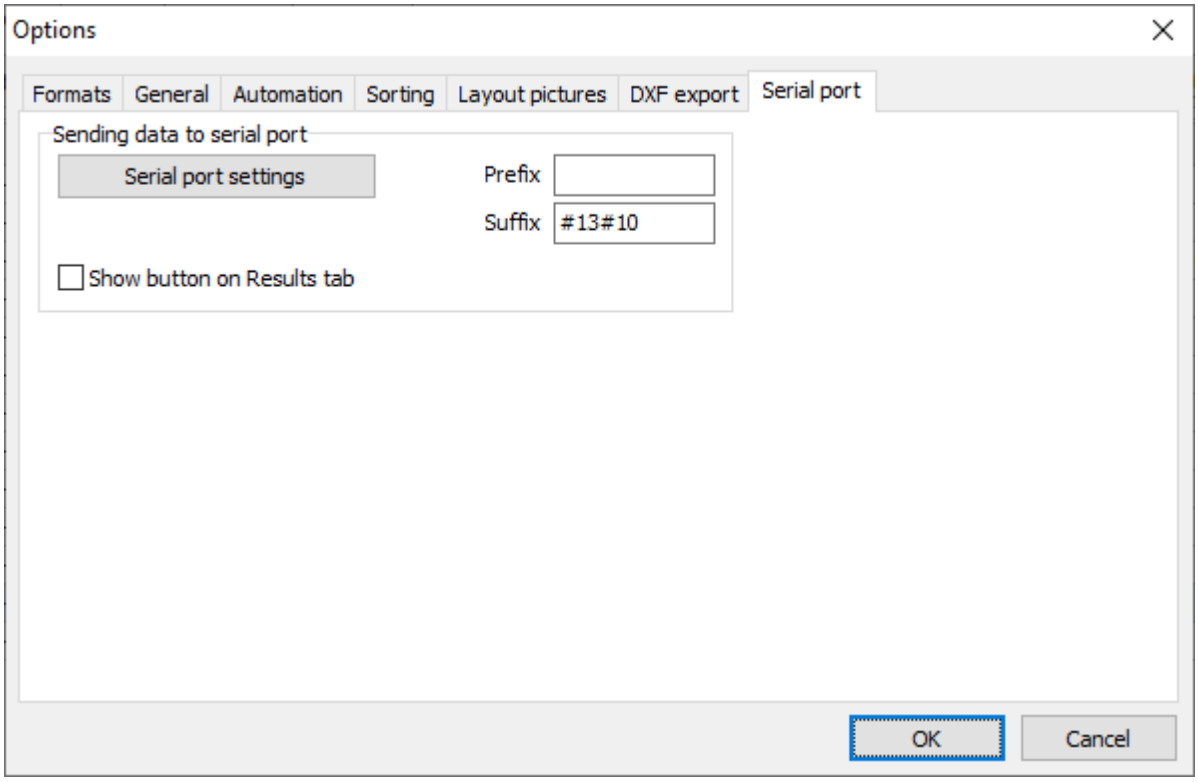
If you want parts to include part info it is possible to define it here. Definition of part info for DXF file is the same as definition of part info for layout pictures[46] in program/reports. The only difference is that you can't define tags here. You can also set font size. If Scaled is checked, Font size represents size of font on FHD screen, otherwise it represents real value in mm written into DXF files.

Save cutting layouts as DXF files...

Program enables you to automatically save DXF files after optimization. If you want save these files automatically, you can set correct path here and after each optimization new DXF files will be created in this folder.

10.7 Serial port

Here you can set serial port, and how data are sent to it. You can send to serial port data exported via Custom Exports module, or cutting layouts of one plan or multiple selected plans via "*File > Export > Send cutting layouts to serial port*".



Serial port settings

Click on the button to pick serial port and set baud rate and other settings.

Prefix

A prefix that is added to the beginning of data sent to the serial port. Can include control char sequence, for example #9 (tab).

Suffix

A suffix that is added to the end of data sent to the serial port. Can include control char sequence, for example #13#10 (line break).

Show button on Results tab

Check if you want to show button on Results tab for quick access. You can send cutting layouts to serial port also via File > Export menu.

11 Plans

To work with Plans, click the button  in the main toolbar or select the menu item *"File > Plans"* or press Ctrl+1.

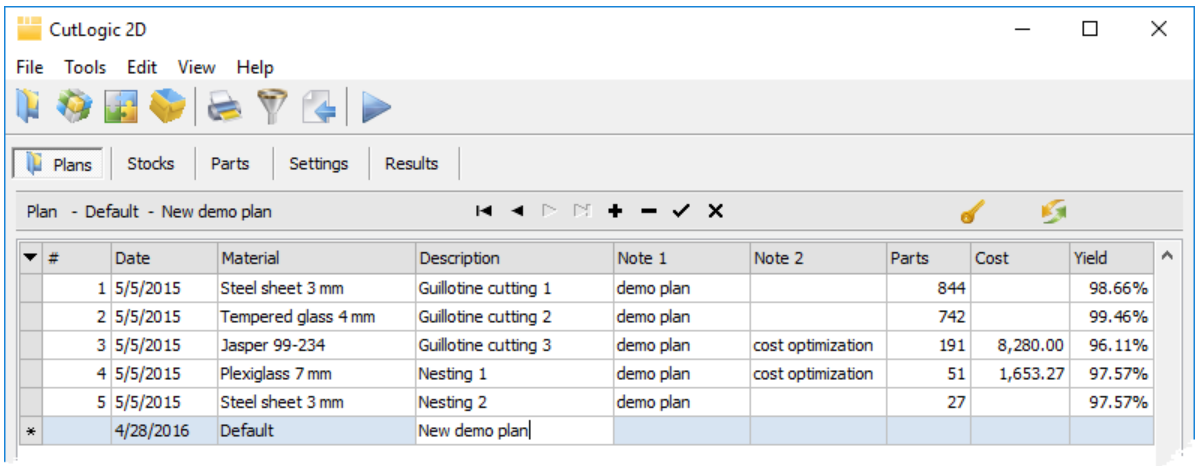
Plans are the main part of the program where you can enter, optimize and manage cutting plans. Each plan consists of stocks (material to cut from), parts (pieces to cut), settings (cutting parameters and restrictions), and optimized cutting layouts.

You can create new cutting plan in one of the following ways.

- Adding new plan directly 52
- Copying existing plan 54
- Adding multiple plans using Assemblies 55
- Adding multi-material plans using import 57

11.1 Adding new plan directly

To add a new empty cutting plan, first click the Plans tab to open Plans form. Next, click the button ✚ in the data navigator to add a new plan.



#	Date	Material	Description	Note 1	Note 2	Parts	Cost	Yield
1	5/5/2015	Steel sheet 3 mm	Guillotine cutting 1	demo plan		844		98.66%
2	5/5/2015	Tempered glass 4 mm	Guillotine cutting 2	demo plan		742		99.46%
3	5/5/2015	Jasper 99-234	Guillotine cutting 3	demo plan	cost optimization	191	8,280.00	96.11%
4	5/5/2015	Plexiglass 7 mm	Nesting 1	demo plan	cost optimization	51	1,653.27	97.57%
5	5/5/2015	Steel sheet 3 mm	Nesting 2	demo plan		27		97.57%
*	4/28/2016	Default	New demo plan					

Columns

No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Date	Plan creation date.
Material	Type of material. This field is mandatory. If you do not use Inventory features you can leave this field without editing and "Default" material is set automatically. "Default" material is predefined in the program and can not be deleted from Materials. The field is red if material Stock level < Min. level. See more in chapter Stock level control 107.
Description	Short description.
Name	Name.
Note 1	Additional description.
Note 2	Additional description.
Note 3	Additional description.
Note 4	Additional description.
Uncut	Number of uncut parts.
Parts	Number of parts.
Stocks	Number of stocks used.
Cost	Overall cost of the project.

Yield	Achieved material utilization in percentage.

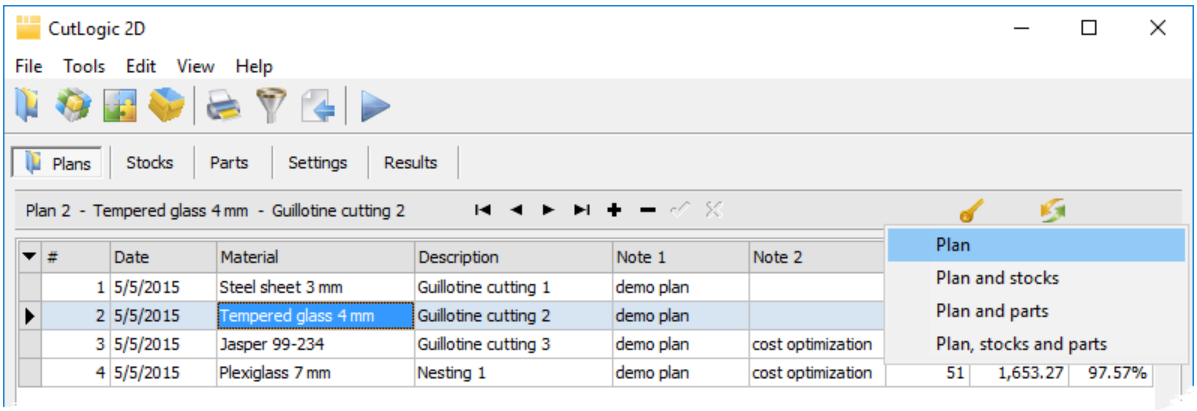
To rearrange columns[34], their order and visibility, click the button  in data grid or select the menu item *"View > Rearrange columns".*

> Important: You can define as many plans as you need for one material. However, one plan may contain only one material.

Once you added new plan, you can start defining its stocks[68] and parts[74].

11.2 Copying existing plan

You can add new plan by copying the existing one. First, select the plan you want to copy by clicking on it. Then click the button  in toolbar and choose an option from the pick list as is shown in the following picture.

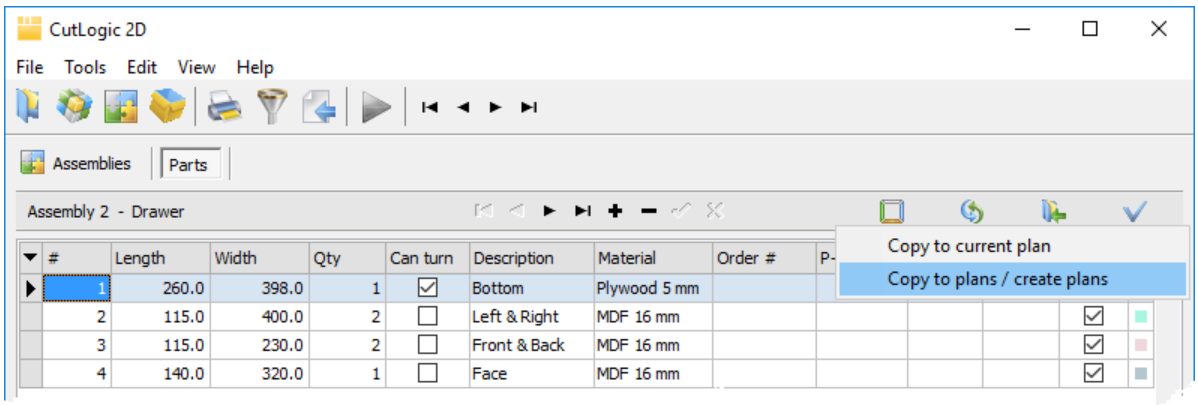


Plan	It will copy only related data from Plans tab and also defined parameters from Settings tab of selected plan into a new plan.
Plan and stocks	It will copy related data from Plans tab and defined parameters from Settings tab and all stocks defined in Stocks tab of selected plan into a new plan.
Plan and parts	It will copy related data from Plans tab and defined parameters from Settings tab and all parts defined in Parts tab of selected plan into a new plan.
Plan, stocks and parts	It will copy all related data from selected plan into a new plan.

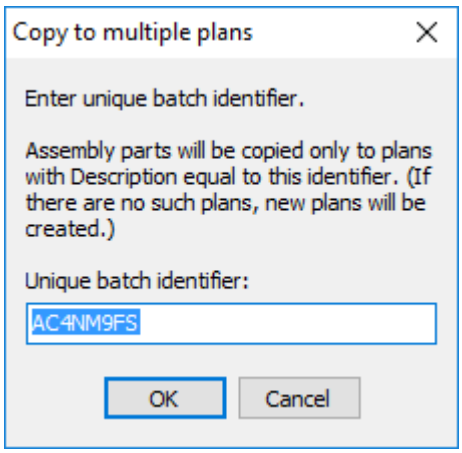
11.3 Adding multiple plans using Assemblies

Entering multiple plans using Assemblies is a very useful feature decreasing your effort in the moment when you need to prepare all plans for all materials defined in one assembly. It enables you to prepare all plans in one turn.

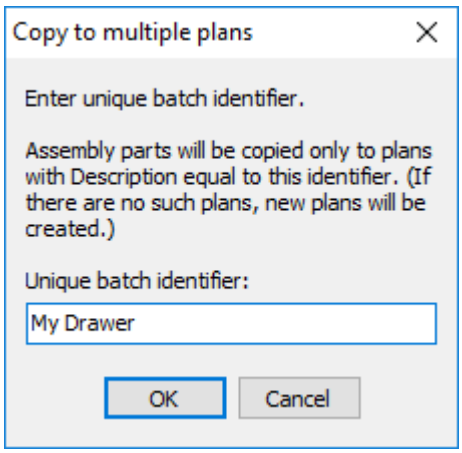
First, select assembly you need to prepare multiple plans for.



Next click  button and select [Copy to plans / create plans].

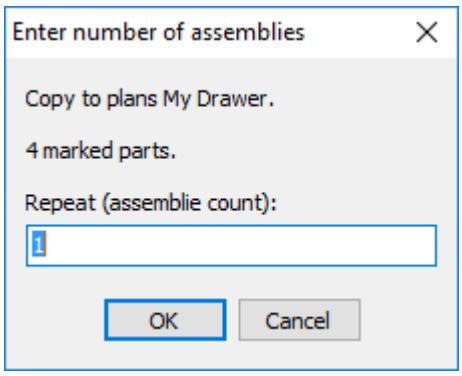


Unique batch identifier is automatically generated. You can use this one or rename the batch as you need.

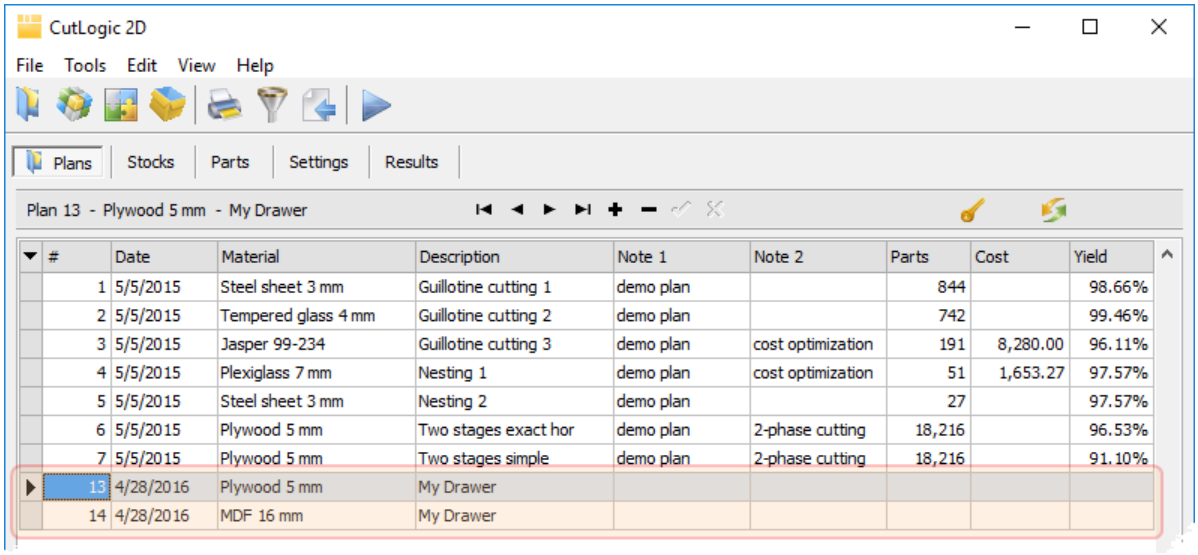


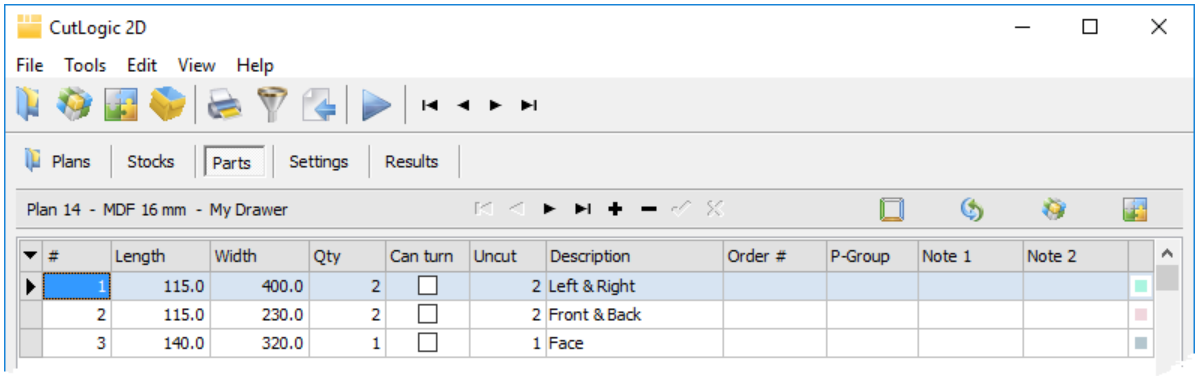
Tip: You can use one Unique batch identifier for as many Assemblies as you need. When creating Multi-material plan for next Assembly simply use the same Unique batch identifier as for the first Assembly. This approach leads to better yield and better labor organization.

Confirm the dialog.



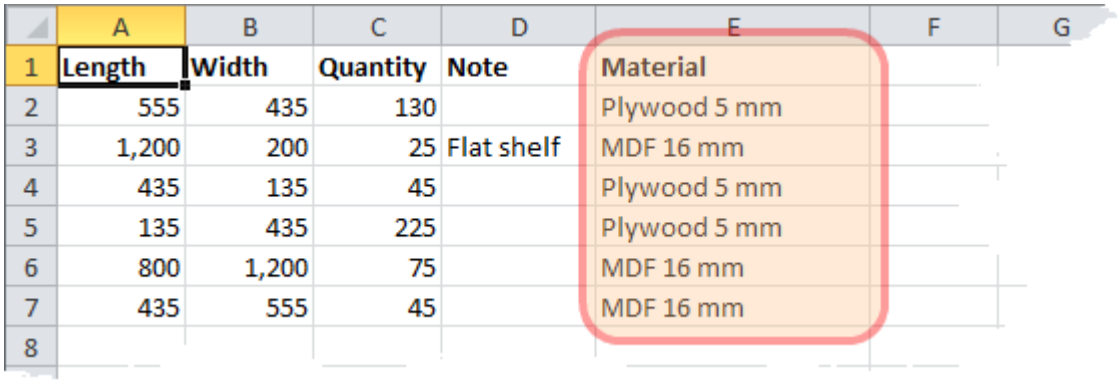
Here you can change repetition of copied assemblies. The original quantity of parts will be multiplied by entered value. Confirm the dialog to create plans.





11.4 Adding multi-material plans using import

This chapter describes creation of multi-material plans by importing parts made from different materials at once. First of all, you have to prepare such import data, as is demonstrated in the following image.

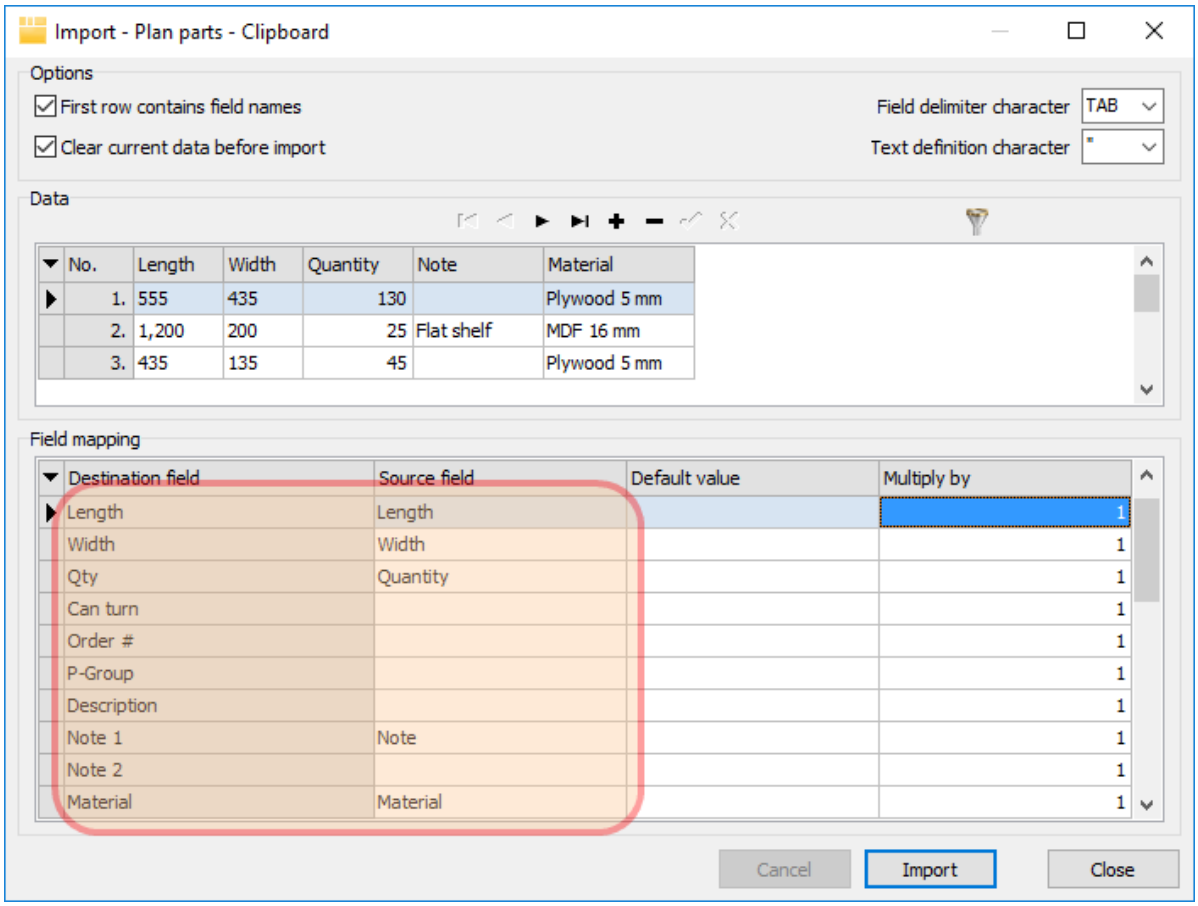


	A	B	C	D	E	F	G
1	Length	Width	Quantity	Note	Material		
2	555	435	130		Plywood 5 mm		
3	1,200	200	25	Flat shelf	MDF 16 mm		
4	435	135	45		Plywood 5 mm		
5	135	435	225		Plywood 5 mm		
6	800	1,200	75		MDF 16 mm		
7	435	555	45		MDF 16 mm		
8							

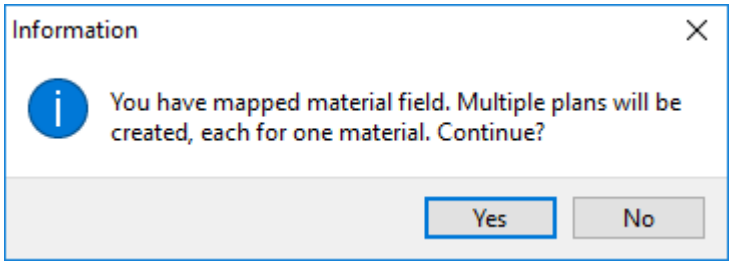
Important: Be sure that you have already created kinds of material you want to import to Inventory. Undefined materials can not be imported.

Note: This demo demonstrates import from clipboard. However, there are other kinds of import presented in chapter Import [122], which can be used too.

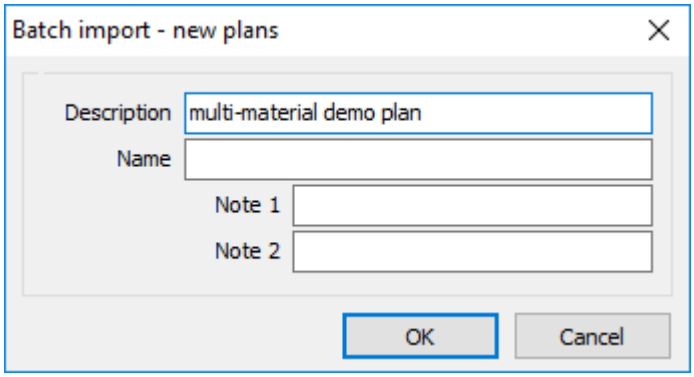
Copy parts to clipboard [126], open Plan parts tab (there is no need to create a new plan manually in this case) and press Ctrl+J to open Import window.



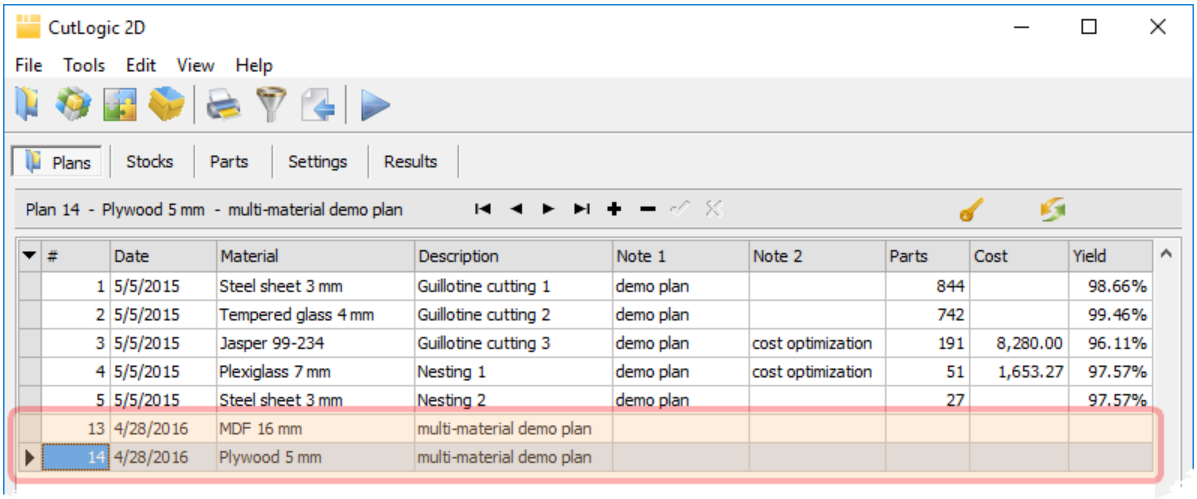
Map all relevant data fields and click the [Import] button. Following information dialog appears.



Confirm [Yes] and fill in the information in the batch import dialog (at least plan description).



Confirm [OK] and program automatically creates multi-material plans from imported parts.



#	Date	Material	Description	Note 1	Note 2	Parts	Cost	Yield
1	5/5/2015	Steel sheet 3 mm	Guillotine cutting 1	demo plan		844		98.66%
2	5/5/2015	Tempered glass 4 mm	Guillotine cutting 2	demo plan		742		99.46%
3	5/5/2015	Jasper 99-234	Guillotine cutting 3	demo plan	cost optimization	191	8,280.00	96.11%
4	5/5/2015	Plexiglass 7 mm	Nesting 1	demo plan	cost optimization	51	1,653.27	97.57%
5	5/5/2015	Steel sheet 3 mm	Nesting 2	demo plan		27		97.57%
13	4/28/2016	MDF 16 mm	multi-material demo plan					
14	4/28/2016	Plywood 5 mm	multi-material demo plan					

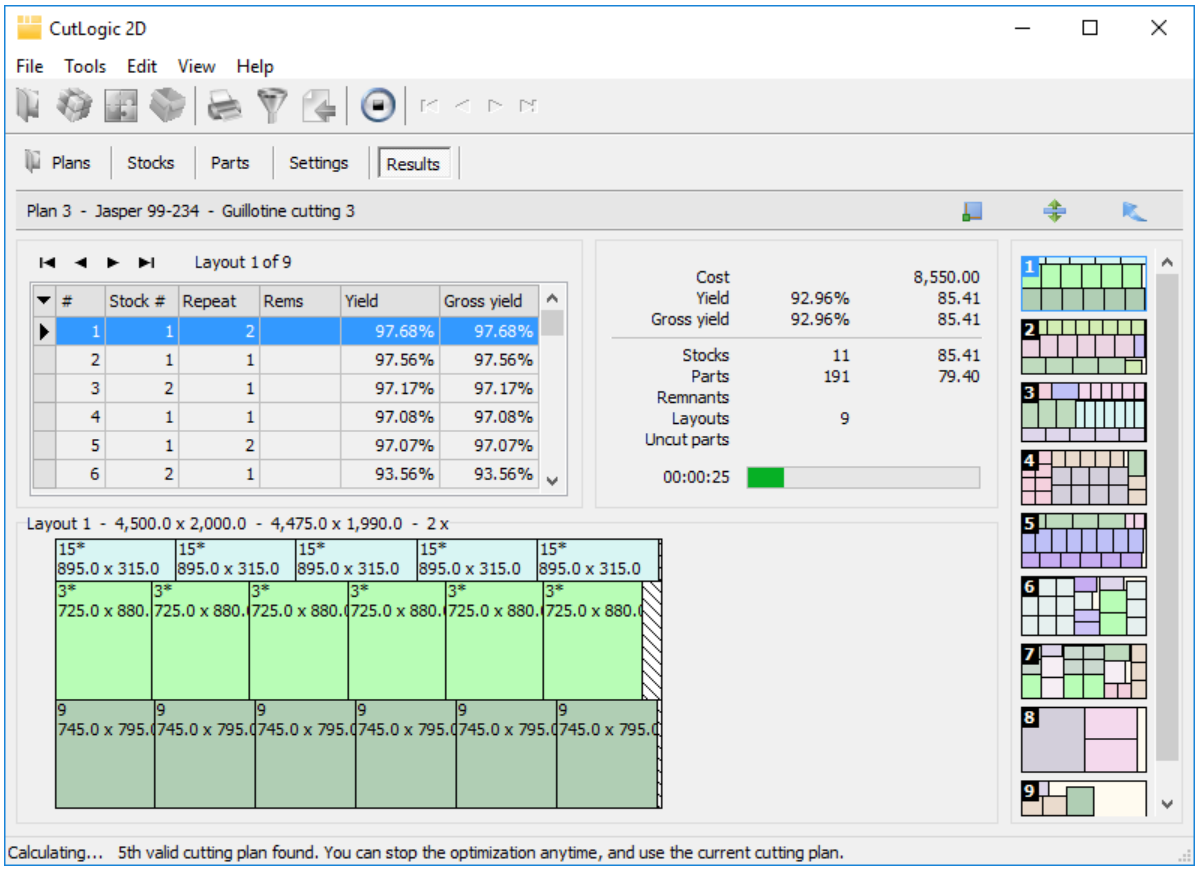
Now you can enter stocks you want to cut from, and run the optimization.

Tip: If you want to optimize more plans at once (also with different materials) select these plans and run the optimization. See more in chapters Data multiselection 32 and Running optimization 60.

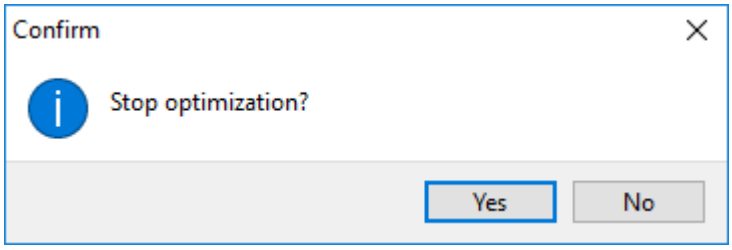
11.5 Running optimization

When all the information needed for the plan is defined (stocks, parts, settings), you can start to perform the optimization of cutting layouts.

To start calculation of cutting layouts for the current plan, click the button  in main toolbar. You can also run optimization directly by pressing F3 or by selecting *"File > Start optimization"* from the menu. You don't have to switch to Results form, the program does it automatically. During the optimization, you can watch its progress and the best results which are achieved.



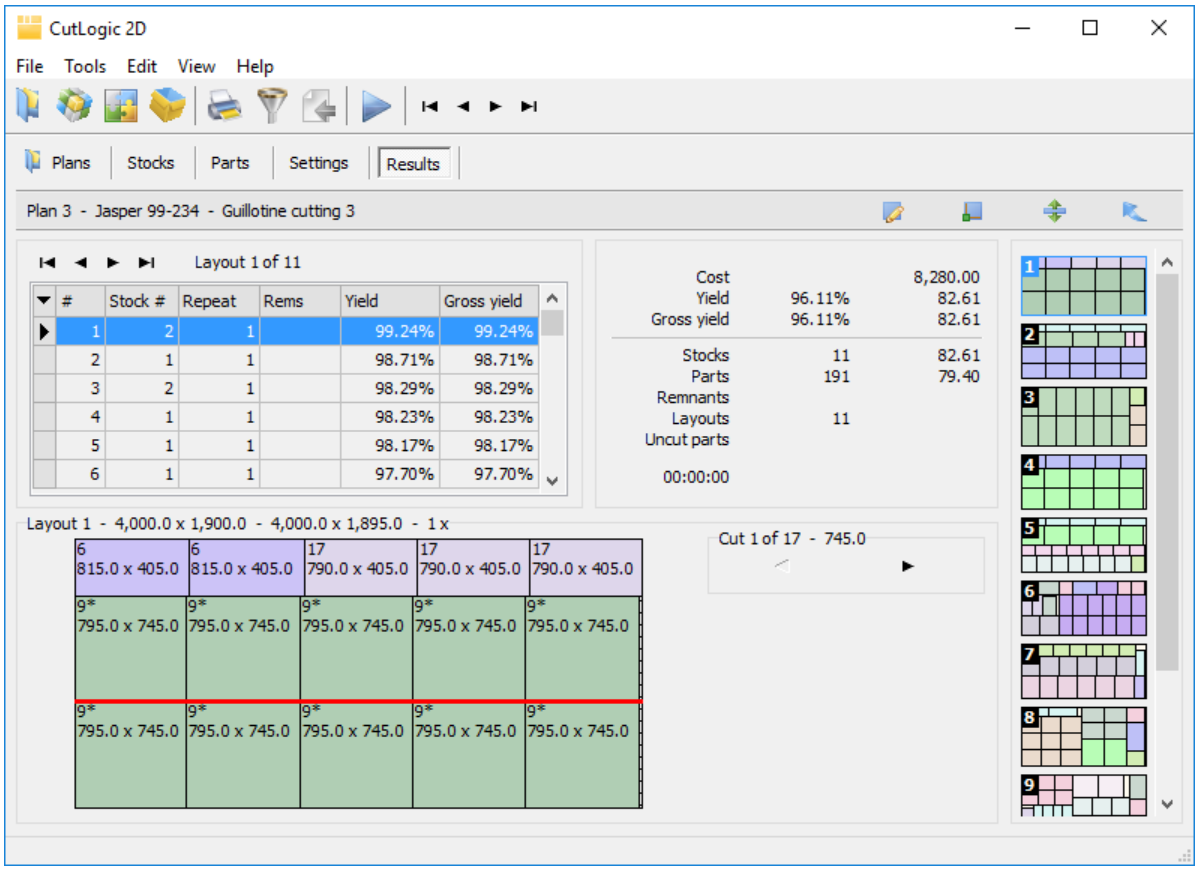
You can stop optimization process at any time by clicking the button  in the main toolbar or by pressing Esc. In such case following confirmation dialog appears.



If you click the button [Yes], program will stop the optimization and the values will be saved to the plan. Previous results will be overwritten by values which were found in the

moment the optimization process was interrupted. If you click the button [No], the optimization will continue.

When optimization is finished, the best cutting layouts will be automatically entered to the plan. The cutting layouts which were saved the last are always stored for next potential use (additional printing of reports, statistics, etc.).

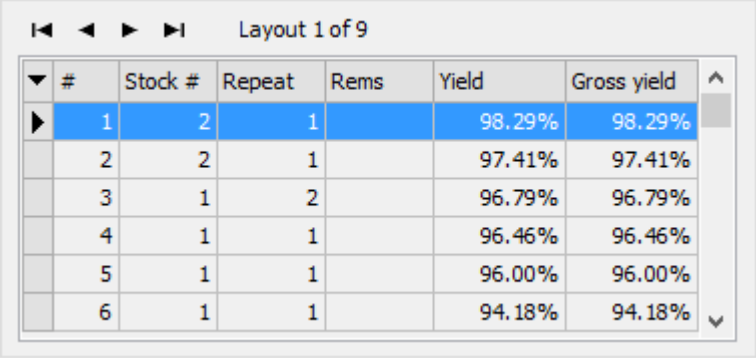


Tip: When you choose particular plan in Plans form and you click the Results tab, you can immediately go over cutting layouts and summary of data which were saved the last.

Tip: If the achieved results fulfill your needs and the optimization is not finished, you can stop it and use these results in the plan.

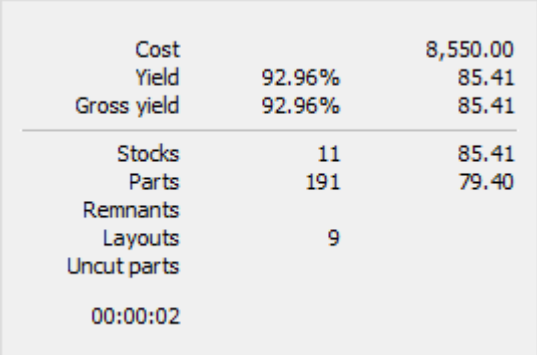
Layouts

Following data grid shows the cutting layouts which were calculated by the program and user is immediately able to see their overview.



Summary

Here are complete information about the progress of calculation and currently achieved values of an active project (Cost, Yield, Gross yield, Stocks, Parts, Remnants, Layouts, Uncut parts).

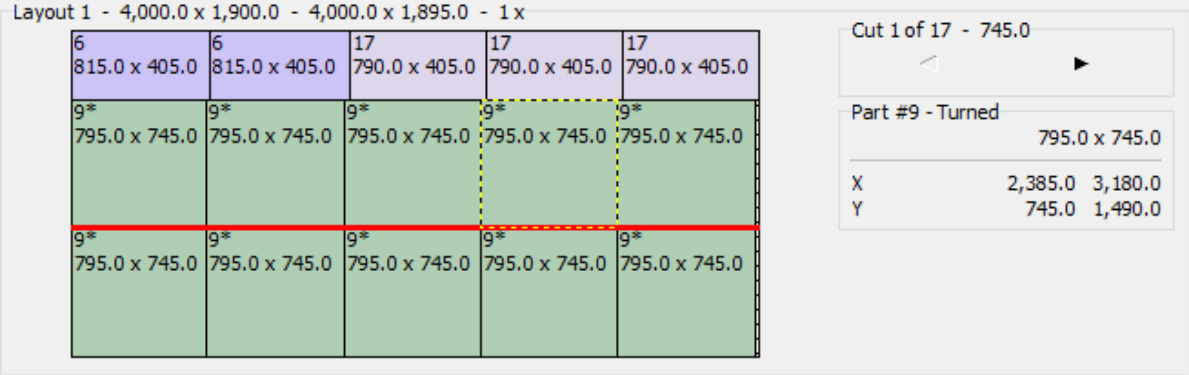


Column 1	Column 2	Column 3
Cost	-	Overall cost of the plan.
Yield	Achieved utilization in percentage taking into account produced remnants.	Absolute value of achieved utilization taking into account produced remnants.
	[(Sum area of used parts / (Sum area of used stocks - Sum area of produced remnants)]	[Sum area of used stocks - Sum area of produced remnants]
Gross yield	Achieved utilization in percentage not taking into account produced remnants.	Absolute value of achieved utilization not taking into account produced remnants.
	[Sum area of used parts / Sum area of used stocks]	[Sum area of used stocks]

Stocks	Number of stocks used in calculated cutting plan.	[Sum area of used stocks]
Parts	Number of parts used in calculated cutting plan.	[Sum area of used parts]
Remnants	Number of reusable remnants produced in calculated cutting plan without newly created remnant rolls.	[Sum area of remnants]
Layouts	Number of layouts of calculated cutting plan.	-
Uncut parts	Number of uncut parts (not used parts) in calculated cutting plan.	[Sum area of uncut parts]

Layout

Graphical representation of the layout which is currently selected.

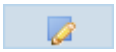


Tip: When clicking on individual part of a layout, basic information about it is showed (part number, position in layout, size, edgebands).

Tip: After double click on part or remnant, associated report is printed (e.g. label report). See more in Reports 110.

It is also possible to browse between cuts. Red line in the layout image demonstrates currently selected cut. You can immediately know position (vertical/horizontal) of selected cut.

Toolbar


Starts manual layout editing.


Enables you to immediately switch origin of layouts.

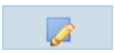

Enables you to stretch/unstretch layout image.

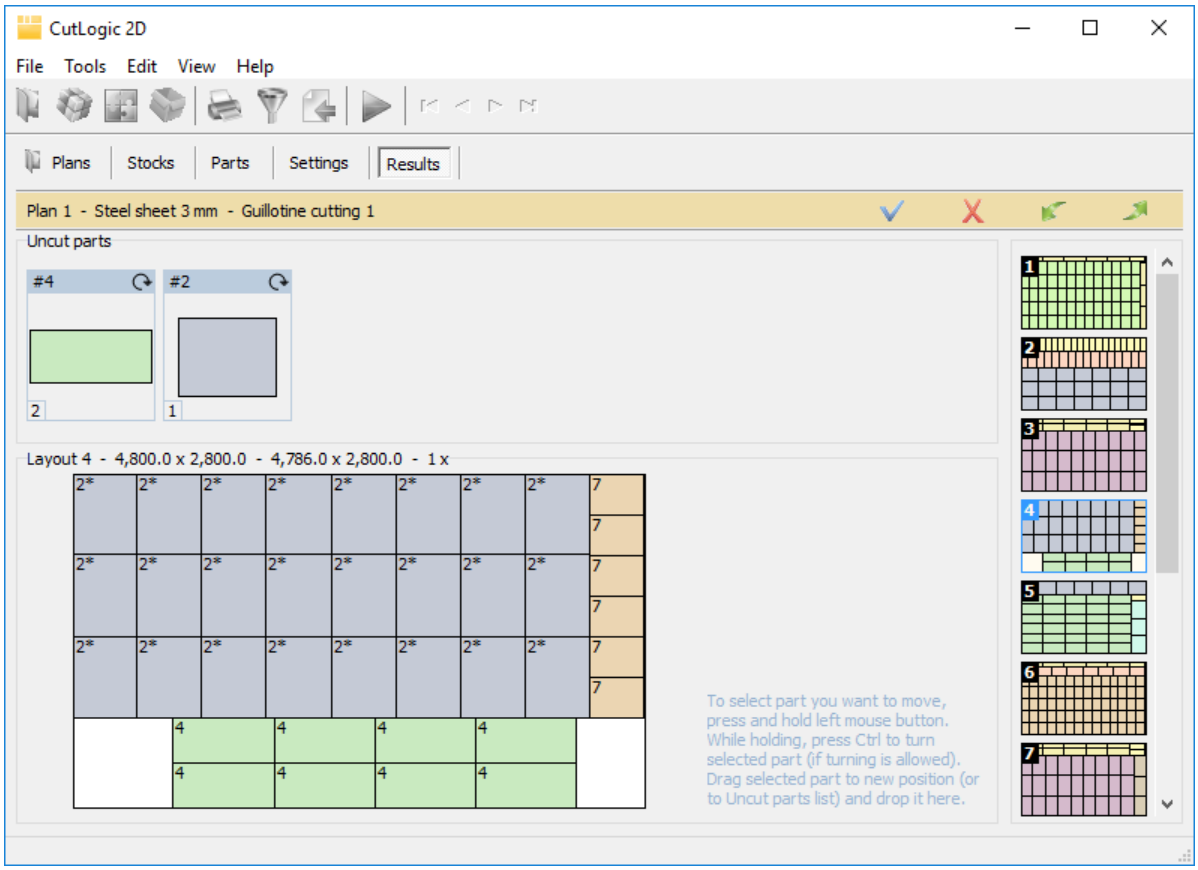

Enables you to switch layout image. This will hide Layouts and Summary tables and enlarge the graphic representation of currently set layout. To switch image it is also possible to use F5 shortcut.

Scroll bar

Enables quick scrolling among individual layouts. Graphical representation also enables to get immediate overview about organization of individual parts in a layout.

11.6 Manual layout editing

CutLogic 2D enables you to manually edit optimized cutting layouts. It can be useful when you need to rearrange parts on cutting layout. To start working with manual layout editing, click the button  on Results tab.



Toolbar

 Saves all changes to current plan and exits layout editing.

 Cancels all changes and exits layout editing.

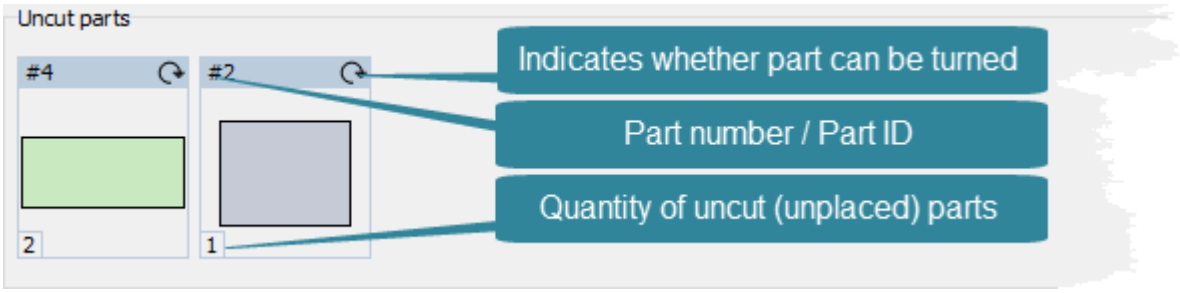
 Undoes last change.

 Redoes last change.

Tip: Red color of toolbar indicates that you are in layout edit mode.

Uncut parts

You can move temporary unnecessary parts here.



Layout

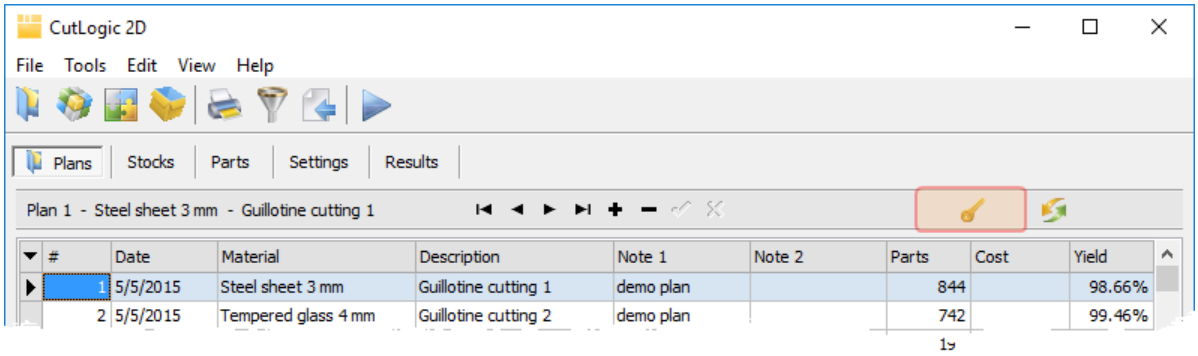
Graphical representation of currently edited layout.

How it works

Manual layout editing fully supports drag and drop functionality. Select part you want to move (press and hold left mouse button) and drag it to new position, or to Uncut parts list and drop it here. If you need to rotate part, press Ctrl key, while holding the part.

11.7 Opening and closing the plan

It is possible to close already optimized and finished plans and disable their unwanted modification. When stocks of materials used in plans are stored stocks registered in the Inventory, by closing the plans used stocks will be counted off the Inventory and their count will be automatically set to real values. In case of need, it is possible to re-open plans and modify them.



To close / open plans click the button  in Plans form. Opening and closing of plans is described as follows.

Close plan — Locks the plan so it is impossible to modify it. When stocks of materials used in the plan are registered in Inventory, the stocks used in the plan are automatically removed from dedicated Material and Storage. Reusable remnants are added to dedicated Materials and Storage as new stocks. The length of reusable remnants is set in Settings of plan.

Open plan — Opens the plan so it is possible to modify it. By opening the plan the changes (made when the plan was closed) are restored to its original state. Stocks levels are readjusted according to real state before closing of the plan and reusable remnants added to Stocks are removed.

12 Plan stocks

When general information about the plan is entered, you can start to enter the stocks (material available to cut from), one of mandatory input for the optimization.

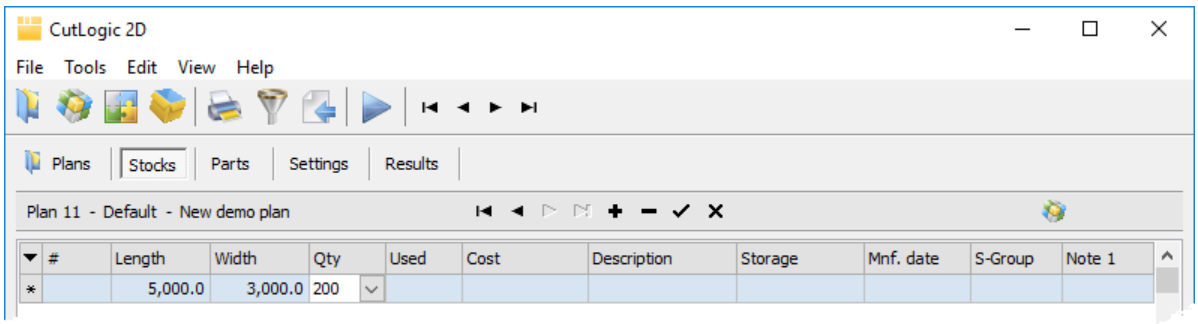
You can enter stocks in one of the following ways.

- Entering stocks directly 69
- Copying stored or predefined stocks from Materials 71
- Importing stocks from external data source 73

Tip: It is possible to combine all above mentioned ways of entering the stocks.

12.1 Adding stocks directly

Click the Stocks tab to open Plan stocks form. To add new cutting stock, click the button ✚ in the data navigator.



Columns

No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Length	Length of stock.
Width	Width of stock.
Qty	Quantity of available stocks. Unlimited quantity represents pre-defined or virtual ones. Such stocks are not part of your real inventory.
Used	Non editable field informs you about number of stocks planned by optimizer to be used for cutting.
Cost	Stock cost (e.g. "75.00 / pc" or "3.50 / a1", etc.). pc = cost of the whole piece a1 = cost of 1 area unit L1 = cost of 1 length unit L2 = cost of 10 length units L3 = cost of 100 length units L4 = cost of 1000 length units L9 = cost of 12 length units
Cost/pc	Calculated cost of the whole piece (read only).
Description	Short description of stock.
Storage	Non editable field represents physical storage where the stocks used in the plan are stored. Applicable only for stored stocks loaded from Inventory.

Mnf. date	Manufacture date (all created remnants have the same manufacture date as their original).
S-Group	Identifier needed for Group optimization. See more in chapter Entering Settings for the Plan [86] > What is Group optimization? and Automation [43] > Default value for stock field S-Group.
Note 1	Additional description of stock.
Note 2	Additional description of stock.
Note 3	Additional description of stock.

To rearrange columns [34], their order and visibility, click the button  in data grid or select the menu item *"View > Rearrange columns"*.

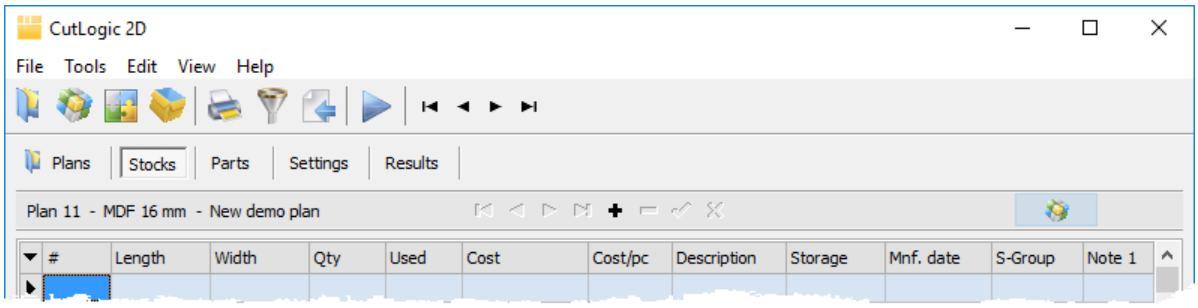
Tip: How to use CutLogic 2D for estimation of optimal quantity of stocks in the plan? If you know what parts you want to cut, what dimensions of stocks can be used, but you do not know how many stocks of given length and width you should order, just select unlimited value in the field Qty. Program will automatically find optimal usage of that stock during optimization. Consequently, you can order only the material you need for the plan and you don't need to keep material in storage.

Important: You can leave field Cost blank – this is not mandatory field for optimization. CutLogic 2D optimizer is based on cost optimization – it means the optimizer is trying to find "the cheapest" cutting plan (layouts). In the case when "Cost" fields are blank or contain the same value for all stocks within given plan – in other words if cost priority is not used – we talk about yield optimization which is a special case of cost optimization. In such case optimizer finds optimal cutting plan with the maximal yield and minimal physical waste. Because of the same cost of all stocks it is also the cheapest cutting plan. In case when you set different costs for different stocks the optimizer finds the cheapest cutting plan, which isn't necessarily the plan with maximal yield/minimal waste.

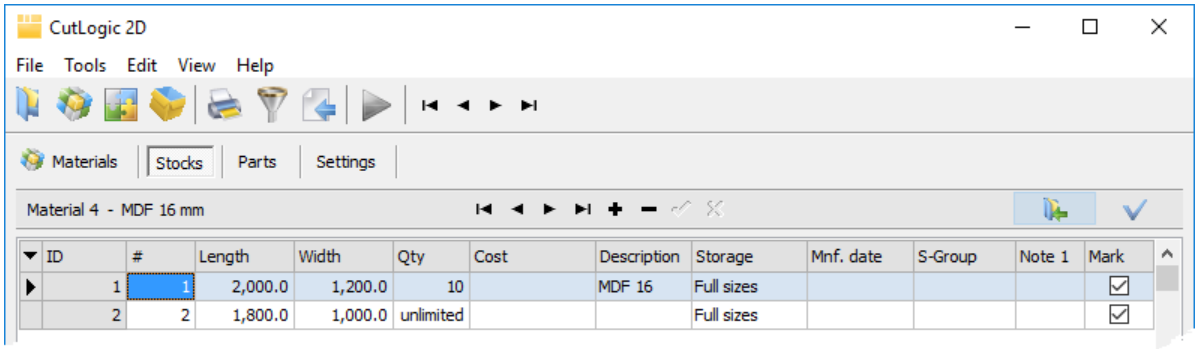
Tip: You don't need to assign the real cost to the Cost field. Cost field can be also understood and used as a priority – stocks with lower cost are used in optimization process with greater priority.

12.2 Copying stocks from Materials

The second way how to enter stocks to the plan is to load them from Materials.



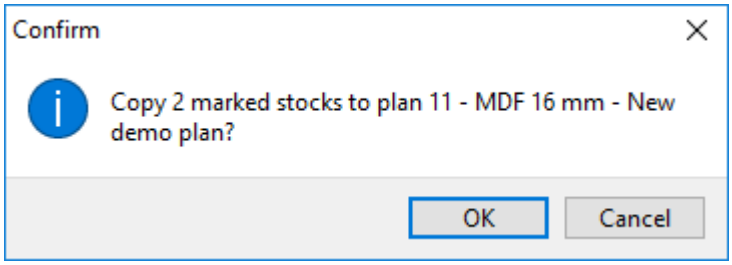
By clicking the button  , the Material stocks form with predefined stocks opens.



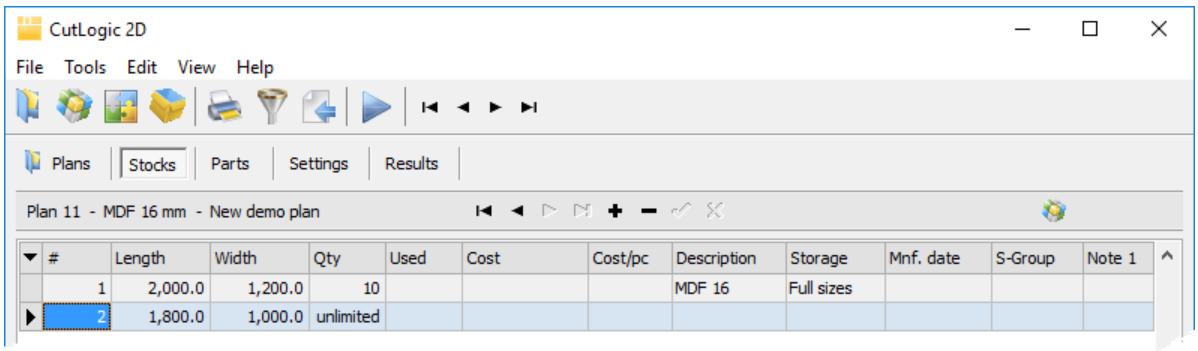
You can mark one or more stocks and copy them to plan by clicking the button  .

Tip: Click the button  or press Ctrl+M to mark/unmark selected/all stocks.

After clicking the button  following confirmation dialog appears.



After confirming the dialog, the stocks are copied to the plan.



Important: Keep in mind that stocks with defined quantity represent real stocks of real Inventory and you can not edit them in this form, while stocks with "unlimited" quantity represent predefined stocks – templates. Such kind of stocks is virtual one and it can not be stored in Storages so that Storage field is blank. You can edit and change the same fields as in manual mode of entering the stocks.

12.3 Importing stocks from external data source

The third way how to enter the stocks to the plan is to import them from the external data source.

It is possible to import stocks from any of following structured files: TXT, CSV, MS Excel file, MS Access file, from clipboard or from an external database via connection string definition.

You can import stocks from external source by clicking the menu *"File > Import"* or by pressing Ctrl+I/Ctrl+J. Read more about import in chapter Import 122.

13 Plan parts

When all stocks are entered, you can start to enter parts you want to cut.

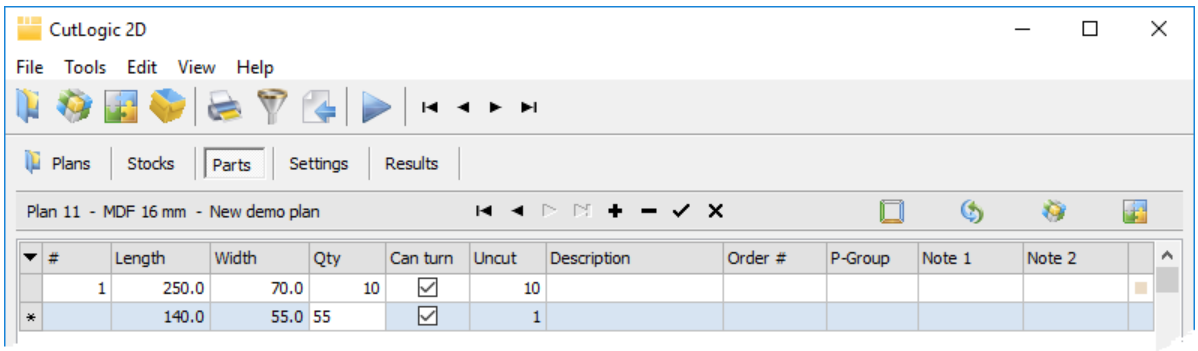
You can enter parts in one of the following ways.

- Adding parts directly 75
- Copying predefined parts from Materials 77
- Copying predefined parts from Assemblies 79
- Importing parts from external data source 81

Tip: It is possible to combine above mentioned ways of entering the parts.

13.1 Adding parts directly

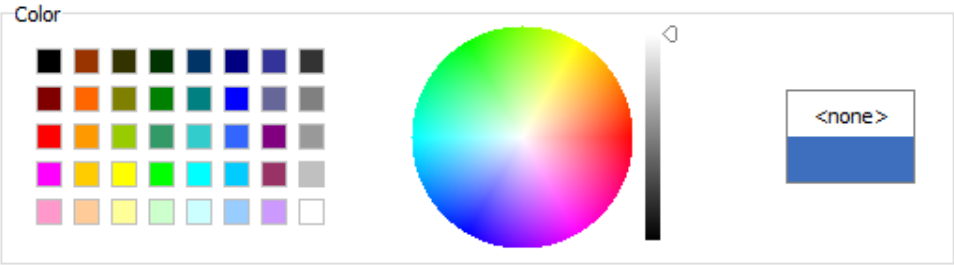
Click the Parts tab to open Plan parts form. To add a new cutting part, click the button ✚ in the data navigator.



Columns

No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Length	Length of part.
Width	Width of part.
Rough len.	Part length taking into account cutting setting "Part increase" and "Decrement" of used edgeband(s).
Rough wid.	Part width taking into account cutting setting "Part increase" and "Decrement" of used edgeband(s).
Qty	Quantity of parts.
Can turn	Flag determining whether the part can be turned during of optimization or not.
Uncut	Number of parts unable to be cut or manually withdrew from the layout.
Description	Short description of part.
Order #	Order number.
P-Group	Identifier needed for Group optimization. See more in chapter Entering Settings for the Plan 86 > What is Group optimization?.
Note 1	Additional description of part.
Note 2	Additional description of part.
Note 3	Additional description of part.

Color — Color of part. To define or change it, click on particular color cell. Tab with following color picker will be shown.

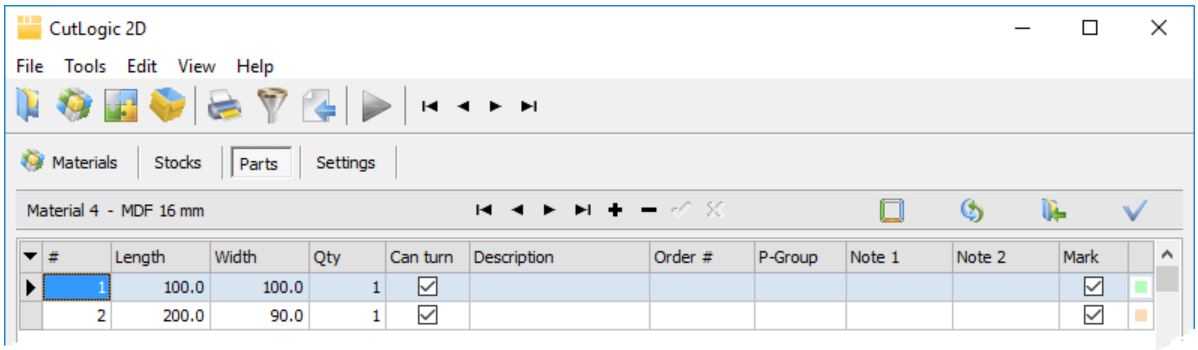


To rearrange columns[34], their order and visibility, click the button in data grid or select the menu item *"View > Rearrange columns"*.

13.2 Copying predefined parts from Materials

If you often use the parts with the same parameters, you can predefine them in Material parts. Whenever you need them, you can copy them into the plan.

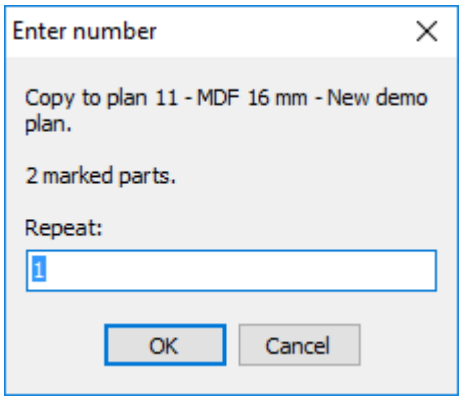
By clicking the button  , the form Material parts with predefined parts opens.



You can mark one or more parts and import them to the plan by clicking the button  .

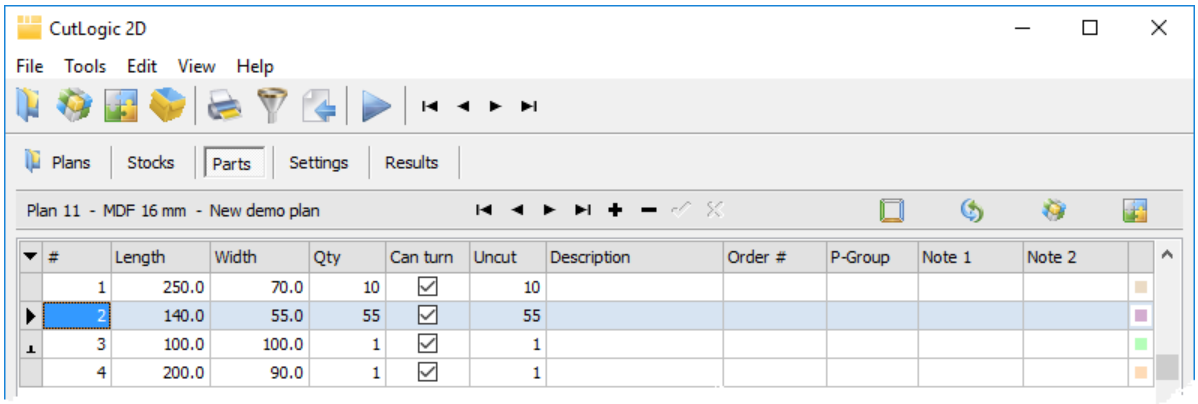
Tip: Click the button  or press Ctrl+M to mark/unmark selected/all parts.

After clicking the button  following confirmation dialog appears.



Here you can change repetition of copied parts. The original quantity will be multiplied by entered value.

After confirming the dialog, the parts are copied to the plan.



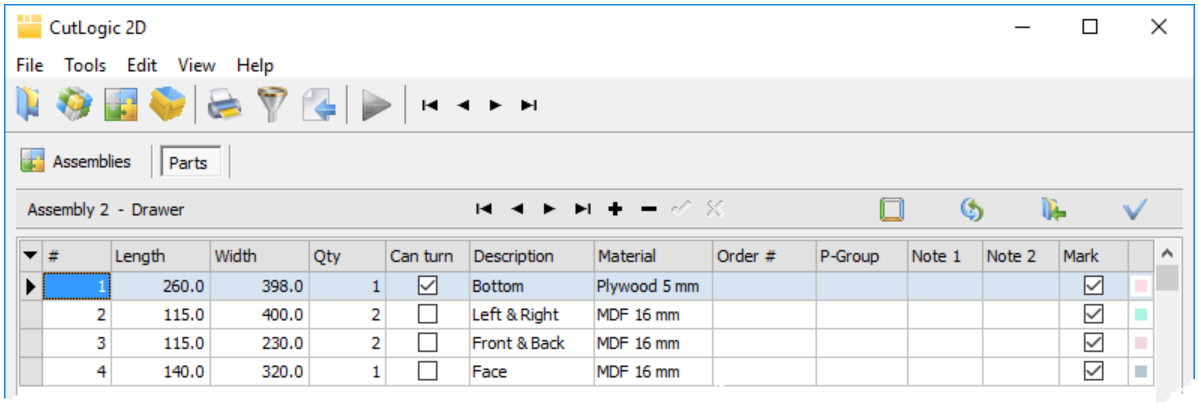
13.3 Copying parts from Assemblies

Assemblies enables you to define multi part products in Inventory and to work with them. Parts in Assemblies represent bill of material for given end product. Working with assemblies simplifies preparation work when defining new cutting plan. When preparing a new cutting plan for given material you can copy all Assemblies containing parts made from given material to the plan.

Example

You need to prepare plan for material MDF 16 mm because your customer ordered 20 Drawers from your catalog.

First, have a look at how the parts of Drawer are defined in the Assemblies.



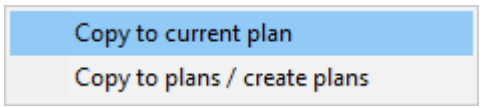
#	Length	Width	Qty	Can turn	Description	Material	Order #	P-Group	Note 1	Note 2	Mark
1	260.0	398.0	1	☑	Bottom	Plywood 5 mm					☑
2	115.0	400.0	2	☐	Left & Right	MDF 16 mm					☑
3	115.0	230.0	2	☐	Front & Back	MDF 16 mm					☑
4	140.0	320.0	1	☐	Face	MDF 16 mm					☑

Note: Notice that assembly Drawer contains parts made from different material, so that you have to prepare separate cutting plan for every material in order to cut all needed parts. To have created multi-material plans by program see Adding multiple plans using Assemblies 55.

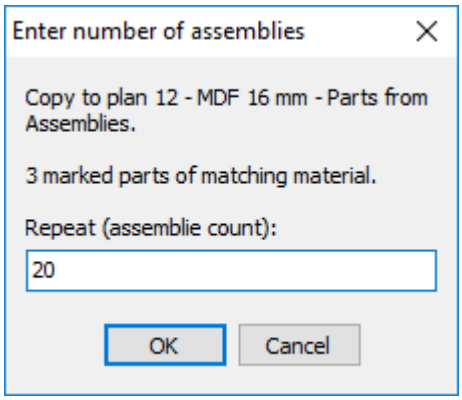
Now you can define cutting plan for material MDF 16 mm and copy related parts to the plan by using Assemblies. Define a new plan and click Parts tab.

Next click the button  to open Assembly parts form. Then click the button  to select all parts for copying into the Plan parts form and click the button  .

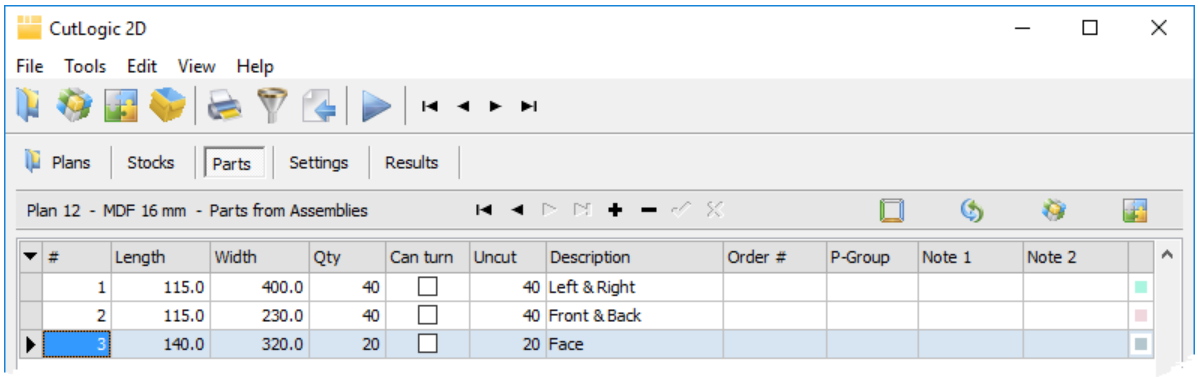
Following popup menu appear.



Select [Copy to current plan].



Enter number of assemblies - in our demo case we want to cut parts for 20 Drawers - and confirm the dialog.



Note: Notice that only matching parts with the same material as defined in given plan will be copied. See Entering multiple plans using Assemblies 55 if you want to create multiple plans from Assembly.

13.4 Importing parts from external data source

The fourth way how to enter the parts to the plan is to import them from the external source.

It is possible to import parts from any of following structured files: TXT, CSV, MS Excel file, MS Access file, from clipboard or from an external database via connection string definition.

You can import parts from external source by clicking the menu *"File > Import"* or by pressing Ctrl+I/Ctrl+J. Read more about import in chapter Import 122.

13.5 Defining edge banding

To define edge banding, select Parts tab and click the button  or press F5. Select Edge banding tab on opened part details section.

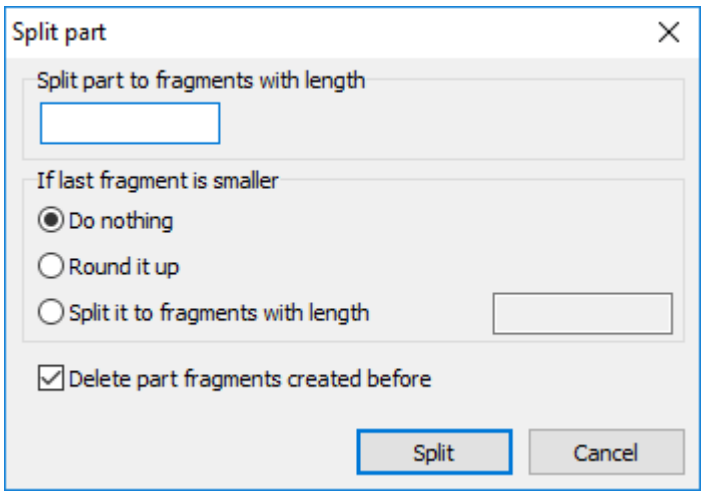
Here you can set part edge banding from predefined Edgebands[105]. Each of part sides can have different edgeband. Colored lines along part sides indicate defined edgebands.

Tip: To speed up defining of edge banding, use button  to copy last used edgeband or clearing. To do it for all edges, press and hold Ctrl key while clicking the button  .

Tip: Edge bandings can also be used for defining of part post-processing (e.g. grinding).

13.6 Part splitting

In case, when your real parts are longer than stocks and your manufacture technology enables you to join small fragments together (welding, gluing, etc.), you can split these long parts before optimization. To split parts, go to Plan parts tab, select [32] desired parts (to select all, press Ctrl+A) and choose the menu item *"Edit > Split part"*. Following Split part dialog appears.

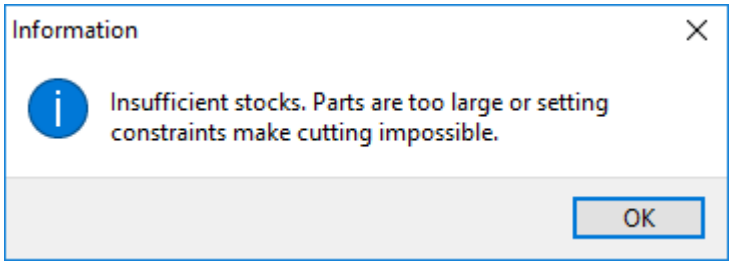


Split part to fragments with length	All selected parts will be split into fragments with this value.
If last fragment is smaller	Determines, what to do with the last part smaller than desired value (Nothing, Round it up, New length).
Delete part fragments created before	All part fragments that were created before will be deleted.

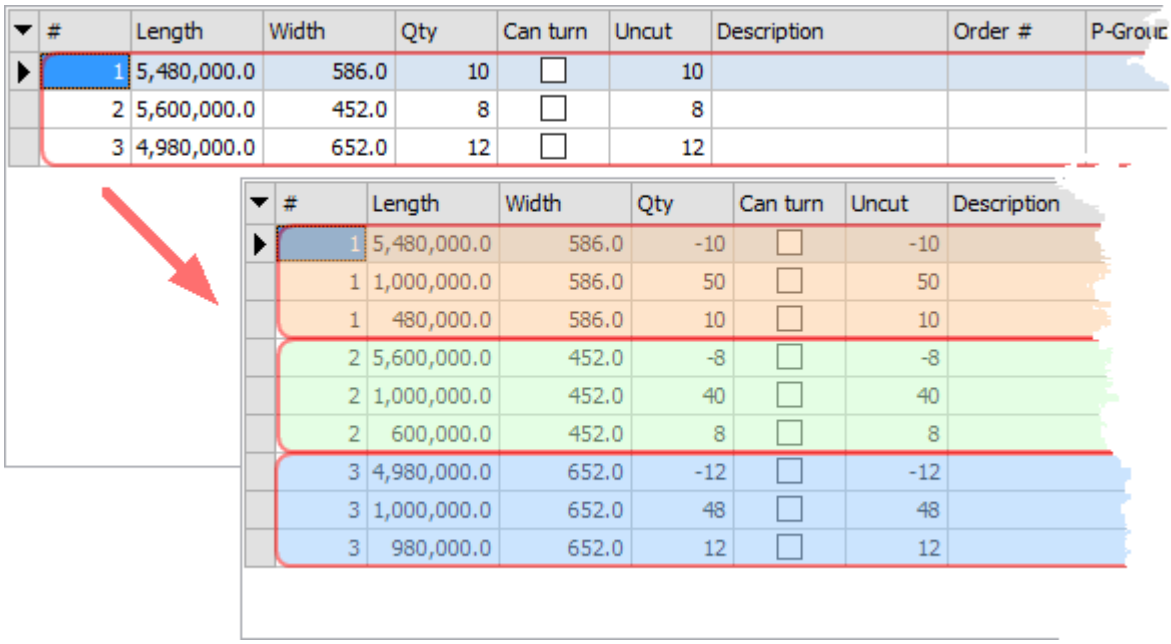
Example

Material	Stocks (Length x Width x Qty)	Parts (Length x Width x Qty)
Plastic film	1,000,000 x 1,000 x Unlimited (usual size from supplier)	5,480,000 x 586 x 10
	1,000,000 x 1,600 x Unlimited (usual size from supplier)	5,600,000 x 452 x 8
	650,000 x 1,300 x 4 (remnants)	4,980,000 x 652 x 12

As you can see when you run optimization, it is not possible to optimize such plan because of too large parts.



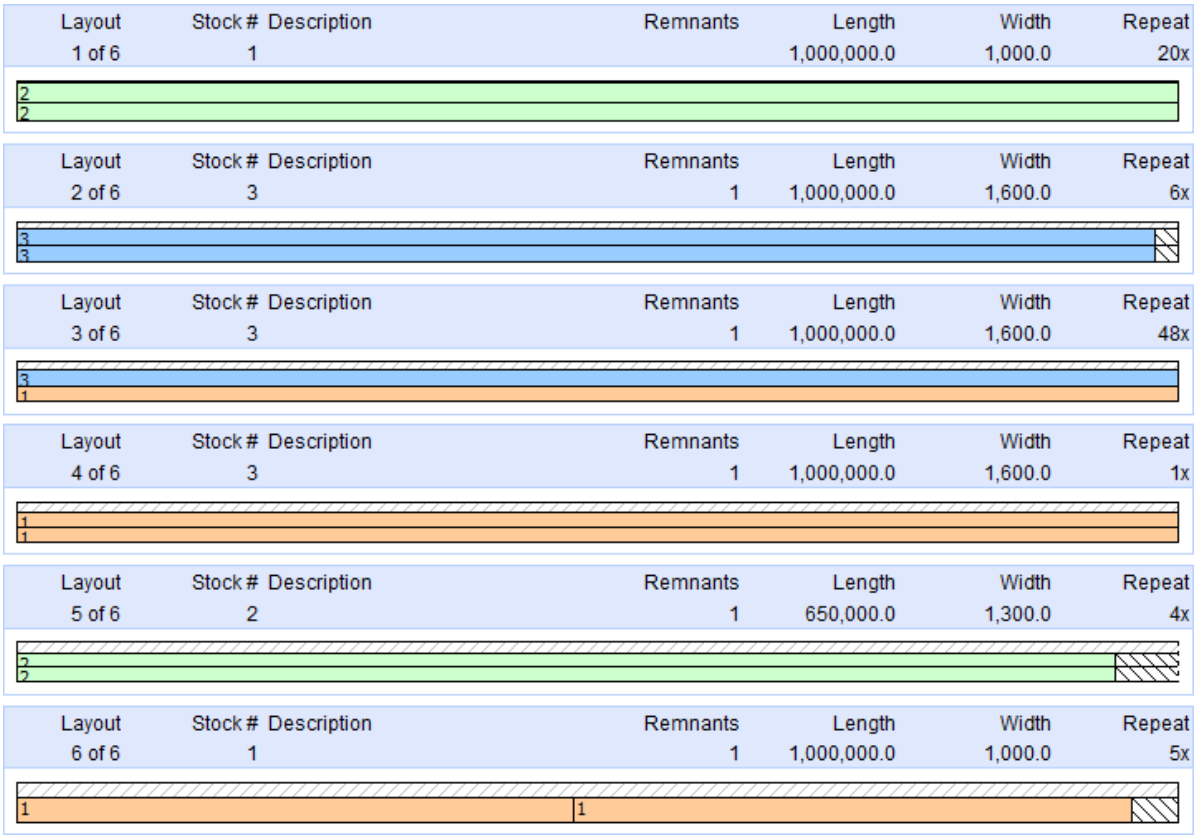
Solution is to split these parts. Select all parts (Ctrl+A) and choose the menu item *"Edit > Split part"*. Enter desired length (in our case 1,000,000) and press "Split" button. Parts are split into following fragments.



#	Length	Width	Qty	Can turn	Uncut	Description	Order #	P-Grou
1	5,480,000.0	586.0	10	☐	10			
2	5,600,000.0	452.0	8	☐	8			
3	4,980,000.0	652.0	12	☐	12			

#	Length	Width	Qty	Can turn	Uncut	Description
1	5,480,000.0	586.0	-10	☐	-10	
1	1,000,000.0	586.0	50	☐	50	
1	480,000.0	586.0	10	☐	10	
2	5,600,000.0	452.0	-8	☐	-8	
2	1,000,000.0	452.0	40	☐	40	
2	600,000.0	452.0	8	☐	8	
3	4,980,000.0	652.0	-12	☐	-12	
3	1,000,000.0	652.0	48	☐	48	
3	980,000.0	652.0	12	☐	12	

As you can see, all part fragments have the same Part # as their original part and are recognized via this number. Now it is possible to run optimization. Following diagram demonstrates optimized plan.



After optimization of cutting plan which includes split parts, UI and "Cutting layouts" report show how to cut material to get part fragments. After the part fragments are cut, you need to put them together and join them to get final parts.

14 Plan settings

Here you can define the Settings for the plan.

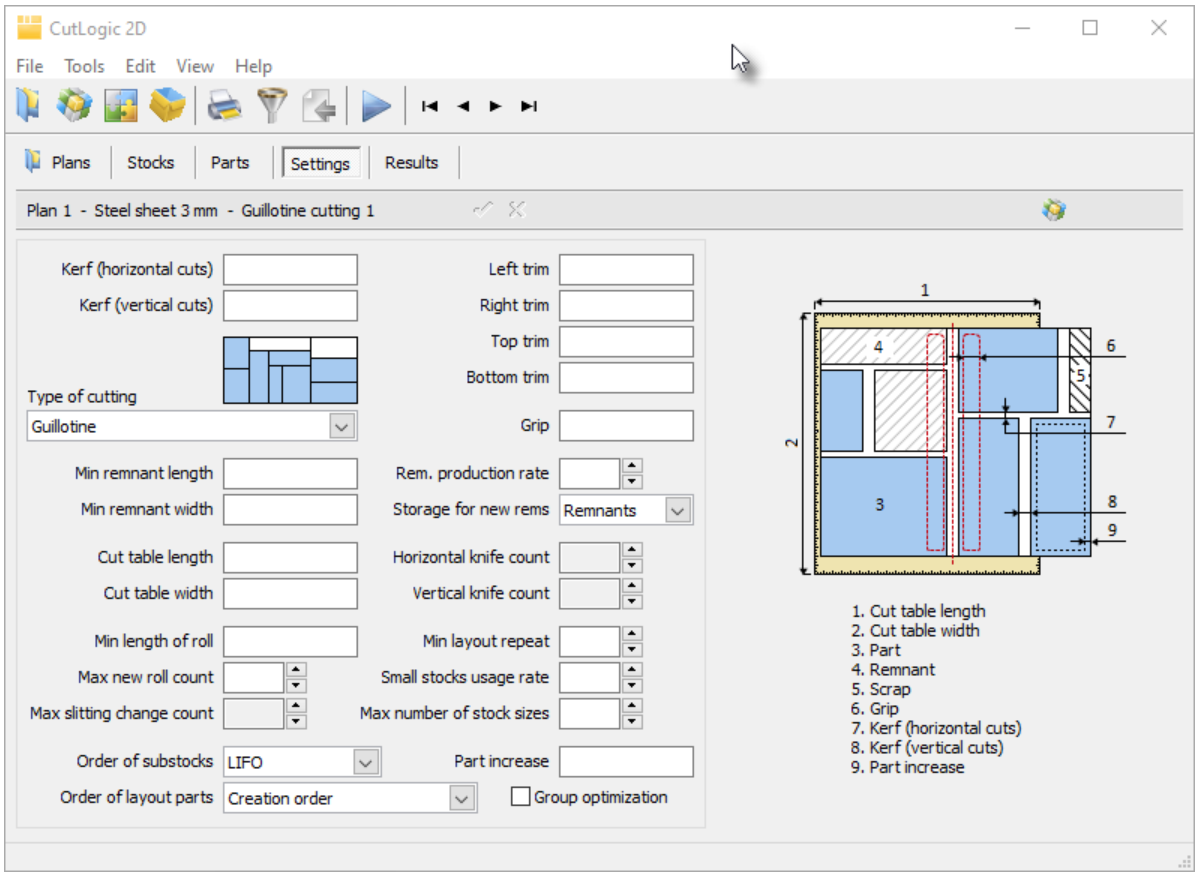
There are two ways how to define Settings.

- Entering parameters directly 87
- Copying predefined Settings from Materials 92

Tip: It is possible to combine above mentioned ways of entering the Plan settings, however keep in mind all consequences.

14.1 Entering settings directly

Click the Settings tab to open Plan settings form.

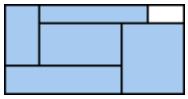


Settings tab enables you to define cutting settings for given plan.

Kerf (horizontal cuts)	Width of horizontal cuts.
Kerf (vertical cuts)	Width of vertical cuts.
Left trim	Left unusable stock margin.
Right trim	Right unusable stock margin.
Top trim	Top unusable stock margin.
Bottom trim	Bottom unusable stock margin.

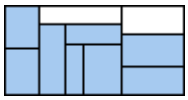
Type of cutting

- Nesting



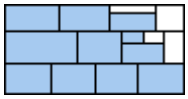
This is a nested (non-guillotine) cutting which provides the highest yield but is suitable only for special cutting machines.

- Guillotine



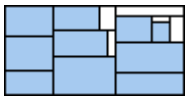
This is a general guillotine (edge-to-edge) cutting with unlimited number of cut stages. It can lead to cutting plans with higher complexity but yield is still very high. Optimizer itself decides whether to start in vertical or horizontal dimension.

- 3.5 stages



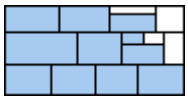
This is a guillotine (edge-to-edge) cutting, the same as "3.5 stages ver" and "3.5 stages hor", optimizer itself decides whether to start in vertical or horizontal dimension.

- 3.5 stages ver



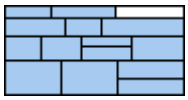
This is a guillotine (edge-to-edge) cutting with maximum 4 cut stages, starting with vertical cuts. Cut stages are: 1st: vertical cuts, 2nd: horizontal cuts, 3rd: vertical cuts. 4th stage with horizontal cuts is allowed only for finishing parts.

- 3.5 stages hor



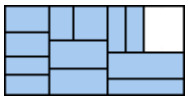
This is a guillotine (edge-to-edge) cutting with maximum 4 cut stages, starting with horizontal cuts. Cut stages are: 1st: horizontal cuts, 2nd: vertical cuts, 3rd: horizontal cuts. 4th stage with vertical cuts is allowed only for finishing parts.

- 3 stages



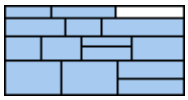
This is a guillotine (edge-to-edge) cutting, the same as "3 stages ver" and "3 stages hor", optimizer itself decides whether to start in vertical or horizontal dimension.

- 3 stages ver



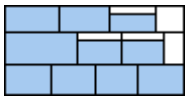
This is a guillotine (edge-to-edge) cutting with maximum 3 cut stages, starting with vertical cuts. Cut stages are: 1st: vertical cuts, 2nd: horizontal cuts, 3rd: vertical cuts.

- 3 stages hor



This is a guillotine (edge-to-edge) cutting with maximum 3 cut stages, starting with horizontal cuts. Cut stages are: 1st: horizontal cuts, 2nd: vertical cuts, 3rd: horizontal cuts.

- 2.5 stages

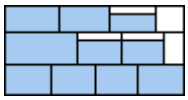


This is a guillotine (edge-to-edge) cutting, the same as "2.5 stages ver" and "2.5 stages hor", optimizer itself decides whether to start in vertical or horizontal dimension.

- 2.5 stages ver

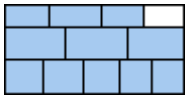
This is a guillotine (edge-to-edge) cutting with maximum 3 cut stages, starting with vertical cuts. Cut stages are: 1st: vertical cuts, 2nd: horizontal cuts. 3rd stage with vertical cuts is allowed only for finishing parts.

- 2.5 stages hor



This is a guillotine (edge-to-edge) cutting with maximum 3 cut stages, starting with horizontal cuts. Cut stages are: 1st: horizontal cuts, 2nd: vertical cuts. 3rd stage with horizontal cuts is allowed only for finishing parts.

- 2 stages

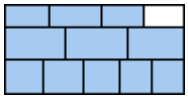


This is a guillotine (edge-to-edge) cutting, the same as "2 stages ver" and "2 stages hor", optimizer itself decides whether to start in vertical or horizontal dimension.

- 2 stages ver

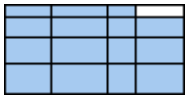
This is a guillotine (edge-to-edge) cutting with maximum 2 cut stages, starting with vertical cuts. Cut stages are: 1st: vertical cuts, 2nd: horizontal cuts.

- 2 stages hor / slitting then shearing



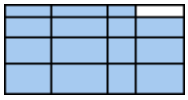
This is a guillotine (edge-to-edge) cutting with maximum 2 cut stages, starting with horizontal cuts. Cut stages are: 1st: horizontal cuts, 2nd: vertical cuts.

- 2 stages simple



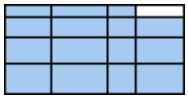
This is a guillotine (edge-to-edge) cutting, the same as "2-stage simple ver" and "2-stage simple hor", optimizer itself decides whether to start in vertical or horizontal dimension.

- 2 stages simple ver



This is a guillotine (edge-to-edge) cutting with maximum 2 cut stages, starting with vertical cuts. Cut stages are: 1st: vertical cuts, 2nd: horizontal cuts across all vertical strips at once.

- 2 stages simple hor / slitting & shearing



This is a guillotine (edge-to-edge) cutting with maximum 2 cut stages, starting with horizontal cuts. Cut stages are: 1st: horizontal cuts, 2nd: vertical cuts across all horizontal strips at once.

Grip

Minimum size of material required for grip on both sides of each cut. Optimizer will make sure that on both sides of each cut, there will be at least this specified amount of material available for gripping. This is useful e.g. in glass cutting when minimum size on both sides of cut is necessary for grip.

Min remnant length

Minimum length of reusable remnant. Function Close plan will move rests with length and width greater or equal to defined values to the storage defined for new remnants. Function Open plan will remove these remnants from inventory.

Min remnant width	Minimum width of reusable remnant. Function Close plan will move rests with length and width greater or equal to defined values to the storage defined for new remnants. Function Open plan will remove these remnants from inventory.
Rem. production rate	Number between 0 and 99; the bigger the number, more remnants are produced which results in better yield. Note: weighted production of remnants positively affects the yield and decreases scrap factor.
Storage for new rems	Storage where newly created remnants will be stored upon plan closure. Function Close plan will move rests with sizes greater or equal to minimum sizes into this storage. Function Open plan will remove these remnants from storage.
Cut table length	Limits length of horizontal cuts. No horizontal cut can be longer than this value.
Cut table width	Limits length of vertical cuts. No vertical cut can be longer than this value.
Horizontal knife count	Limits number of horizontal knives / horizontal cuts. This option is enabled only for horizontal (hor) cut types.
Vertical knife count	Limits number of vertical knives / vertical cuts. This option is enabled only for vertical (ver) cut types.
Min length of roll	Limits minimum length of roll. If newly created rest is the same length or longer than this value, and has the same width as original stock, it is considered to be a roll. Newly created rolls are considered to be 0% waste.
Max new roll count	Limits number of newly created remnant rolls. It is equal to maximum number of partially used stock rolls.
Max slitting change count	Maximum allowed number of slitting knives settings per one roll. Set it to 1 to fully minimize slitting knives changes.
Min layout repeat	Optimizer tries to find cut plan in which each layout repeats at least this value times.
Small stocks usage rate	Number between 0 and 99. The bigger the number, the more the optimizer will use smaller stocks.

	Example: 0 - no sizes are preferred, 33 - small stocks are preferred to big stocks with relative rate 33%, 99 - small stocks are maximally preferred.
Max number of stock sizes	Optimizer will not use more stock sizes than this value.
Order of substocks	Order of sub-stocks processing during cutting. Use LIFO (last in first out) for usual cutting. Use FIFO delayed (first in first out) for bigger beam saws.
Order of layout parts	Sorting of parts in cutting layout & label reports, CNC G-code and DXF. Use Creation order for manual cutting and cutting on beam saw.
Part increase	Value, which will be added to each side of each part.
Group optimization	When on, parts belonging to same P-Group will be cut only from stocks all belonging to one of the defined S-Groups. P-Group is group of parts with the same P-Group identifier. S-Group is group of stocks with the same S-Group identifier. See more below (What is Group optimization?).

What is Group optimization?

CutLogic 2D enables grouping of parts and stocks. Group optimization utilizes these groupings in order to find the best plan for given groups of parts among defined groups of stocks. This is the way how Group optimization feature ensures the same parameters like color shade or surface patterns or by other words the same quality for all parts within given group. This feature is very useful especially in industries like furniture or window fashions where typical requirement is to ensure the same quality of all parts assembled into final products.

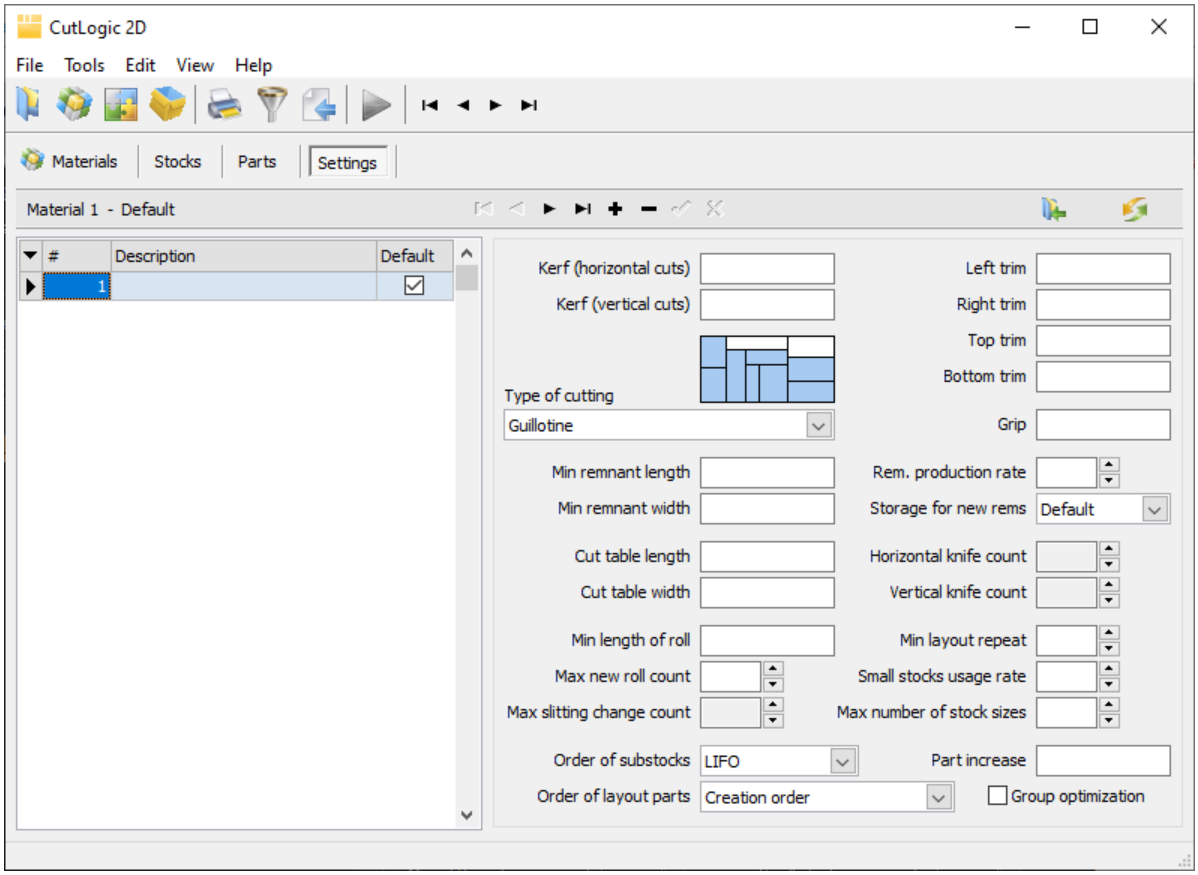
In one sentence, in case Group optimization is turned on, parts belonging to the same P-Group will be cut only from stocks belonging to one of defined S-Groups.


Note: Some of parameters are available only in professional edition or in enterprise edition. See chapter Edition comparison 14 for details.

14.2 Copying predefined settings from Materials

If you often use the same settings for new plans or if you want to setup different settings for different cutting machines, you can predefine them in Material settings. Whenever you need it, you can load them to the plan.

By clicking the button  , the Material settings form opens.



You can choose setting from predefined settings list and write it to the plan. To copy chosen setting to the plan, click button  or press F4.

15 Inventory

Inventory is a complement part of the program. It is used for inventorying and overall easy work with the program. You can keep here types of materials and their stocks and you can also define the storages where the stocks are actually placed. You can define Assemblies in order to save time and simplify working with plans.

The Inventory enables you to track physical material (from inventory to plans and vice versa), run physical inventory and more.

See chapter Opening and closing the plan [67] for related consequences.

Inventory consists of these four parts:

 Materials [94]

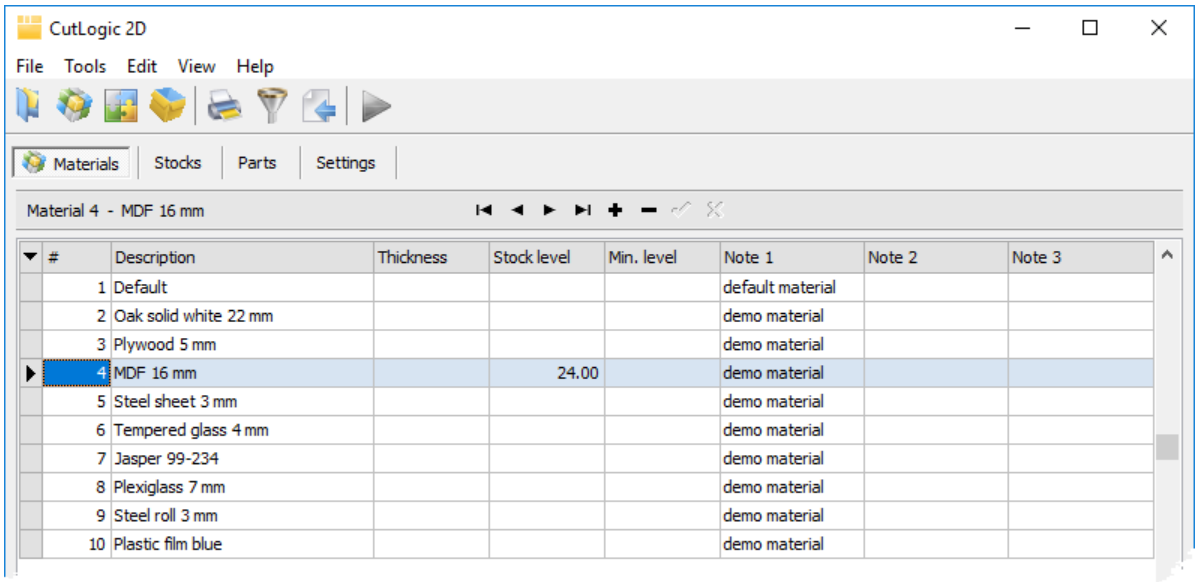
 Assemblies [99]

 Storages [102]

Edgebands [105]

15.1 Materials

To work with Materials, click the button  in the main toolbar or select the menu item *"File > Inventory > Materials"* or press Ctrl+2.



#	Description	Thickness	Stock level	Min. level	Note 1	Note 2	Note 3
1	Default				default material		
2	Oak solid white 22 mm				demo material		
3	Plywood 5 mm				demo material		
4	MDF 16 mm		24.00		demo material		
5	Steel sheet 3 mm				demo material		
6	Tempered glass 4 mm				demo material		
7	Jasper 99-234				demo material		
8	Plexiglass 7 mm				demo material		
9	Steel roll 3 mm				demo material		
10	Plastic film blue				demo material		

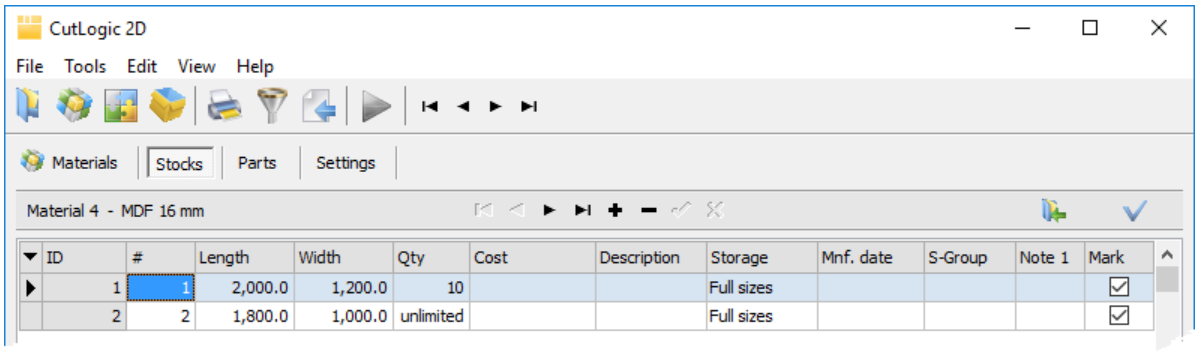
Columns

No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Description	Short description.
Thickness	Thickness of material. Useful for some Machine settings.
Stock level	Sum area of all stocks of actual material. The field is red if Stock level < Min. level.
Min. level	Minimum stock level. See more in chapter Stock level control 107.
Above level	Calculated value of above stock level (Above level = Stock level - Min. level). The field is red if Stock level < Min. level. This column is hidden by default, you can make it visible in columns rearrangement form 34.
Note 1	Additional description.
Note 2	Additional description.
Note 3	Additional description.
Note 4	Additional description.

To rearrange columns 34, their order and visibility, click the button  in data grid or select the menu item *"View > Rearrange columns".*

Click the Materials master tab to add new material and/or change descriptive information about existing materials. When new material is added you can continue in defining of stocks, parts and cut settings.

Stocks tab



Click the Stocks tab to define stocks of actually set material. These stocks are your real inventory and you can associate them to the specific Storage through the field Storage. If no Storage is defined, default storage will be used implicitly.

Columns

No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Length	Length of stock.
Width	Width of stock.
Qty	Quantity of available stocks. Unlimited quantity represents virtual ones. Such stocks are not part of your real inventory.
Cost	Stock cost (e.g. "75.00 / pc" or "3.50 / a1", etc.). pc = cost of the whole piece a1 = cost of 1 area unit L1 = cost of 1 length unit L2 = cost of 10 length units L3 = cost of 100 length units L4 = cost of 1000 length units L9 = cost of 12 length units
Cost/pc	Calculated cost of the whole piece (read only).
Description	Short description of stock.
Storage	Storage where the stock is stored.

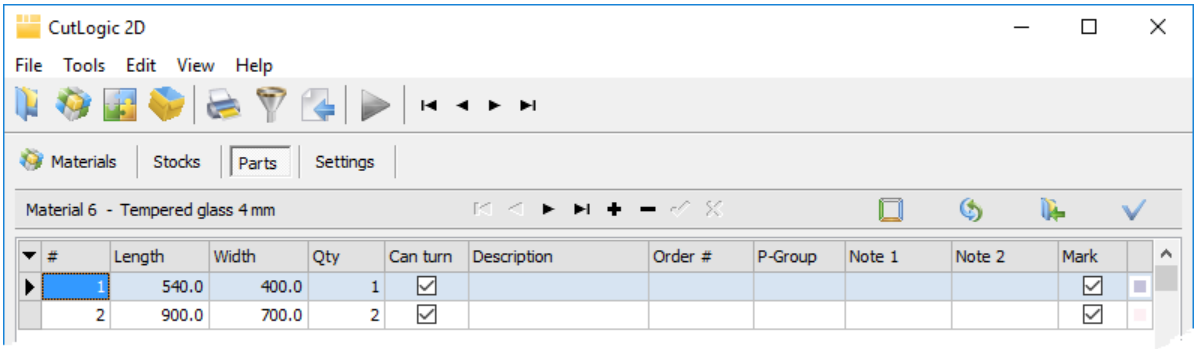
Mnf. date	Manufacture date (all created remnants have the same manufacture date as the stock they were cut from).
S-Group	Identifier needed for Group optimization. See more in chapter Entering Settings for the Plan [86] > What is Group optimization? and Automation [43] > Default value for stock field S-Group.
Note 1	Additional description of stock.
Note 2	Additional description of stock.
Date	Is automatically filled-in when stock is entered or remnant is created.
Origin ID	When defining a new stock, Origin ID is automatically set by program and is equal to stock ID displayed in data grid. All remnants inherit Origin ID from stock they were cut from. It is extremely useful for tracking purposes of given material from original stock through sub-stocks or remnants to final parts.
Plan ID	Plan identification number, in which remnant was created.
Mark	Determines which stocks can be copied to plan.

To rearrange columns [34], their order and visibility, click the button in data grid or select the menu item *"View > Rearrange columns"*.

Note: Stocks which are defined in Materials are your real inventory. When you define and use them, you get a transparent overview of movement of materials and overall inventory in Storages.

Tip: It is possible to import stocks of materials from any file with any structure or from clipboard.

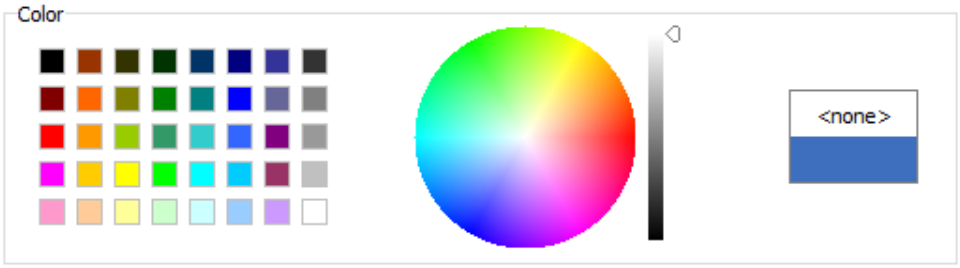
Parts tab



Click the Parts tab to define parts for given material. Defining of parts in Materials can be useful in cases when these predefined parts are frequently used in plans, so that copying these parts from Materials may save time and simplify preparation of new cutting plan.

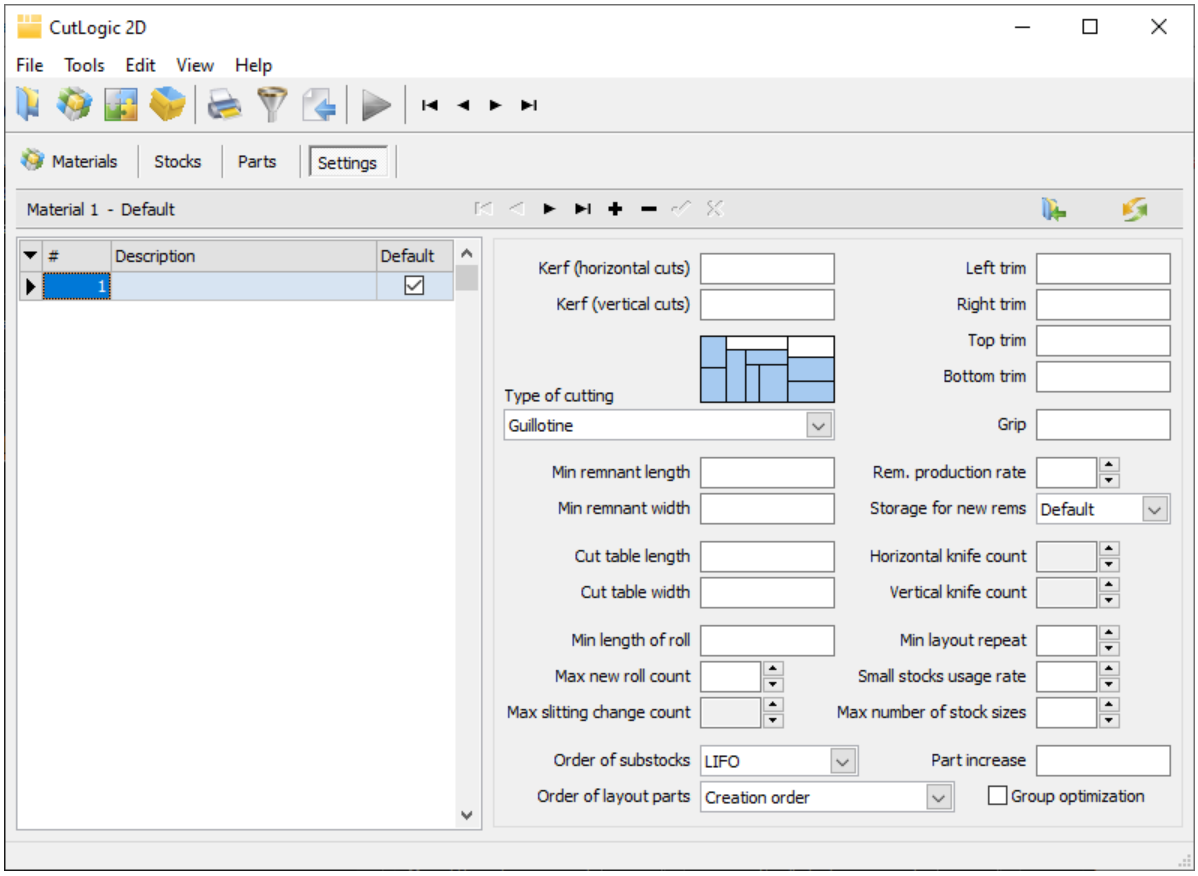
Columns

No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Length	Length of part.
Width	Width of part.
Qty	Quantity of parts.
Can turn	Flag determining whether the part can be turned during of optimization or not.
Description	Short description of part.
Order #	Order number.
P-Group	Identifier needed for Group optimization. See more in chapter Entering Settings for the Plan [86] > What is Group optimization?.
Note 1	Additional description of part.
Note 2	Additional description of part.
Mark	Determines which parts can be copied to plan.
Color	Color of part. To define or change it, click on particular color cell. Tab with following color picker will be shown.



To rearrange columns [34], their order and visibility, click the button  in data grid or select the menu item *"View > Rearrange columns".*

Settings tab



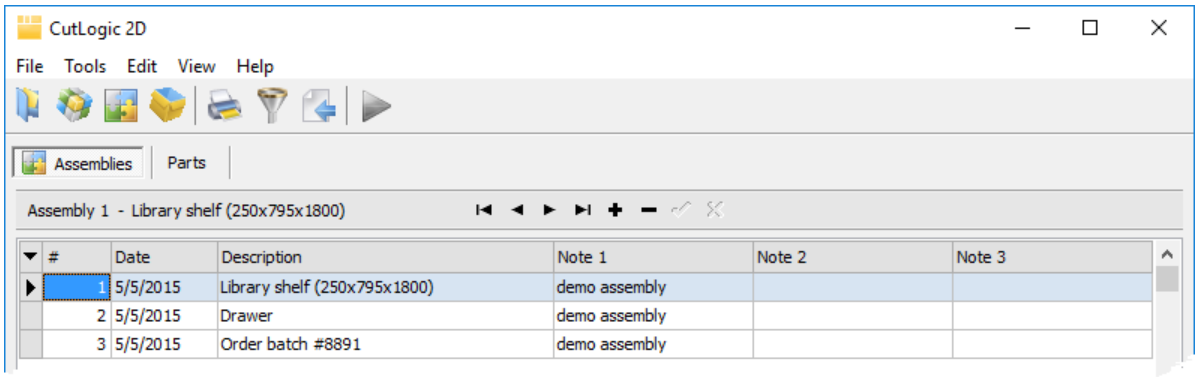
Settings tab enables you to define list of pre-defined plan settings for given material. See more in chapter Entering Settings for the Plan 86.

15.2 Assemblies

Working with Assemblies enables you to define assemblies (products) and their parts. When defining a plan(s), it is possible to copy entire assemblies into given plan(s). It can be also used to store orders from your customers and using these you can create a new plan or multiple plans. It brings simplification and streamlining to your work. See chapter Entering multiple plans using Assemblies 55 for more information.

Tip: You can use Assemblies to collect and record your orders and according to them create new plans.

To work with Assemblies, click the button on the main toolbar or select the menu item *"File > Inventory > Assemblies"*, or press Ctrl+3.



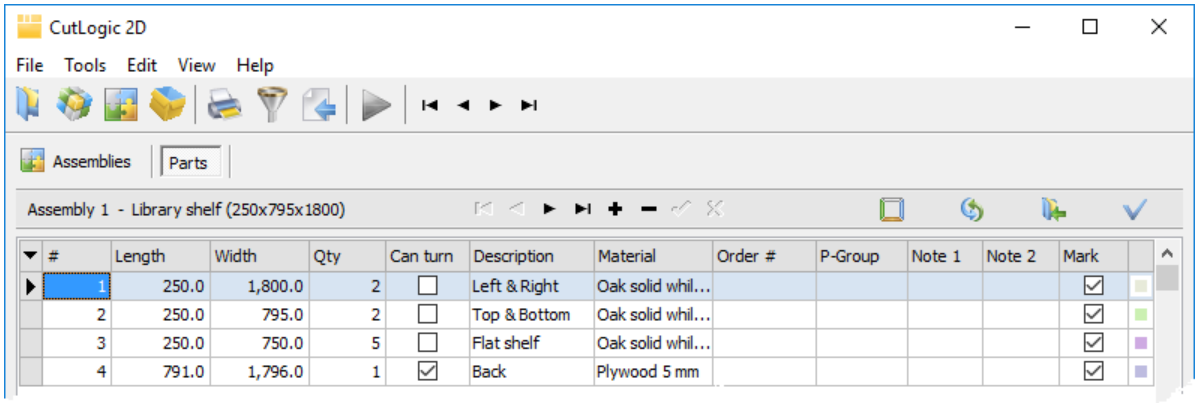
Assemblies tab enables you either to define new assembly and related descriptive information or to edit existing ones.

Columns

No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Date	Assembly date. Alternatively it can be also used as order date.
Description	Short description. Alternatively it can be also used as order description.
Note 1	Additional description.
Note 2	Additional description.
Note 3	Additional description.
Note 4	Additional description.

To rearrange columns 34, their order and visibility, click the button in data grid or select the menu item *"View > Rearrange columns"*.

Parts tab



Parts tab enables you to define parts for given assembly. Parts in assemblies represent bill of materials or customer orders. This is new point of view on how to work with parts. It can be very useful in cases when you prepare cutting plan with many assemblies or orders. This feature brings time saving and simplifies preparation of the new cutting plan.

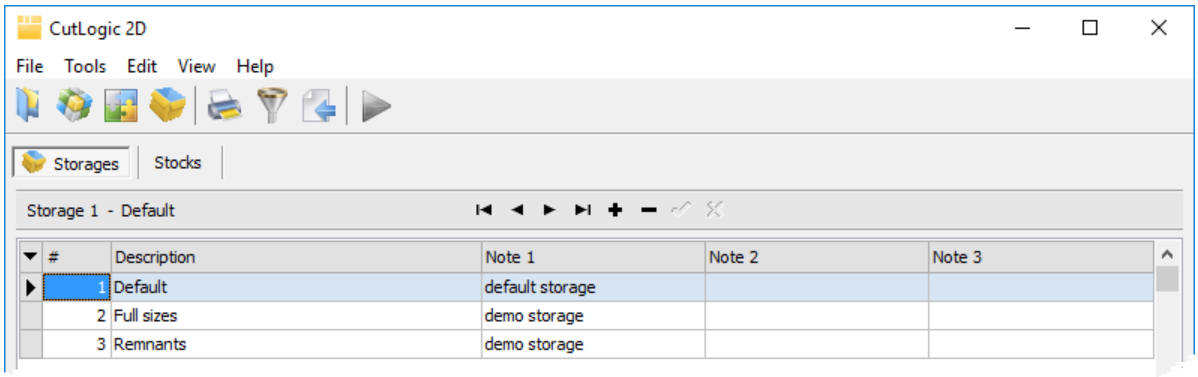
Columns

No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Length	Length of part.
Width	Width of part.
Qty	Quantity of parts.
Can turn	Flag determining whether the part can be turned during of optimization or not.
Description	Short description.
Material	Type of material.
Order #	Order number.
P-Group	Identifier needed for Group optimization. See more in chapter Entering Settings for the Plan 86 > What is Group optimization?.
Note 1	Additional description.
Note 2	Additional description.
Mark	Determines which parts can be copied to plan.
Color	Color of part. To define or change it, click on particular color cell. Tab with following color picker will be shown.

To rearrange columns[34], their order and visibility, click the button in data grid or select the menu item *"View > Rearrange columns".*

15.3 Storages

To work with Storages, click the button  in the main toolbar or select the menu item *"File > Inventory > Storages"*, or press Ctrl+4.



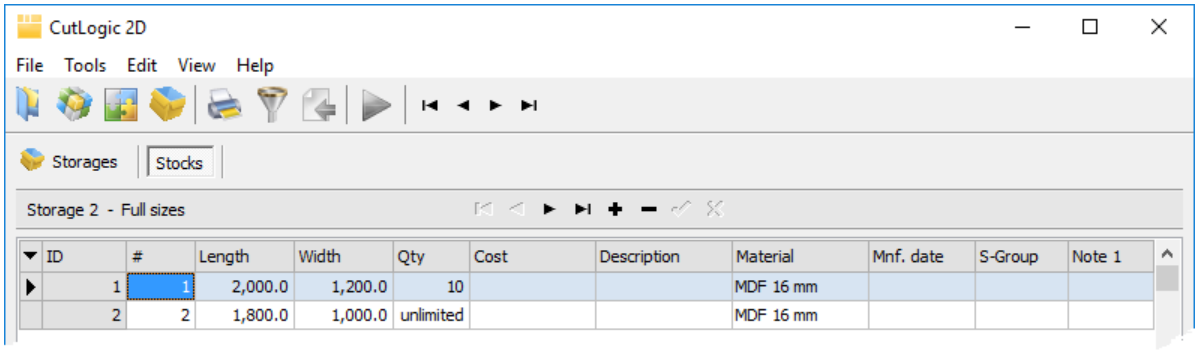
Storages tab enables you to define your storages where your material is kept. Storage numbered 1 is pre-defined storage (Default) and it is not possible to delete it. You can change its Description for better customizing. If you don't define other storage when defining plan, pre-defined storage (Default) will be used.

Columns

No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Description	Short description.
Note 1	Additional description.
Note 2	Additional description.
Note 3	Additional description.
Note 4	Additional description.

To rearrange columns[34], their order and visibility, click the button  in data grid or select the menu item *"View > Rearrange columns"*.

Stocks tab



Click the Stocks tab to view or define stocks of currently selected Storage. These stocks are your real inventory and you can associate them to the concrete Material through the field Material.

Columns

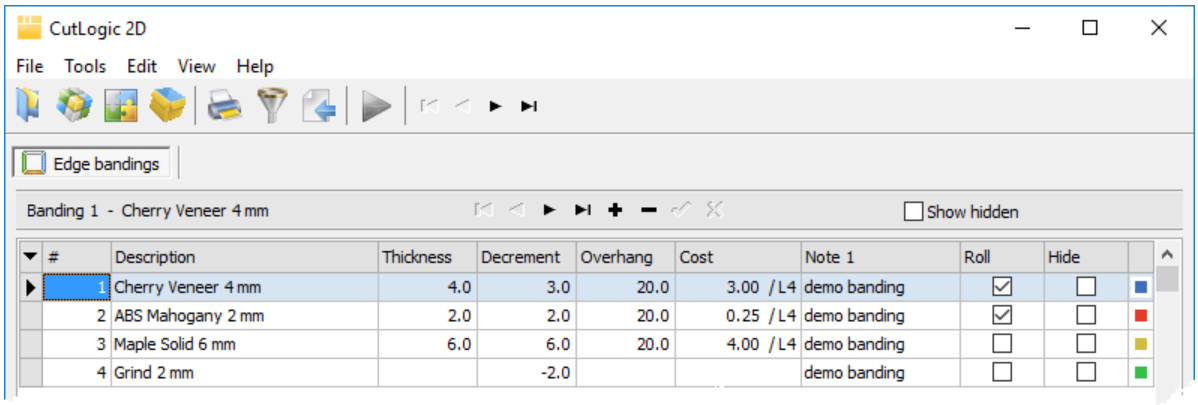
No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Length	Length of stock.
Width	Width of stock.
Qty	Quantity of available stocks. Unlimited quantity represents pre-defined or virtual ones. Such stocks are not part of your real inventory.
Cost	Stock cost (e.g. "75.00 / pc" or "3.50 / a1", etc.). pc = cost of the whole piece a1 = cost of 1 area unit L1 = cost of 1 length unit L2 = cost of 10 length units L3 = cost of 100 length units L4 = cost of 1000 length units L9 = cost of 12 length units
Cost/pc	Calculated cost of the whole piece (read only).
Description	Short description.
Material	Type of material.
Mnf. date	Manufacture date (all created remnants have the same manufacture date as their original).
S-Group	Identifier needed for Group optimization. See more in chapter Entering Settings for the Plan 86 > What is Group optimization? and Automation 43 > Default value for stock field S-Group.

Note 1	Additional description.
Note 2	Additional description.
Date	Additional date.
Origin ID	When defining a new stock, Origin ID is automatically set by program and is equal to stock ID displayed in data grid. All remnants inherit Origin ID from stock they were cut from. It is extremely useful for tracking purposes of given material from original stock through sub-stocks or remnants to final parts.
Plan ID	Plan identification number, in which remnant was created.

To rearrange columns[34], their order and visibility, click the button  in data grid or select the menu item *"View > Rearrange columns".*

15.4 Edge bandings

To work with Edgebands, select the menu item *"File > Inventory > Edgebands"*, or press Ctrl+5.



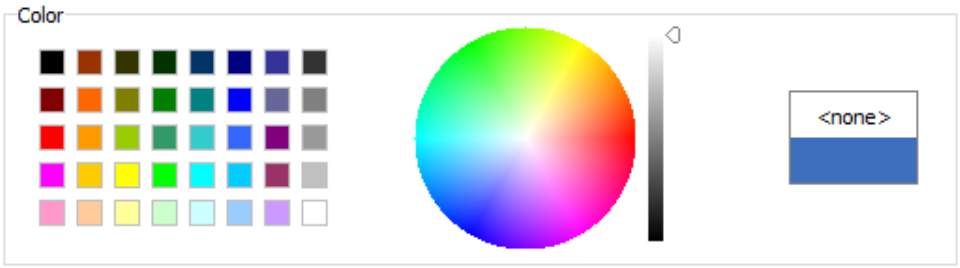
#	Description	Thickness	Decrement	Overhang	Cost	Note 1	Roll	Hide
1	Cherry Veneer 4 mm	4.0	3.0	20.0	3.00 / L4	demo banding	☑	☐
2	ABS Mahogany 2 mm	2.0	2.0	20.0	0.25 / L4	demo banding	☑	☐
3	Maple Solid 6 mm	6.0	6.0	20.0	4.00 / L4	demo banding	☐	☐
4	Grind 2 mm		-2.0			demo banding	☐	☐

Edgebands tab enables you to define edgebands or it can be used for defining of post-processing of parts (e.g. grinding). Once you define edgebands you can assign them to edges of plan parts. See also Defining edge banding 82.

Columns

No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Description	Short description.
Thickness	Band thickness.
Decrement	Each banded side of part will be decreased by this value, so part size corresponds to its final size (Rough length = Length - Decrement; Rough width = Width - Decrement). It is also possible to enter negative decrement. In this case it specify post-processing of part (grinding, etc.).
Overhang	Length of material overhang, will be added to each banded edge length. Is included in total length calculated for given plan parts.
Cost	Band cost (e.g. "8.20 / L4", etc.). L1 = cost of 1 length unit L2 = cost of 10 length units L3 = cost of 100 length units L4 = cost of 1000 length units L9 = cost of 12 length units
Note 1	Additional description.
Note 2	Additional description.

Roll	Determines whether edgeband is in roll or not. Applicable when previewing, printing and exporting Edgebands.
Hide	Enables you to hide given edgeband. Useful when edgeband is not used anymore. To show all (hidden and unhidden) edgebands check option Show hidden.
Color	Color of edgeband. To define or change it, click on particular color cell. Tab with following color picker will be shown.

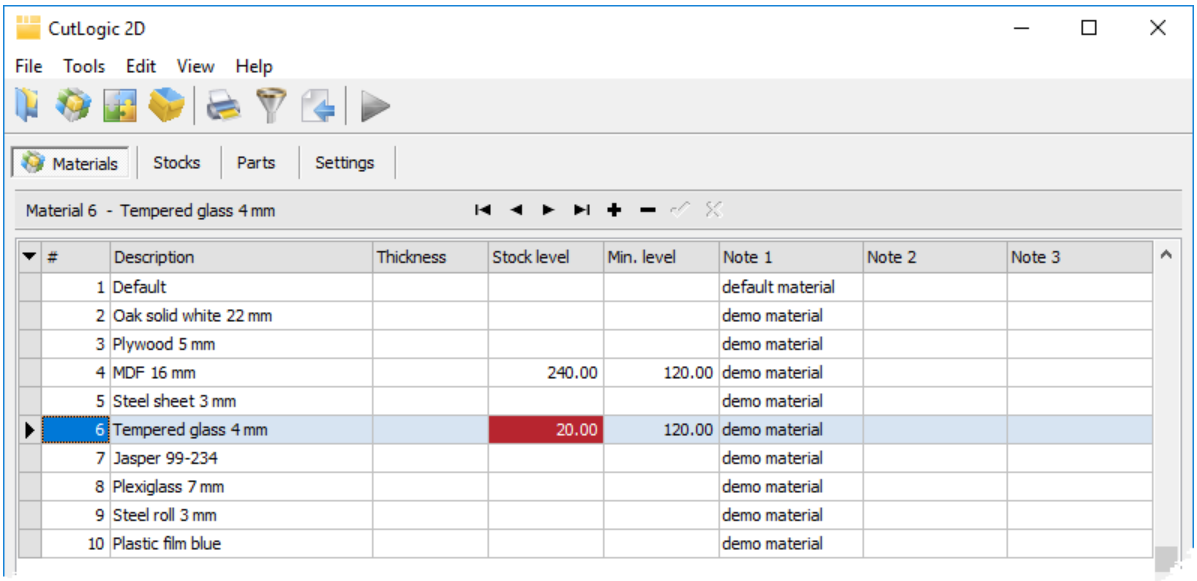


To rearrange columns[34], their order and visibility, click the button in data grid or select the menu item *"View > Rearrange columns"*.

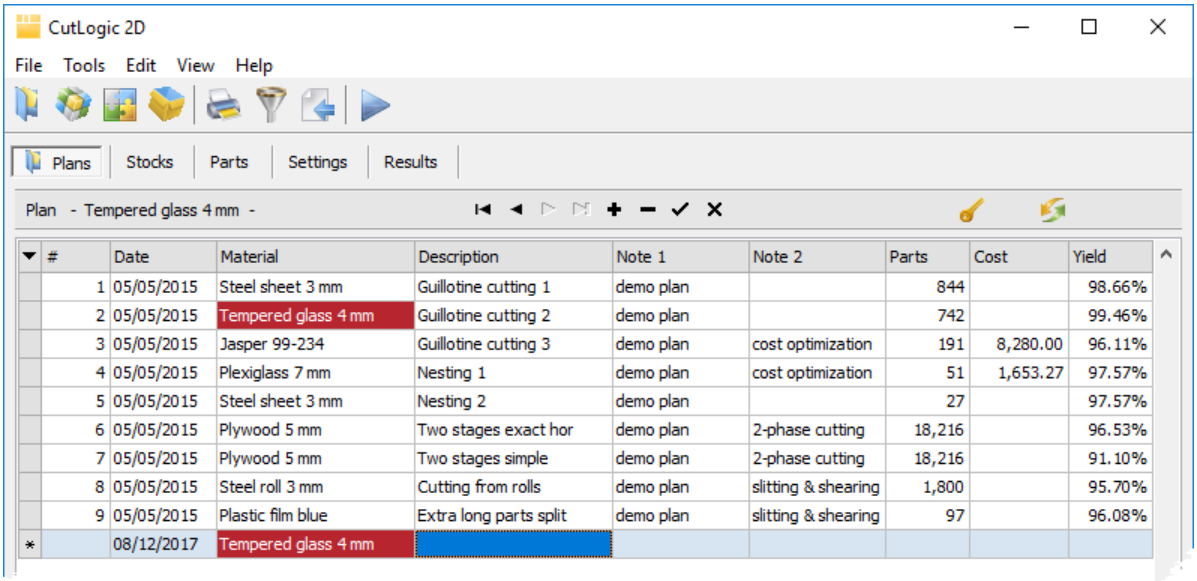
15.5 Stock level control

You can manage your material stock level by filling the Min. level field in the Materials. This value determines minimum total area of stocks you want to keep on the storage to achieve maximum fluency of the production. If minimum stock level is lower than real stock level, it is immediately indicated in the grid highlighted in red color. This informs you, that you need to order and store additional material stocks.

Following images show state which is under minimum level of stocks in the Materials and also in the Plans.



#	Description	Thickness	Stock level	Min. level	Note 1	Note 2	Note 3
1	Default				default material		
2	Oak solid white 22 mm				demo material		
3	Plywood 5 mm				demo material		
4	MDF 16 mm		240.00	120.00	demo material		
5	Steel sheet 3 mm				demo material		
6	Tempered glass 4 mm		20.00	120.00	demo material		
7	Jasper 99-234				demo material		
8	Plexiglass 7 mm				demo material		
9	Steel roll 3 mm				demo material		
10	Plastic film blue				demo material		



#	Date	Material	Description	Note 1	Note 2	Parts	Cost	Yield
1	05/05/2015	Steel sheet 3 mm	Guillotine cutting 1	demo plan		844		98.66%
2	05/05/2015	Tempered glass 4 mm	Guillotine cutting 2	demo plan		742		99.46%
3	05/05/2015	Jasper 99-234	Guillotine cutting 3	demo plan	cost optimization	191	8,280.00	96.11%
4	05/05/2015	Plexiglass 7 mm	Nesting 1	demo plan	cost optimization	51	1,653.27	97.57%
5	05/05/2015	Steel sheet 3 mm	Nesting 2	demo plan		27		97.57%
6	05/05/2015	Plywood 5 mm	Two stages exact hor	demo plan	2-phase cutting	18,216		96.53%
7	05/05/2015	Plywood 5 mm	Two stages simple	demo plan	2-phase cutting	18,216		91.10%
8	05/05/2015	Steel roll 3 mm	Cutting from rolls	demo plan	slitting & shearing	1,800		95.70%
9	05/05/2015	Plastic film blue	Extra long parts split	demo plan	slitting & shearing	97		96.08%
*	08/12/2017	Tempered glass 4 mm						

16 Reports

Reports is an important part of the program, where you can print or preview any data (cutting layouts, lists, labels, etc.) displayed in printable format. It is possible to choose from predefined reports, or you can create new ones (customized data views, statistics, etc.). See more in Report creating 115.

Following list represents predefined reports divided into groups according to active section (Plans, Materials, Assemblies, Storages, Edge bandings).

Plans

Cutting layouts	Optimized cutting layouts.
Plans	List of plans.
Plan stocks	List of plan stocks.
Plan parts [grouped by sorting]	List of plan parts grouped according to sorting fields (when sorting 27 is applied).
Edge banding	Edge banding details for plan parts.
Labels - Cutting layout parts	Labels of cutting layout parts.
Labels - Cutting layout remnants	Labels of cutting layout remnants.
Labels - Plan parts	Labels of plan parts.

Materials

Materials	List of materials.
Material stocks	List of material stocks.
Material stocks [grouped by storages]	List of material stocks grouped by storages (when various storages are used).
Material parts	List of material parts.
Labels - Material stocks	Labels of material stocks.

Assemblies

Assemblies	List of assemblies.
Assembly parts	List of assembly parts.

Storages

Storages	List of storages.
Storage stocks	List of storage stocks.
Storage stocks [grouped by materials]	List of storage stocks grouped by materials (when various materials are used).

Labels - Storage stocks	Labels of storage stocks.

Edgebands

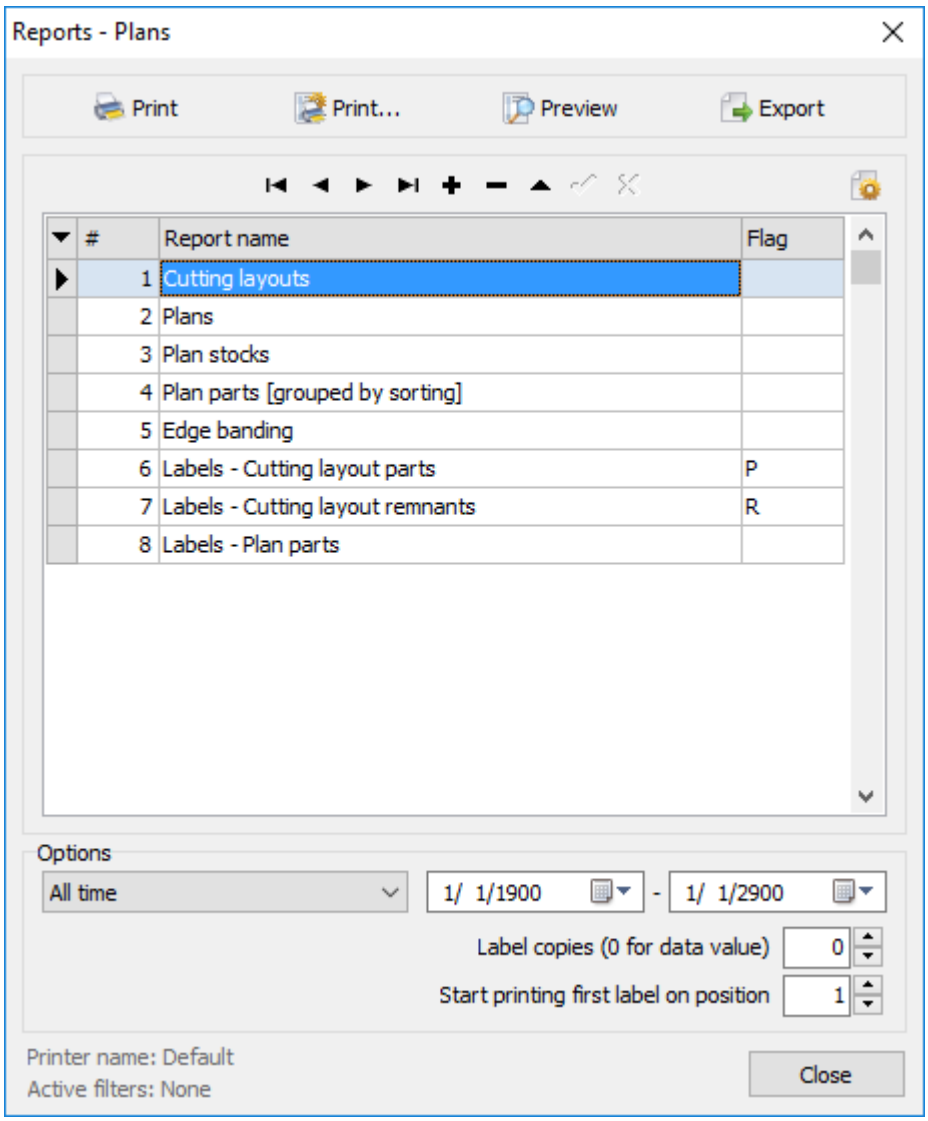
Edgebands	List of edgebands.

Note: It is possible to apply both, filter[29] and data multiselection[32], to prepare the reports.

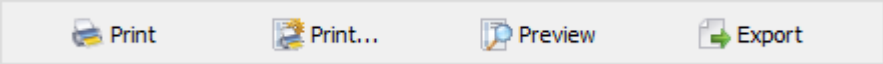
16.1 Report window

Here you can manage (print, export, preview, create, copy, edit, delete) all available reports and also set printer for each report. Program displays reports relevant to currently active section (Plans, Materials, Assemblies, Storages or Edgebands).

To work with Reports, click the button  on the main toolbar or select the menu item *"File > Reports"* or press Ctrl+P.



Main bar



The main bar is a collection of four speed buttons providing quick access to commonly used commands.

Print	Prints selected report.
Print...	Shows print dialog (where you can select printer, set number of copies, print mode, etc.), and then prints selected report.
Preview	Shows preview of selected report.
Export	Exports selected report (data) to PDF file, Excel file, Word file, RTF file, ODT file, ODS file, CSV file, HTML file or sends report as an email. Read more about export in chapter Export 135.

Data navigator

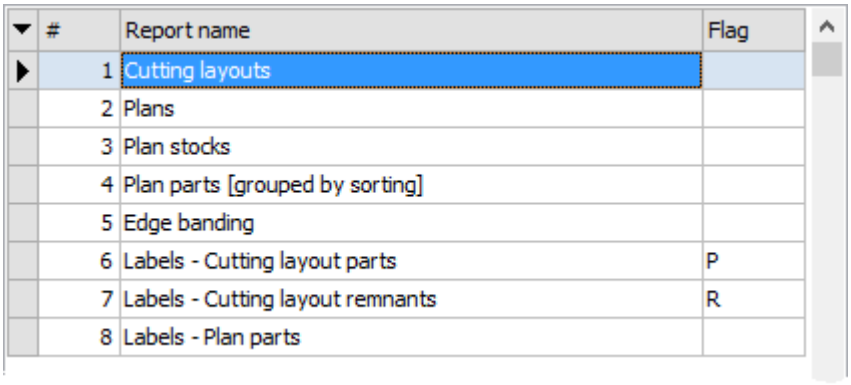
Data navigator serves for navigation and editing of reports displayed in data grid.

Function of the buttons of navigator is following.

- Moves to the first report.
- Moves to the previous report.
- Moves to the next report.
- Moves to the last report.
- Creates a new empty report / a copy of selected report. See more in Report creating 115.
- Deletes the current report (system reports cannot be deleted).
- Opens embedded report editor enabling you to modify current report (system reports cannot be modified, however copies of system reports can be fully modified). See more in Report editing 116.
- Posts changes made in the header of the current report (fields No., #, Report name, Flag) to the database.
- Cancels changes made in the header of the current report (fields No., #, Report name, Flag).

Data grid

Serves for setting and managing of reports.



#	Report name	Flag
1	Cutting layouts	
2	Plans	
3	Plan stocks	
4	Plan parts [grouped by sorting]	
5	Edge banding	
6	Labels - Cutting layout parts	P
7	Labels - Cutting layout remnants	R
8	Labels - Plan parts	

Columns

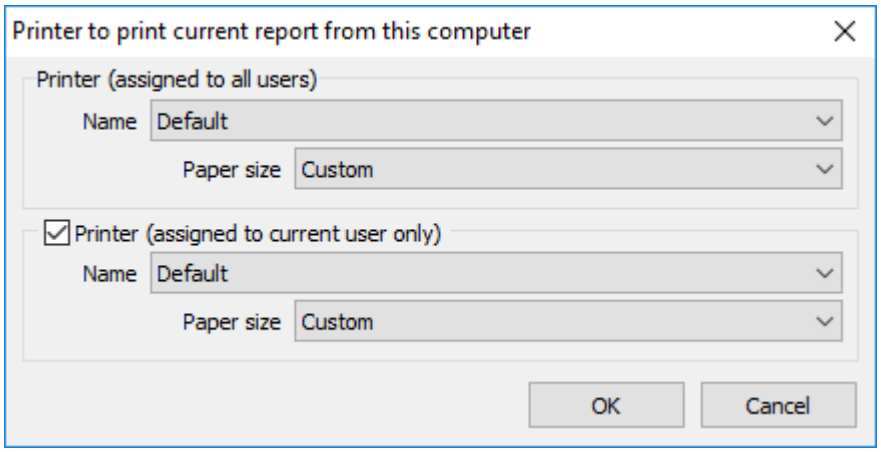
No.	Record number.
#	User defined identification number. Click on column header # to sort reports by numbers.
Report name	Short description of report.
Flag	Printing flag which can be assigned to each report. "P - Print after double click on part" - When you double click on part in the cutting layout image (Results tab), report with assigned P flag is immediately sent to printer. "R - Print after double click on remnant" - When you double click on remnant in the cutting layout image (Results tab), report with assigned R flag is immediately sent to printer.

To rearrange columns [34], their order and visibility, click the button in data grid.

Tip: Double-click the chosen report or press Enter to preview it immediately.

Printer setting for selected report

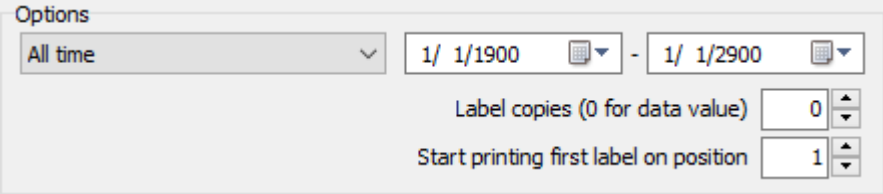
By clicking the button , it is possible to set printer and appropriate paper size to selected report. This setting is tied to "Computer name", "Report name" and/or "User name". It means that every CutLogic workstation on the network enables (if it is necessary) to print current report on different printer, without changing printing options (avoiding frequent changing of printer).



Tip: Setting printer to each computer and user individually can be very useful feature when multiple CutLogic workstations share CutLogic database over network, especially on thin client architecture networks such as Citrix and Terminal Services.

Important: Assigning printer to each user individually is possible only when CutLogic is switched to network database mode.

Options



Date

Some reports can be filtered by creation or manufacture date. You can set range of date (Date From - Date To) you want to print.

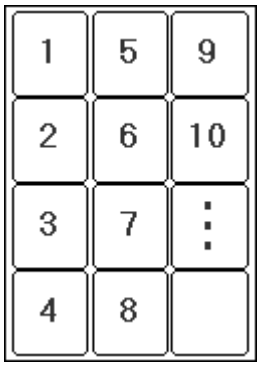
Tip: If you want to build your own reports using SQL (Structured Query Language), you can apply date parameters as "DateFr" (Date From) and "DateTo" (Date To) in your scripts.

Label copies (0 for data value)

Here you can set number of copies of printed labels. By default (if set to 0), program prints for each label as many copies as defined in quantity field (Qty) of printed dataset. If you set custom copies number (1-500), each label is printed that value times.

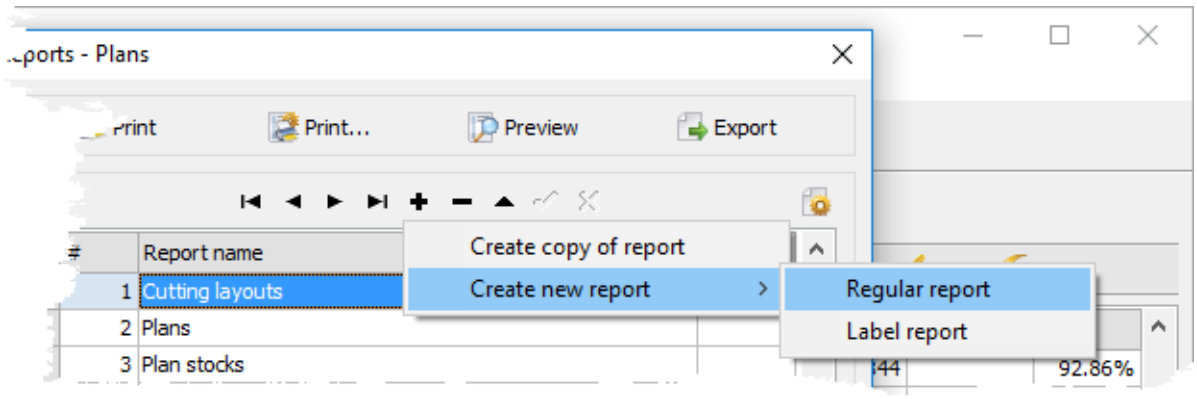
Start printing first label on position

Here you can set start position (1-200) from which you want to print first label of the current labels dataset. The order of printed labels is "Top to Bottom" and "Left to Right", as you can see in the following layout.



16.2 Creating

To create a new empty report (or a copy of selected one), click data navigator button or press Insert. Popup menu with the following options appears.



Create copy of report	Creates copy of selected report and opens report editor.
Create new regular report	Creates new empty report and opens report editor.
Create new label report	Creates new empty report which enables you to print labels. After creating a report, report editor opens. See more in Label creating [117].

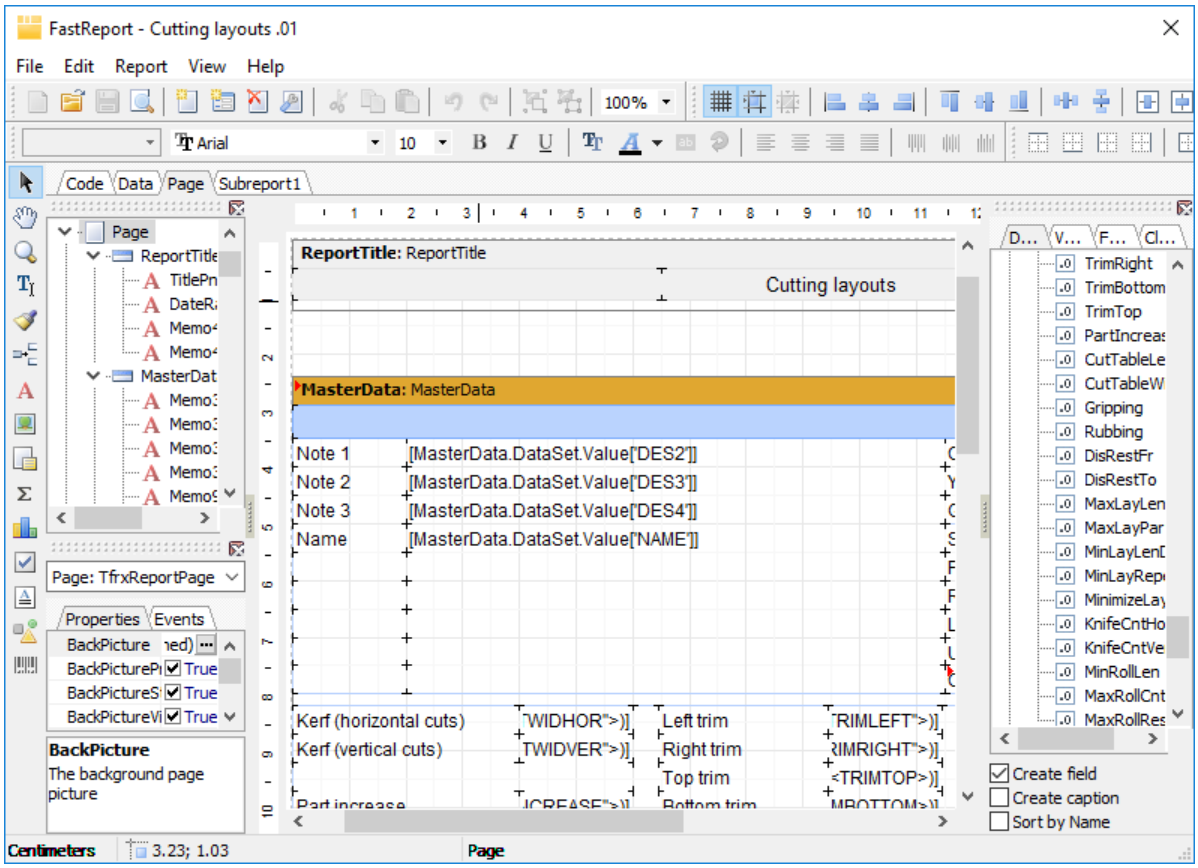
Note: It is not possible to modify predefined (system) reports. If you would like to change a system report, we recommend you to create a copy of this report first. Copied (user defined) reports can be fully modified.

See also Report editing [116].

16.3 Editing

To start working with embedded report editor, select appropriate (custom) report and click data navigator button .

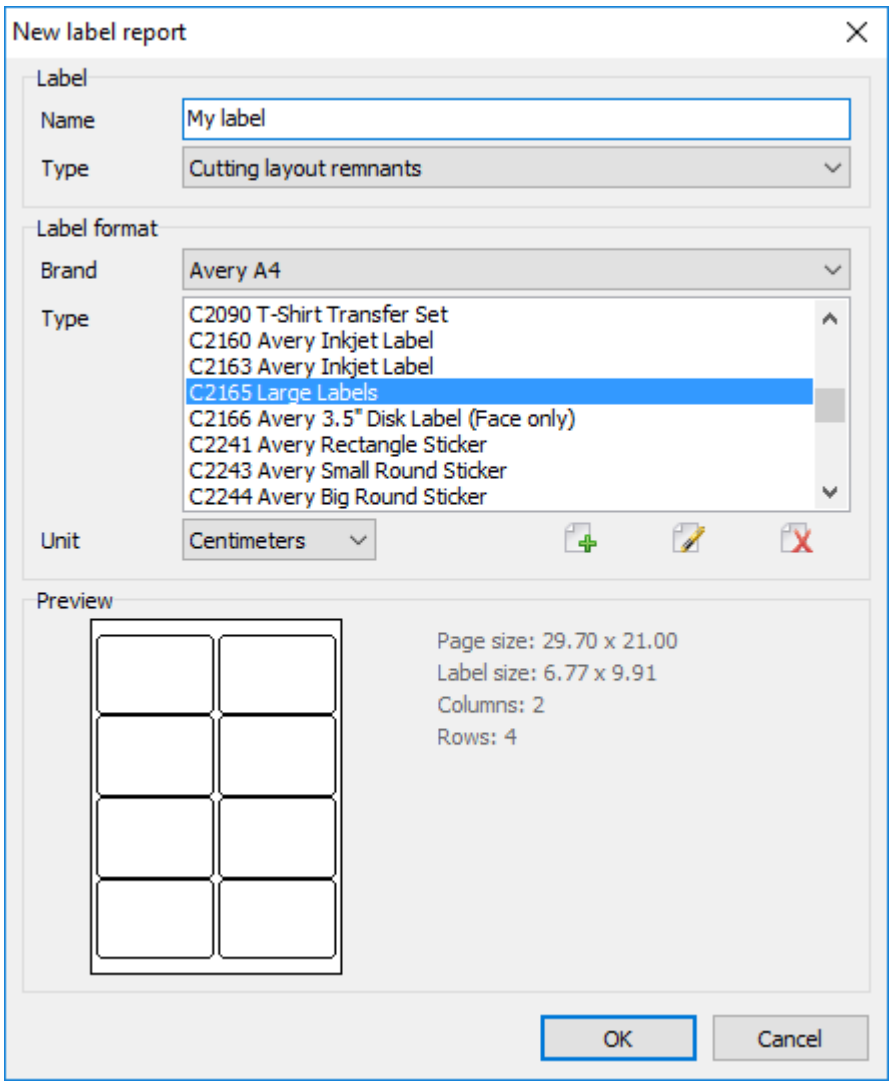
Important: Predefined (system) report cannot be edited. However, it is possible to create a copy [115] of this report and edit it (professional and enterprise editions only).



Note: CutLogic 2D has a built in report editor – FastReport® generator. For details how to work with reports (edit, print or preview) or for explanation regarding all report settings and/or export settings please download FastReport user's manual from our web.

16.4 Label creating

To create new label report, click data navigator button  or press Insert and select *"Create new report > Label report"*.



Label

Name — Here you can enter name of new label report.

Type — Here you can select type of new label report (Cutting layout remnants, Cutting layout parts, Plan parts).

Label format

Brand — Here you can set brand of label.

Type — Here you can select type of label from hundreds of predefined labels.

Unit — Here you can set desired units (Centimeters, Inches, Pixels).

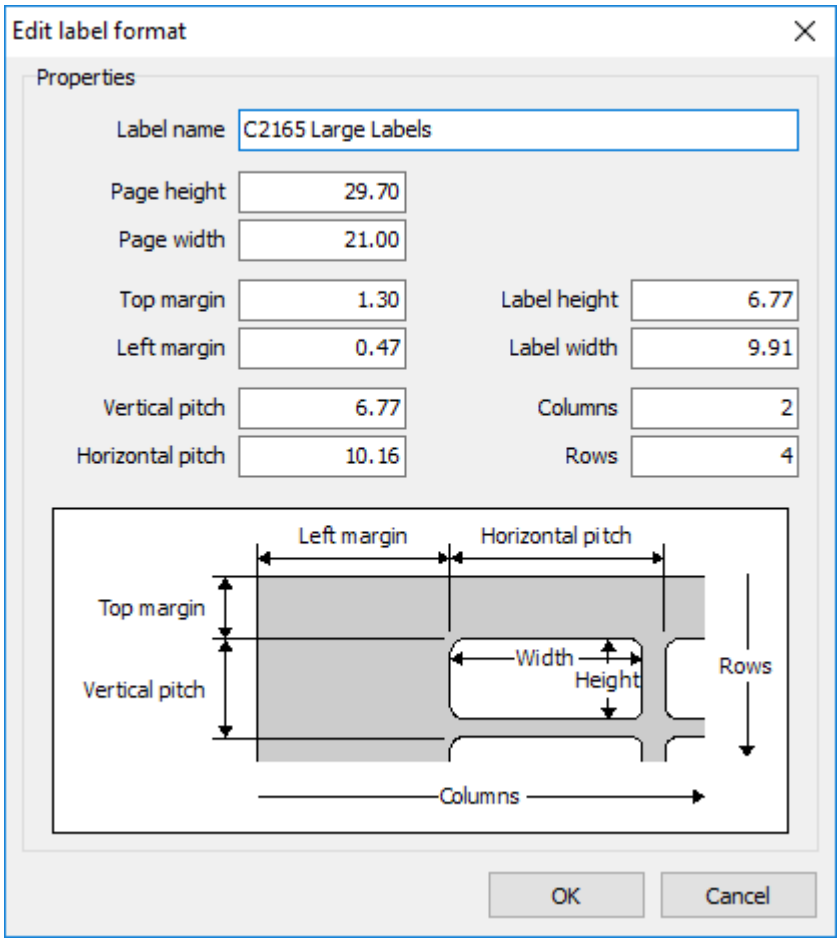
 Creates new label format.

 Starts property editor of selected label format.

 Deletes selected label format.

Label format editor

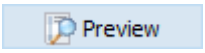
By clicking button  or  following property editor is shown. Here you can set main properties of label format.



Preview

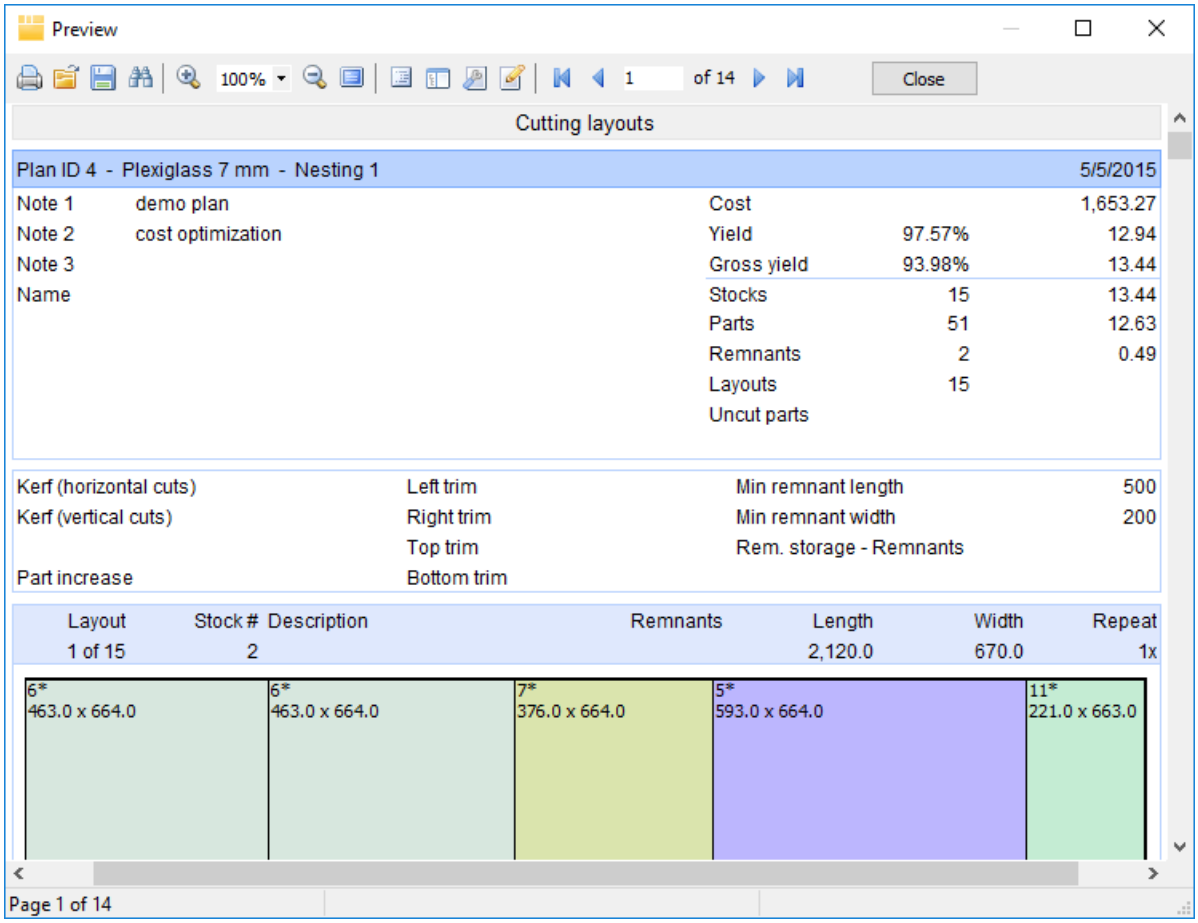
Here you can see design of currently selected label format and its basic information (Page size, Label size, Columns, Rows).

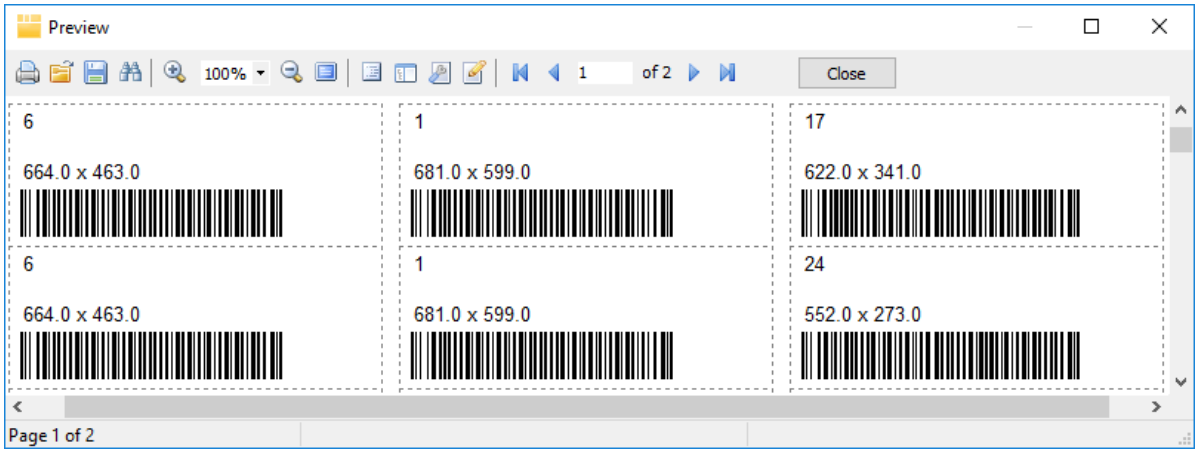
16.5 Previewing

To preview selected report click the button 

or double-click the chosen report.

Following images show Cutting layouts and Labels - Cutting layout parts reports in preview modes.





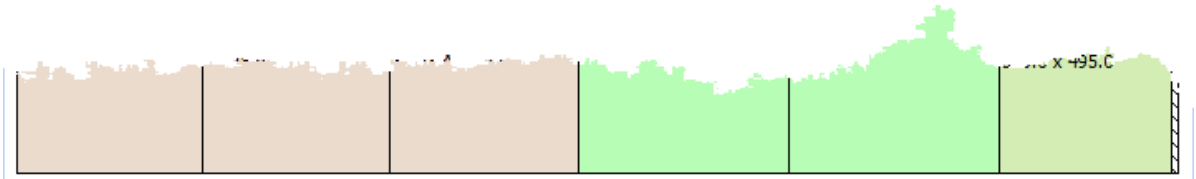
Note: CutLogic 2D has a built in report editor – FastReport® generator. For details how to work with reports (edit, print or preview) or for explanation regarding all report settings and/or export settings please download FastReport user's manual from our web.

16.6 Completeness flag

Sometimes you can see the sign "*" on the left of the part Description or Order # in the Cutting layout reports (in the section layout parts). It signalizes that the batch of parts with this value (Description or Order #) is completed and there is no next occurrence of these parts in the cutting layouts of currently viewed plan(s).

Tip: This feature can be extremely useful when you need to speed up your manufacture process. When you see the completeness flag, cut parts of the entire completed order can be immediately sent to production.

You can see example in the following image.



#	Part #	Description	Order #	X-coord	Y-coord	Length	Width
1	10	AXN-9Z-STR-10	100275	0.0	0.0	645.0	520.0 *
2	10	AXN-9Z-STR-10	100275	0.0	520.0	645.0	520.0 *
3	10	AXN-9Z-STR-10	100275	0.0	1,040.0	645.0	520.0 *
4	15	AXZ-4Z-STR-05	100280	0.0	1,560.0	895.0	315.0 *
5	10	AXN-9Z-STR-10	100275	645.0	0.0	645.0	520.0 *
6	10	AXN-9Z-STR-10	100275	645.0	520.0	645.0	520.0 *
7	10	AXN-9Z-STR-10	100275	645.0	1,040.0	645.0	520.0 *
8	15	AXZ-4Z-STR-05	100280	895.0	1,560.0	895.0	315.0 *
9	10	AXN-9Z-STR-10	100275	1,290.0	0.0	645.0	520.0 *
10	10	AXN-9Z-STR-10	100275	1,290.0	520.0	645.0	520.0 *
11	10	*AXN-9Z-STR-10	100275	1,290.0	1,040.0	645.0	520.0 *
12	3	AXN-3Z-STR-05	100275	1,935.0	0.0	725.0	880.0 *
13	2	AXN-2Z-STR-03	100267	1,935.0	880.0	725.0	500.0 *
14	2	AXN-2Z-STR-03	100267	1,935.0	1,380.0	725.0	500.0 *
15	3	AXN-3Z-STR-05	*100275	2,660.0	0.0	725.0	880.0 *
16	2	AXN-2Z-STR-03	100267	2,660.0	880.0	725.0	500.0 *
17	2	AXN-2Z-STR-03	100267	2,660.0	1,380.0	725.0	500.0 *
18	13	*AXZ-3Z-STR-05	100272	3,385.0	0.0	590.0	495.0
19	7	*AXN-7Z-STR-08	*100272	3,385.0	495.0	550.0	895.0 *
20	8	AXN-8Z-STR-08	100273	3,385.0	1,390.0	555.0	490.0 *

17 Import

CutLogic 2D provides very sophisticated and powerful features for import. Importing data is easy and user friendly. All commonly used input formats of source files are supported in the program. You can import data from:

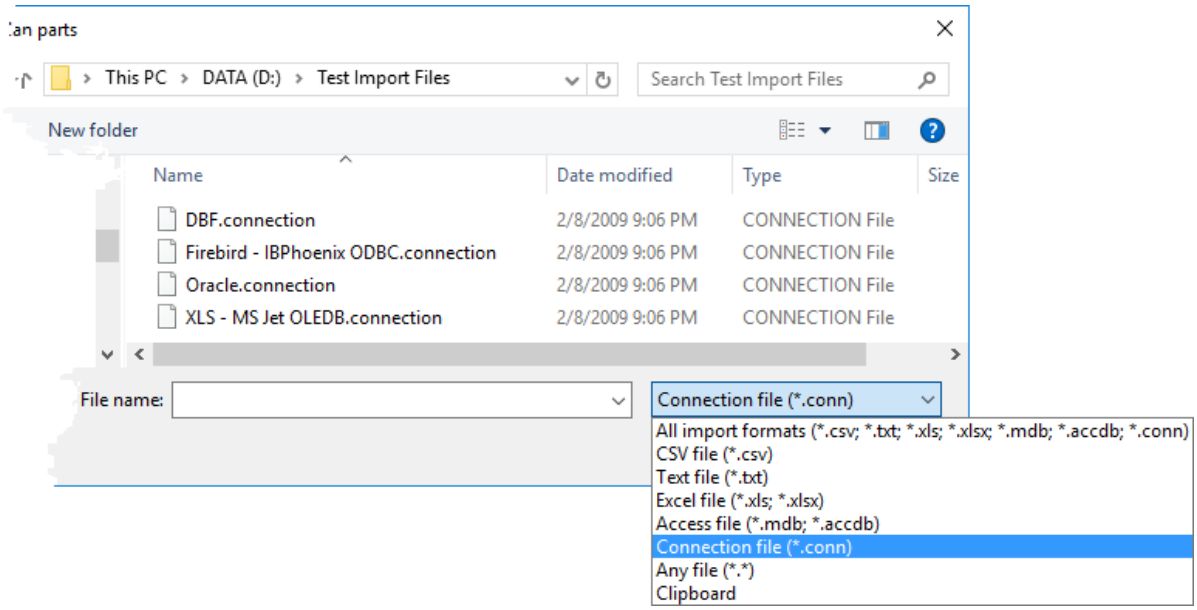
- Clipboard 126
- Microsoft Excel file 128
- CSV file 130
- Microsoft Access db file 132
- Connection file 134
- Text file 130

Import of data via connection file brings unmatched versatility into CutLogic 2D and enables you to import data from more than 40 other sources - databases, tables and files.

Note: See Edition comparison 14 chapter to check if desired import format or method is available in given edition of CutLogic 2D.

17.1 How to import data

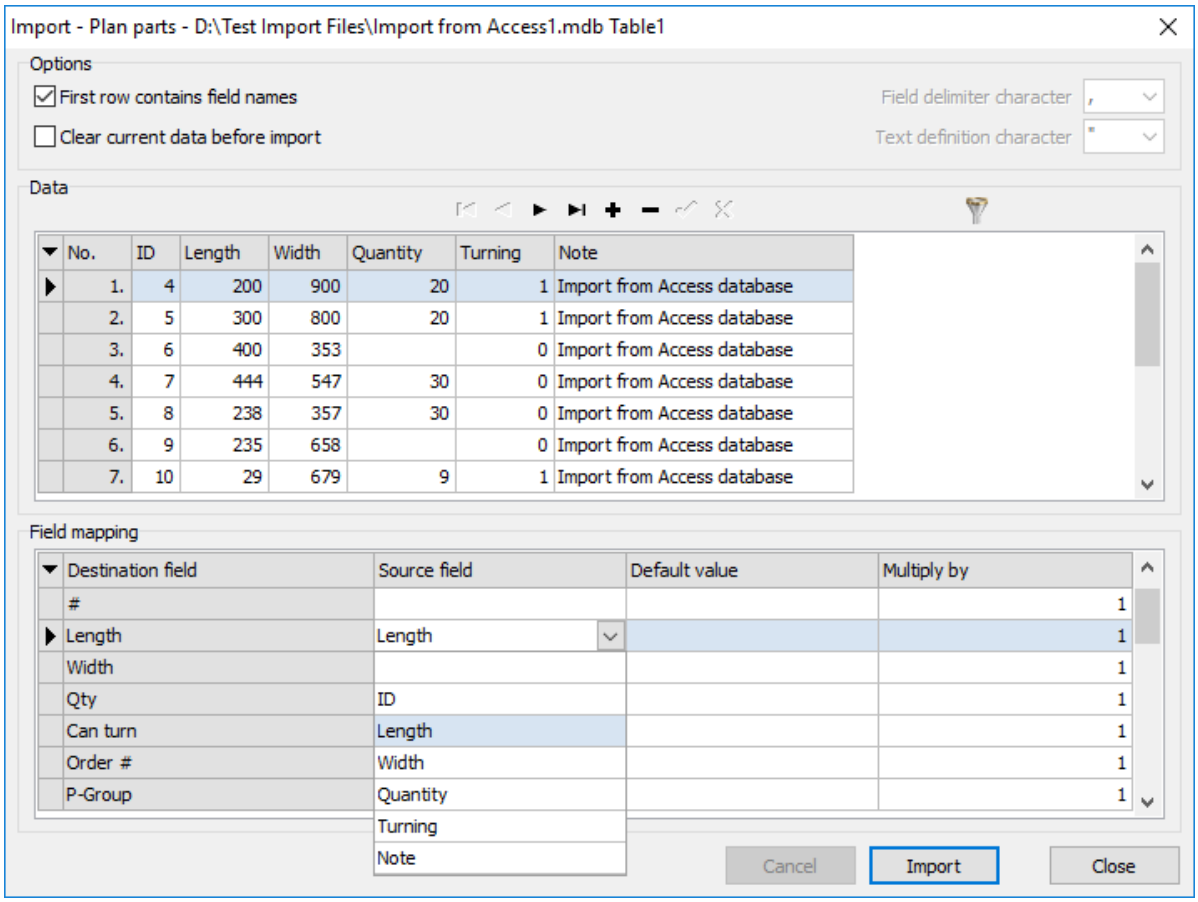
To import data, first select desired tab (e.g. Plan parts tab) and click the button  in the main toolbar or select the menu item *"File > Import > Import data from Excel, Access, CSV or connection file"* or press Ctrl+I. Following open file dialog appears.



Here you can define the path to the file containing data for import, select desired file format and pick the desired source file from the list.

Note: To import data directly from clipboard, select the menu item *"File > Import > Import data from clipboard"* or press Ctrl+J.

Click button [OK] to confirm selected file. Following Import window opens.



Here you can define structure of imported file, map the source fields to the destination fields and define some transformations like "Default value" or "Multiply by" in this form.

Options

First row contains field names	If the first row of import file is fields information, real field names will appear in the table of imported data instead of Field1, Field2, etc.
Clear current data before import	When checked, all data from target data grid will be deleted before Import.
Field delimiter character	Here you can set fields delimiter identical with fields delimiter in import file. (used only for *.txt and *.csv files)
Text definition character	Here you can set text definition in field. Some text fields, e.g. Description or Note, can contain characters identical to "Fields delimiter character", therefore it is necessary to define these fields.

Data

Table	Displays actual table format - structure of imported file based on selected Options. Shows how the fields and rows of the file are recognized. Important for *.txt , *.csv and *.* files.
	Here you can set filter for imported data. See more about setting of filter in chapter Data filtering 29.

Field mapping

Destination field	Shows Destination field where source field will be imported.
Source field	This is mapping field where you can set the name of Source field, which will be imported to Destination field. If you do not set Source field, to Destination field won't be imported any value. For better orientation in names of imported fields see the data grid "Data".
Default value	Enables you to define default value for cases when values for given field are not defined (empty values) in source file.
Multiply by	Enables you to define multiply factor. It is number by which is numeric value of given field multiplied during the import.

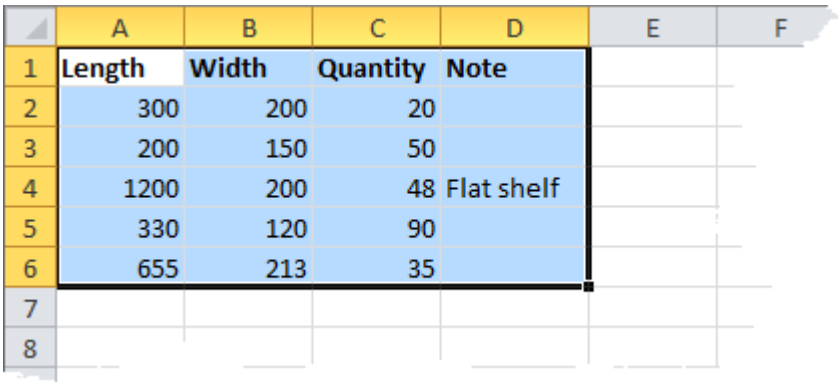
Note: Program remembers field mapping for each data grid.

Note: When importing detail data, you can map master field description. In such case, import will find the master record and assign to it respective detail(s). For example, to import plan parts to plan with given description, map destination field "Plan".

17.2 Import from clipboard

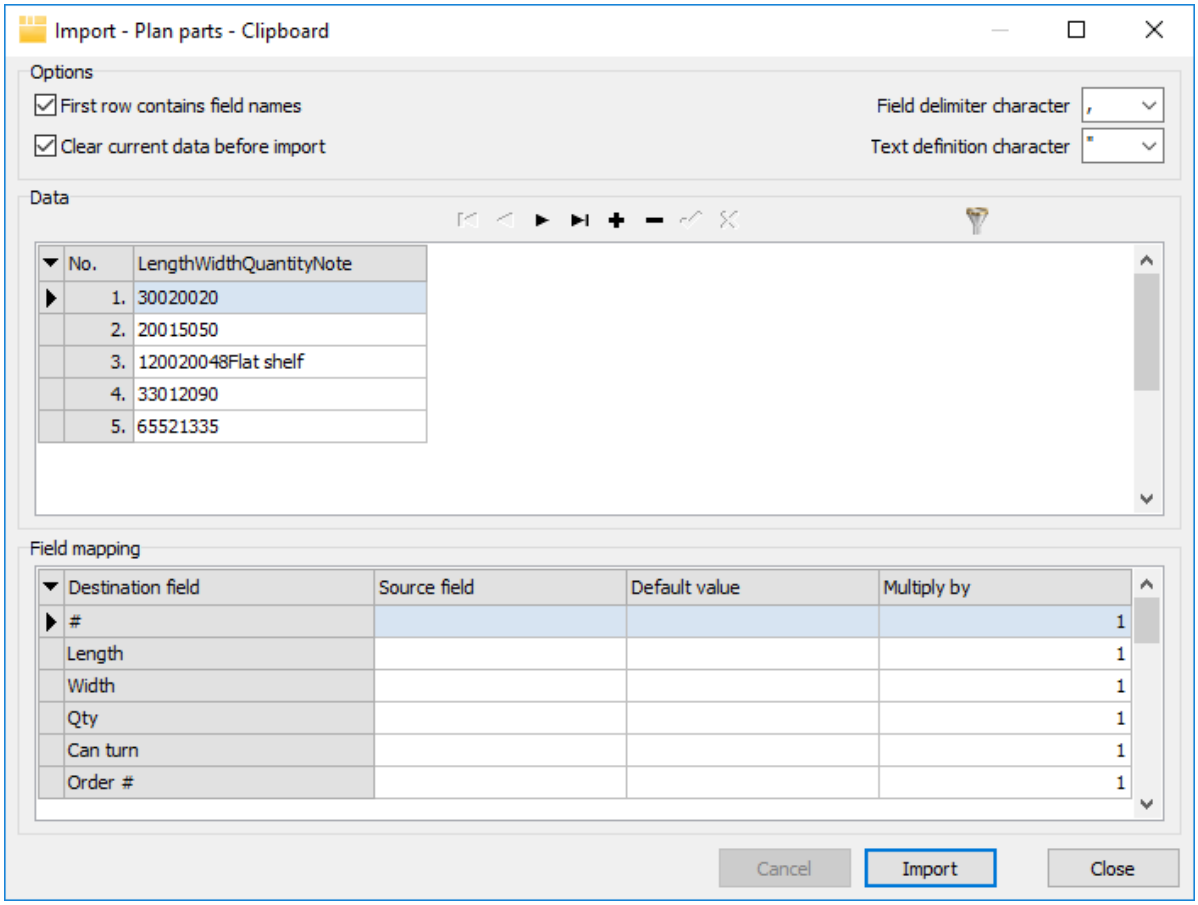
Importing from clipboard is very similar to importing from any text based files like *.txt, *.csv or *.*.

Before importing data from clipboard, prepare relevant import data: in Excel, Notepad, Word, or any other editor (spreadsheet) choose the portion of data you want to import into CutLogic 2D, select them, then click the selected data with the right mouse button and choose Copy in popup menu or press Ctrl+C. Data saved in this way is always at your disposal for import.

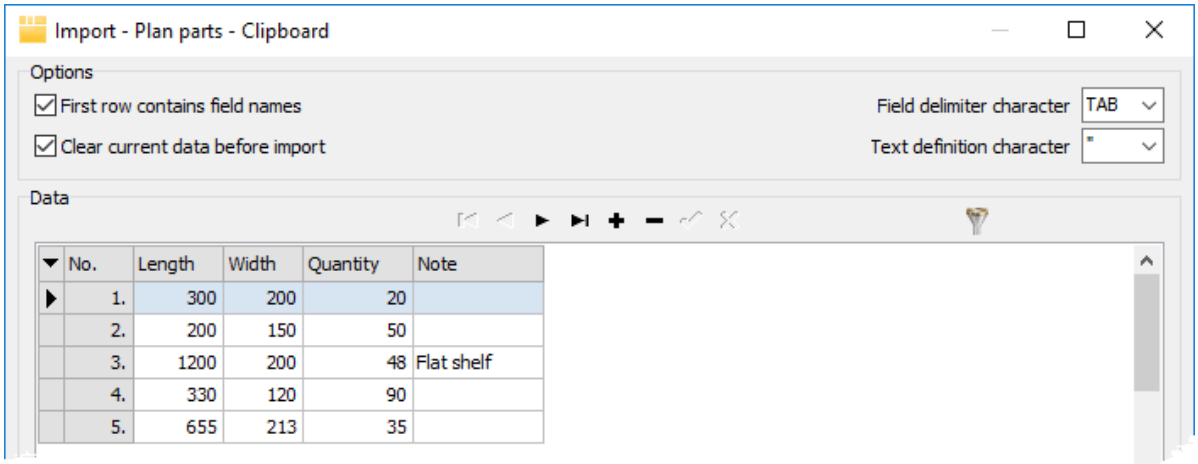


	A	B	C	D	E	F
1	Length	Width	Quantity	Note		
2	300	200	20			
3	200	150	50			
4	1200	200	48	Flat shelf		
5	330	120	90			
6	655	213	35			
7						
8						

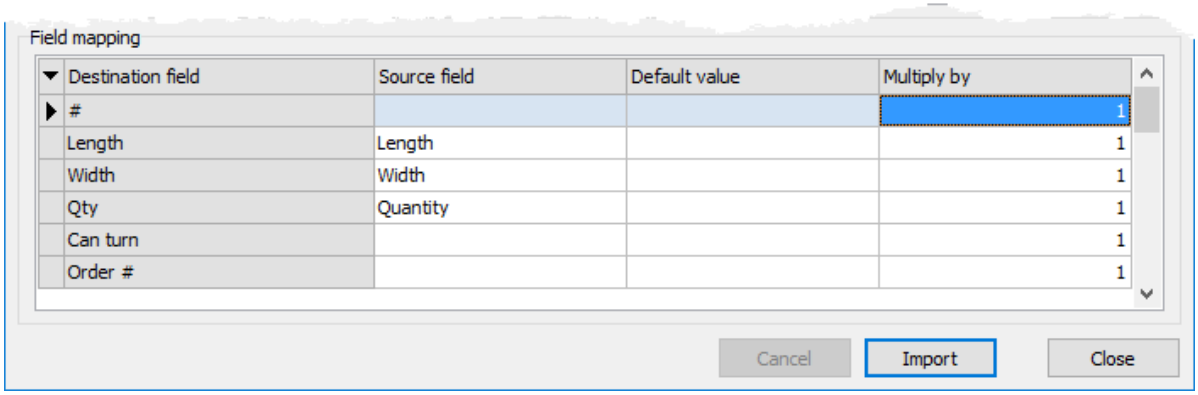
Having prepared data in clipboard you can start with import by pressing Ctrl+J.



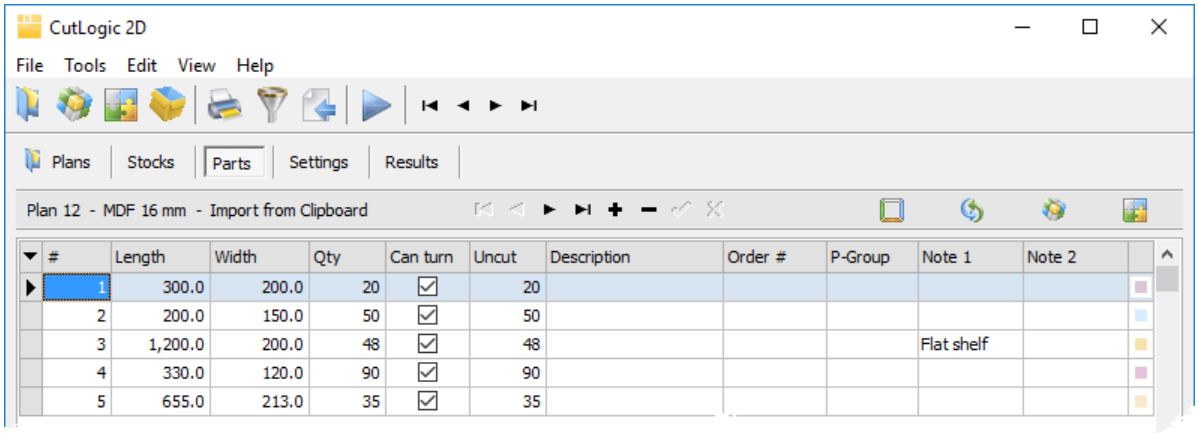
Here you have to setup options in order to format source data from the clipboard to the form suitable for the fields mapping. In our case we have activated option First row contains field names and we have set Field delimiter character to TAB value.



Now you can start to map the source fields to the destination fields. By left click on given "Source field" in the Field mapping table, mapping list of available source fields opens. You can pick one source field to map it on given destination field and continue until all mapping is finished.

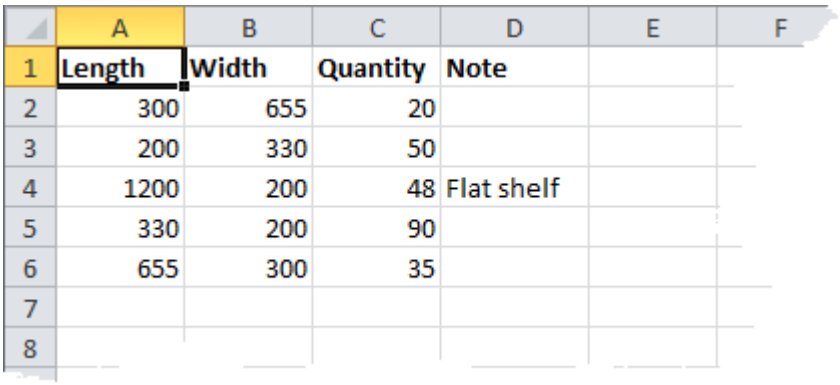


When all fields are mapped, you can click the [Import] button and import is done. You can start to work with imported data.



17.3 Import from Excel file

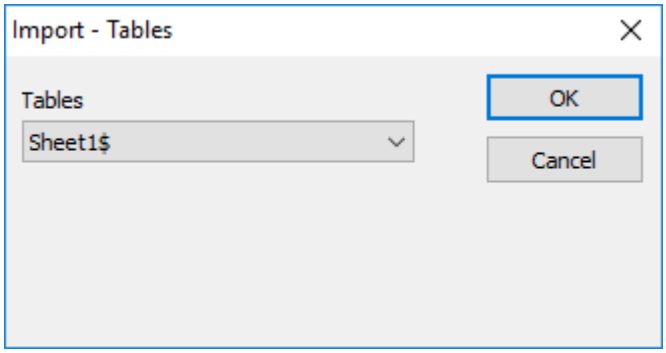
If you prepare import data in MS Excel sheet (*.xls, *.xlsx or *.xlsm) you can import them directly from the file.



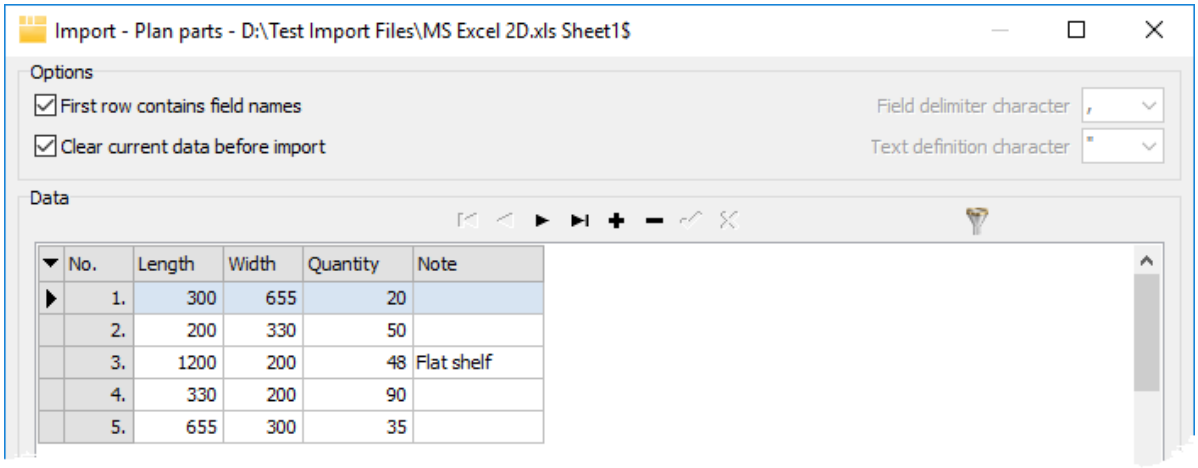
	A	B	C	D	E	F
1	Length	Width	Quantity	Note		
2	300	655	20			
3	200	330	50			
4	1200	200	48	Flat shelf		
5	330	200	90			
6	655	300	35			
7						
8						

Open Excel file you want to import from. See more in How to import data[123].

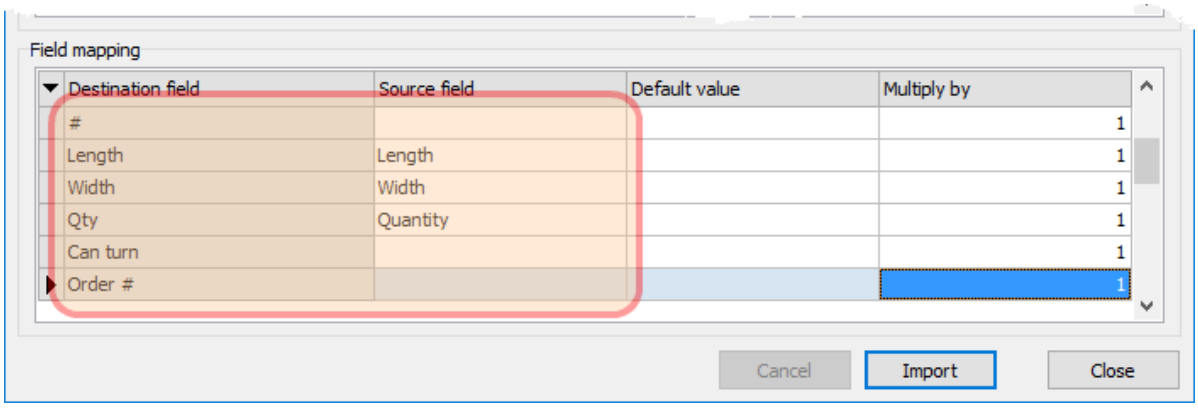
Select particular Sheet (in case your file consists of multiple worksheets) and click [OK].



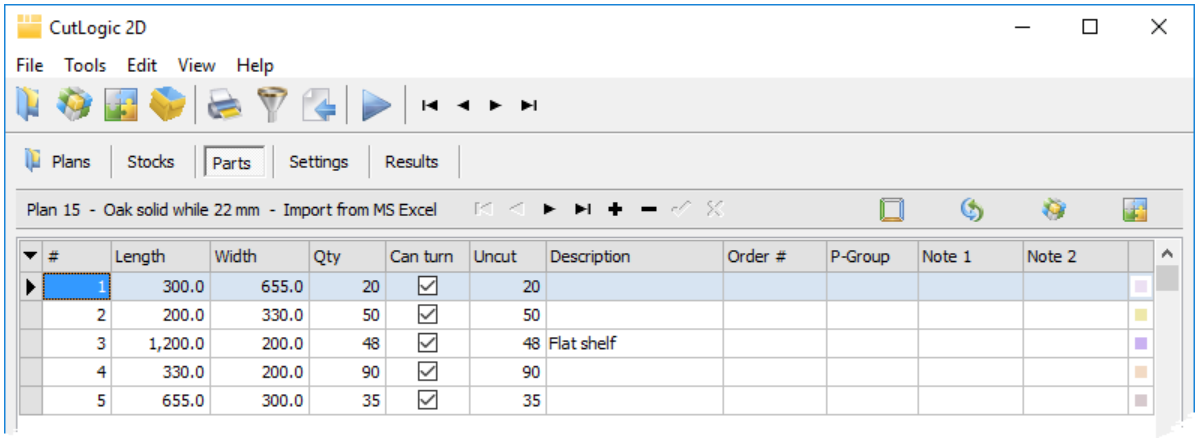
Following Import window opens.



If needed, set up options and map all relevant data fields.

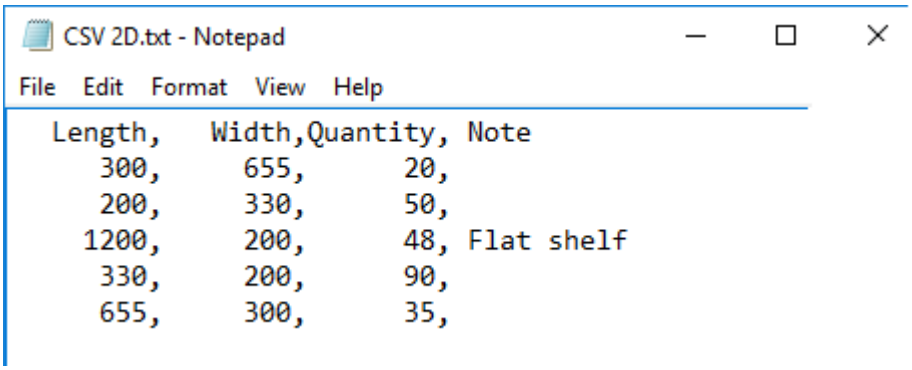


When all fields you want to import are mapped, you can click the [Import] button and import is done. You can start to work with data.



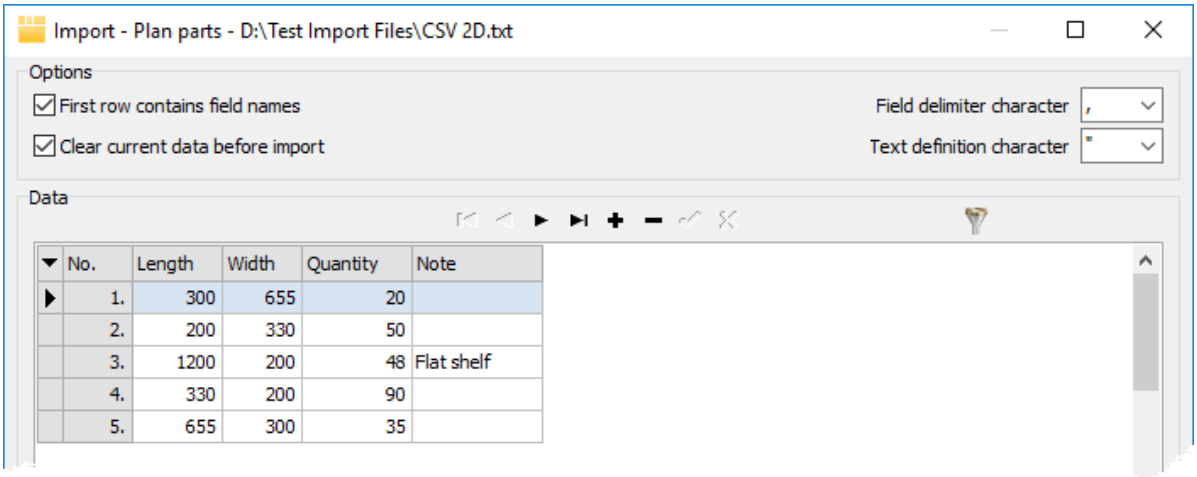
17.4 Import from CSV file

If you prepare import data in CSV (Comma Separated Values) file you can import them directly from the file.

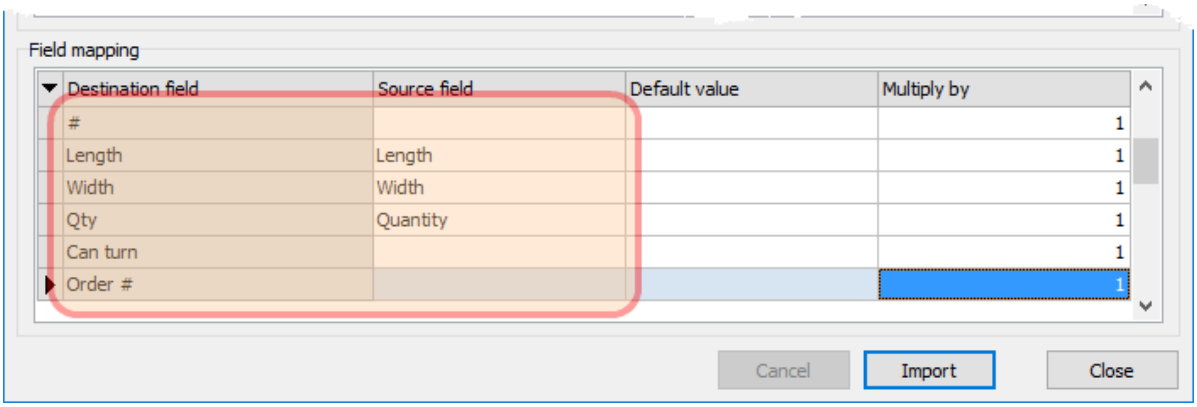


Open CSV file you want to import from. See more in How to import data[123].

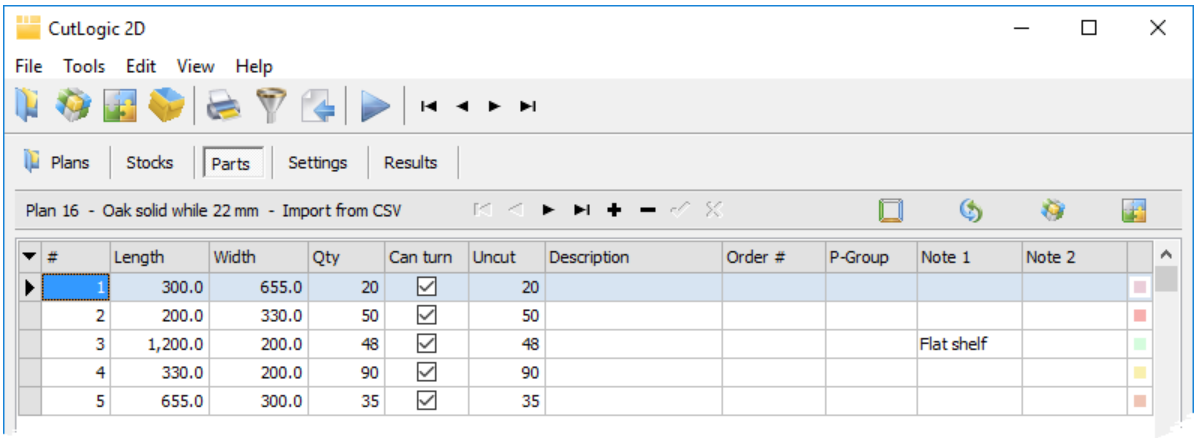
Following Import window opens.



If needed, set up options and map all relevant data fields.



When all fields you want to import are mapped, you can click the [Import] button and import is done. You can start to work with data.

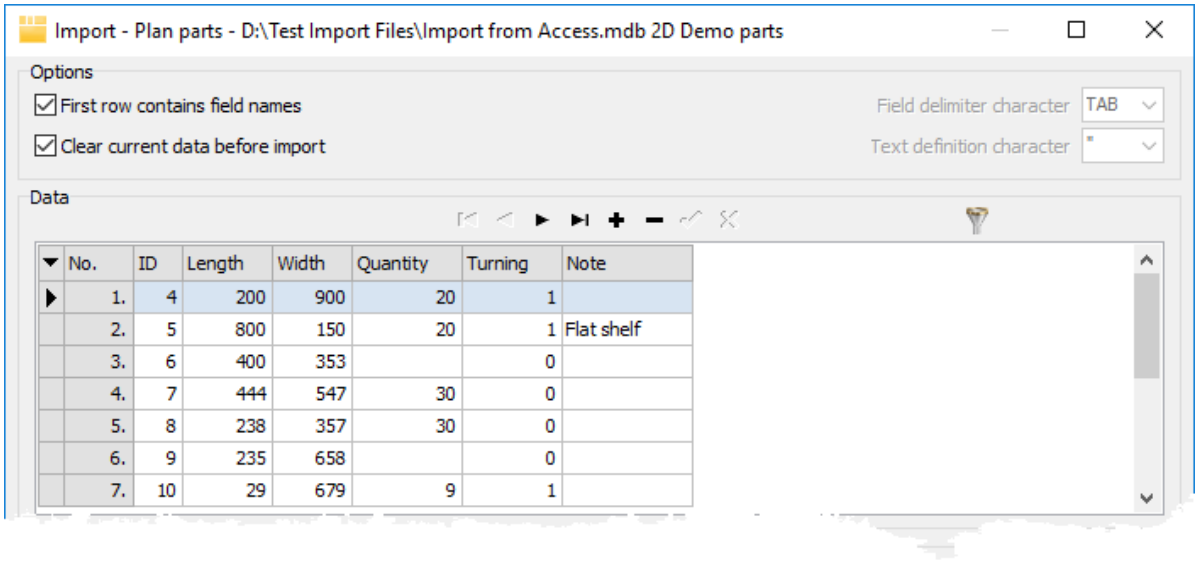


17.5 Import from Access db file

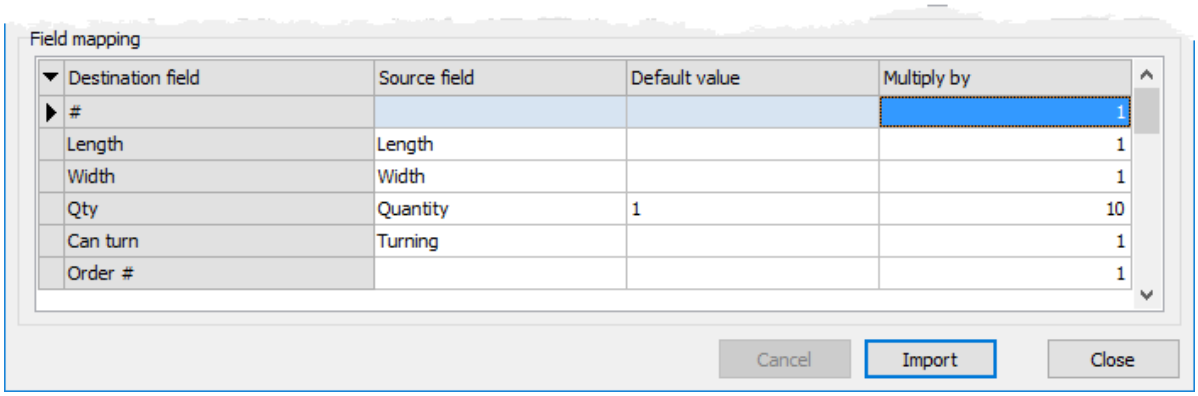
Import from Access db files (*.mdb, *.accdb) is very similar to imports from any table based files like Microsoft Excel (*.xls or *.xlsx).

Open Access file you want to import from. See more in How to import data 123.

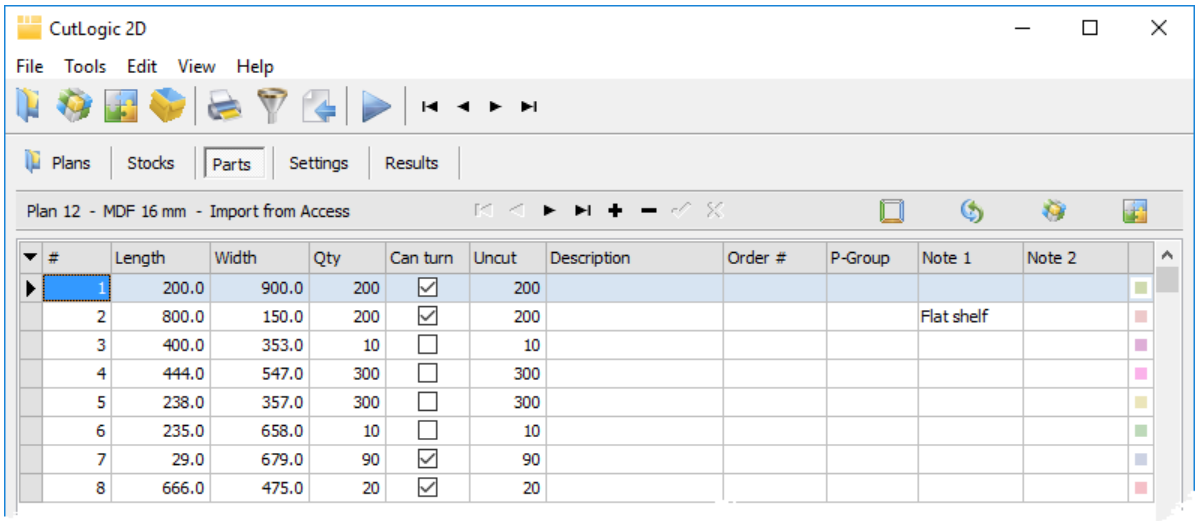
Following Import window opens.



Now you can start mapping. In our case we have used Default value feature for field Qty because of some source data in Access file have no values, and Multiply by column has been set to 10 on Qty.



When all fields are mapped, you can click the [Import] button and import is done. You can start to work with imported data.



#	Length	Width	Qty	Can turn	Uncut	Description	Order #	P-Group	Note 1	Note 2
1	200.0	900.0	200	☑	200					
2	800.0	150.0	200	☑	200				Flat shelf	
3	400.0	353.0	10	☐	10					
4	444.0	547.0	300	☐	300					
5	238.0	357.0	300	☐	300					
6	235.0	658.0	10	☐	10					
7	29.0	679.0	90	☑	90					
8	666.0	475.0	20	☑	20					

17.6 Import via connection file

Import via connection files extremely extends importing capabilities of CutLogic 2D. Connection file is a file containing information how to connect to existing data source via ODBC or OLE DB driver installed on computer where CutLogic 2D runs. Connection file is simple text file with one line including connection definition.

Example connection file cf1.conn for Microsoft SQL Server:

```
Provider=SQLOLEDB; Server=myServerAddress; Database=myDataBase;
Uid=myUsername; Pwd=myPassword;
```

You can also define table name, for example:

```
Provider=SQLOLEDB; Server=myServerAddress; Database=myDataBase;
Uid=myUsername; Pwd=myPassword; TableName=Orders;
```

Or you can define SQL statement, for example:

```
Provider=SQLOLEDB; Server=myServerAddress; Database=myDataBase;
Uid=myUsername; Pwd=myPassword; SQL=select * from Orders where MaterialNo = 321
order by Length;
```

One more example, ODBC connection to Firebird SQL database using complex SQL statement:

```
DRIVER=Firebird/InterBase(r) driver; UID=SYSDBA; PWD=masterkey;
DBNAME=myServer:C:\data\ERP.fdb;
sql=
select Orders.*, Customers.CompanyName
from Orders
left join Customers on Customers.ID = Orders.CustomerID
where Orders.MaterialNo = 411
order by Orders.Date
```

For more information how to define connection string for your specific data source, see www.connectionstrings.com or contact us.

18 Export

CutLogic 2D provides powerful features and rich functionality for export. Exporting data is easy and user friendly. Many output formats are supported in the program. You can export data to common or specific file formats.

Common file formats

TXT	Text
CSV	Comma separated values
XLSX	MS Excel table
DOCX	MS Word file
HTML	Hyper Text Markup Language
PDF	Portable Document Format
RTF	Rich Text Format
ODT	Open Document Format
ODS	Open Document Spreadsheet
JPG	You can export labels to JPG files, one file per one label
PNG	You can export labels to PNG files, one file per one label

Specific file formats

DXF	AutoCAD Drawing Exchange Format
G-Code	Numerical control language for CNC
Edgebands	Exchange format of edgebands for 1D optimizer (CSV)
CutLogic	CutLogic 2D plan exchange format

Note: See Edition comparison 14 chapter to check if desired output format is available in given edition of CutLogic 2D.

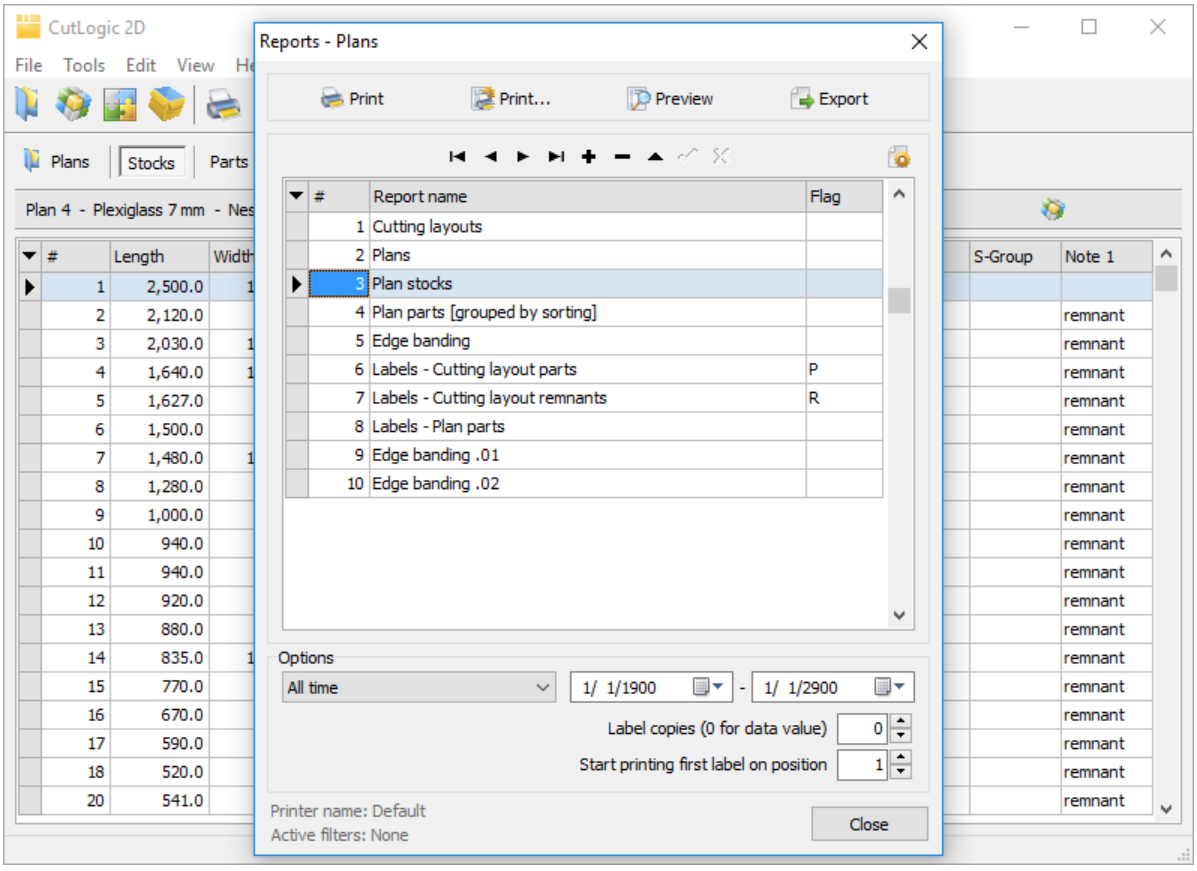
Tip:If you use Fractional format, instead of Excel (XLSX) file, export to CSV file, Excel then automatically recognizes numbers in Fractional format (as Fractions).

18.1 Export to common file formats

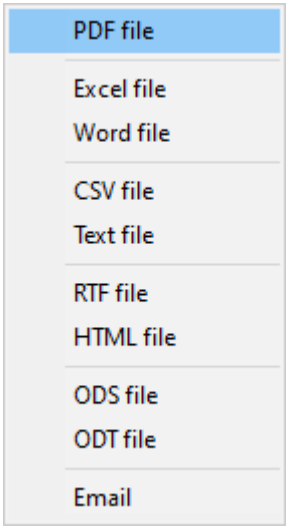
CutLogic 2D enables you to export data to Excel file, PDF file, CSV file and other formats[135]. Export of common file formats is a part of Report window[110]. You can export any report available in given report form. You can export reports from one of following report window available in the program:

Reports - Plans
Reports - Materials
Reports - Assemblies
Reports - Storages
Reports - Edgebands

To export data, first select desired section (e.g. Materials) and click the button  on the main toolbar or select the menu item *"File > Reports"* or press Ctrl+P.

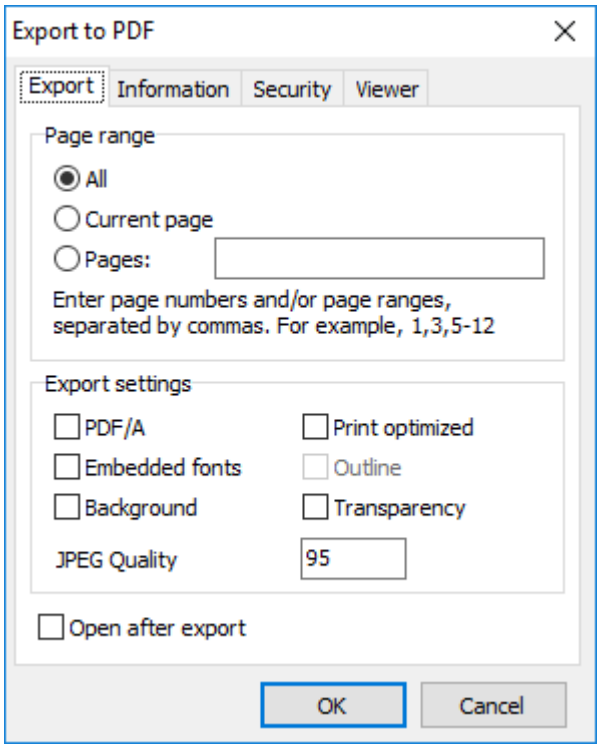


Select desired report from the list of available reports, set-up Options and click the button [Export].

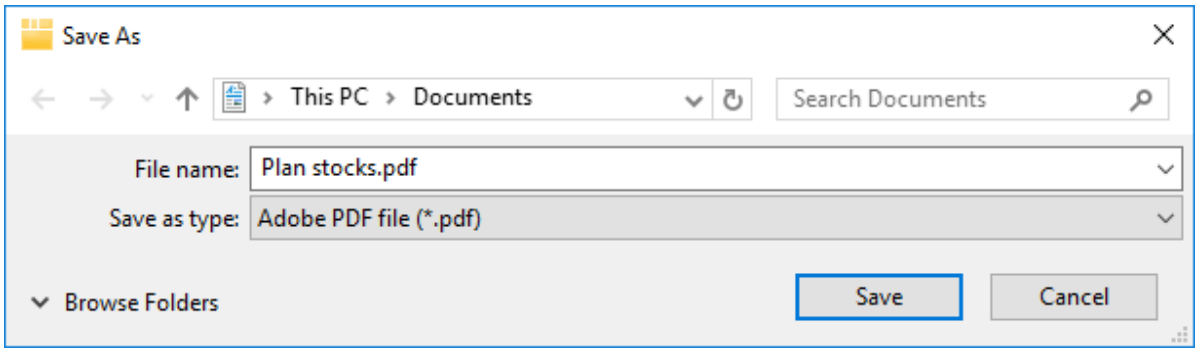


Select desired export format from the list.

Tip: All mentioned file formats can be sent as an email directly from CutLogic 2D.



Check or change export settings and click [OK].



Select the file name and directory and click the button [Save].

Plan stocks

Plan #4 - Plexiglass 7 mm - Nesting 1 5/5/2015

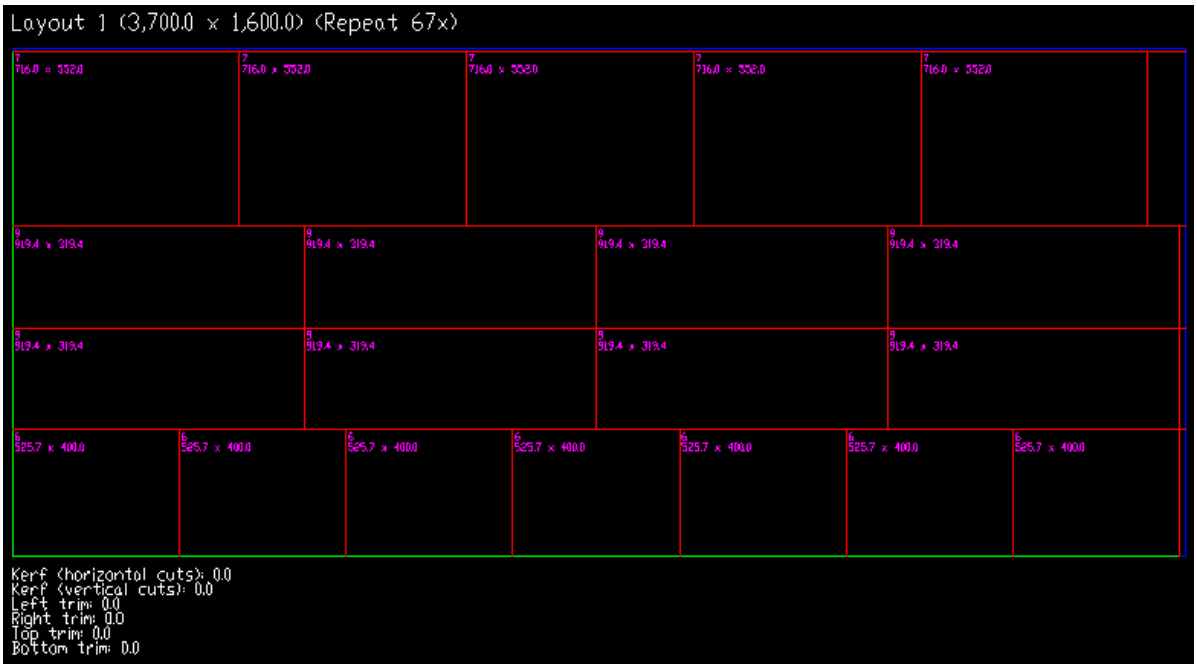
#	Description	Storage	Length	Width	Cost/pc	Total cost	Qty	Used
1			2,500.0	1,300.0	419.25	419.25	unlim.	1
2			2,120.0	670.0	181.81	181.81	1	1
4			1,640.0	1,100.0	230.91	230.91	1	1
5			1,627.0	630.0	131.20	131.20	1	1
6			1,500.0	705.0	135.36	135.36	1	1
8			1,280.0	850.0	139.26	139.26	1	1
10			940.0	560.0	66.85	66.85	1	1
12			920.0	700.0	83.08	83.08	1	1
13			880.0	670.0	74.29	74.29	1	1
14			835.0	1,300.0	137.86	137.86	1	1
16			670.0	690.0	58.25	58.25	1	1
17			590.0	660.0	49.06	49.06	1	1
21			650.0	345.0	28.26	28.26	1	1
23			505.0	267.0	16.99	16.99	1	1
	Total			(area) 13.70		1,752.43	13	14

Note: CutLogic 2D has a built in report editor – FastReport® generator. For details how to work with reports (edit, print or preview) or for explanation regarding all report settings and/or export settings please download FastReport user's manual from our web.

18.2 Export to DXF files

Export of DXF file is specific type of export, enabling you to export cutting layout drawings. There are two ways how to export cutting layouts to dxf files. The first one is to export it manually from program menu (*File > Export > Export cutting layouts to DXF files*). The second one is to set auto export path. See more in chapter Setting the Options > DXF Export [49].

Following picture represents cutting layout exported as dxf file opened in CAD application.



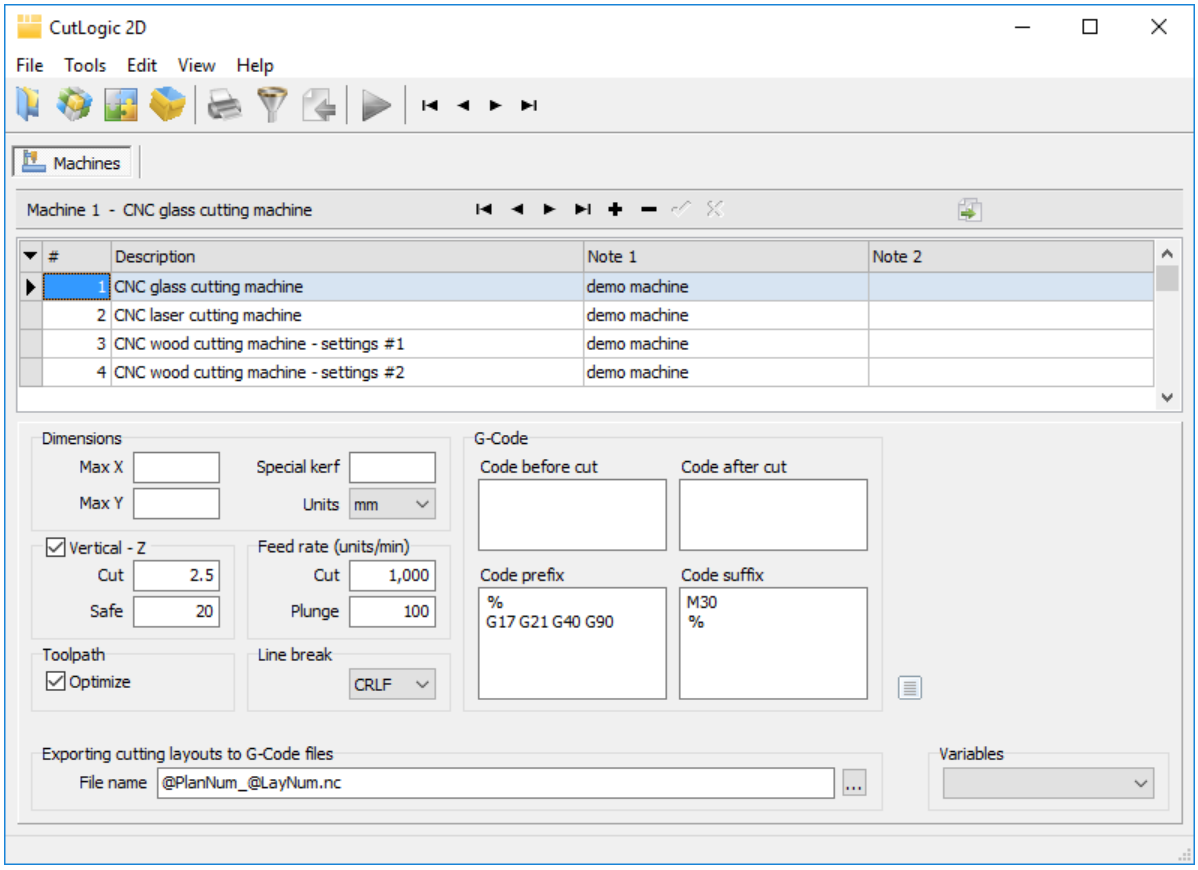
It is possible to export objects like Stocks, Parts, Part info, Layout info and Cuts. Each object can be exported as separate layer.

18.3 Export to G-Code files

G-Code is the numerical language used to control CNC machines and CutLogic 2D enables you to export cutting layouts to G-Code file format. There are two ways how to export cutting layouts to G-Code files. In both cases program exports cutting layouts of currently selected plan. Each cutting layout is exported as a single file.

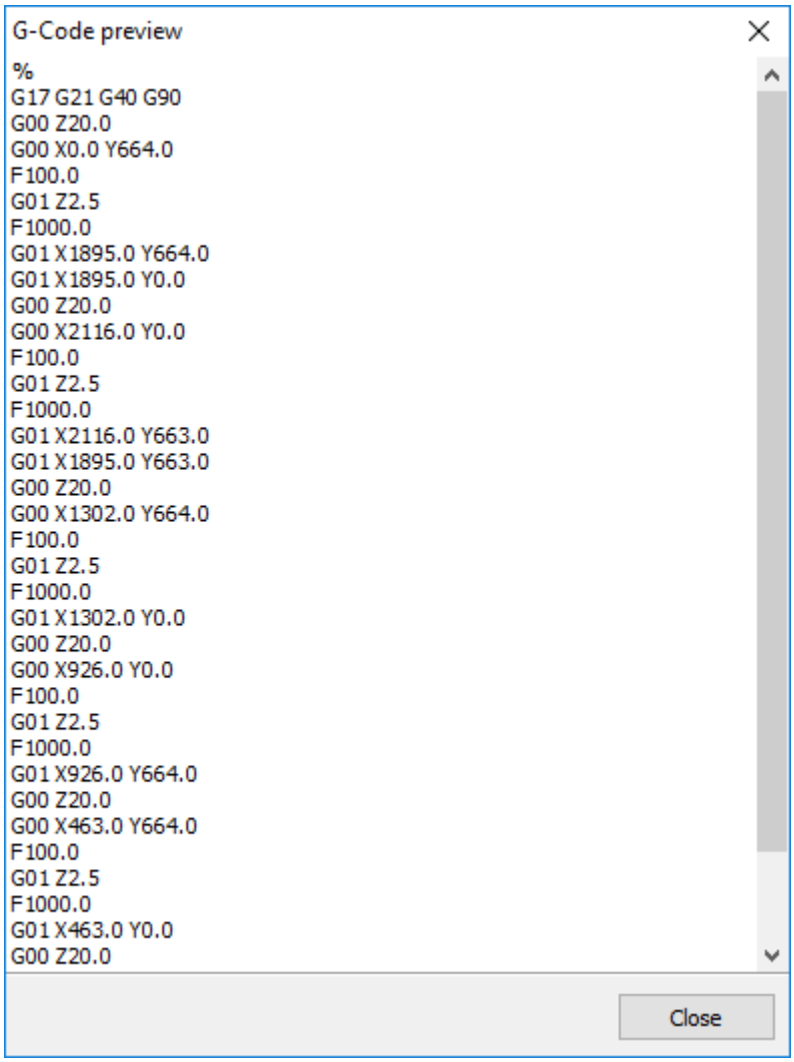
The first way is to export it from program menu (*"File > Export > Export cutting layouts to G-Code files"*). In this case, setting of currently selected machine is used for export.

Second way is to export G-Code directly from Machines. In this case, cutting layouts of currently selected plan are exported. To open Machines, select menu item *"File > Machines"* or press Ctrl+6.



Choose machine you want to use for export, or define new one. Enter appropriate setting and click the button  to export cutting layouts as G-Code files.

Following image represents example of generated G-Code.



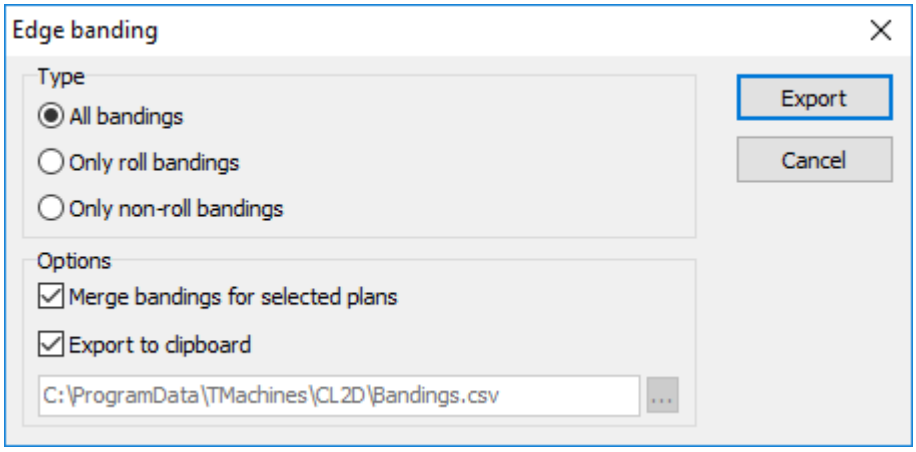
See also CNC Machines[156].

18.4 Export to CutLogic file

CutLogic file is special exchange file format enabling you to import/export plans. Each file can contain only data of a single plan. To export plan, select desired plan you want to export and choose the menu item *"File > Export > Export plan to CutLogic file"* or press Alt+1.

18.5 Edge bandings for 1D optimizer

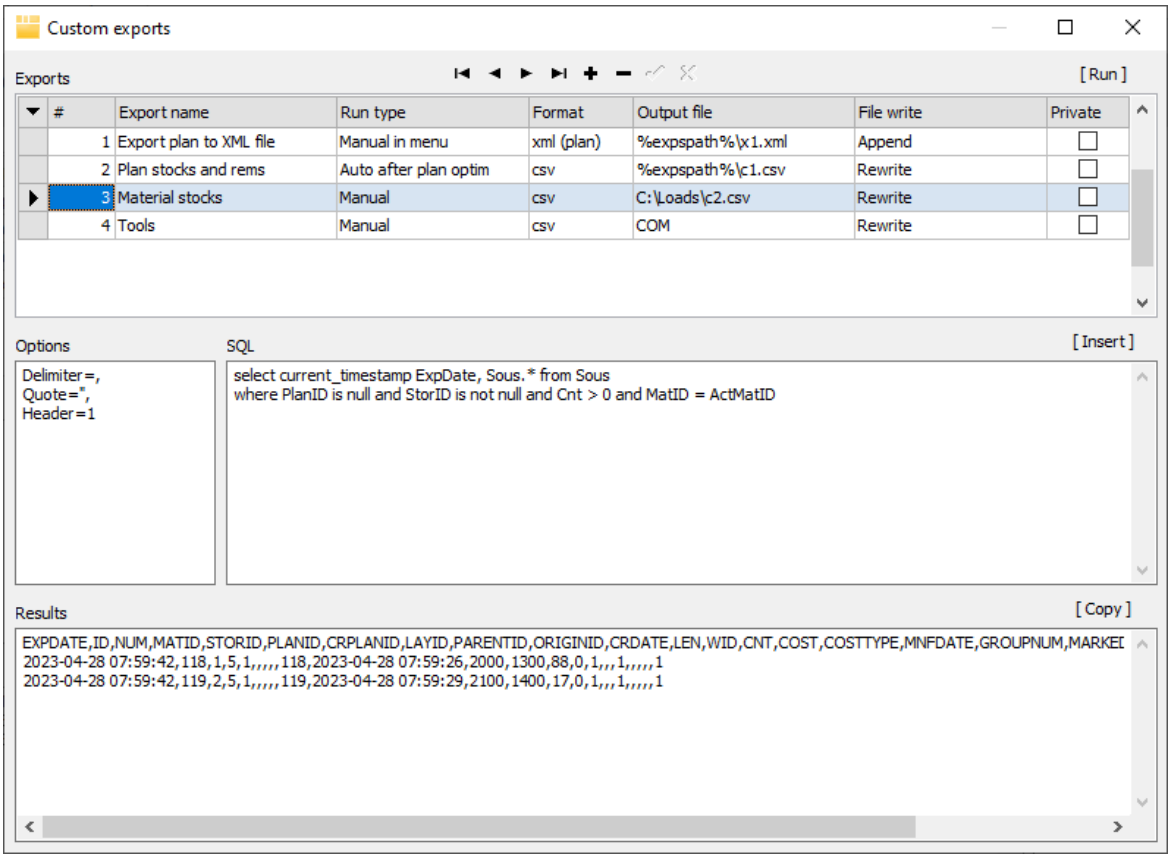
This kind of export enables you to export edgebands of currently selected plan(s) as simple CSV (comma separated value) file. It can be used for further 1D optimization. To export edgebands, select plan(s) containing edgebands you want to export and select the menu item *"File > Export > Export edgebands for 1D optimizer"*.



If needed, set-up Type and Options and click the button [Export].

19 Custom exports

Custom exports module allows you to define and run your own custom exports. ("*File > Custom exports*" or Ctrl+E)



Export name: Name of export. If some exports have same name, and one of them is run, all will run.

Run type values:
- Manual
- Manual in menu > Export will be accessible also via menu *"File > Exports"*.
- Auto after plan optim > Export will run automatically after plan is optimized.
- Auto after plan close > Export will run automatically after plan is closed.
- Auto after plan open > Export will run automatically after plan is opened.

Format values:
- xml (plan) > Export of cutting plan including cutting layouts into XML file.
- csv > Export to CSV file using custom SQL query.

Output file: Name of export file.

File write values:
- Rewrite > Output file is rewritten by export data.
- Append > Export data are appended to output file.

- Append and empty line > One empty line and export data are appended to output file.
- Rewrite and empty line > If multi-selected data are exported, each data block will be followed by empty line.

Private: If multiple users share same database over LAN, each can make his exports private, non-visible to other users.

Options:
- Run > Export will run third party app or batch file, for example Run=c:\mybatch.bat.

Options (for csv exports):
- Delimiter > Field delimiter.
- Quote > Quotation mark used to quote fields which include delimiter. To quote each field, double the quotation mark, for example Quote="".
- Header > 0 - export will not include field names, 1 - field names will be included once, 2 - field names will be included for each block appended
- BOM > 0 - export file will not include BOM (Byte Order Mark), 1 - BOM will be included. If CSV file contains accented characters, Excel will not display them properly without the BOM.

SQL: Here you can define your SQL query. For example select * from Plans.

You can also add to SQL constant header, for example

```
/* ExpHead
This is my constant header line 1.
This is my constant header line 2.
*/
select ...
```

Masks you can use in output file name:
- %expspath% > Represents standard CutLogic folder *C:\ProgramData\TMachines\CL2D\Exps*.
- COM > Output will be sent to (virtual) serial port. You can set serial port properties at *"Tools > Options > Serial port"*.

Masks you can use in output file name and SQL query:
- ActPlanID > ID of selected plan.
- ActPlanSouID > ID of selected stock in selected plan.
- ActPlanPartID
- ActMatID
- ActMatSouID
- ActMatPartID
- ActMatSettID
- ActStorID

- ActStorSouID
- ActAssemID
- ActAssemPartID
- ActRepID
- ActPlanNum > Number (#) of selected plan.
- ActMatNum
- ActStorNum
- ActAssemNum
- ActRepNum
- ActPlanDes1 > Description of selected plan.
- ActMatDes1
- ActStorDes1
- ActAssemDes1
- ActRepDes1

Masks you can use in SQL query:

- ActPlanIDs > refers to all multi-selected plans; for example *select * from Plans where ID in ActPlanIDs*
- ActIDs > refers to all multi-selected records; for example *select * from Mats where ID in ActIDs*

Masks you can use for field names in SQL queries:

- _l > Transforms length value from database internal format to format set in CutLogic, for example *select 2 * (Len + Wid) Perim_l from Parts*.
- _a > Transforms area value from database internal format to format set in CutLogic, for example *select Len * Wid Area_a from Parts*.

Press button Run to run selected export. (F3 or Ctrl+Enter)

Press button Insert to enter mask into SQL query.

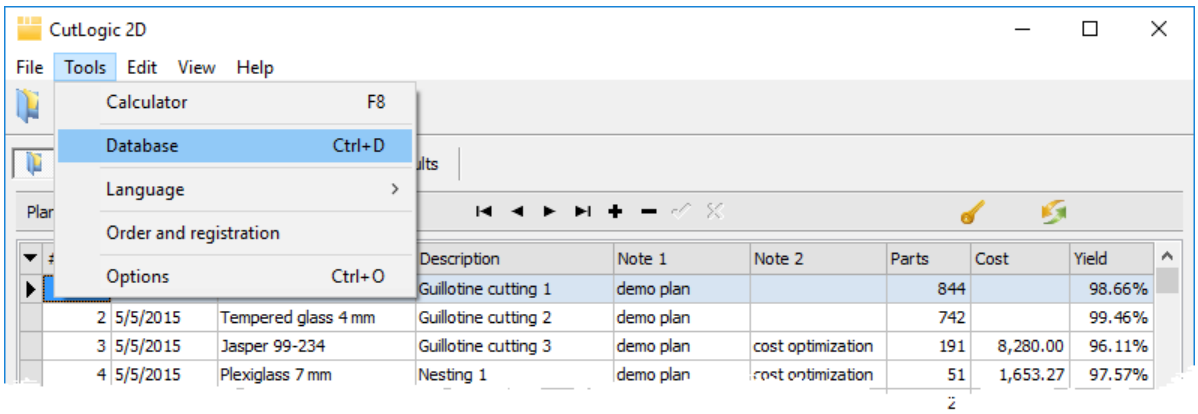
Press button Copy to copy result of export into clipboard.

Custom exports support multi-selected data. For example if you multi-select 5 plans, and then run export in Custom export form, all 5 plans will be exported.

20 Database

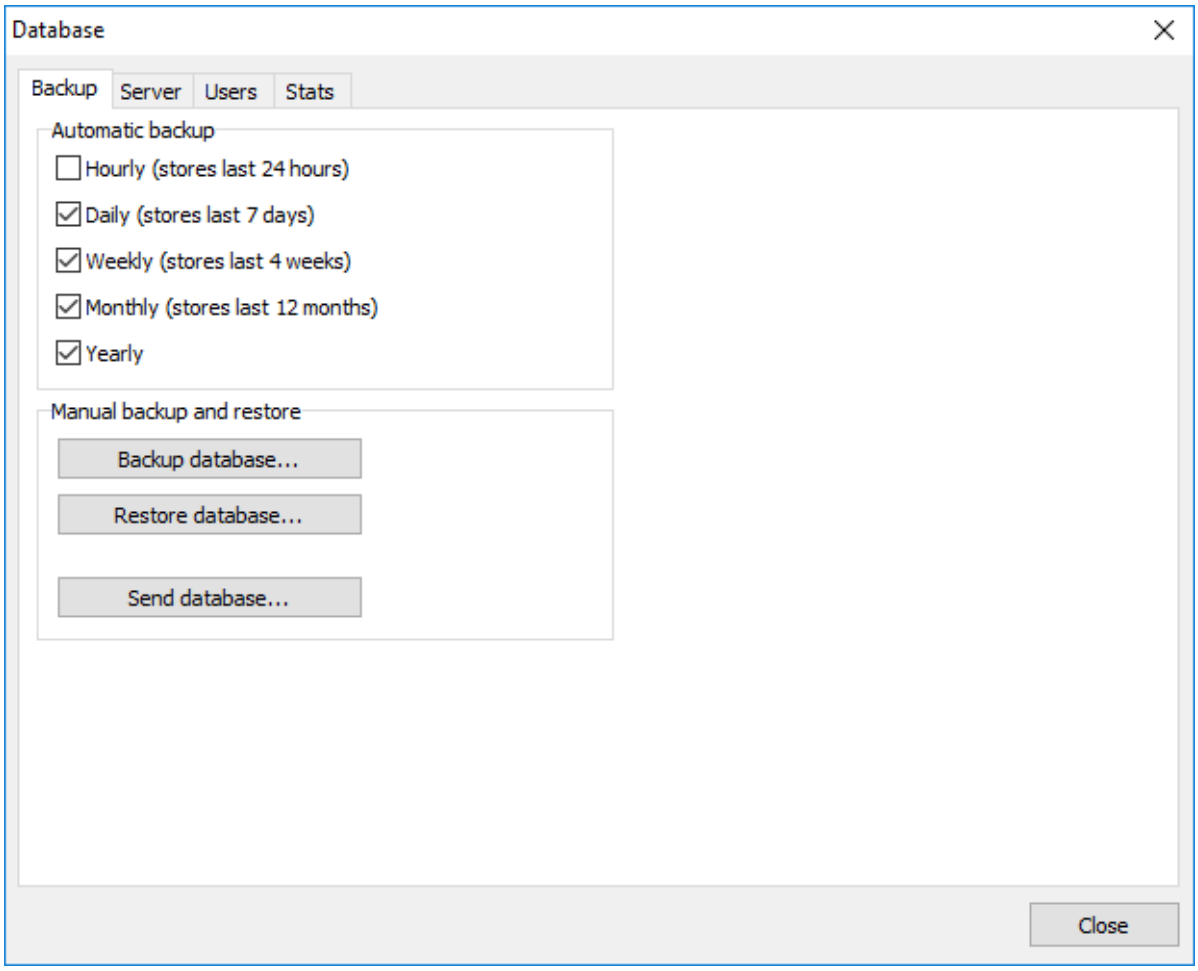
CutLogic 2D uses for its data Firebird SQL database. It brings new features in terms of security, reliability, networking and data management into the program. This chapter describes how to maintain the data and the users.

To maintain the data select the menu item *"Tools > Database"*.



20.1 Backup

To backup or restore database, select the menu item *"Tools > Database"* and go on page *"Backup"*.



Automatic backup

Automatic backup enables you to define frequency of creation the backup files. Check one or more options in Automatic backup area to match your backup strategy.

Note: Automatic backup works in the time loop. If you chose, for example, hourly backup, system automatically creates new backup file every hour. After 24 hours new backup file replaces the oldest backup file, so that the oldest available backup file can not be older than 24 hours. Individual backups (Hourly, Daily, Weekly, etc.) work independently, so for example if you set on Daily and Weekly backups, Daily backup will keep backups for last 7 days (one backup per day); and Weekly backup will keep backups for last 4 weeks (one backup per week).

Manual backup and restore

You can backup or restore your data anytime as you need.

Send database

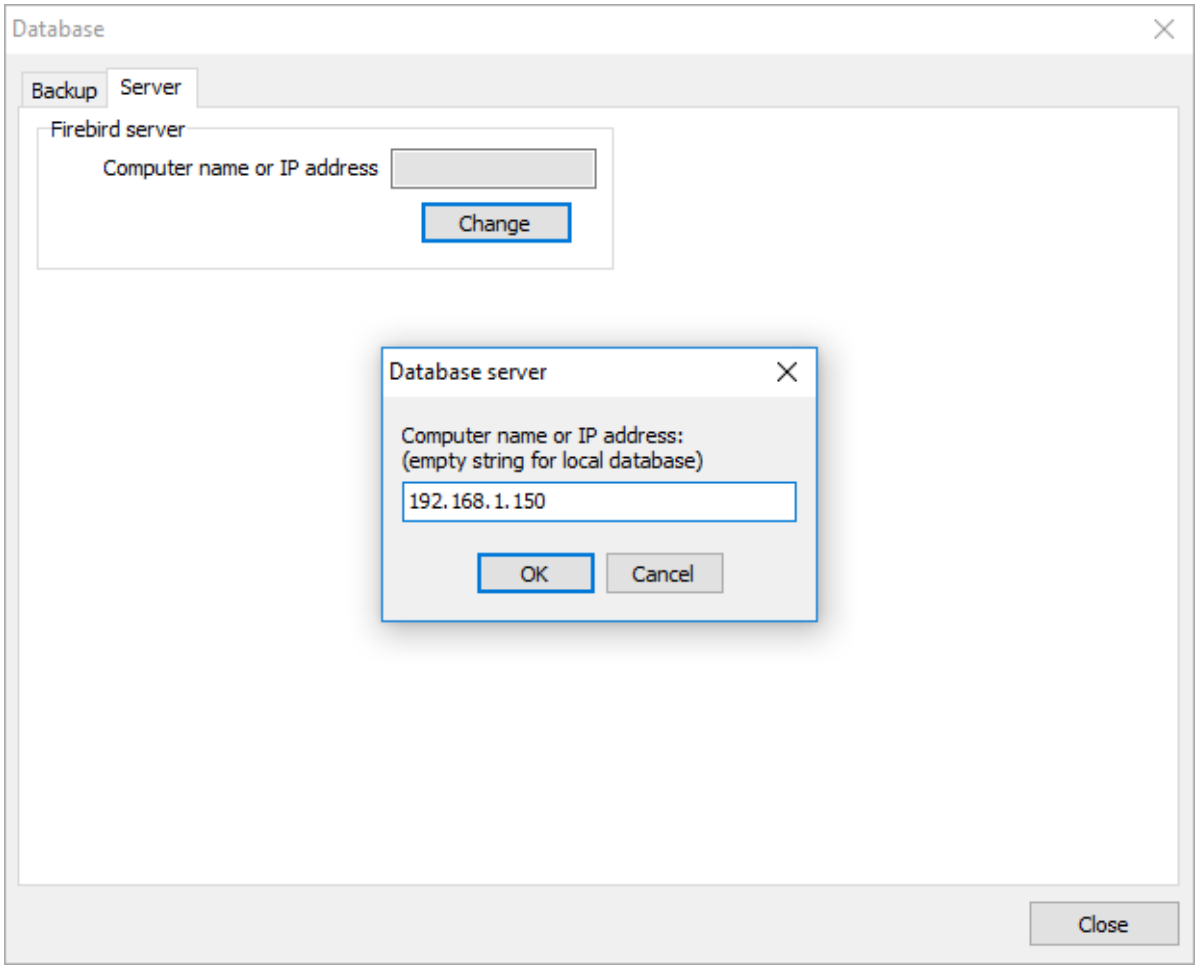
You can send your data via email for diagnostic purposes to our support department.

20.2 Server

After the CutLogic 2D installation, program works in embedded database mode. You do not have to install database separately - it is essential part of the program. However the data saved in this embedded database is not available for other users and can not be shared. Only way how to share the data is to install the Firebird database and switch the CutLogic 2D to the network database mode.

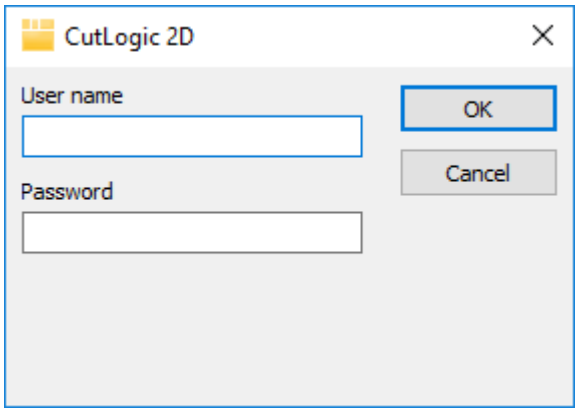
Changing CutLogic 2D to the network database mode

To switch the program to the network database mode, select the menu item *"Tools > Database"*. Go on page *"Server"* and click the button [Change].



Fill in computer name or IP address where Firebird SQL server is installed and click the [OK] button.

Program automatically restarts and new Login dialog box appears.



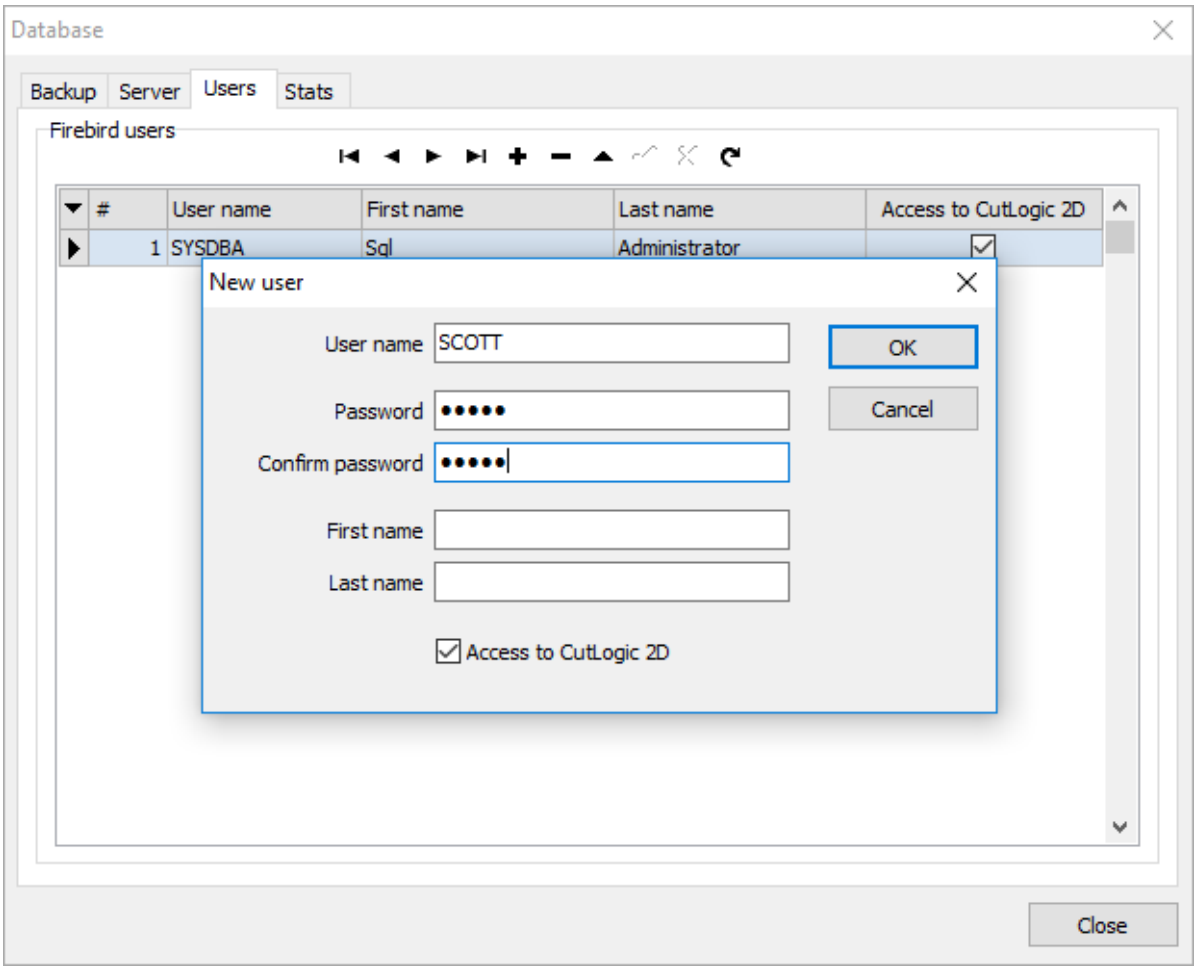
Fill in user name and password and click the [OK] button to start the program.

Note: Firebird SQL server contains default user "SYSDBA" with default password "masterkey". You can use this default user for login into CutLogic 2D or create new users as described in chapter Users 152.

See also Network database setup 154.

20.3 Users

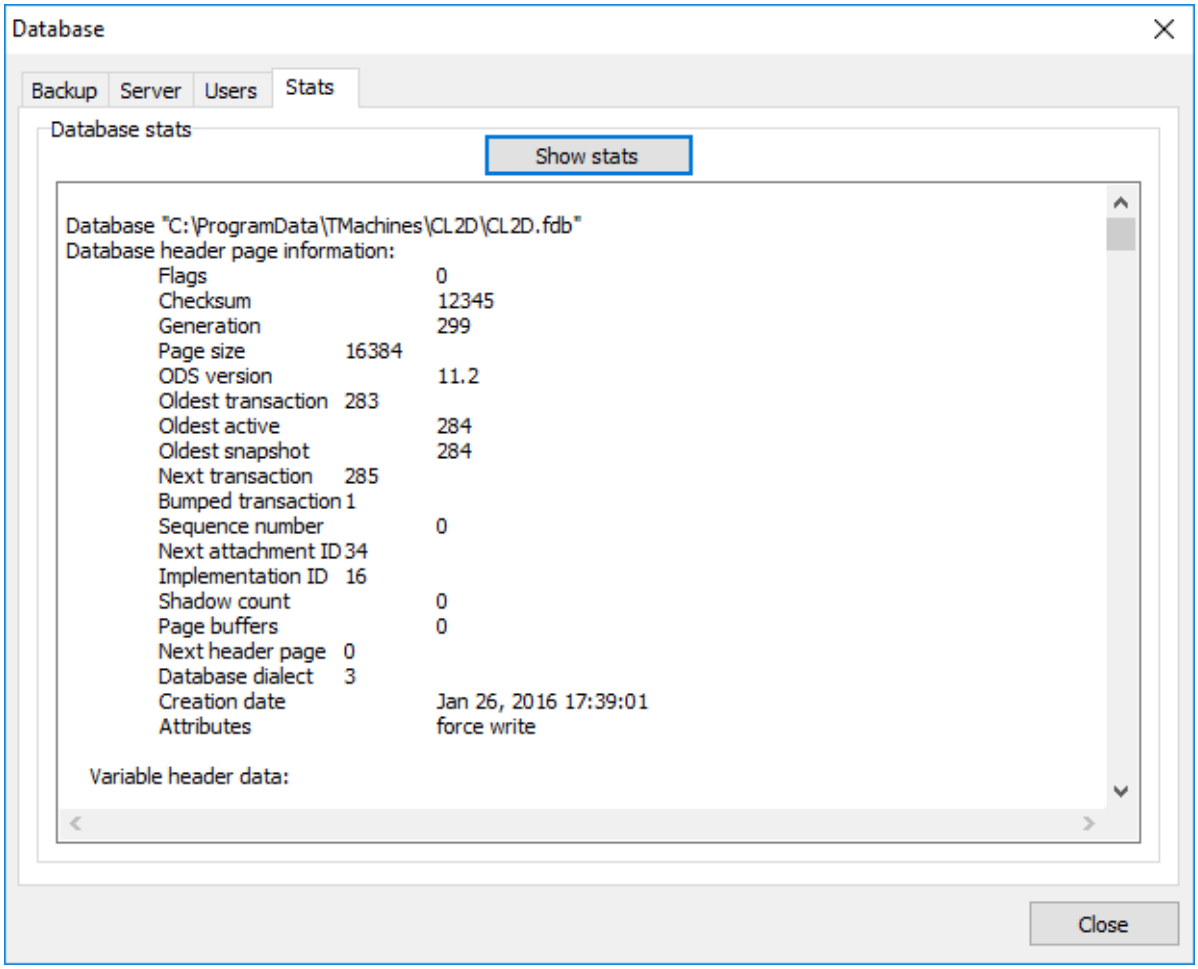
CutLogic 2D has to work in network database mode to allow working with users. To add new user, select the menu item *"Tools > Database"*. Go on page *"Users"* and click the button  to add new user.



Fill in the user name and the password, confirm the password and check the Access to CutLogic 2D option and click the [OK] button.

20.4 Statistics

The program enables you to show Firebird database statistics. This feature can be useful especially for database administrators. To show the statistics, select the menu item *"Tools > Database"*. Go on page *"Stats"* and click the [Show stats] button.



20.5 Network setup

First: Install Firebird and CutLogic 2D database file on the server

On the server computer:

1. Download Firebird SQL server version 2.5 64-bit at https://www.firebirdsql.org/en/firebird-2-5/ and install it (use default settings, don't change anything, just click Next buttons). Make sure that no firewall or other SW blocks Firebird server on ports 3050 and 3051.
2. Copy or restore database file CL2D.fdb to chosen folder, e.g. C:\CutLogic\CL2D.fdb.

   To obtain CL2D.fdb, install CutLogic 2D on one of the station computers, then you will find CL2D.fdb on station at:
   C:\ProgramData\TMachines\CL2D\CL2D.fdb
3. In Firebird folder, open file aliases.conf and add to it line:
   TMachines.CL2D = C:\CutLogic\CL2D.fdb

   on Linux e.g.
   TMachines.CL2D = /opt/databases/CL2D.fdb

   Make sure you have full write access right and file aliases.conf was really modified.
4. In Firebird folder, open file firebird.conf and add to it line:
   RemoteAuxPort = 3051

   Make sure you have full write access right and file firebird.conf was really modified.
5. Write down computer name. It can be either computer name (e.g. JOECOMP), or IP address (e.g. 192.0.2.25). Further we will refer to it as to ServerName.
6. Restart Firebird SQL server.

Second: Install CutLogic 2D on each station

On each station computer:

1. Install CutLogic 2D
2. Run CutLogic 2D, go to *"Tools > Database > Server"*, and enter ServerName.

Third: Define users

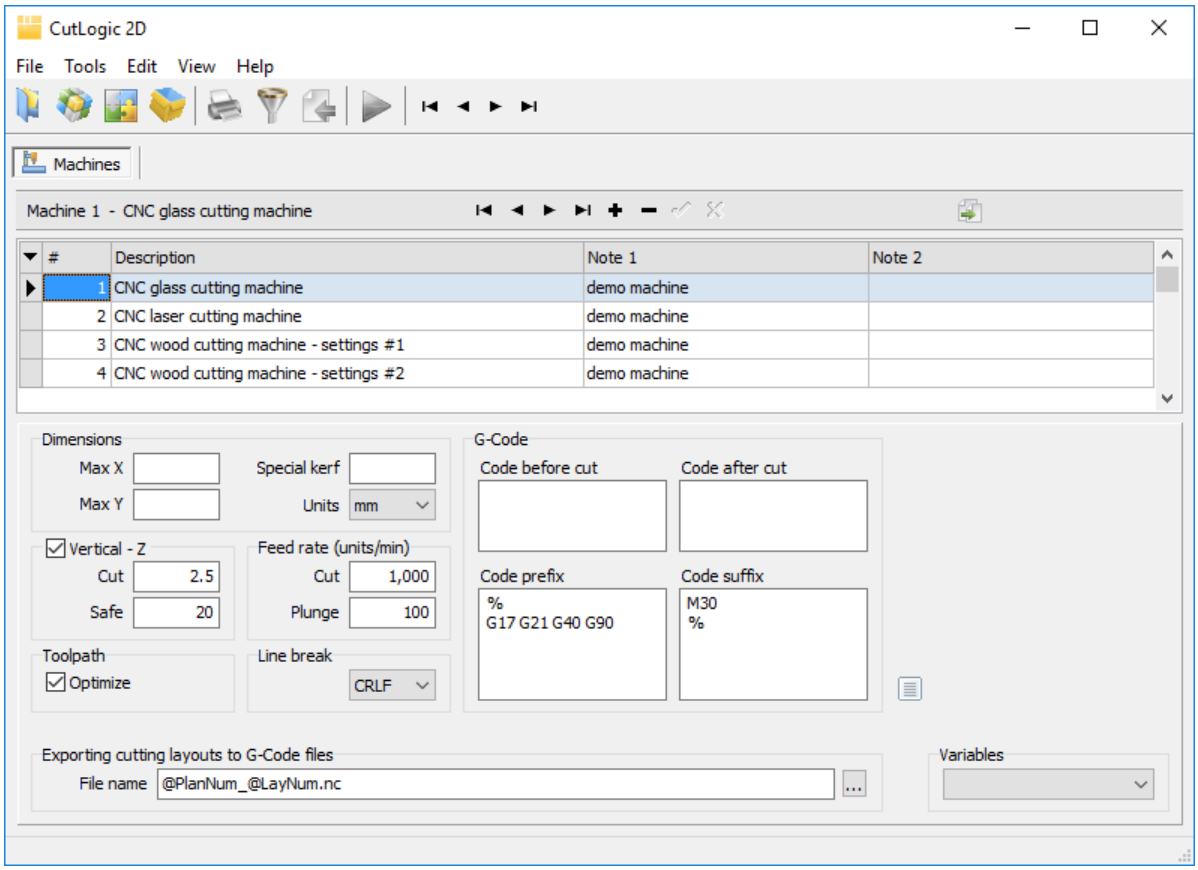
1. Choose one station computer (any) and run CutLogic 2D, log in under username "SYSDBA" and password "masterkey".
2. Go to *"Tools > Database > Users"* and define users - their user names and passwords.

Fourth: Security

It is recommended to change SYSDBA's password from default "masterkey" to your own one. To do so, run CutLogic 2D, log in under username "SYSDBA" and password "masterkey", and go to *"Tools > Database > Users"*.

21 CNC Machines

To work with Machines, select the menu item *"File > Machines"* or press Ctrl+6.



Here you can pre-define settings of CNC routers for which G-Code is generated.

Columns

No.	Record number.
ID	Unique identification number generated by program.
#	User defined identification number.
Description	Short description.
Note 1	Additional description.
Note 2	Additional description.
Note 3	Additional description.

To rearrange columns[34], their order and visibility, click the button in data grid or select the menu item *"View > Rearrange columns"*.

Fields

Dimensions

Max X	Limits maximum of X coordinate. Program will not allow export if cut coordinates exceed this value.
Max Y	Limits maximum of Y coordinate. Program will not allow export if cut coordinates exceed this value.
Special kerf	Limits kerf size. Enter value only if real kerf is smaller than kerf (cut width) used in plan. Enter 0 if kerf is compensated by machine.
Units	Units the CNC machine will works with (mm, inches). Make sure you use same units in program!

Vertical - Z	Turn on if cutter uses z-coordinate.
Cut	Cutter z-coordinate during cut.
Safe	Cutter z-coordinate during movement.

Feed rate (units/min)

Cut	Cutter horizontal speed during cut (units/min).
Plunge	Cutter vertical speed during plunge movement into stock (available only if z-coordinate allowed).

Toolpath

Optimize	If allowed, minimizes toolpath by merging cuts and optimizing cutting sequence.

Line break	Defines code of used line breaks (CRLF/CR/LF).

G-Code

Code before cut	Code called before each cut (e.g. spindle on, coolant on, etc.). Each line can be X/Y axis specific if you prefix it with "@x " or "@y ".
Code after cut	Code called after each cut (e.g. spindle off, coolant off, etc.). Each line can be X/Y axis specific if you prefix it with "@x " or "@y ".
Code prefix	Code called at the beginning of the G-Code program (e.g. comments, safety codes, modal codes, etc.).
Code suffix	Code called at the end of the G-Code program (e.g. comments, safety codes, modal codes, etc.).

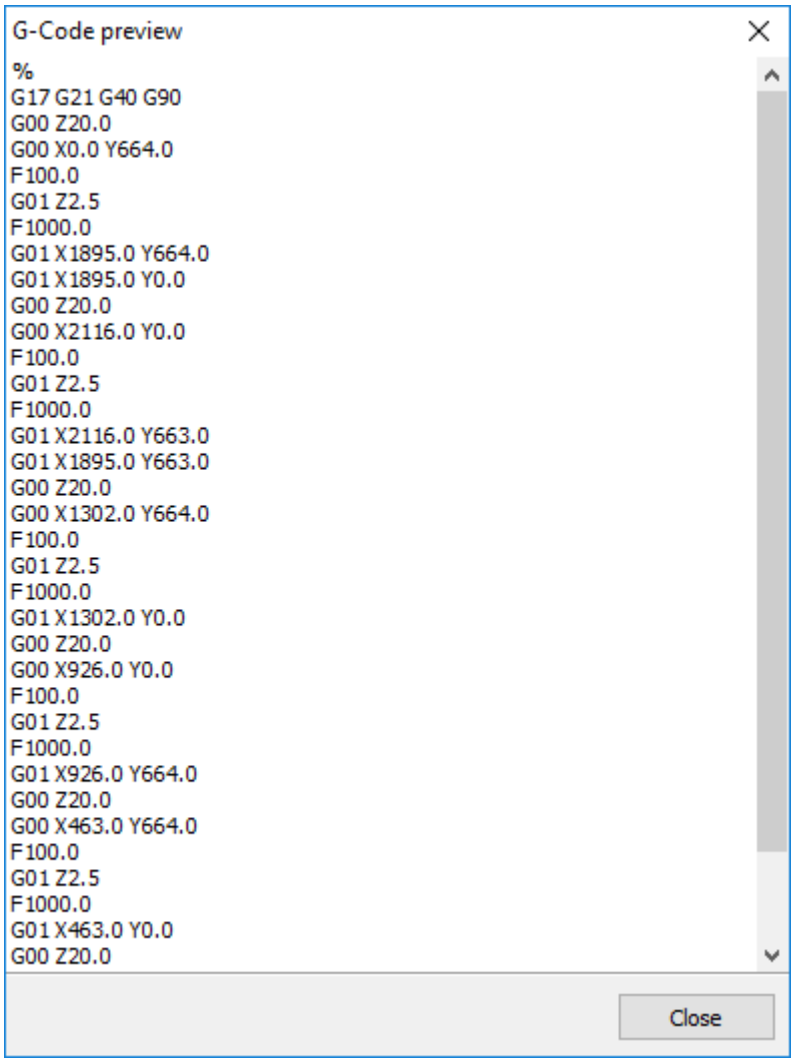
Exporting cutting layouts to G-Code files

File name	File name of G-Code program.
Variables	List of available variables, which can be inserted into Code prefix, Code suffix or File name. To insert variable, select position where it

should be placed, and choose desired one from the list.

Click the button  , to preview G-Code program of currently selected Plan. Click the button  to export cutting layouts as G-Code files.

Following image represents example of generated G-Code.



See also Export > G-Code files[140].

- A -

- B -

- C -

- D -

- E -

- F -

- G -

- H -

- I -

- K -

- L -

- M -

- N -

- O -

- P -

- R -

- S -

- U -

- W -