

Woodwork4Inventor

- Design quality wood products
- Reduce quantity of mistakes and time-wasting calculations
- Have a faster production process



Technical brief

Contents

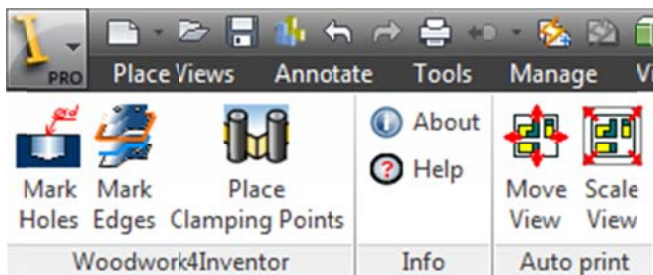
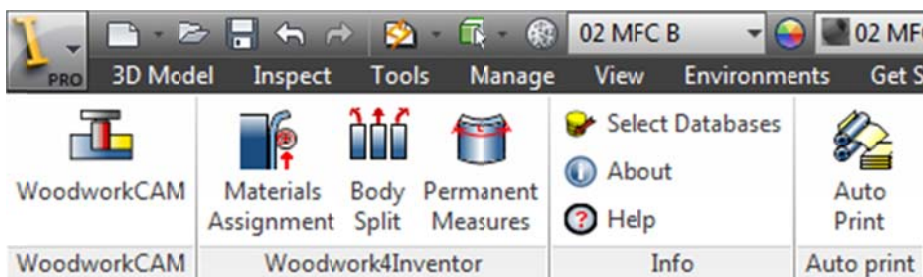
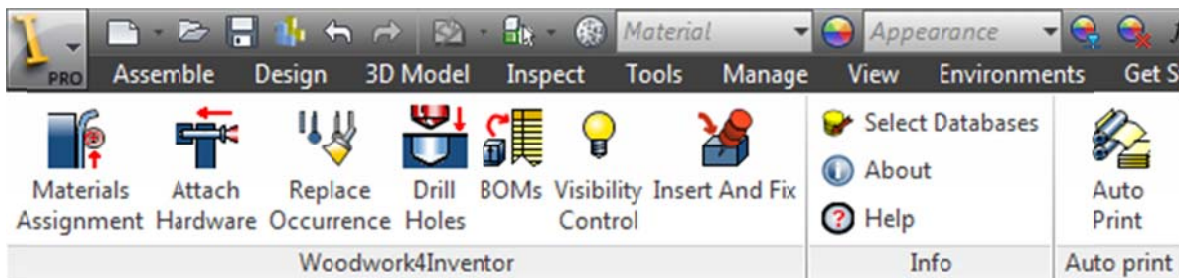
Based on a powerful and intelligent 3D CAD engine.....	<u>33</u>
Assignment of materials.....	<u>44</u>
Groups of materials.....	<u>44</u>
Edge banding groups.....	<u>55</u>
Size Calculations of Part and Blank.....	<u>55</u>
Types of parts.....	<u>66</u>
Glued composite parts	<u>66</u>
Library of W4I furniture components	<u>66</u>
Furniture Hardware Arrangement and Automatic Holes.....	<u>77</u>
Use of prototype and assembly copying	<u>77</u>
BOM generation	<u>88</u>
Export to cutting optimization software	<u>88</u>
CNC Preparation	<u>99</u>

Technical brief

The Woodwork4Inventor (W4I) makes Autodesk Inventor a more convenient and powerful tool for all woodworking industries (furniture, doors, stairs, etc.). W4I automates and shortens the time for engineering documentation preparation up to 50 %.

Based on a powerful and intelligent 3D CAD engine

W4I includes all design capabilities of Autodesk Inventor software and adds new features and design methods. W4I does not restrict any functions of Inventor. Almost any part of furniture may be designed using Inventor and easily prepared for manufacturing by W4I. One can create intelligent parts and assemblies using iPart and iAssembly technologies. The models may be driven using parameter tables, etc.



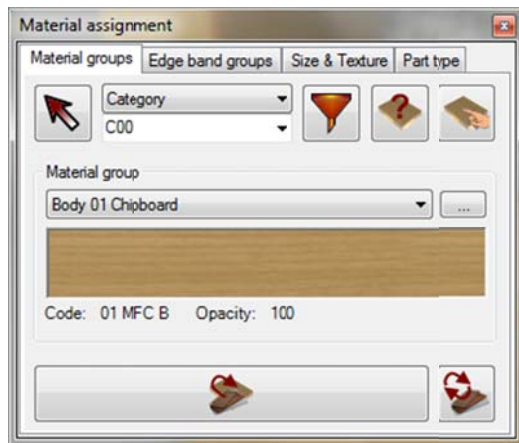
Technical brief

Assignment of materials

Autodesk Inventor can assign a material and appearance for a part. However, is difficult to use the Inventor method in furniture design, since most parts of furniture are composite. For instance, a part consists of laminated chipboard and edge banding material. In fact, such parts are assemblies. They can be modeled as Inventor assemblies, but it significantly increases designing time. This is why W4I presents its own way to handle the materials.

Groups of materials

Woodwork4Inventor uses the concept of Material Group for manipulating the materials of parts. The idea is that all furniture parts may be classified into groups by their function. For example, group of facade materials and group of Body parts materials.



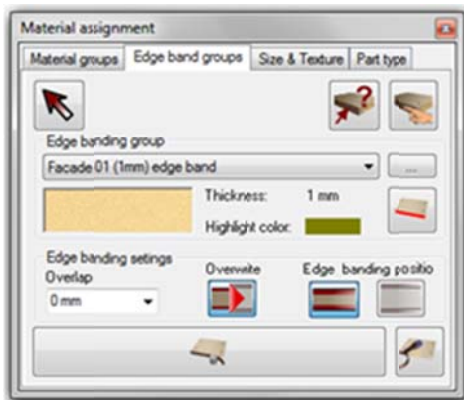
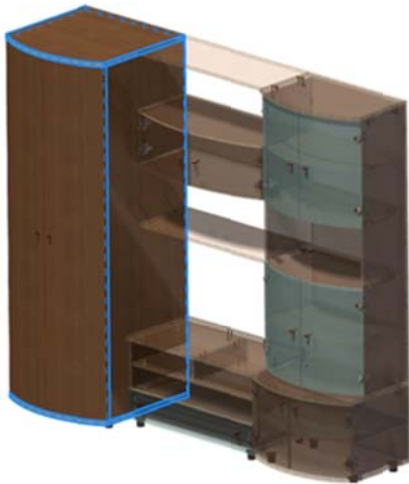
At the beginning, the designer only needs to be concerned on how the parts are grouped by their physical purpose (body, façade, etc.). The designer does not need to know the exact material that will be used. Only at the stage of manufacturing preparation, he/she has to decide what exact material should be set for the group of materials. For example, the parts in the group of Facade materials will be made of Oak Cantor R4128, the Body-of Bantu R3018W. If the designer wants to produce the same furniture using a different material (for example, white facades instead of black), he/she does not need to make the changes in the model. All he/she needs to do is to generate another specification assigning a different material to the same group of materials.



Technical brief

Edge banding groups

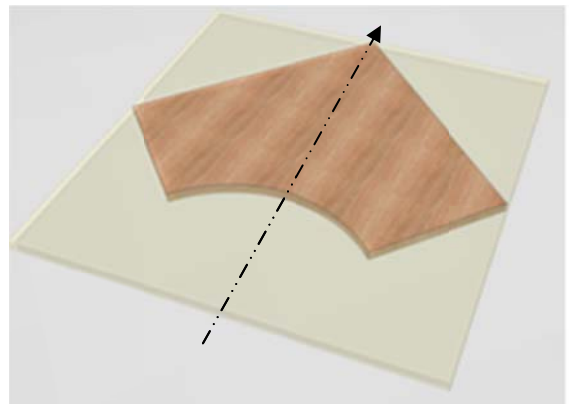
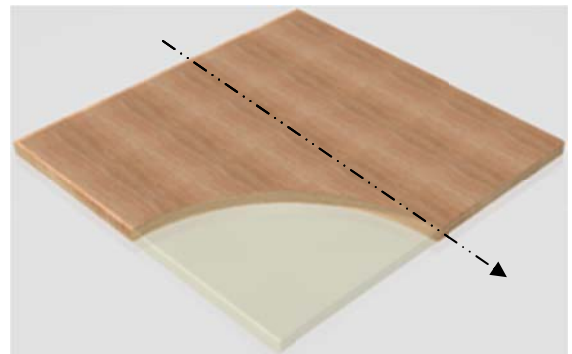
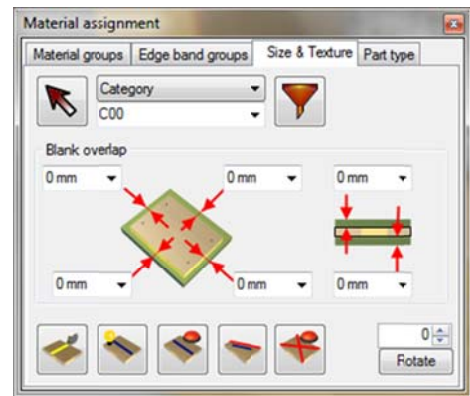
The method used with edge banding is the same as for working with materials. At the modeling stage one assigns common edge banding groups of different thickness. The real material is not relevant at this moment. Also one has to specify the edges that have to be banded. Edge banding thickness is taken into account when BOM is generated.



One can change the thickness of edge banding for the entire group. For example, the designer decides to use 2mm edge banding instead of 1mm. He/she can use the filter to select the edge banding that meets the search criteria and reassign it. Banded edges may be highlighted. One can also select the edges that are invisible from that angle without rotating the furniture model.

Size Calculations of Part and Blank

W4I allows setting grain (texture) direction and technological overlaps for the blanks. Depending on the grain direction, W4I automatically calculates the minimum size of the blank needed to produce the part. During BOM calculation, edge banding position and thickness, grain direction and blank overlap sizes are accounted for automatically.

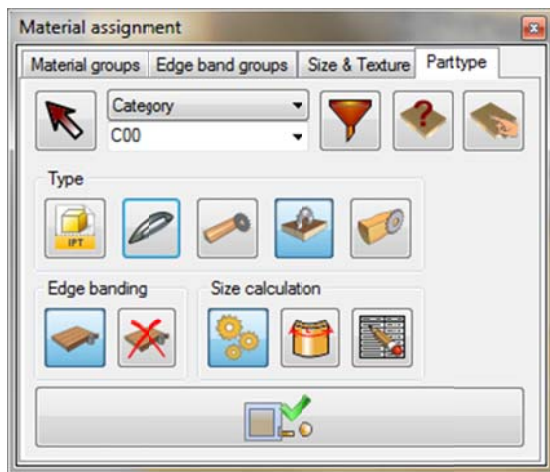
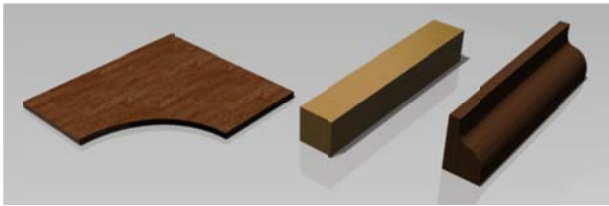


Technical brief

Types of parts

W4I additionally presents the types of Inventor parts in a way that facilitates the woodworking. Examples of some types of W4I parts:

- Profiles - calculated by length;
- Timber - calculated by volume;
- Boards – calculated by area, etc.



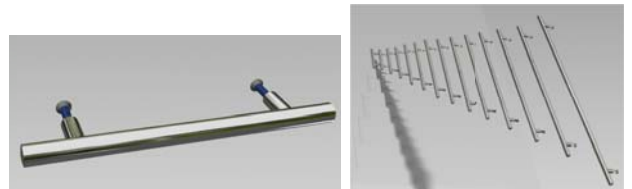
When BOM is generated, the parts are accounted for according to their type. The parts of the same type are grouped together. The size of each part is calculated as well as the amount of materials necessary for manufacturing. All materials are sorted by material type, thickness, etc.

Glued composite parts

Autodesk Inventor allows rendering an assembly as one part. W4I allows interpreting such part as a glued part assembly. It can be additionally modeled, i.e. one can model post-gluing operations such as calibration, milling, drilling, edge banding, etc. Woodwork BOM interprets the data of such part and properly includes it in the BOM.

Library of W4I furniture components

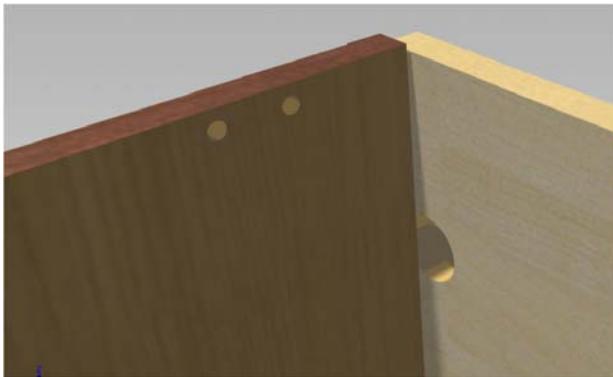
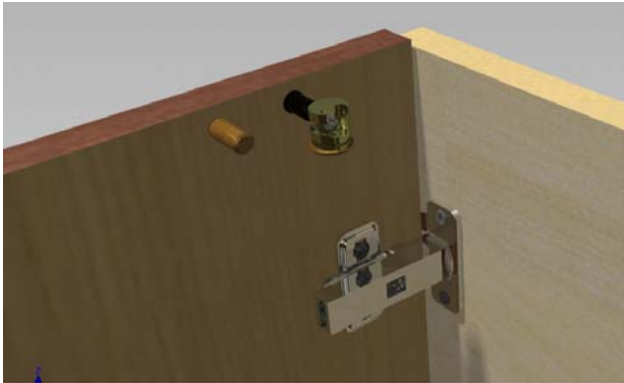
W4I has a library of basic furniture hardware components. The components are created as regular Autodesk Inventor components (parts, assemblies, iParts, iAssemblies). Each hardware component can have a hole-type component. W4I allows evaluating such components and automatically drilling holes in parts of furniture according to the position of the component. It decreases design time and increases the reliability of design process.



Technical brief

Furniture Hardware Arrangement and Automatic Holes

Rearranging hardware components in a furniture assembly may be done by W4I command. It allows rearranging multiple instances of hardware in furniture assembly by one operation. When hardware components are set, holes for mounting of components may be drilled automatically in a few clicks of the mouse.



Use of prototype and assembly copying

In most cases you need to produce similar furniture. Dimensions, materials, number of drawers, hardware settings may differ, but the main concept remains the same. W4I allows making an independent copy of any existing furniture model. Copying procedure allows renaming the files and keeping the relations between components the same as in the prototype model. Then, all you need to do is change some model parameters and generate a new BOM using our tool. All related model drawings will be copied and will reflect the current copied design situation as well.

During the copying process, you can apply various file renaming schemes, change the names of component parts, their descriptions, etc.



Technical brief

BOM generation

BOM for the woodworking industry differs from traditional Inventor BOM. Many parameters specific to furniture parts have to be included. W4I Woodwork BOM allows collecting information from a 3D furniture model and exporting it to MS Excel worksheet. It also contains various forms of information necessary for furniture production. It may be the structure of the product, a summary of materials and purchased items, a plain BOM list, list of cutting, list of parts with edge banding legend, etc. Woodwork BOM allows saving BOM in xml format. Several files may be joined into one consolidated BOM. This way, BOMs for huge manufacturing orders with large amounts of products can be made. Woodwork BOM allows customizing the templates of BOM reports. This way, the system may be adapted to company needs.

Material Summary						
Boards						
Name	Code	Producer	Type	Quantity (in ³)	Thickness (in)	
Body 02 Chipboard	02 MFC B			2.95	4	
Body 02 Chipboard	02 MFC B			0.29	5	
Body 02 Chipboard	02 MFC B			7.04	18	
Body 02 Chipboard	02 MFC B			3.73	25	
Glass	GLASS			0.41	25	
				14.42		
Profiles						
Name	Code	Producer	Type	Quantity (in)	Thickness (in)	Width (in)
Body 02 Chipboard	02 MFC B			0.1	296	446
Body 02 Chipboard	02 MFC B			0.79	346	119
Body 02 Chipboard	02 MFC B			3.89	346	119
Glass	GLASS			1.19	346	104
Glass	GLASS			1.19	347	104
				7.16		
Bands						
Name	Code	Producer	Type	Quantity (in)	Thickness (in)	Width (in)
Body 02 (2 mm) edge band	B022mm			1.39	2	18
Facade01 (0.45mm) edge band	F030.45mm			0.59	0.45	18
Facade01 (1mm) edge band	F011mm			0.81	1	18
Facade01 (1mm) edge band	F011mm			7.58	1	38
Facade02 (0.45mm) edge band	F020.45mm			13.99	0.45	18
Facade02 (0.45mm) edge band	F020.45mm			7.4	0.45	38
				31.76		
Purchased products						
Name	Code	Producer	Type	Quantity		
Amortizatorius kljuojamas	Amortizatorius kljuojamas-02			4		
Atrama reguliuojama	Atrama reguliuojama [spain]			12		

You can create your own template that fits your needs. You can change column names, sequence of columns, add or remove columns, remove or add new sheets, etc. The report is highly customized and requires only basic knowledge of MS Excel.

Assembly by Parts							
Part				Material			
Name	Code	Quantity	Length	Width	Thickness	Name	Code
Mod3 surinkimas		1					
STLC 010101	STLC010101	1					
S002M3_05	Dugnas	1	900mm	459mm	25mm	Glass	GLASS
S002M3_07	Lentyna 1	1	964mm	418mm	18mm	Body 02 Chipboard	02 MFC B
S002M3_08	Lentyna 2	1	964mm	418mm	18mm	Body 02 Chipboard	02 MFC B
S002M3_04	Nugara mdp	1	964mm	400mm	18mm	Body 02 Chipboard	02 MFC B
S002M3_06	Pertvara	1	418mm	122mm	18mm	Body 02 Chipboard	02 MFC B
S002M3_03	Sonas d	1	400mm	436mm	18mm	Body 02 Chipboard	02 MFC B
S002M3_02	Sonas k	1	400mm	436mm	18mm	Body 02 Chipboard	02 MFC B
S002M3_01	Stogas	1	900mm	459mm	25mm	Body 02 Chipboard	02 MFC B
S002_02mod_surinkimas		1					
Dugnas	S002M2_01	1	700mm	558mm	25mm	Body 02 Chipboard	02 MFC B
Sonas apat d	S002M2_02	1	436mm	400mm	18mm	Body 02 Chipboard	02 MFC B
Sonas apat k	S002M2_03	1	436mm	400mm	18mm	Body 02 Chipboard	02 MFC B
Stalv tarp	S002M2_04	1	700mm	558mm	25mm	Body 02 Chipboard	02 MFC B
Sonas virs d	S002M2_05	1	1525mm	350mm	18mm	Body 02 Chipboard	02 MFC B
Sonas virs k	S002M2_06	1	1525mm	350mm	18mm	Body 02 Chipboard	02 MFC B
Lentyna stac 1	S002M2_07	2	964mm	447mm	25mm	Body 02 Chipboard	02 MFC B
Lentyna	S002M2_08	1	961mm	446mm	18mm	Body 02 Chipboard	02 MFC B
Lentyna stikl	S002M2_08t	1	961mm	446mm	5mm	Body 02 Chipboard	02 MFC B
Stogas	S002M2_09	1	700mm	472mm	25mm	Body 02 Chipboard	02 MFC B
MPP apat	S002M2_10	1	182mm	425mm	4mm	Body 02 Chipboard	02 MFC B
MPP virs	S002M2_11	1	1550mm	682mm	4mm	Body 02 Chipboard	02 MFC B
Dureles apat k	S002M2_12	1	396mm	119mm	346mm	Body 02 Chipboard	02 MFC B
Dureles apat d	S002M2_13	1	396mm	119mm	346mm	Body 02 Chipboard	02 MFC B

Assembly by Hardware			
Name	Code	Quantity	Comments
Mod3 surinkimas		1	
STLC 010101	STLC010101	1	
20 kg stalčiaus bėgelių kompleksas	Stalčiaus begeliai 20kg L=400	1	
Amortizatorius kljuojamas	Amortizatorius kljuojamas-02	4	
Medsr. - kryžminis	Meds.- kryzm. 4 x 30	2	
Medsr. - kryžminis	Meds.- kryzm. 4 x 40	8	
Rankenėlė	Rankenele M6_12x25	2	
Atrama reguliuojama	Atrama reguliuojama [spain]	4	
Dangtelis kljuojamas	Dangtelis kljuojamas D12	8	
Dygis	Dygis 8x30	16	
Ekscentrikas D15	EKS D15 S18	16	
Plastmasinė kepurėlė	Kepurele D15	16	
Konfirmatai	Konfirmatas 7 x 50	2	
Konfirmatai	Konfirmatas 7 x 70	6	
Pirštas	Pirštas 6x B35	16	
S002_02mod_surinkimas		1	
Atrama reguliuojama	Atrama reguliuojama [spain]	4	
Isorinis lankstas 110	B75T1558-03	4	
Isorinis lankstas stiklui	Isorinis lankstas 94*K [B75T4100]	8	
Dangtelis kljuojamas	Dangtelis kljuojamas D12	6	
Dygis	Dygis 8x30	16	
Ekscentrikas D15	EKS D15 S18	16	
Plastmasinė kepurėlė	Kepurele D15	16	
Konfirmatai	Konfirmatas 7 x 70	8	
Lentynu laikiklis	Lentynu laikiklis 5x16	12	

Export to cutting optimization software

Lists of cutting parts may be exported to formats supported by various sawing optimization programs. At the moment, exporting to CutRite v.8.0 and Cutting v3.0 cutting optimization software formats is possible.

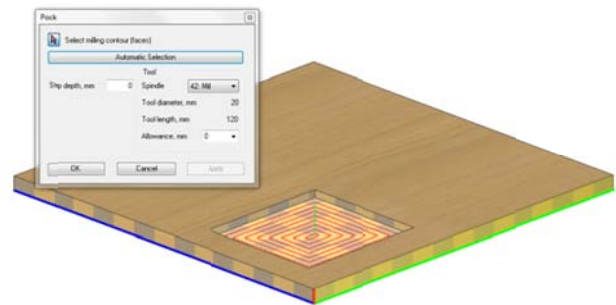
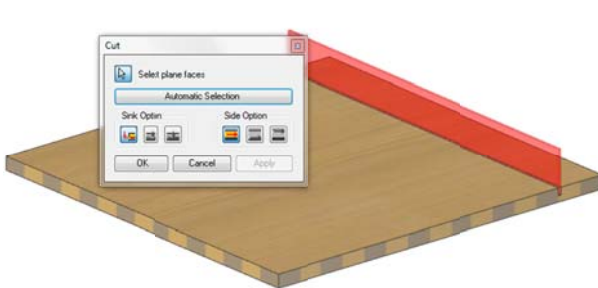
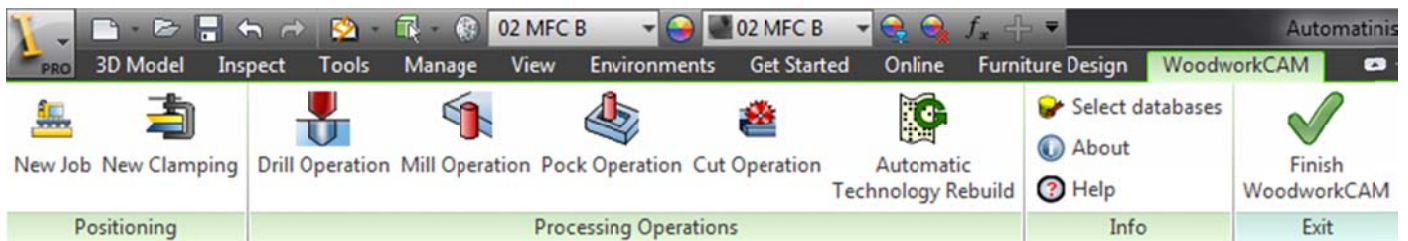
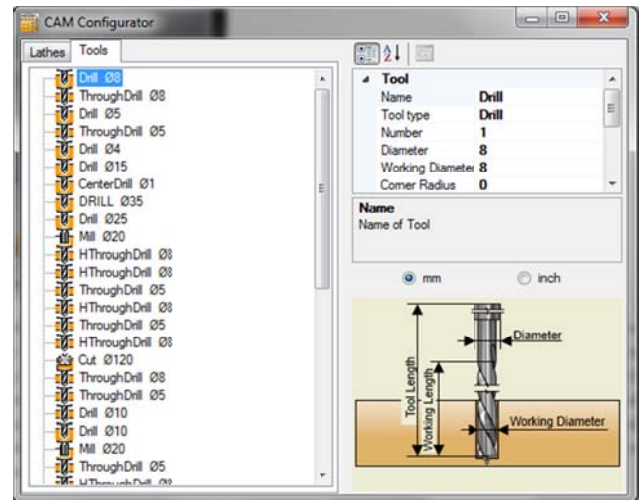
CutRite software is a simple cutting optimization program from Stiles Machinery Inc. The software creates optimized cutting patterns and program files

Technical brief

CNC Preparation

WoodworkCAM4Inventor (WCAM4I) is a W4I configuration with additional CAM functionality, which allows preparing programs for CNC machines based on geometry of furniture parts. To create a CNC program file, specifying the base point of the part and applying the necessary operation is enough. Drilling, milling, pocketing and cutting operation may be applied. The system allows automatic selection of necessary geometry for the operation. Manual geometry selection is possible as well. The system specifies the configuration of lathes and organizes the CNC program file according to the possibilities of lathes. WCAM4I generates the files for Woodwop, Master Wood CAM systems. It is also possible to generate a file in G-code format.

for CNC machines.



Technical brief

