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### DISCLAIMER

The images of the procedures specified in the manual are for explanation purposes only. For this reason the calculation results may not match those currently displayed by the program. Also the forms

may now show some small differences in graphics.



# UNILAB EASY MANUAL

UNILAB EASY is a specific & independent application that collects all necessary constructive information of an heat exchanger coil and lets the automatic creation of circuits.

This software allows to create all the necessary information for the constructive design of the elements of a heat exchanger coil, such as the frame and manifolds. It can be made either importing data from a calculation of UNILAB COILS, either independently. In addition, this software is enhanced by a procedure that allows the creation of a fully automatic circuitry required, choosing between one or more solutions. To complete the software, there is the 3D design, drafting and the ability to export drawings in various formats recognized by the most common three dimensional drawing programs.

- Automatic creation of the circuits: according to the number of the circuits, the software directly suggests you one or more layout solutions. It is able to handle tubes skipped, bends and U-bolts.
- Manual creation of circuits: possibility to manually create, save or load patterns.
- Useful warnings that suggest & guide the end user in the creation of the circuit.
- Collection & exportation of detailed information, necessary to build the coil heat exchanger (frame & manifolds), helpful for the Production Dept. (cost and weight).
- View of the coil in 2D and 3D, with the possibility to export drawings (2D in DWG; 3D in ASCII STL, Binary STL, IGES, OBJ, STEP, Bitmap, EMF).
- Independent software, compatible with UNILAB COILS' projects. Possibility to open and load projects created by using UNILAB COILS. software.

### **Suggested System Requirements**

- Operating System Microsoft® Windows® 7 with Service Pack 1, 8.1 or 10, 32 or 64 bits
- Intel® Core 2 or AMD Athlon®; 1.5 GHz or faster processor
- 4 GB or more of RAM
- 2 GB or more of available hard-disk space for 32-bit operative system; 4 GB or more of available hard-disk space for 64-bit operative system
- Screen resolution 1366x768 pixel recommended with 24-bit color, small characters and 512 MB or more of dedicated VRAM
- Internet connection and registration are necessary for required software activation, validation of subscriptions.



- 0 X

### Your first 3D project

At first you can choose the right unit measure system from the menu bar

Then you click on "New Project"

© EXprie Build 10030) The Languages View Tools Windows Measure system "Mew Project Lack III Sew | ✓ Edit ( ⊂ Crouits ) we Print preview () Esport metal sheet drawings () Comencions 31 Lood Title Block

New Project

You will see this



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💀 New Project	- 🗆 X
Coil Parameters Definition	
Mode Heating V	Archive Compatible Circuits Availables frames preconfigured
×	Available Circuits Preview
Geometry	Project Circuits N
Disposition Channel of	(+)
Disposition Mode Type A V	
Tubes Spacing [mm] 60,	
Rows Spacing [mm] 30,	
60 ( )	
Material Aluminium	
Thickness [mm] 0,35	
External Diam. [mm]	
Smooth tube	
Fins 20	
Fin Type Integral V	
Material Aluminium V	
Thickness [mm]	
Fins Sparing [mm]	
Coil Dimensions	
Height [mm] 480, Tubes For Row 8	
Length [mm] 720, Rows 6,	
Manifolds	
Inlet Manifolds 22x1 V	< >>
Outlet Manifolds 22x1 V	
	OK Cancel

#### Where we can see the data divided for the Geometry

Geometry		
Disposition	Staggered	•
Tubes Spacing [mm]		60,
Rows Spacing [mm]		30,

#### Tubes

Tubes		
Material	Aluminium	•
Thickness [mm]		0,35
External Diam. [mm]		20,
Smooth tube		

#### Fins

Fins		
Fin Type	Integral	•
Material	Aluminium	-
Thickness [mm]		0,1
Fins Spacing [mm]		2,1

	∧ B				
HEAT TRANSFER SOFT	WARE	casy manual		Page 5 c	of 58
Coils Dimensions					
Coil Dimensions					
Height [mm]	480,	Tubes For Row	8	3	
Length [mm]	720,	Rows	6		
Manifolds					
Manifolds					
Inlet Manifolds	Not present	•			
Outlet Manifolds	Not present				

We can set and edit the data relative to our geometry, or we can choose our geometry from the given archive for the calculation mode that we need

New Project				×
Mode 102512_S_S 102522_C_G 102522_L_G 102525_L_S 102522_L_S 102525_S_S 102525_S_S 102525_S_S 102525_S_S 166000_X_S 166000_X_S 166000_X_S 166000_X_S 166000_X_S 166000_X_S 105000_S 072512_C_G 072512_C_G 072512_L_S 072512_L_S 072512_L_S 072512_P_G 072512_P_G 072512_P_G 072512_P_S 072512_P_S 072512_P_S 072512_P_S 072512_S_G 072512_S_G 072512_S_G 072512_S_G 072512_S_G 072512_S_S 072512_S 0725	Heating			
Height [mm]	]	480, 720,	Tubes For Row Rows	8 6,
Manifolds				
Inlet Manifo	lds Folde	Not present	▼	
Outlet Mani	TOIOS	Not present	•	OK Cancel

So we can choose one like the following

	U	Ν				В
HEAT TRANSFER SOFTWARE						

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New Project			×
Mode Heal 166030_C_S Geometry Disposition Tubes Spacing [m Rows Spacing [m Tubes Material Thickness [mm] External Diam. [m Smooth tube Fins Fin Type Material Thickness [mm] Fins Spacing [mm] Coll Dimensions	ing   ing	60 60 + 15,88 -	-30
Height [mm] Length [mm]	480, 720,	Tubes For Row Rows	8 6,
Manifolds Inlet Manifolds Outlet Manifolds	Not present Not present	<b>•</b>	OK Cancel

### Suppose we want leave the above data, but we want to add the manifolds Rew Project

Coil Parameters Definition	Auching Compatible Circuits
Mode Heating ~	Availables frames preconfigured
166030_C_S ~ 30	Available Circuits Preview
Geometry	Project Circuits N
Disposition Stangered	
Tubes Spacing [mm] 60,	
Rows Spacing [mm] 30,	
Tubes	
Material Aluminium ~	
Thidmess [mm] 0,35	
External Diam. [mm]	
Smooth tube	
Fins + 15,88 +	
Fin Type Integral V	
Material Aluminium ~	
Thickness [mm]	
Fins Spacing [mm]	
Coil Dimensions	
Height [mm] 480, Tubes For Row 8	
Length [mm] 720, Rows 6,	
Manifoldo	
	< >>
Cullet Manifolds 22X1 *	
	OK Cancel

Then we click on OK and after few seconds, where the software generates a 1:1 scale 2D model of the coil you have just calculated, the main window will appear:



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#### If you then click on the 3D button you can see the following



While if you click on the Manifolds button you can see the following



The main window is subdivided in the classic four views of the 3D object: front, right, top and 3D. Please note that for performances options, not all the fins have been displayed. This is to allow people with slower computers use this utility too.

The 3D view incorporate a tool bar to navigate in the 3D view:

The above buttons lets you respectively (from left to right):

- Zoom window: to draw an area to zoom to
- Zoom in/out: to use the mouse to zoom in/out the view
- Pan: to pan the view with the mouse
- Rotate: rotate the view with the mouse
- Zoom fit: to reset the view and zoom it to the extends

On the left panel there's a tree that represent the main components of the coil:

⊨ Ø Project
Tubes
····· 💜 Manifolds

Below this panel, there's a list of the properties of each component.



•	ât I				
4	Design				
	Fins	True			
	Frame	True			
	Manifolds	True			
	Tubes	True			
4	Extimate Price				
	Fins	20,31			
	Frame	18,26			
	Manifolds	0,44			
	Tubes	4,34			
	Total	43,35			
4	General				
	Project Name	Project			
	Project Path				
4	SHEET				
	Dimension height	15			
	Format	Real			
4	Weight				
	Fins [kg]	7,87			
	Frame [kg]	6,43			
	Manifolds [kg]	0,17			
	Tubes [kg]	1,68			
	Total [kg]	16,14			

When you select an item from the above list, all the parameters of this part of the project will be shown in this area for modifications.

For example when you click on "Fins" this is what you get

₽↓	
Dimension	
Thikness [mm]	0,1
General	
Fin extended	False
Number	342
Material	
Density [kg/m³]	2700
Material	Aluminium
Price	
Price	20,31
Weight	
Total Weight [kg]	7,87
Weight per tube [kg]	0,02
	▲       Immension         Thikness [mm]       General         General       Fin extended         Number       Material         Density [kg/m³]       Material         Price       Price         Weight       Total Weight [kg]         Weight per tube [kg]       Immedia

If you click on "Manifolds" this is what you get:



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•	₽↓		
⊿	Inlet Manifolds		
	Alignment type	Not Set	
	Inlet Manif. Pos.	0	
	Inlet Manif. Side	Right	
	Link type not in axis	45°	
	Row for alignment	0	
	Row2 for alignment	0	
	Visible	True	
⊿	Manifolds		
	Connection Length [mm]	150	
	Curves dimension [mm]	30	
	Dimension height	10	
	Dist. from finned pack [mm]	100	
	Distance betw. manifolds [mr	40	
⊿	Outlet Manifolds		
	Alignment type	Not Set	
	Link type not in axis	45°	
	Outlet Manif. Pos.	0	
	Outlet Manif. Side	Right	
	Row for alignment	0	
	Row2 for alignment	0	
	Visible	True	
⊿	Price		
	Inlet manifold price	0,22	
	Outlet manifold price	0,22	
	Price	0,44	
4	Weight		
	Inlet manifold weight [kg]	0,08	
	Outlet manifold weight [kg]	0,08	
	Total Weight [kg]	0,17	

When you click on the "Frame" item from the list above, all the frame parameters will be loaded and you will be able to customize them and save the frame configuration from the dedicated button:



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₽∎ <b>2</b> ↓   🖻	
Dimension	
Delta Frame [mm]	50
Depth Frame [mm]	215,88
Down gap [mm]	0
Front gap [mm]	25
Rear gap [mm]	25
Upper gap [mm]	0
▲ General	
Bottom part	True
Conveyor	False
Divisions Nr.	0
Left part	True
Right part	True
Total Weight [kg]	6,43
Туре	Type_B
Up part	True
▲ Metal Sheet	
⊿ (Down)	()
Fold 1 [mm]	40
Fold 1 [mm] - DOWN	0
Fold 1 [mm] - UP	0
Fold 2 [mm]	15
Mounting	False
Price	5,71
Thikness [mm]	1
Weight [kg]	2,01
(Left)	()
(Rigth)	()
▷ (Up)	()
Fold 1 [mm]	40
Fold 2 [mm]	15
Material	Stainless Steel
Thikness [mm]	1
(Down)	
🔚 Save frame conf.  /te L	oad frame conf. 👻

At the end, you can also load a frame configuration previously saved in the same unit measure system from the button "Load frame conf."

Now you can start customizing your project and get it ready for the manufacturing department.



### How to modify the frame

As we saw in the previous chapter, to modify the frame you have to select it from the tree of the components in the top right corner



Now that all the parameters have been loaded, you will notice that they have been divided into 3 categories: Dimensions, General and Metal Sheets.

•	2↓ □	
~	Dimension	
	Delta Frame [mm]	50
	Depth Frame [mm]	215,88
	Down gap [mm]	0
	Front gap [mm]	25
	Rear gap [mm]	25
	Upper gap [mm]	0
~	General	
	Divisions Nr.	0
	Total Weight [kg]	6,36
	Туре	Type_B
~	Metal Sheet	
>	(Down)	()
>	(Left)	()
>	(Rigth)	()
>	(Up)	()
	Fold 1 [mm]	40
	Fold 2 [mm]	15
	Material	Stainless Steel
	Thikness [mm]	1
~	Visibility	
	Bottom part	True
	Conveyor	False
	Left part	True
	Right part	True
	Up part	True

Inside the first category you can find "Front Gap" and "Rear Gap".

This lets you change the depth of the frame so you can add some space before or after the coil (respectively – referred to the air throw) changing the value and clicking on the icon that appears "Update Drawing".

	🔮 Update Drawing	
•	<b>2</b> ↓   □	
4	Dimension	
	Delta Frame [mm]	500
	Depth Frame [mm]	665,88
	Down gap [mm]	0
	Front gap [mm]	100
	Rear gap [mm]	400
	Upper gap [mm]	0
4	General	
	Bottom part	True



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For example this is a frame with 100 mm front gap and 400 mm rear gap:



You can either modify these two properties or change directly the "Depth frame" property, and the two gaps will be updated automatically.

#### Selecting a different type of frame

Under the "General" category there's the frame type. Two types of frame are available:

Type\_A

Front view





Top view



When you select a different type of frame, or you just change any parameter of the frame itself or one of its metal sheets, the program will recalculate the weight and the estimated price of the frame, as well as the estimated price of the entire coil.

#### Changing the dimension of the single metal sheet

Every frame is composed by three metal sheets, the (R) right, (L) left, (T) top, (B) bottom. Each metal sheet can be customized:

۵	Metal Sheet	
⊿	(Down)	()
	Fold 1 [mm]	40
	Fold 1 [mm] - DOWN	0
	Fold 1 [mm] - UP	0
	Fold 2 [mm]	15
	Mounting	False
	Price	5,71
	Thikness [mm]	1
	Weight [kg]	2,01



As you can see, the program calculates the price and weight of every metal sheet, so if you change its dimension, the resulting updated price and weight will be shown immediately.

#### Changing the dimension of all the metal sheets

With EASY you can change the dimensions and thickness of all the metal sheets at once, with just one click:

۵	Metal Sheet	
$\triangleright$	(Down)	()
$\triangleright$	(Left)	()
$\triangleright$	(Rigth)	()
$\triangleright$	(Up)	()
	Fold 1 [mm]	40
	Fold 2 [mm]	15
	Material	Stainless Steel
	Thikness [mm]	1

For example, there is "Fold 1" and "Fold 2" outside of the metal sheets. If you change it, you change these two parameters of all the metal sheets in just one step:

Metal Sheet	
(Down)	()
(Left)	()
(Rigth)	()
(Up)	()
Fold 1 [mm]	40
Fold 2 [mm]	15
Material	Stainless Steel
Thikness [mm]	1

	°.	
	°,	
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	<u></u>	
	õ.	
	õ	
	0	۲

4	Metal Sheet		Г	
$\triangleright$	(Down)	()		0
$\triangleright$	(Left)	()		6
$\triangleright$	(Rigth)	()		စ္
$\triangleright$	(Up)	()		Q
	Fold 1 [mm]	20		6
	Fold 2 [mm]	15		õ
	Material	Stainless Steel		ο
	Thikness [mm]	1		°,

As explained in the previous chapter, you can also save the frame configuration from the button "Save frame conf." and load a frame configuration previously saved in the same unit measure system from the button "Load frame conf."



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	Right part	True
	Total Weight [kg]	5,45
	Туре	Type_B
	Up part	True
⊿	Metal Sheet	
$\triangleright$	(Down)	()
$\triangleright$	(Left)	()
$\triangleright$	(Rigth)	()
$\triangleright$	(Up)	()
	Fold 1 [mm]	20
	Fold 2 [mm]	15
	Material	Stainless Steel
	Thikness [mm]	1

릚 Save frame conf.	📌 Load frame conf. 👻	

#### Selecting Fins extended or not option

If we click on "Fins" option



#### We can go under General

⊿	▲ General	
	Fin extended	False
	Number	342

We click "False" and we see the coil like below



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Hermous				B Project	
	۵. C			···· ✓ Tubes ···· ✓ Tubes ···· ✓ Prane	
				21     Dimension     Tokness (m)     Central     Tokness (m)     Central     Tokness     Matches     Price     Price     Velopht     Tool Weight (pc)     Weight per table (bc)	0,1 542 2200 2,31 2,87 0,02
		a			

If we click on "True" and then on "Update Drawing", we get

	Project
${\tt Q}  {\tt Q}  {\tt D}  {\tt C}$	- ✓ Tubes - Ø Fina - ✓ Manifolds - ✓ Frame
	Durensson     Tutivess (nm)     O.1     General     Pre-extended     True     Number     342     Material     Denviry (bg/m)     Z020     Material     Proc     Z0,31     Veight per tube (bg)     0,02
	Density [kg/m³]
	Density [kg/m³]



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#### Changing the material of the frame

EASY lets you also change the material of the frame on the fly, just by clicking on the "Material" property of the frame

	2↓ □	
4	Dimension	
	Delta Frame [mm]	50
	Depth Frame [mm]	220
	Down gap [mm]	0
	Front gap [mm]	25
	Rear gap [mm]	25
	Upper gap [mm]	0
⊿	General	
	Bottom part	True
	Conveyor	False
	Divisions Nr.	0
	Left part	True
	Right part	True
	Total Weight [kg]	6,51
	Туре	Type_B
	Up part	True
⊿	Metal Sheet	
$\triangleright$	(Down)	()
$\triangleright$	(Left)	()
$\triangleright$	(Rigth)	()
$\triangleright$	(Up)	()
	Fold 1 [mm]	40
	Fold 2 [mm]	15
	Material	Stainless Steel
	Thikness [mm]	Aluminium
		Copper
		Stainless Steel
		Galvanized Carbon Steel
		Coated
		Coated Aluminium

When you change the material of the frame, the price and the weight of it will change accordingly

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#### В HEAT TRANSFER SOFTWARE

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4	Extimate	Price
---	----------	-------

	Fins	20,31	
	Frame	18,61	
	Manifolds	0,44	
	Tubes	4,34	
	Total	43,7	
4	General		
	Project Name	Project	
	Project Path		
⊿	SHEET		
	Dimension height	15	
	Format	Real	
4	Weight		
	Fins [kg]	7,87	
	Frame [kg]	6,55	
	Manifolds [kg]	0,17	
	Tubes [kg]	1,68	
	Total [kg]	16,27	

۵	Extimate Price	
	Fins	20,31
	Frame	6,61
	Manifolds	0,44
	Tubes	4,34
	Total	31,7
۵	General	
	Project Name	Project
	Project Path	
۵	SHEET	
	Dimension height	15
	Format	Real
4	Weight	
	Fins [kg]	7,87
	Frame [kg]	6,61
	Manifolds [kg]	0,17
	Tubes [kg]	1,68
	Total [kg]	16,33

With Stainless Steel

#### How To Save a new frame configuration

After changes made, go to "Save frame conf."

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#### With Iron

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	VARE	Edsy Manual	Page 20 of 5
I Project			
Tubes			
U-Bend/Hair-Pin			
Fins			
Manifolds			
Frame			
Update Drawing			
âz↓ I 🖻			
Dimension		^	
Delta Frame [mm]	50		
Depth Frame [mm]	220		
Down gap [mm]	0		
Front gap [mm]	25		
Kear gap [mm]	25		
Ceneral	0		
Divisions Nr.	0		
Total Weight [kg]	6 44		
	Type B		
Metal Sheet	Type_b		
(Down)	()		
(Left)	()		
(Rigth)	()		
(Up)	()		
Fold 1 [mm]	40		
Fold 1 [mm] - DOWN	0		
Fold 1 [mm] - UP	0		
Fold 2 [mm]	15		
Material	Stainless Steel		
Mounting	False		
Hodriding	5,72		
Price			
Price Radius Curvature Folds[mm]	1,13		
Price Radius Curvature Folds[mm] Thikness [mm]	1,13 1 2.01		
Price Radius Curvature Folds[mm] Thikness [mm] Weight [kg] Fold 1 [mm]	1,13 1 2,01 40		
Price Radius Curvature Folds[mm] Thikness [mm] Weight [kg] Fold 1 [mm] Fold 2 [mm]	1,13 1 2,01 40 15		
Price Radius Curvature Folds[mm] Thikness [mm] Weight [kg] Fold 1 [mm] Fold 2 [mm] Material	1,13 1 2,01 40 15 Stainless Steel		
Price Radius Curvature Folds[mm] Thikness [mm] Weight [kg] Fold 1 [mm] Fold 2 [mm] Material Thikness [mm]	1,13 1 2,01 40 15 Stainless Steel 1		
Price Radius Curvature Folds[mm] Thikness [mm] Weight [kg] Fold 1 [mm] Fold 2 [mm] Material Thikness [mm] Visibility	1,13 1 2,01 40 15 Stainless Steel 1		
Price Radius Curvature Folds[mm] Thikness [mm] Weight [kg] Fold 1 [mm] Fold 2 [mm] Material Thikness [mm] Visibility Bottom part	1,13 1 2,01 40 15 Stainless Steel 1 True		
Price Radius Curvature Folds[mm] Thikness [mm] Weight [kg] Fold 1 [mm] Fold 2 [mm] Material Thikness [mm] Visibility Bottom part Conveyor	1,13 1 2,01 40 15 Stainless Steel 1 True False		

UNIL 🛦 B	Easy Manual	
HEAT I RANSFER SOFTWARE		Page 21 of 58
EASY	×	
Frame configuration name:	OK Annulla	

Now every time opening a new project or editing your current project, you will see this saved frame into the list "Available frames preconfigured"

🛃 New Project	– D X
Coil Parameters Definition	
Mode Heating ~	Archive Compatible Circuits Availables frames preconfigured
166030 C S	Availables frames preconfigured
30	Frame configuration name
Geometry	Image: Weight of the second
Disposition Staggered V	project A
Disposition Mode Type A V	
Tubes Spacing [mm] 60,	
Rows Spacing [mm] 30,	
60	
Tubes	
Material Aluminium V	
Thickness [mm] 0,35	
External Diam. [mm] 20,	
Smooth tube	
	Preview
Fin Type Integral V	
Material Aluminium	
Thickness [mm]	
Fins Spacing [mm] 2,1	
Coil Dimensions	
Height [mm] 480, Tubes For Row	8
Length [mm] 720, Rows	6,
Manifolds	
Inlet Manifolds 22x1 ~	
Outlet Manifolds 22x1 V	
	OK Cancel



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### Tubes

The properties of the tubes are received from the Coils project file. However you can customize the protrusion on the left and on the right side:

•	â, a la companya de			
⊿	Dimension			
	External Dim. [mm]	15,88		
	Thikness [mm]	0,35		
⊿	General			
	Left protrusion	15		
	Number	48		
	Right protrusion	50		
4	Material			
	Density [kg/m³]	2700		
	Material	Aluminium		
⊿	Price			
	Price	4,59		
⊿	Weight			
	Total Weight [kg]	1,78		
	Weight per tube [kg]	0,04		



With 15 mm right protrusion

With 50 mm right protrusion

### Manifolds

If the project has been calculated with manifolds (both automatic or manual mode), Coils 3D will show them getting the dimensions from the project. When you click on the "Manifolds" item in the component list, the manifolds properties will be shown in the properties panel:



#### 8≣ 2↓ 🖾

4	Inlet Manifolds	
	Alignment type	Not Set
	Inlet Manif. Pos.	0
	Inlet Manif. Side	Right
	Link type not in axis	45°
	Row for alignment	0
	Row2 for alignment	0
	Visible	True
4	Manifolds	
	Connection Length [mm]	150
	Curves dimension [mm]	20
	Dimension height	10
	Dist. from finned pack [mm]	100
	Distance betw. manifolds [mr	40
۵	Outlet Manifolds	
	Alignment type	Not Set
	Link type not in axis	45°
	Outlet Manif. Pos.	0
	Outlet Manif. Side	Right
	Row for alignment	0
	Row2 for alignment	0
	Visible	True
۵	Price	
	Inlet manifold price	0,26
	Outlet manifold price	0,26
	Price	0,53
⊿	Weight	
	Inlet manifold weight [kg]	0,1
	Outlet manifold weight [kg]	0,1
	Total Weight [kg]	0,2

#### Here's a list of the available parameters:

- Connection length: the length of the piece of tube that connects the manifold to the pipes
- Curves dimension: an offset that the program will take in consideration to avoid overlapping of the manifolds
- Dimensions height: to increase or decrease the dimensions text in the manifolds drawing (before you need to set the circuitation)
- Distance from the finned pack: the distance between the manifold and the finned pack
- Distance between manifolds: distance between the manifolds if they are on the same side
- Inlet manifold side: if the inlet manifold is on the left or on the right side of the coil
- Outlet manifold side: if the outlet manifold is on the left or on the right side of the coil

Changing the distance between the manifold lets you adapt the coil to the pipes where it will be placed. The example below has a 160 mm gap instead of 40:







If you have some skipped tubes you can click on "OK" and it will appears this mask where you can select which are skipped tubes

#### Then you can click on $\ensuremath{``}\ensuremath{\mathsf{OK}''}$

🖷 Circuits Drawing Editor	-		×	
V       General         Disposition       Type_A         Geometrical Data       Depth [mm]         Depth [mm]       115,83         Height [mm]       480         PSQ       1         Rows       6         Rows Spacing [mm]       0         Tubes For Row       8         V       Pepth [mm]         Patterns       Projects         AutoMATIC CALCULATION       Manual Configuration         AUTOMATIC CALCULATION       AUTOMATIC CALCULATION				
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Here you can choose the circuit pattern that will best suits your needs double clicking on it, you will obtain:



You can also go back and draw the circuit manually as explained in the next section.

# MANUAL CIRCUIT DRAWING EXAMPLE

Circuits Drawing Editor		
2.1     General       Disposition     Type_A       Gecometrical Data     Depth [mm]       Depth [mm]     170       Height [mm]     480       PSQ     1       Rows     6       Rows Spacing [mm 30       Tubes For Row     8       Depth [mm]		
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From the above screen, which we came on from the automatic circuit, we can click on "Manual Configuration" We will get this



#### We can follow the instructions on the right on STEP 1

#### **1. HOW TO CREATE A NEW** PATH a) Click on "Start Path" button. b) Click on the first tube from where you want to start the path (this one will be the first feeded tube. Attention: if you are not able to select the tube, you can zoom on the image with mouse wheel scroll. c) Click on the second tube from where the fuild will return back, and repat this action to continue the path. d) On the left side of the drawing area you have the front part of the coil, and on the right side the back one. e) Once ended the path, click on "Stop Path" button and save it with name. f) If you want to replicate the same path for all tubes, click on the tube from where you want to start, then, from the list of saved paths, double click on the path you want to replicate. UNILAB S.r.I. - Via N. Bixio 6 - 35131 - Padova (PD) - Italy - Tel.: 049 8763311 - Fax: 049 8750196

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#### So We click on click on "Start Path"



#### At this point we see this, we click on the first tube and we will see something like this

Circuits Drawing Editor	2 0 0 2 3 9 + D .: C + D 0 0 0	
		Start Guide
General     Disposition Type_A     Geometrical Data		1. HOW TO CREATE A NEW PATH
Depth [mm]         170         ∎           Height [mm]         480         ₽           PSQ         1         ■		a) Click on "Start Path" button.
Rows Spacing (mm 30 Tubes For Row 8 v		<li>b) Click on the first tube from where you want to start the path (this one will be the first feeded tube.</li>
Patterns Projects		Attention: if you are not able to select the tube, you can zoom on the image with mouse wheel scroll.
NEW PATTERN CREATION		c) Click on the second tube from where the fuild will return back, and repat this action to continue the path.
Start Pattern Stop Pattern		d) On the left side of the drawing area you have the front part of the coil, and on the right side the back one.
Select Patterns		e) Once ended the path, click on "Stop Path" button and save it with name.
AUTOMATIC CALCULATION		f) If you want to replicate the same path for all tubes, click on the tube from where you want to start, then, from the list of saved paths, double click on the path you want to replicate.
		2. HOW TO SAVE THE PROJECT



#### We will continue with the remaining part

Circuits Drawing Editor	200 Q Q Q + D .: C + D	
		Start Guide
General     Disposition     Type_A     Geometrical Data		1. HOW TO CREATE A NEW PATH
Depth [mm]         170         ⊨           Height [mm]         480            PSQ         1            Rows         6		a) Click on "Start Path" button.
Rows Spacing [mm 30 Tubes For Row 8 v		<li>b) Click on the first tube from where you want to start the path (this one will be the first feeded tube.</li>
Patterns Projects		Attention: if you are not able to select the tube, you can zoom on the image with mouse wheel scroll.
NEW PATTERN CREATION		c) Click on the second tube from where the fuild will return back, and repat this action to continue the path.
Start Pattern Stop Pattern		d) On the left side of the drawing area you have the front part of the coil, and on the right side the back one.
Select Patterns		e) Once ended the path, click on "Stop Path" button and save it with name.
AUTOMATIC CALCULATION		f) If you want to replicate the same path for all tubes, click on the tube from where you want to start, then, from the list of saved paths, double click on the path you want to replicate.
		2. HOW TO SAVE THE PROJECT

At this point we can click on "Stop Pattern" and we will see this

EASY		X
Do you	ı want to save this Pat	ttern?
	Sì	No

We can save the pattern on Yes and get

Path name	×
Get a path menmonic name	ОК
	Annulla
Path_4	

We can click on OK. Then we can decide to repeat the pattern

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HEAT TRANSFER SOFTWARE	Easy Manual	Page 30 of 58
Made in Italy		Fage 50 01 50
Circuits Drawing Editor  Circuits Drawing Editor  General  General  Disposition Type_A  Geometrical Data Depth [mm] 480 PSQ 1 Rows 6 Rows 6 Rows 6 Rows 6 Rows 7 Depth [mm]  Patterns Projects  NEW PATTERN CREATION  Start Pattern Stop Pattern  Select Patterns  AUTOMATIC CALCULATION	Attent select i the full action to the full action	uide W TO CREATE A NEW on "Start Path" button. on the first tube from where nt to start the path (this one will first feeded tube. ion: if you are not able to the tube, you can zoom on age with mouse wheel scroll. on the second tube from where d will return back, and repat this o continue the path. he left side of the drawing area te the front part of the coil, and right side the back one. e ended the path, click on "Stop utton and save it with name. U want to replicate the same r all tubes, dick on the tube from you want to start, then, from of saved paths, double click on
Automatic Configuration	• - - - НО	h you want to replicate.
Ceneral     Disposition Type_A     Geometrical Data     Depth [mm] 170     Height [mm] 170     Height [mm] 480     PSQ 1     Rows 5 a construction     Tubes For Row 8     Depth [mm]     Patterns     Projects     NEW PATTERN CREATION     Start Pattern     SAVED PATTERNS     Select Patterns     AUTOMATIC CALCULATION	2 3 2 2 4 2 4 5 1 5 1 HO Zoom Fit H a) Cick b) Cick b) Cick c) Cick c	w TO CREATE A NEW on "Start Path" button. on the first tube from where nt to start the path (this one will first feeded tube. ion: if you are not able to the tube, you can zoom on age with mouse wheel scroll. on the second tube from where d will return back, and repat this o continue the path. he left side of the drawing area re the front part of the coil, and right side the back one. e ended the path, click on "Stop utton and save it with name. u want to replicate the same rail tubes, click on the tube from you want to start, then, from of saved paths, double click on
Automatic Configuration		W TO SAVE THE DROJECT
If we click on the <sup>200</sup> button,	you will see this	
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#### Then we click on 2D



Then we can draw all the patterns



Then we can click on Stop Pattern and get

EASY		3
Do y	u want to save this Pattern?	
	Sì <u>N</u> o	

We can decide to save or not the pattern, if click on "No", we get



#### We can start the following pattern



Now we can click on "Stop Pattern" and then we can proceed with the next pattern



#### We can continue with this formula: START PATTERN, then you go to STOP PATTERN



Then we can continue on that



#### And we can continue again



Continue



#### Then we click on "x" and we get





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# **U-Bend and Hair-Pin calculation**

After we have already chosed circuits, we ca see on the right side of the working window

	···· 🧾 Project		
	····· 📝 U-Bend/Hair-Pin		
•	<b>≵</b> ↓ □		
•			
~	2↓ □ _ Type	Ubends_HairPin	_
*	Z↓ E Type U-Bend side	Ubends_HairPin ManifoldInlet	
* *	_ Type U-Bend side HairPin	Ubends_HairPin ManifoldInlet	
*	Z↓ E Type U-Bend side HairPin 42,43 [mm]	Ubends_HairPin ManifoldInlet 24	
* * *		Ubends_HairPin ManifoldInlet 24	
* * *	- Type U-Bend side HairPin 42,43 [mm] U-Bends 42,43 [mm]	Ubends_HairPin ManifoldInlet 24 16	

# **EXPORT METAL SHEET DRAWINGS**

Once we have a preview for the circuit

File Languages View Tools Windows Measure system				- 5 ×
: 🕑 New Project 🎴 Load 🔚 Save 🛛 🖉 Edit 🛛 🗮 Circuits 🛛 🚔 Print preview 💾 Dimensions 📧 Load Title Blo	ck			
2D 30 Manifolds				Project
				✓ Tubes         ✓ Udexd/tair Pin         ✓ Fins         ✓ Pranc         ✓ Design         Franc         Pranc         Marifolds         True         Pranc         Marifolds         True         Prance         True         Marifolds         True         Marifolds         True         Marifolds         O(5.1         Tubes         Project Name         Project Path         Sterrat         Real         Y Weight         Fins Real         Y Weight         Finage [0]         7.35         Marifolds [log]         0         Y Sterr         Dimension height         15         Format         Real         Y Weight         Finage [0]         7.35         Marifolds [log]         0         Y Tubes         Y Tubes         Y Tubes         Y Tubes         Y Tubes         Y Tubes
				Fins Fine Weight
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#### Left view



Top view and bottom view







We can also change the dimensions height setting a new value, we need to change field and click on "Update Drawing":





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# LOAD TITLE BLOCK

To enter the data of the Title Block we need to click on "Load Title Block" in the menu bar, we click on Project on the right menu



Then we can compile the data in Title Block

#### ▲ TitleBlock

DATE	
DESCRIPTION	
FORMAT	
ITEM	
MATERIAL	
N° DRAWING	
QTY	
REV	

We can compile each line like this

$\sim$	TitleBlock	
	DATE	13/09/2018
	DESCRIPTION	AAA
	FORMAT	1
	ITEM	1
	MATERIAL	NO
	N° DRAWING	3
	QTY	1
	REV	ОК

At this point we will see the inserted data



Page 45 of 58

ITEM				DESCRIPTION	QTY	1	
PROJECT		FORMAT:			MATERIA	L:	
	⊕	1		AAA	NO		
	1	SHEET:	1/1				
SCALE:		UNIT:		ITEM	Nº DRAW	/ING:	REV:
1:3		mm		1	3		ок
DATE:		13/09/2018	;				

### **SMOOTH TUBE EXAMPLE**

Let us open a new project and we check the option "Smooth tube"

🖳 New Project					-	
Coil Parameters Definition	on		Archive Compatible Circuits	wailables frames presentique	ad	
Mode     Heating       Geometry     Disposition     Stagger       Disposition Mode     Type A       Tubes Spacing [mm]     Tubes       Material     Aluminiu       Thickness [mm]     External Diam. [mm]       Image: Spacing [mm]     Image: Spacing [mm]       Fins     Fins       Fins     Integral       Aluminiu     Thickness [mm]       External Diam. [mm]     Image: Spacing [mm]       Cold Dimensions     Height [mm]       Length [mm]     Length [mm]	w     w       ed     w       60,       30,       30,       60,       20,       m       0,135       20,       480,       720,       Tubes For Row       Rows	30	Available Circuits	Circuits N		
Outlet Manifolds	22x1 ~		L			
					ОК	Cancel
Outlet Manifolds	lick on "OK" and we car	n see			ОК	



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#### If we click on 3D we can see the coils



And if you draw the circuit you can have it complete like this



### How To Save Easy Coils Projects

To save the a project after we have used the EASY software we click on File-> Save As

Ø	File	Languages View To	Fools	s Windows Measure system	
9	9	New Project	1	🖌 Edit 🛛 🔚 Circuits 🛛 🚔 Print preview 🖺 Dimensions 📧 Load Title Block	
2D	4	Load CTRL+O	- 1		
		Save	- E		
	M	Save As			
		Export •	۰I		
		Export XLS materials			
	÷	Print preview	T		
	0	Exit	1		
	_		-		
			F		
		I			
τŀ	hor		++	his	
	ICI	i you will see	: u		
			D	<b>S r l</b> Via N Bivia 6 25121 Dadava (DD) Italy Taly 040 9762211 Eavy 040 9750106	
		UNILA	D	<b>3.1.1.</b> $-$ VIa IV. DIXIO 0 - 35151 - PAUOVA (PD) - ILAIY - IEI.: 049 8/05511 - PAX: 049 8/50196	
				www.unilab.eu — info@unilab.eu	
				-	



Then we will see



#### Then we click on open and get

	$\bar{\triangleleft} \ Q \ \Phi \ \circlearrowright \ \vdots$	General Project → Tobe → France → France
		21/==
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### How To open in Easy projects saved in Coils software

In Unilab Easy, we can open project that are saved using the software Unilab Coils, to do so please go to File Menu->Load



And we will see

😞 Apri								x
🕞 🖓 🖉 📃 Desktop 🕨					<b>- - ↓ • • • • • • • • • •</b>	Cerca Desktop		٩
Organizza 🔻 Nuova d	cartella					10 == 10 ==	•	0
🔶 Preferiti		Cartella di file		Cartella di file				^
E Desktop Download Risorse recenti		<b>prog</b> Cartella di file		<b>scan</b> Cartella di file				
Raccolte		<b>shark</b> Cartella di file	- SUIL	Sistema attivazione Cartella di file				
<ul> <li>Documenti</li> <li>Immagini</li></ul>		buz.c3d File C3D 8,19 KB		cemal.c3d File C3D 7,19 KB				
Video		easy_Projet.c3d File C3D 7,64 KB		Fasttech 10_2522 60Tc6prj Collegamento Internet 148 byte				
Disco locale (C:)		<b>scan</b> Collegamento 393 byte		software remote usagdoc Collegamento Internet 129 byte				
🕞 Disco locale (N:)		thermokar.c3d File C3D 8,60 KB						-
Nom	ne file:				•	Coils 3D Project file	e (*.c3d) Annulla	• •

Now we click on side and choose Coils 6.5 project file





Then you click on open and we will see

ୁ ଭ_Q ⊕ ℃ ; ;	→ Tubes → Tubes → Vinna → Vinna → Vinna

### How To Export from 2D

If we click on 2D<sup>2D</sup>

we will see, then we can click on File->Export



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Then we if i click on File->Export we can choose differents file types and if we want a global file or one file for each part:

File	Languages View	<u>т</u>	ools Window	s	Measure system
	New Project	Save	e 🛛 🎽 Edit 🛛 🚽	Circ	cuits 🛛 🛕 Print preview 😁 Ex
1	Load CTRL+O				
	Save	E			
1	Save As				_
	Export +		ASCII STL	•	Single file parts
4	Print preview		Binary STL	►	Global file
	Exit		IGES	•	
			OBJ		
			STEP		
			Bitmap		
			EMF		

### How To Export the list of materials



#### If we go to export XLS materials, we will see this:

Code	Quantity	Misure	Material	Thikness [mm]	Weight [kg]	Component Price	Total price [€]
PROJECT							
Tubes	48	N°	Aluminium	0,35	1,68	0,09	
Fins	342	N°	Aluminium	0,1	7,87	0,06	:
Inlet Manifolds	1	N°	Aluminium	1	0,12	0,3	
Outlet Manifolds	1	N°	Aluminium	1	0,12	0,3	
- Frame	1	N°	Stainless Steel		6,36	18,07	:
— Rigth	0,15	m²	Stainless Steel	1	1,19	3,39	
— Left	0,15	m²	Stainless Steel	1	1,19	3,39	
— Up	0,25	m²	Stainless Steel	1	1,99	5,65	
Down	0,25	m²	Stainless Steel	1	1,99	5,65	
U-Bend							
— 42,43 [mm]	16	N°					
🗏 HairPin							
- 42,43 [mm]	24	N°					



### UPDATES

In order to update the software you have to go on "Start"  $\rightarrow$  "Programs"  $\rightarrow$  "Unilab Easy"  $\rightarrow$  "Update Easy"



When requested you need to insert your "TSC.." code that you can find in your mainteinance contract, click on "Next" and wait until the installation are completed





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### UNILAB EASY SOFTWARE RECOMMENDATIONS

We advice to use unilab easy according to the pc hardware specifics, so that the memory usage would still be available, that is not to use it with several other memory consuming software at the same time. We also suggest for those who have the software Unilab coils, to use both one at a time, that is either Unilab coils, then close it, and open Unilab Easy or in the reverse order.



### How to get in contact with Unilab Technical Support

Please visit our website www.unilab.eu and click on "Suppor Portal".

HOME BLOG \$	PANY   PRODUCTS	\$ SUPPORT	REQUEST TRIAL
	Support Portal		
	Create New Ticket	t	
	Book Remote Assi	istance	
	Download Suppor	Download Support Tool	

In this section, you will find some useful tools for you (example FAQs and useful documentations).

HEAT TRANSFER SOFTWARE CUSTOMER SERVICE UNILAB	Welcom Login Sign t
Home Solutions	
How can we help you today?	+ New support ticket
Enter your search term here	SEARCH Check ticket status
Knowledge base	
Remote assistance / Assistenza remota	
REMOTE CONNECTION SOFTWARE (1)	SOFTWARE CONNESSIONE REMOTA (1)
UNILAB TEAMVIEWER QUICKSUPPORT	UNILAB TEAMVIEWER QUICKSUPPORT
General	
FAQ (English) (7)	FAQ (Italian) (4)
W HOW TO HAVE YOUR USB SMARTKEY WORK IN WINDOWS VISTA, 7, 8 64 BITS	COME FARE FUNZIONARE LA CHIAVE USB SMARTKEY PER L'ATTIVAZIONE DI COILS S
WHEN TRYING TO UNINSTALL YOUR SOFTWARE, WINDOWS KEEPS ON TELLING ME A	<b>W</b> ERRORE DURANTE READTEXTFILECONTENTS
FROR DURING READTEXTFILECONTENTS	COME AGGIORNARE COILS
HOW TO MAKE THE COILS UPDATE	COME IMPOSTARE LA COMPATIBILITA' CON WINDOWS 7 O ALTRO
How To SET WINDOWS 7 OR OTHER COMPATIBILITY     See all 7 articles	
Latest software manuals	
COILS 8.0 (3)	EASY (1)
😈 COILS manuals (English)	<b>EASY manuals (English)</b>
100 HOW TO INSTALL BLUE USB-KEY IN SERVER AND CLIENTS	

• To get in touch with our techninicians, please click on "Create New Ticket" and insert all necessary information.

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	Customer service UNILAB	Welcome Login Sign up
Home Solutions		
Submit a ticket	Email	
Subject *		
Product	<b>v</b>	
Description *		
	+ Attach a file	
	Submit Cancel	
Home - Solutions		

• To book a remote connection with our technicians, please click on "Remote Connection" and select the date for the meeting.

Book Re	emote Assist	tance		
All times be	elow are express	ed in your local tir	ne	
1. Start	2. Time	3. Details	4. Payment	5. Done
Please select se	rvice:			
Remote connec	tion			
			21	N
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#### **Book Remote Assistance**

. Start	2. Time		3. Details	4. Do	ne
elow you can find a list ick on a time slot to pro	of available time slo ceed with booking	ots for <b>Remote conne</b>	ection by Customer	Care.	
Mon, Aug 27	Thu, Aug 30	Tue, Sep 04	Fri, Sep 07	Wed, Sep 12	Mon, Sep 17
🗌 10:00 am	0 10:00 am	0 10:00 am	🔵 10:00 am	🔵 10:00 am	0 10:00 am
🔵 3:00 pm	3:00 pm	3:00 pm	3:00 pm	3:00 pm	3:00 pm
Tue, Aug 28	Fri, Aug 31	Wed, Sep 05	Mon, Sep 10	Thu, Sep 13	Tue, Sep 18
🗌 10:00 am	0 10:00 am	0 10:00 am	🔵 10:00 am	🗌 10:00 am	0 10:00 am
🔵 3:00 pm	] 🗌 3:00 pm	3:00 pm	🔵 3:00 pm	🔵 3:00 pm	🔵 3:00 pm
Wed, Aug 29	Mon, Sep 03	Thu, Sep 06	Tue, Sep 11	Fri, Sep 14	Wed, Sep 19
🔵 10:00 am	0 10:00 am	0 10:00 am	0 10:00 am	0 10:00 am	0 10:00 am
🔾 3:00 pm	🔾 3:00 pm	🔾 3:00 pm	🔾 3:00 pm	🔾 3:00 pm	🔾 3:00 pm
Book Remo	o <b>te Assis</b> are express	<b>tance</b> ed in your loc	al time		
Book Remo All times below . start	o <b>te Assis</b> are express 2. Time	tance ed in your loc	cal time 3. Details	4. Dc	ne
Book Remo All times below . start You selected a booking for Please provide your deta	are express 2. Time Is in the form belo	tance ed in your loc tion by Customer Ca w to proceed with boo	cal time 3. Details re at 10:00 am on 2 oking.	4. Dc 9/08/2018.	ne
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l times below start u selected a booking fr ase provide your deta me	are express 2. Time or Remote connect Is in the form belo	tance ed in your loc tion by Customer Ca w to proceed with boo Phone	cal time 3. Details re at 10:00 am on 2 oking.	4. Do 9/08/2018. Email	ine
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Book Remo Ill times below start ou selected a booking fo iease provide your deta ame oftware Name	em	tance ed in your loc tion by Customer Ca w to proceed with boo Phone	cal time 3. Details re at 10:00 am on 2 oking.	4. Do	ine
Book Remo	are express 2. Time ar Remote connect Is in the form belo	tance ed in your loc tion by Customer Ca w to proceed with boo Phone	cal time 3. Details re at 10:00 am on 2 oking.	4. Dc	ine
Book Remo	em	tance ed in your loc tion by Customer Ca w to proceed with boo Phone • 312 345 6789	cal time 3. Details re at 10:00 am on 2 oking.	4. Do	nne 
Book Remo	em	tance ed in your loc tion by Customer Ca w to proceed with boo Phone	cal time 3. Details re at 10:00 am on 2 oking.	4. Dc	Ine