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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.

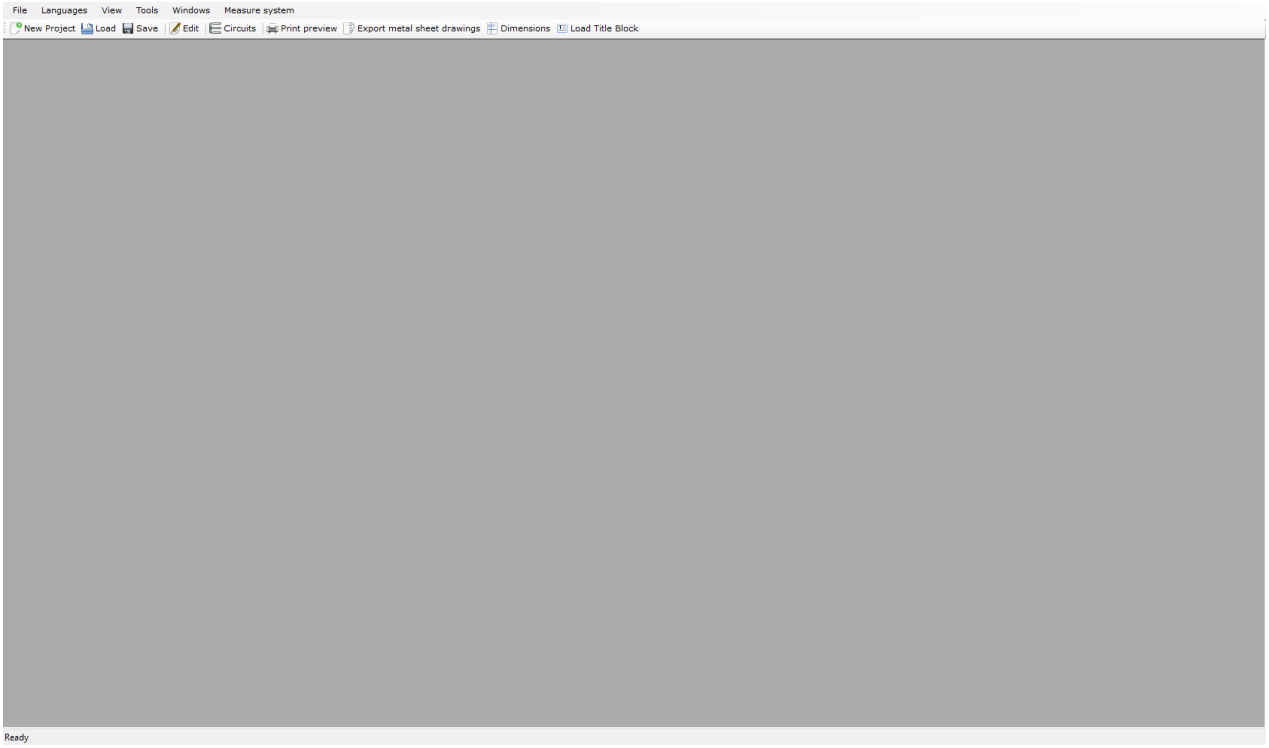
- *Automatic creation of the circuits: according to the number of the circuits, the software directly suggests you one or more layout solutions. It is able to handle tubes skipped, bends and U-bolts.*
- *Manual creation of circuits: possibility to manually create, save or load patterns.*
- *Useful warnings 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

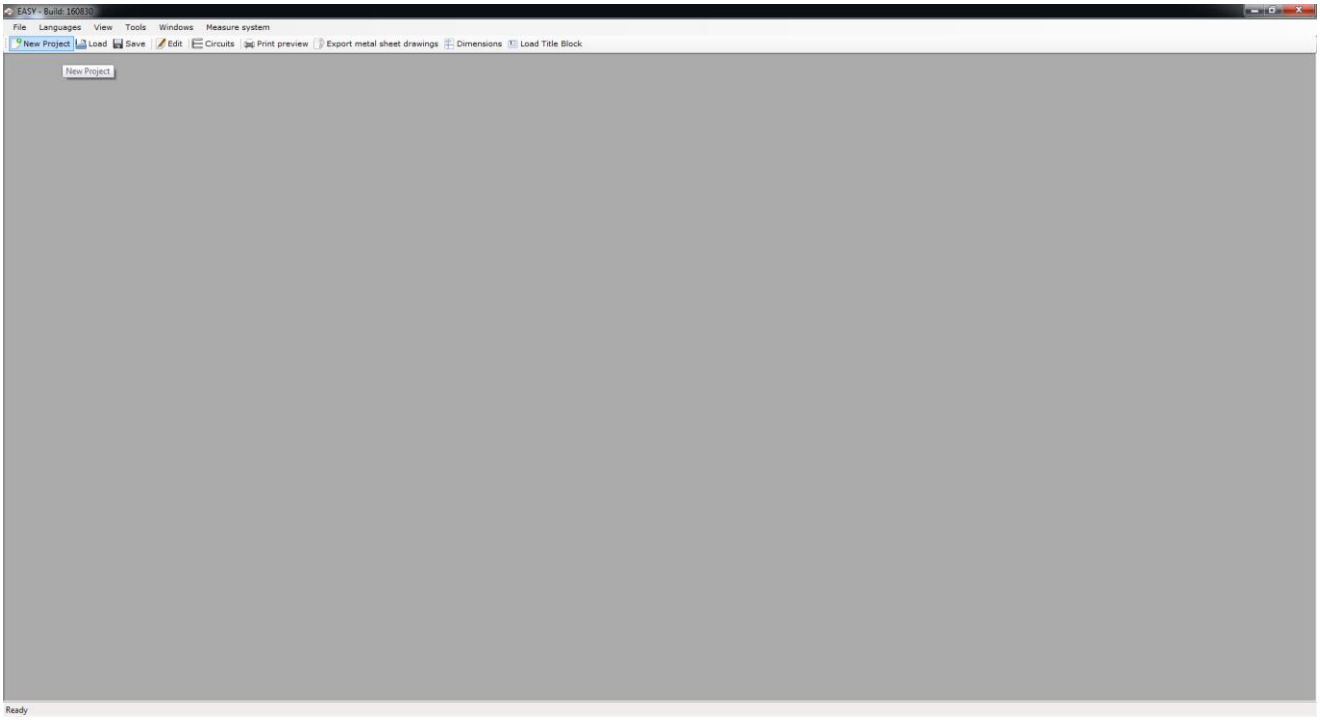
- Operating System Microsoft® Windows® 7 with Service Pack 1, 8.1 or 10, 32 or 64 bits
- Intel® Core 2 or AMD Athlon®; 1.5 GHz or faster processor
- 4 GB or more of RAM
- 2 GB or more of available hard-disk space for 32-bit operative system; 4 GB or more of available hard-disk space for 64-bit operative 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.

Your first 3D project

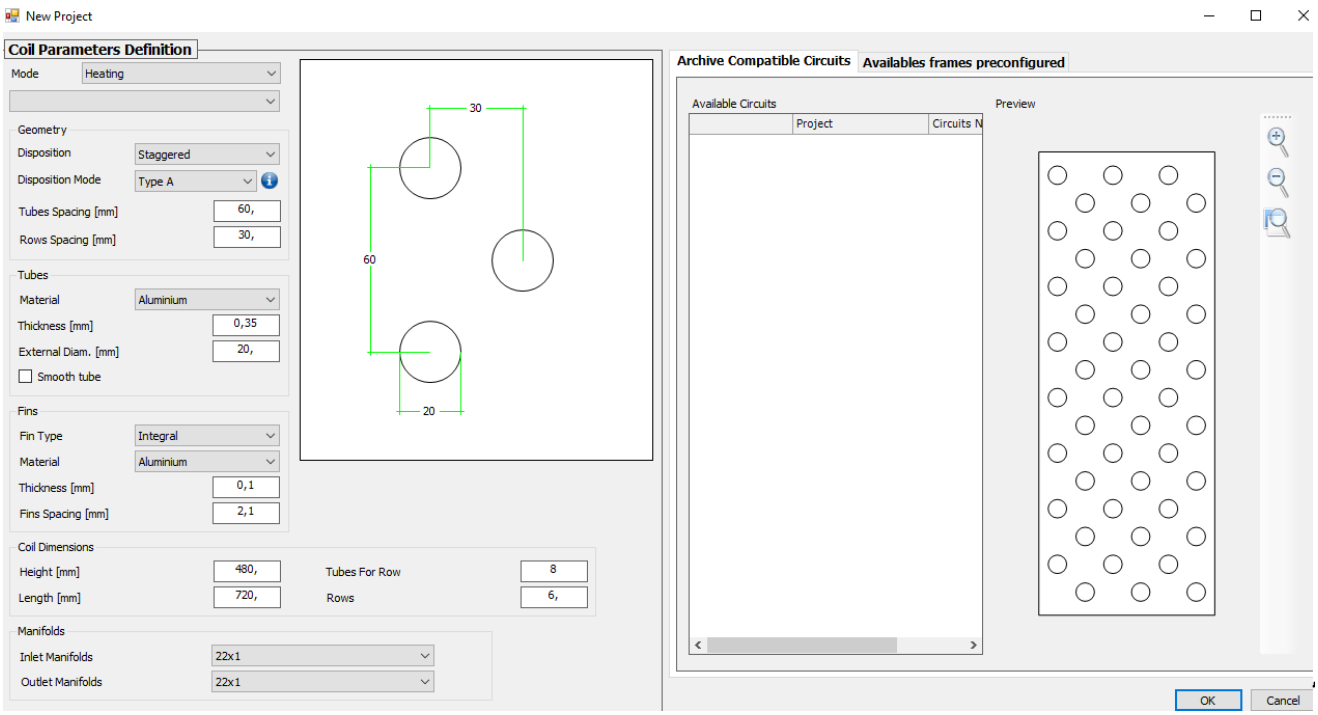
At first you can choose the right unit measure system from the menu bar



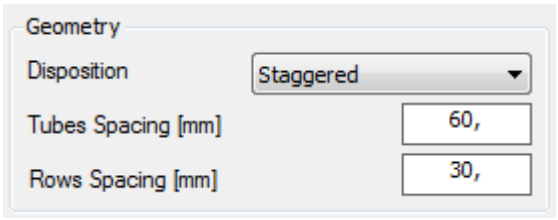
Then you click on "New Project"



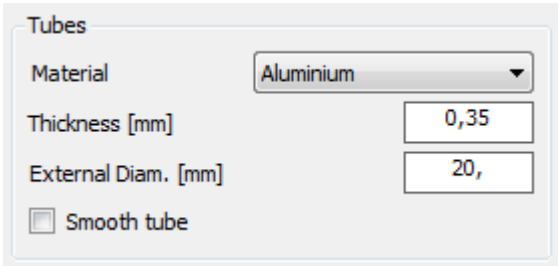
You will see this



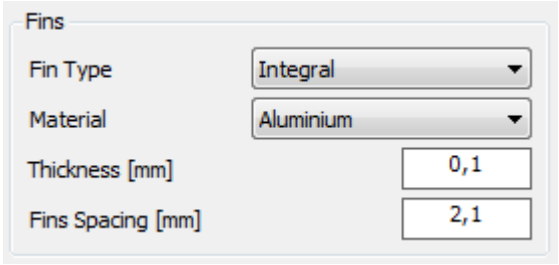
Where we can see the data divided for the Geometry



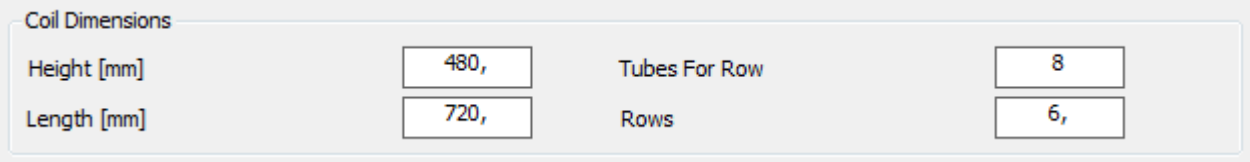
Tubes



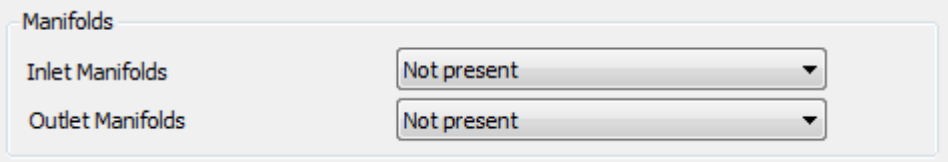
Fins



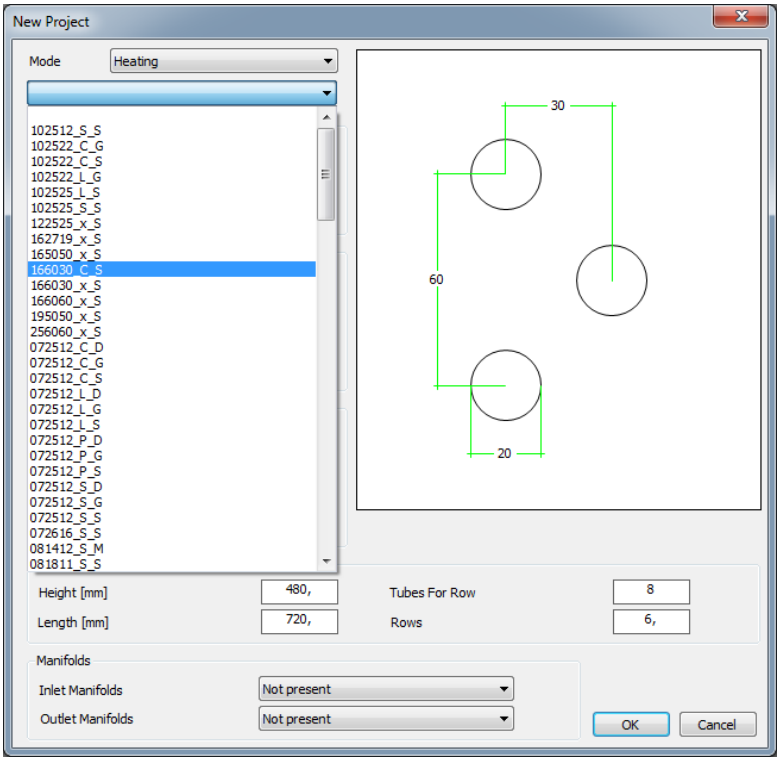
Coils Dimensions



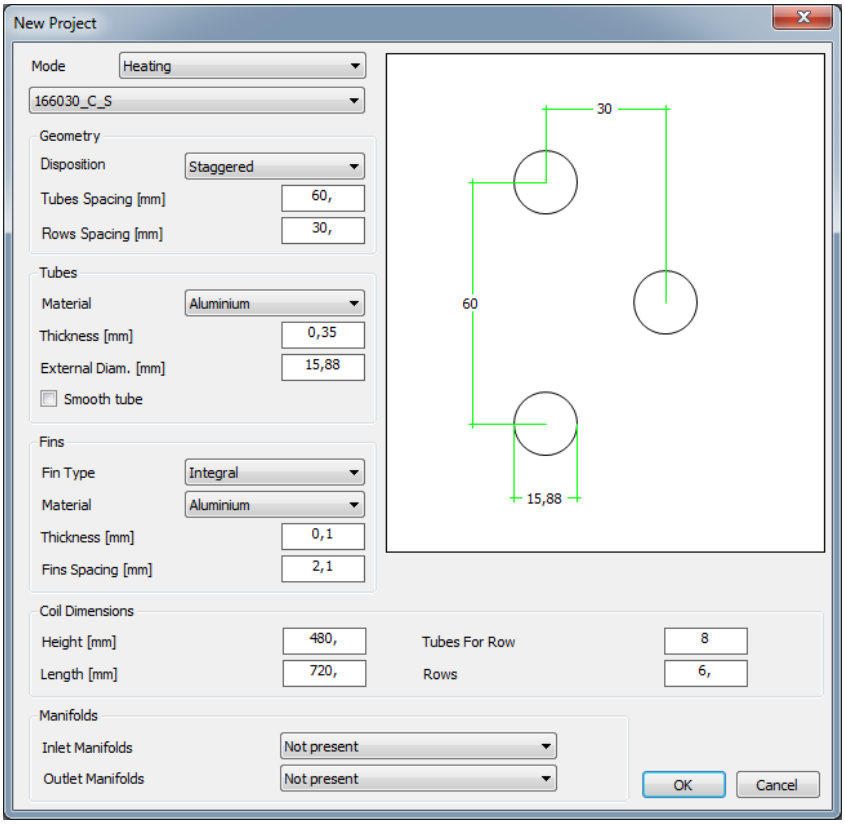
Manifolds



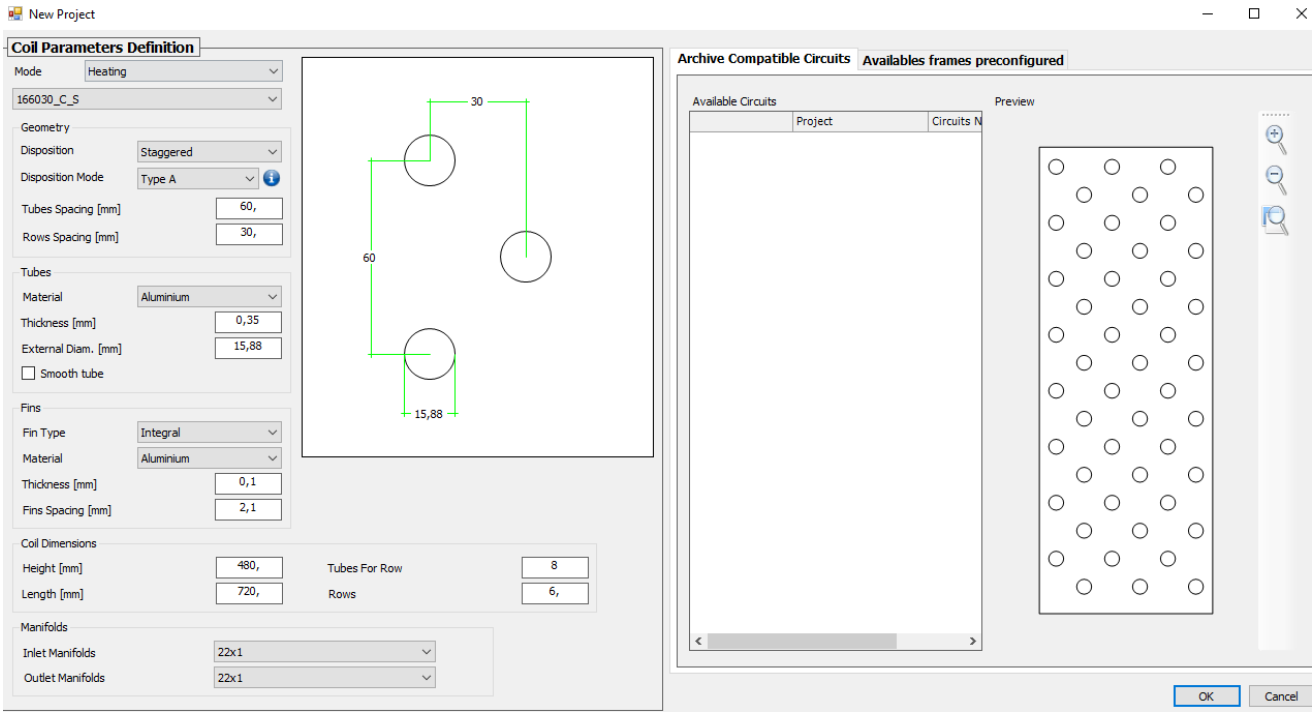
We can set and edit the data relative to our geometry, or we can choose our geometry from the given archive for the calculation mode that we need



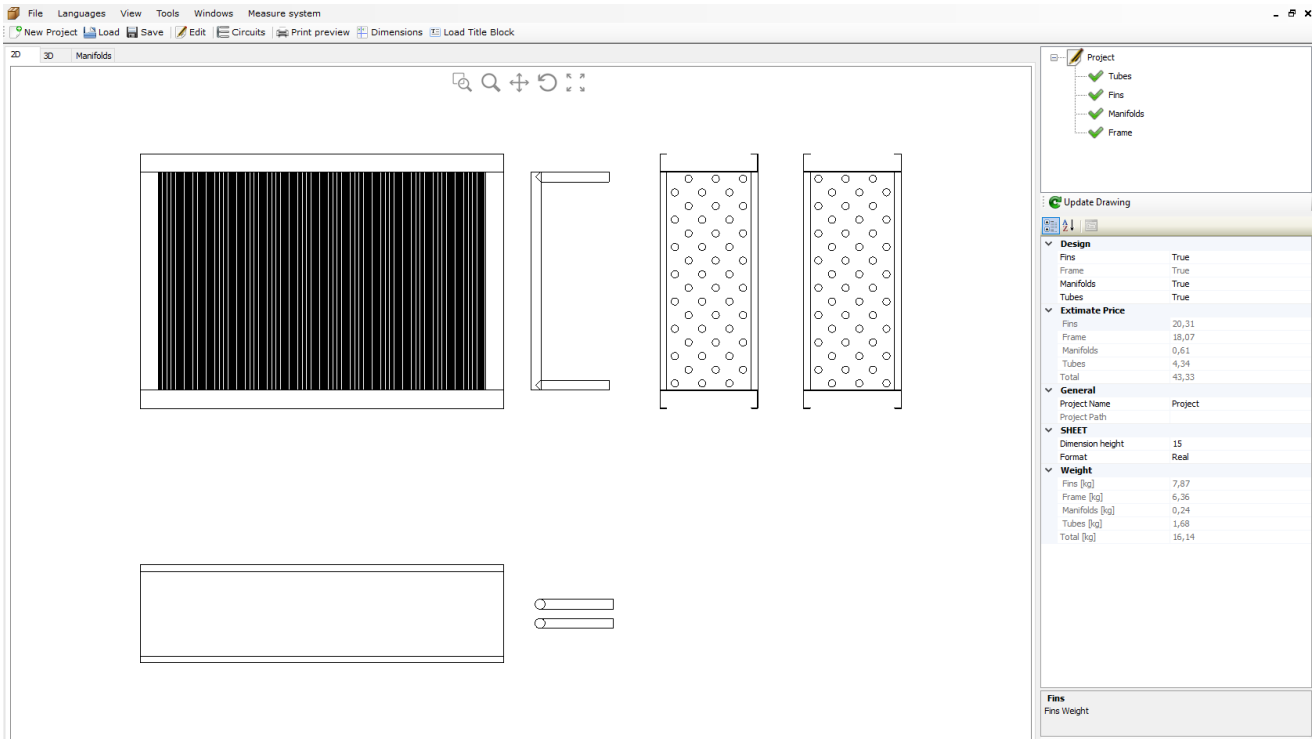
So we can choose one like the following



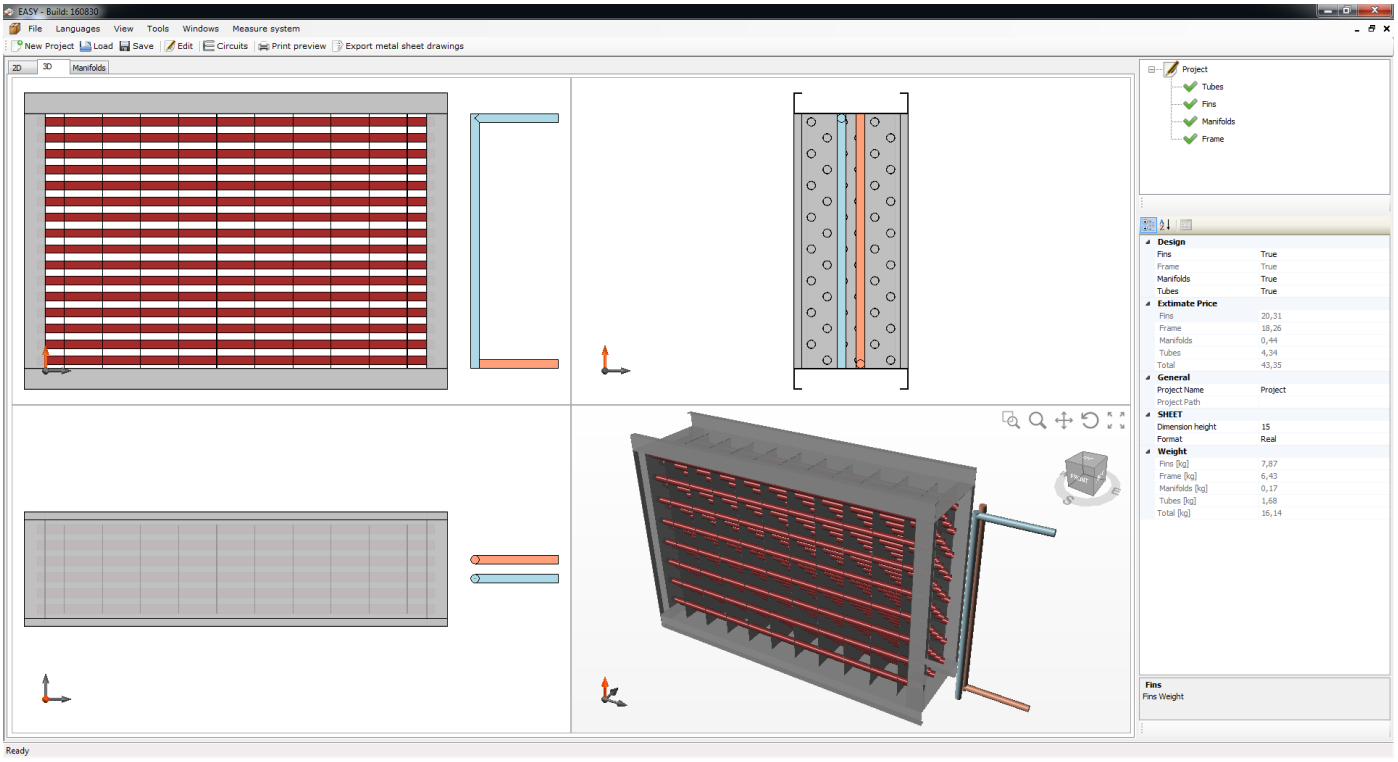
Suppose we want leave the above data, but we want to add the manifolds



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:



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

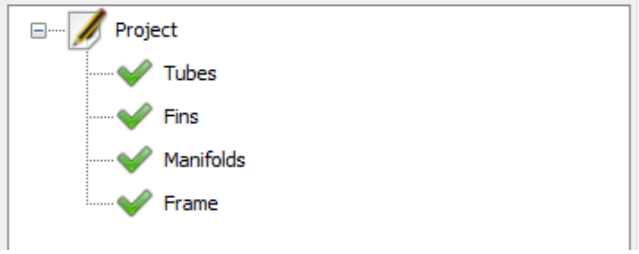
The main window is subdivided in the classic four views of the 3D object: front, right, top and 3D. Please note that for performances options, not all the fins have been displayed. This is to allow people with slower computers use this utility too.

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

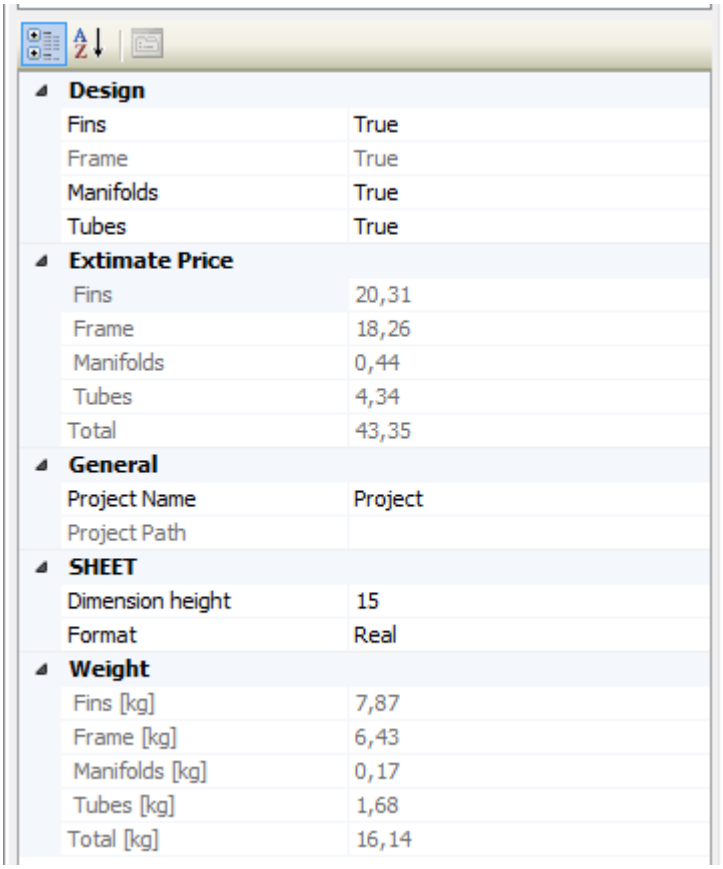
The above buttons lets you respectively (from left to right):

- 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:



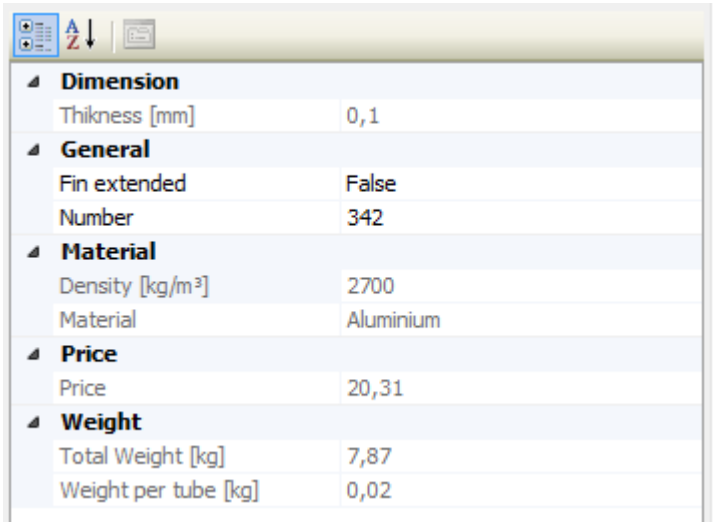
Below this panel, there's a list of the properties of each component.



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

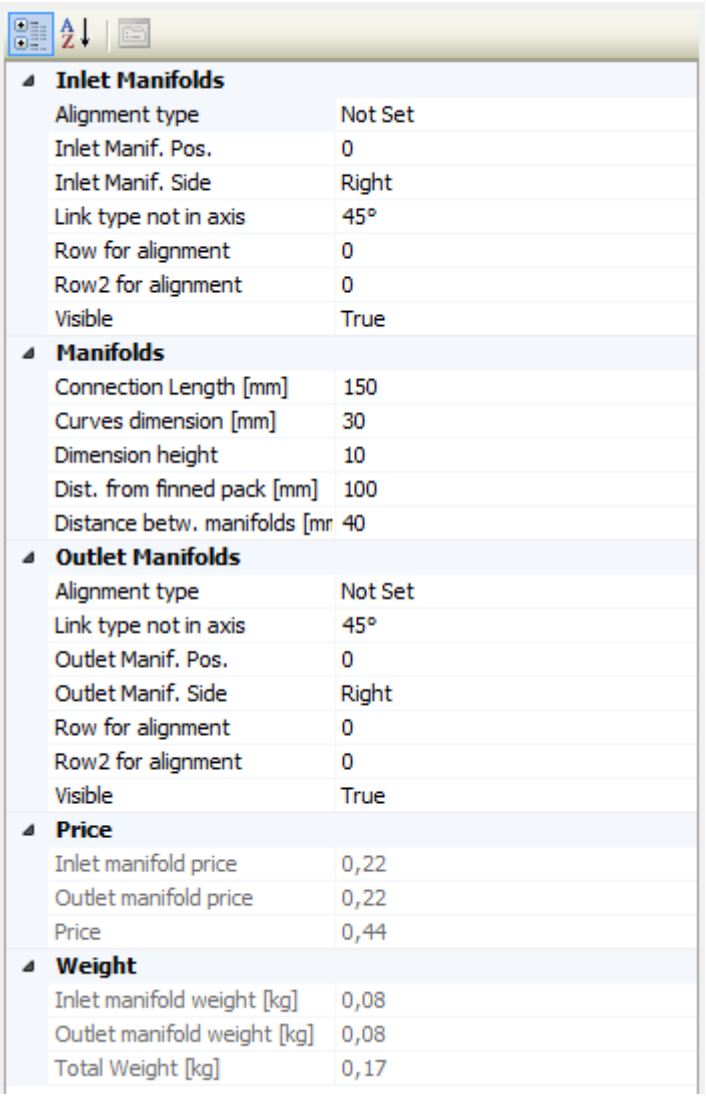
When you select an item from the above list, all the parameters of this part of the project will be shown in this area for modifications.

For example when you click on “Fins” this is what you get



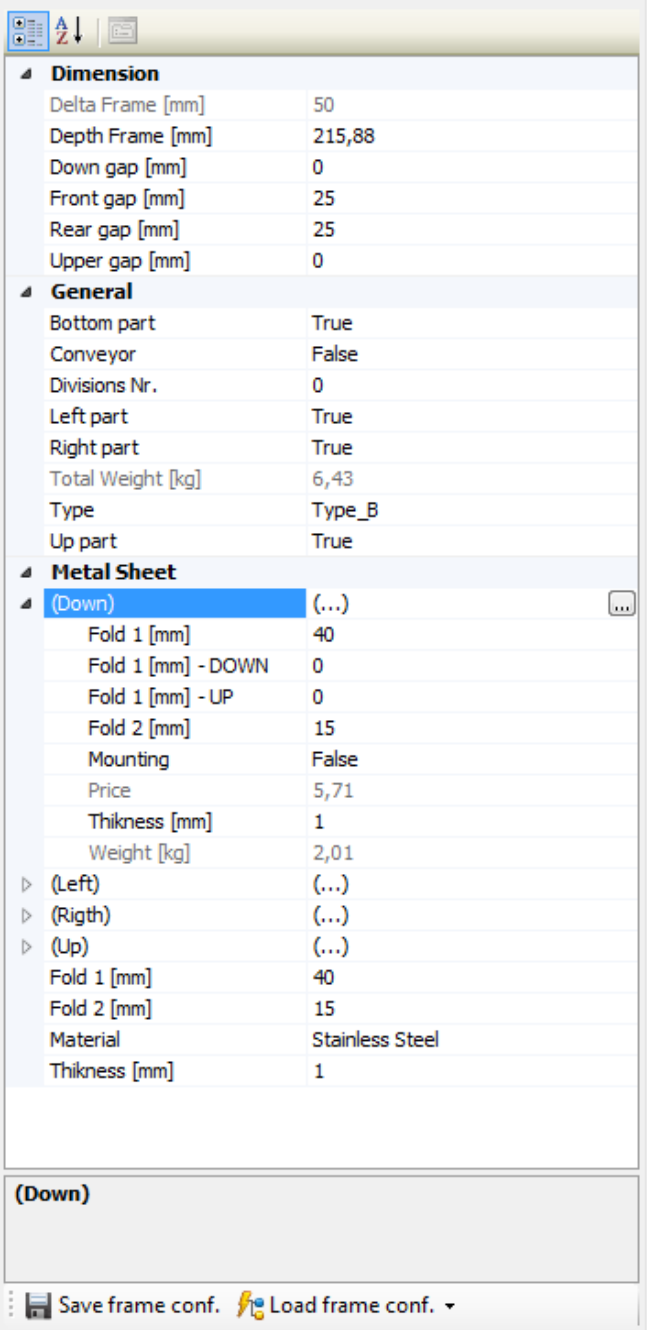
Dimension	
Thikness [mm]	0,1
General	
Fin extended	False
Number	342
Material	
Density [kg/m³]	2700
Material	Aluminium
Price	
Price	20,31
Weight	
Total Weight [kg]	7,87
Weight per tube [kg]	0,02

If you click on “Manifolds” this is what you get:



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
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:

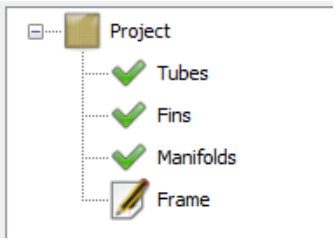


At the end, you can also load a frame configuration previously saved in the same unit measure system from the button “Load frame conf.”

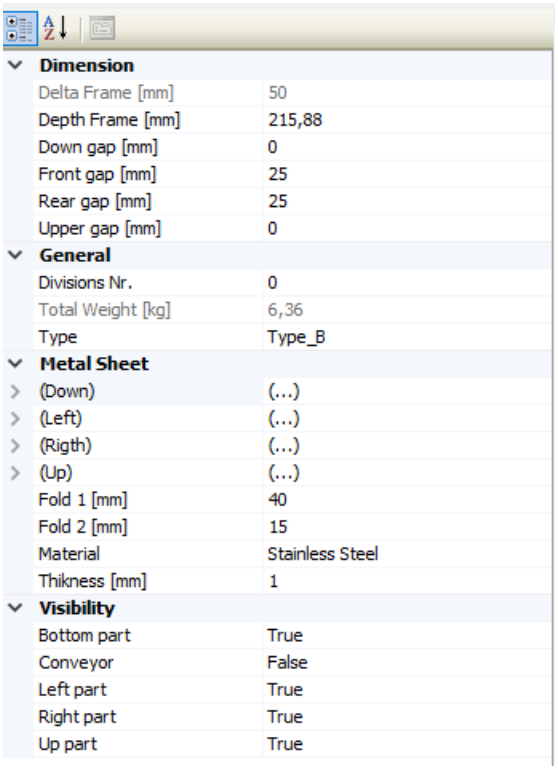
Now you can start customizing your project and get it ready for the manufacturing department.

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

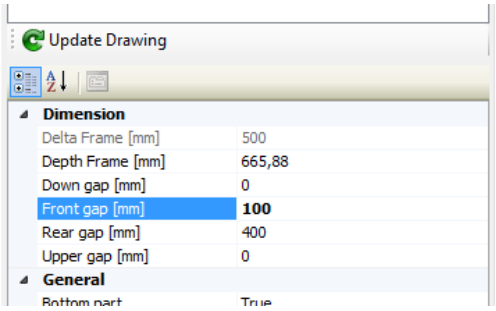


Now that all the parameters have been loaded, you will notice that they have been divided into 3 categories: Dimensions, General and Metal Sheets.

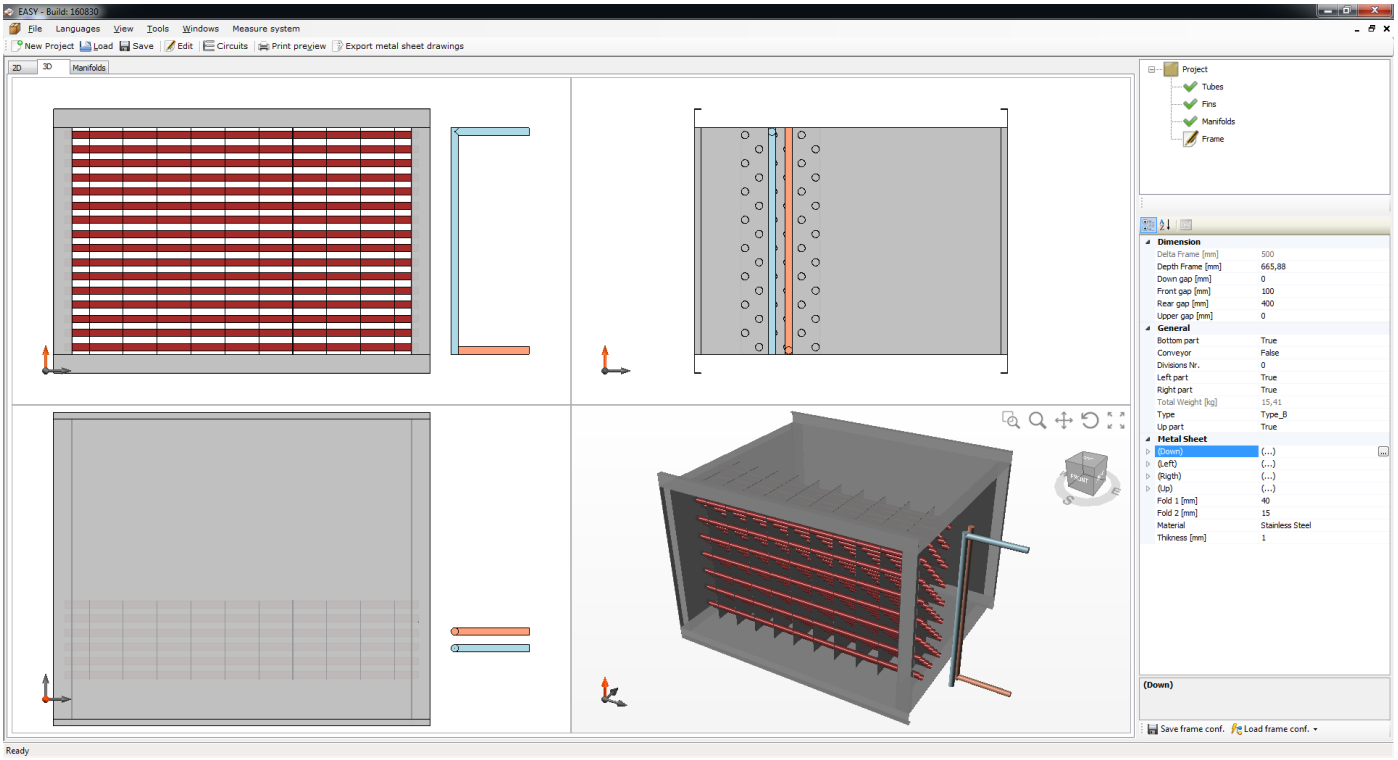


Inside the first category you can find “Front Gap” and “Rear Gap”.

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”.



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



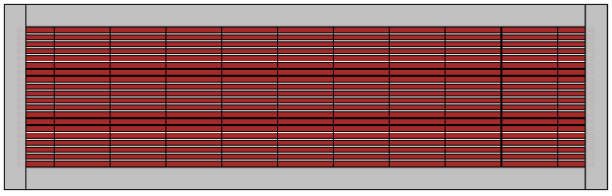
You can either modify these two properties or change directly the “Depth frame” property, and the two gaps will be updated automatically.

Selecting a different type of frame

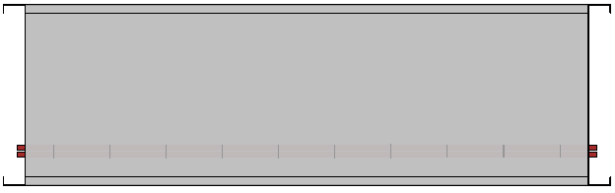
Under the “General” category there’s the frame type. Two types of frame are available:

Type_A

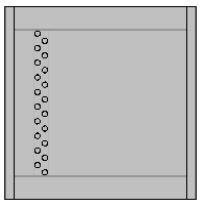
Front view



Top view

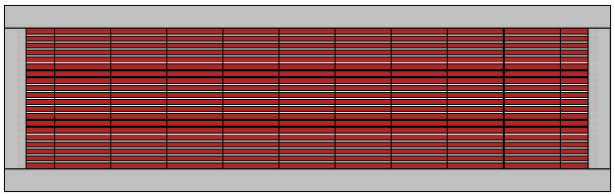


Right view

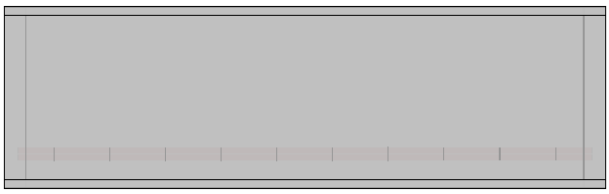


Type_B

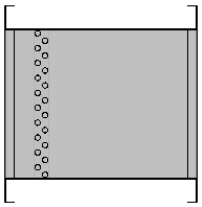
Front view



Top view



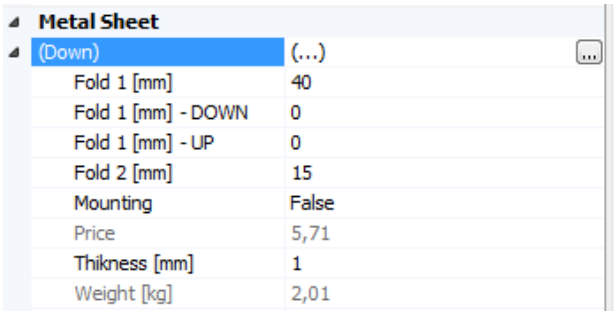
Right view



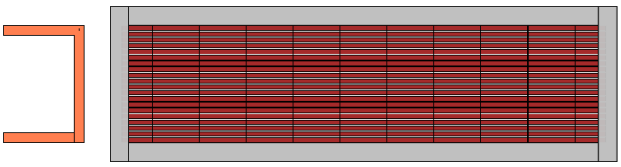
When you select a different type of frame, or you just change any parameter of the frame itself or one of its metal sheets, the program will recalculate the weight and the estimated price of the frame, as well as the estimated price of the entire coil.

Changing the dimension of the single metal sheet

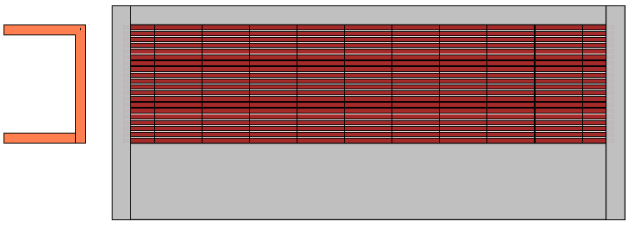
Every frame is composed by three metal sheets, the (R) right, (L) left, (T) top, (B) bottom. Each metal sheet can be customized:



You can set the dimensions of the four folds and add or remove the mounting, so you can enlarge the metal sheet depending on your needs, like in the example below:



Fold 1, metal sheet “Down”: 40 mm



Fold 1, metal sheet “Down”: 160 mm

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.

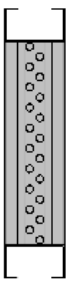
Changing the dimension of all the metal sheets

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

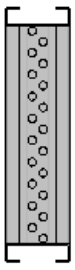
Metal Sheet	
(Down)	(...)
(Left)	(...)
(Rigth)	(...)
(Up)	(...)
Fold 1 [mm]	40
Fold 2 [mm]	15
Material	Stainless Steel
Thikness [mm]	1

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:

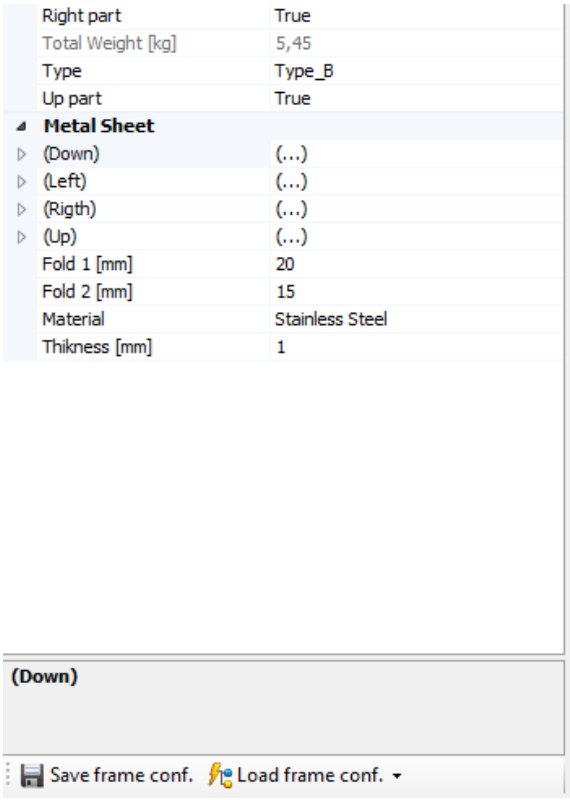
Metal Sheet	
(Down)	(...)
(Left)	(...)
(Rigth)	(...)
(Up)	(...)
Fold 1 [mm]	40
Fold 2 [mm]	15
Material	Stainless Steel
Thikness [mm]	1



Metal Sheet	
(Down)	(...)
(Left)	(...)
(Rigth)	(...)
(Up)	(...)
Fold 1 [mm]	20
Fold 2 [mm]	15
Material	Stainless Steel
Thikness [mm]	1

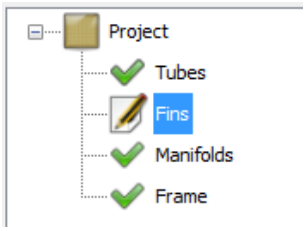


As explained in the previous chapter, you can also save the frame configuration from the button “Save frame conf.” and load a frame configuration previously saved in the same unit measure system from the button “Load frame conf.”

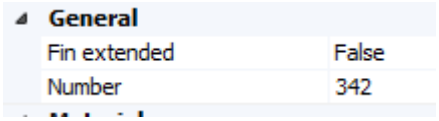


Selecting Fins extended or not option

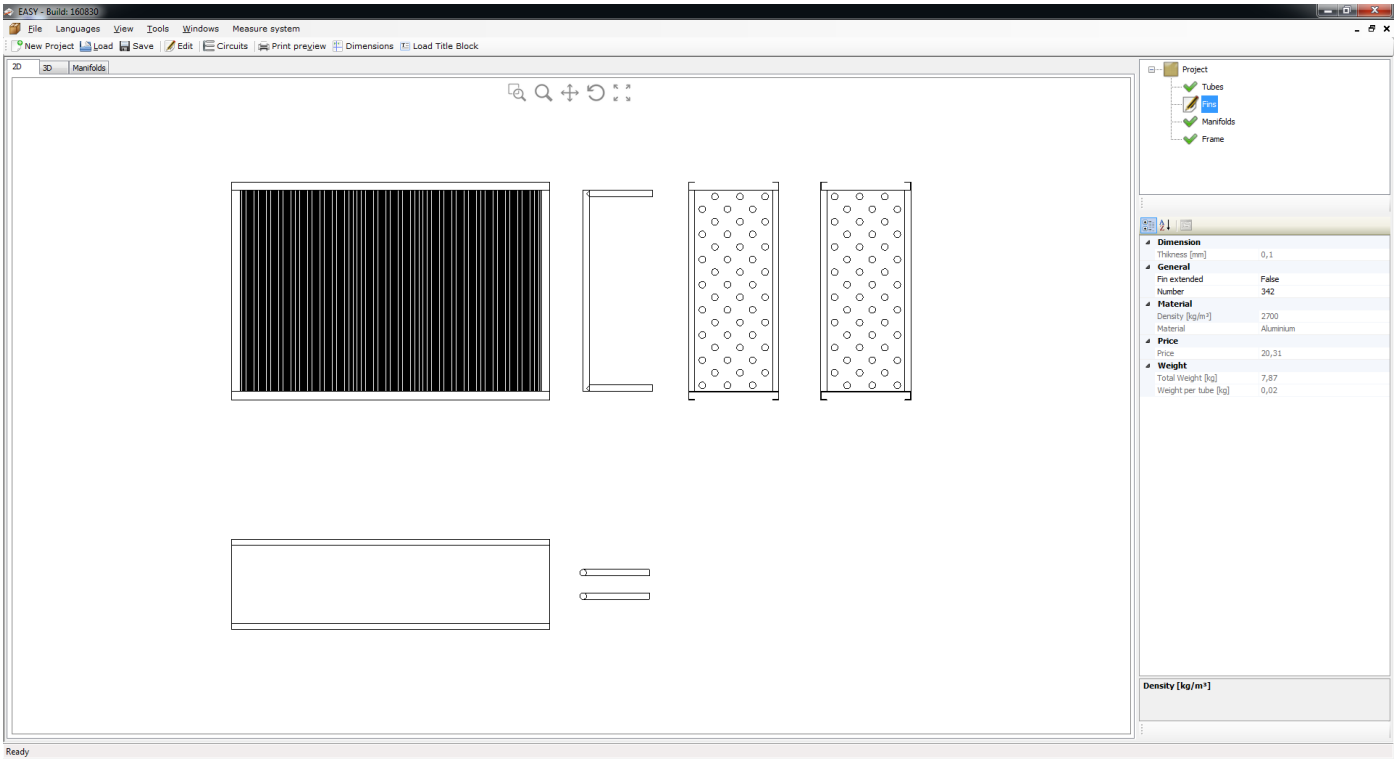
If we click on "Fins" option



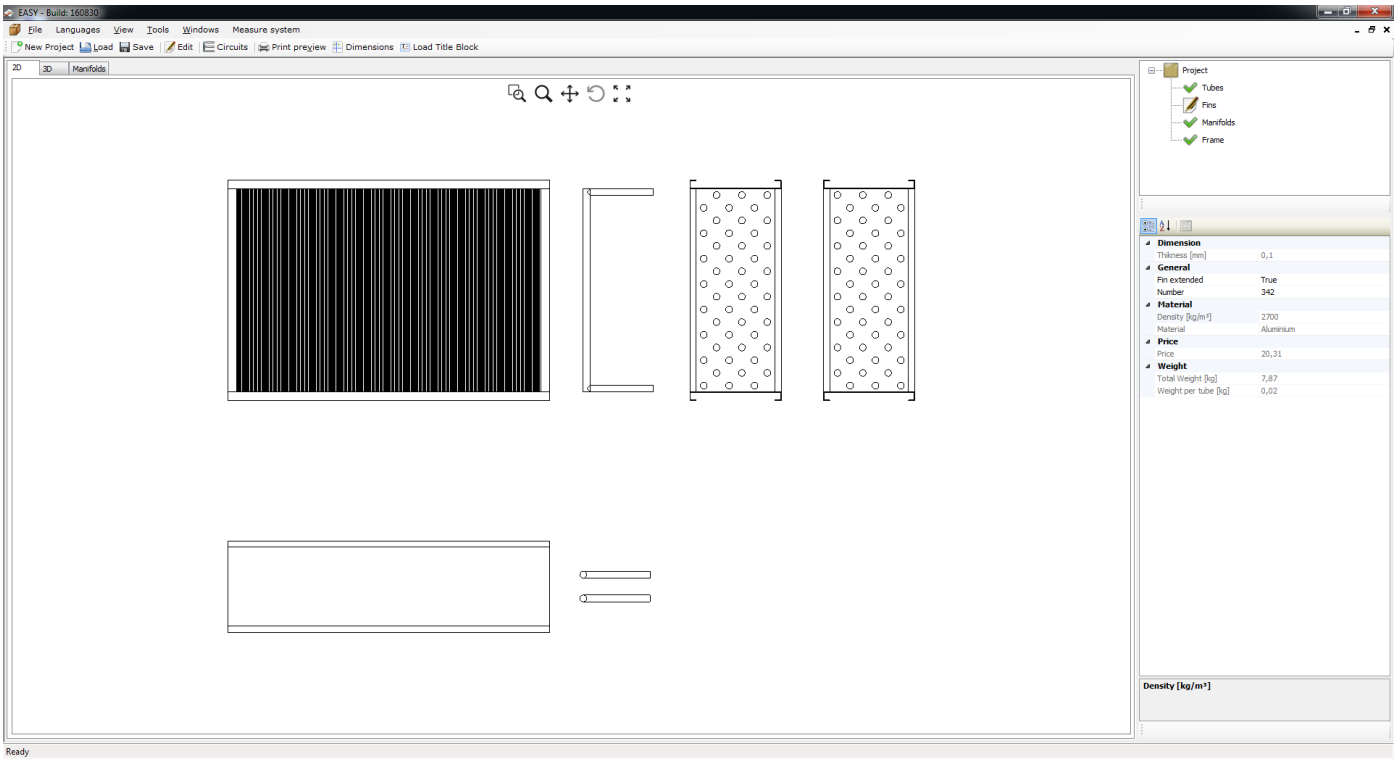
We can go under General



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

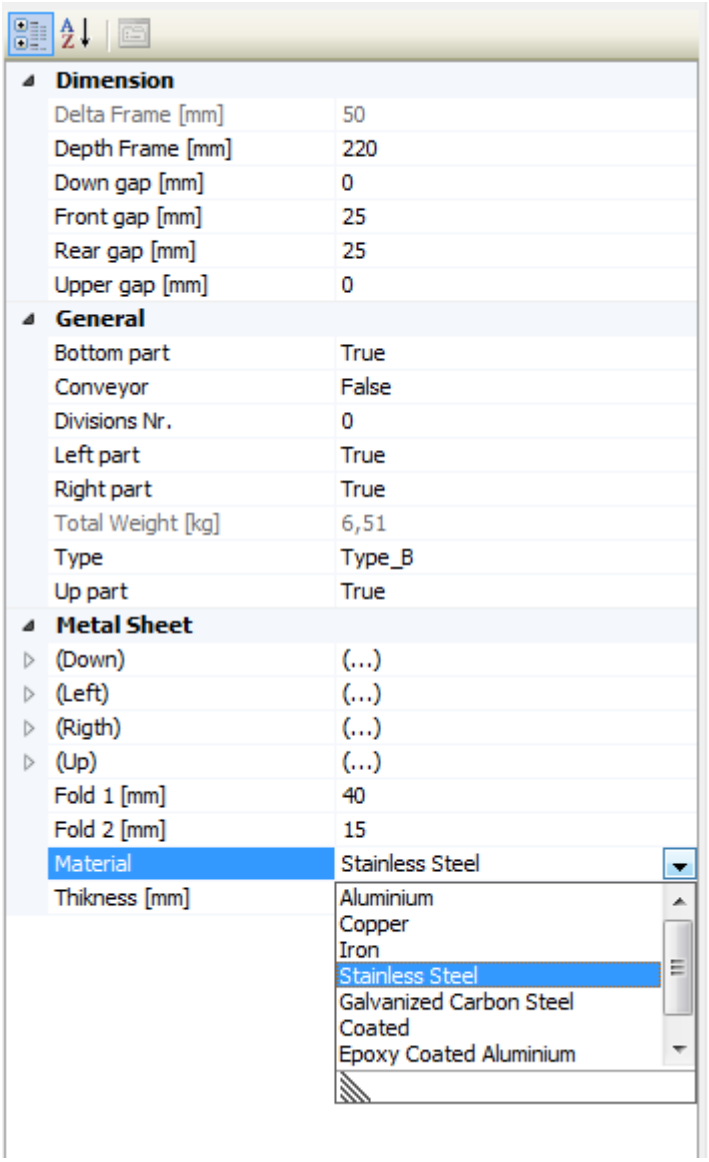


If we click on "True" and then on "Update Drawing", we get



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



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

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

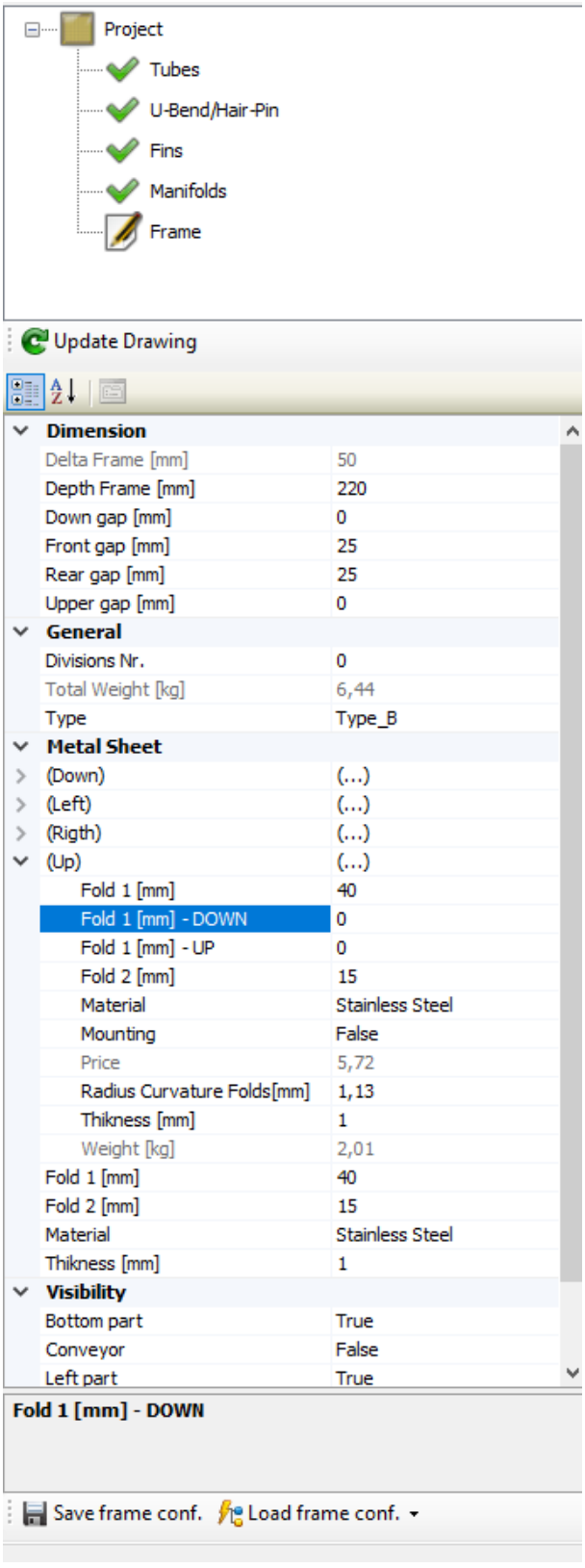
With Stainless Steel

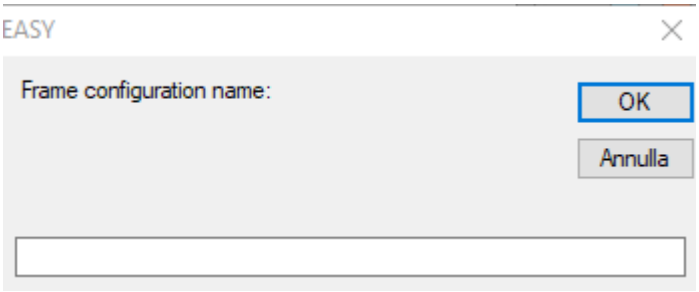
Extimate Price	
Fins	20,31
Frame	6,61
Manifolds	0,44
Tubes	4,34
Total	31,7
General	
Project Name	Project
Project Path	
SHEET	
Dimension height	15
Format	Real
Weight	
Fins [kg]	7,87
Frame [kg]	6,61
Manifolds [kg]	0,17
Tubes [kg]	1,68
Total [kg]	16,33

With Iron

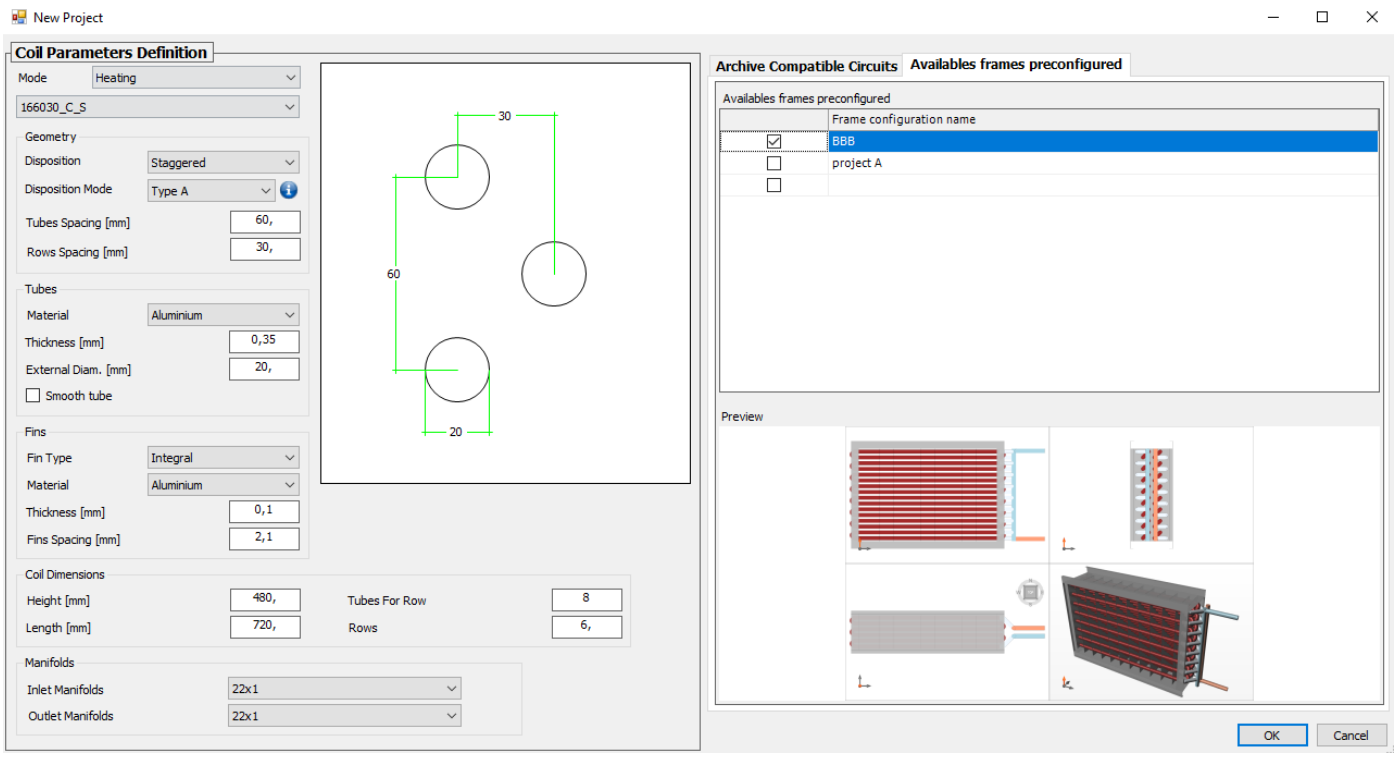
How To Save a new frame configuration

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


Project
Tubes
U-Bend/Hair-Pin
Fins
Manifolds
Frame
Update Drawing
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
Divisions Nr. 0
Total Weight [kg] 6,44
Type Type_B
Metal Sheet
(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
Price 5,72
Radius Curvature Folds[mm] 1,13
Thikness [mm] 1
Weight [kg] 2,01
Fold 1 [mm] 40
Fold 2 [mm] 15
Material Stainless Steel
Thikness [mm] 1
Visibility
Bottom part True
Conveyor False
Left part True
Fold 1 [mm] - DOWN
Save frame conf.
Load frame conf.



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



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:

Dimension	
External Dim. [mm]	15,88
Thikness [mm]	0,35
General	
Left protrusion	15
Number	48
Right protrusion	50
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

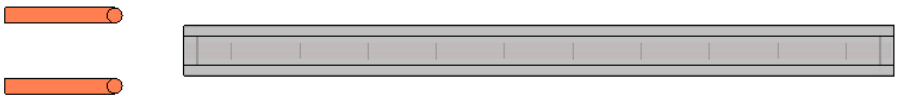
If the project has been calculated with manifolds (both automatic or manual mode), Coils 3D will show them getting the dimensions from the project. When you click on the “Manifolds” item in the component list, the manifolds properties will be shown in the properties panel:

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]	20
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	0,26
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

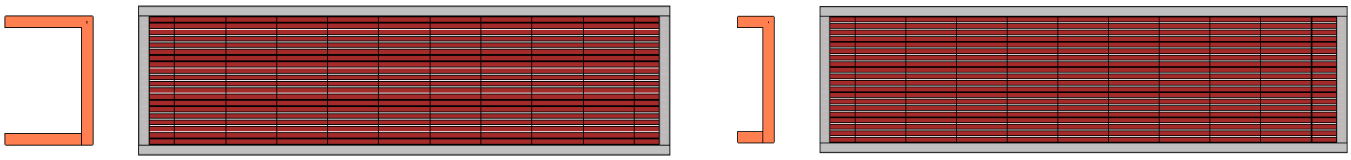
Here's a list of the available parameters:

- 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:



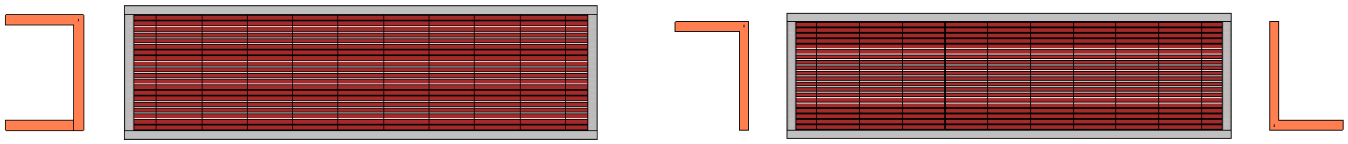
This is what happens when you change the connection length:



Connection length: 150 mm

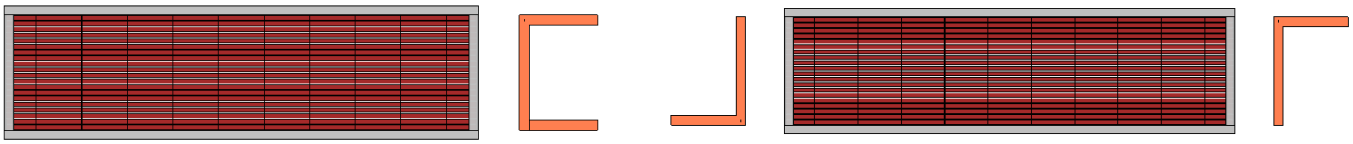
Connection length: 50 mm

Changing the manifold position separately gives you more options to customize the manifold position:



In: left / Out: left

In: right / Out: left

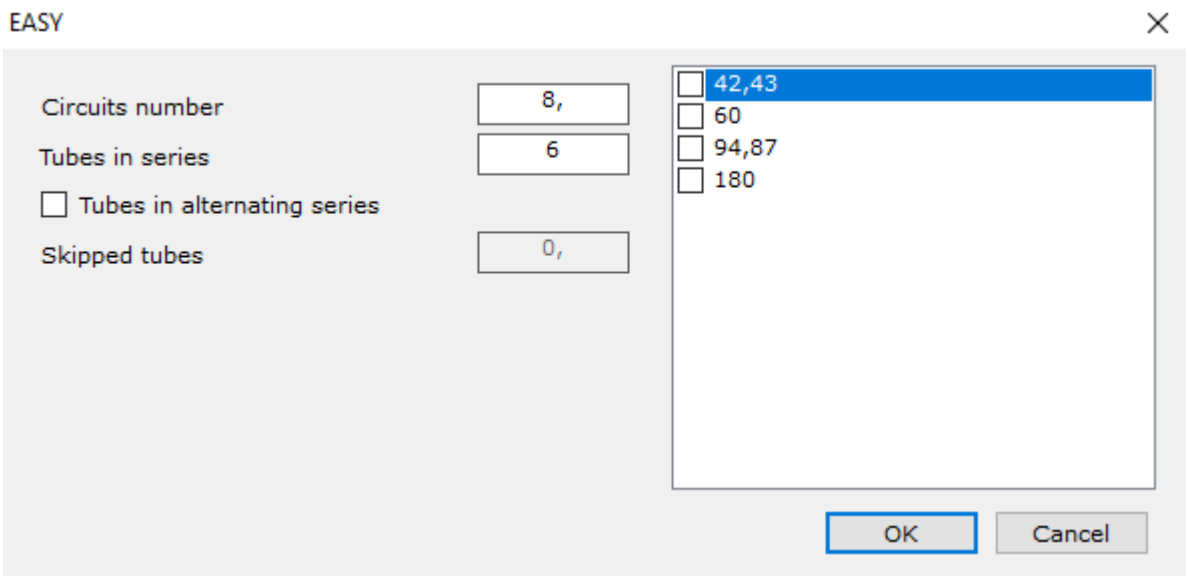


In: right / Out: right

In: left / Out: right

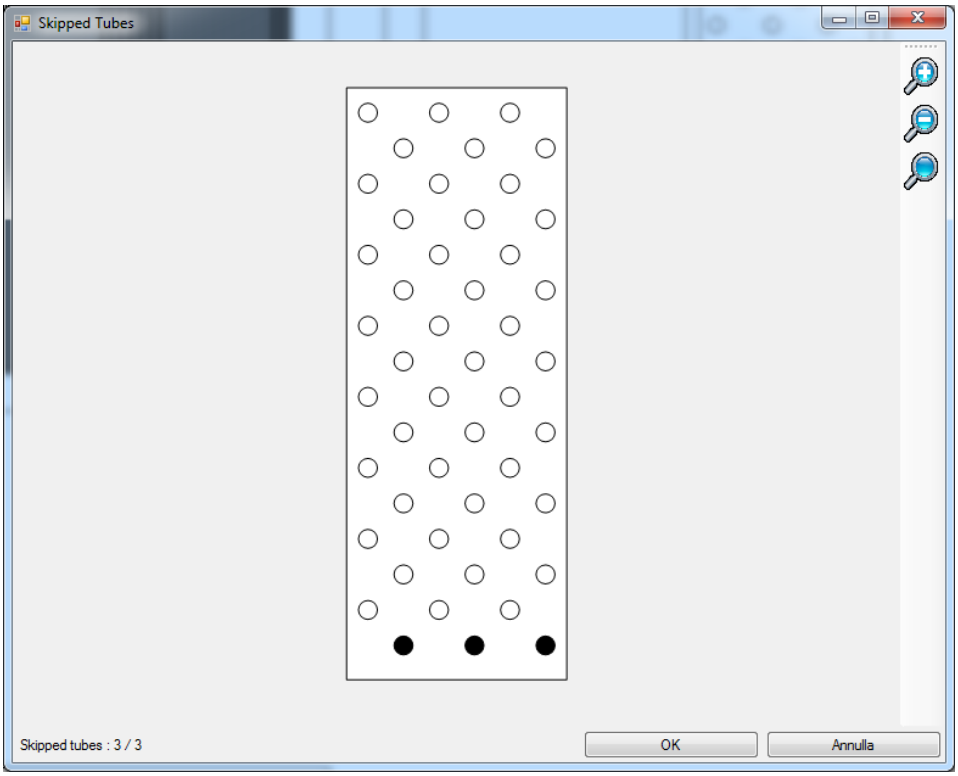
Automatic Circuits Calculation

If you click on the "Circuits" button this is what you will receive

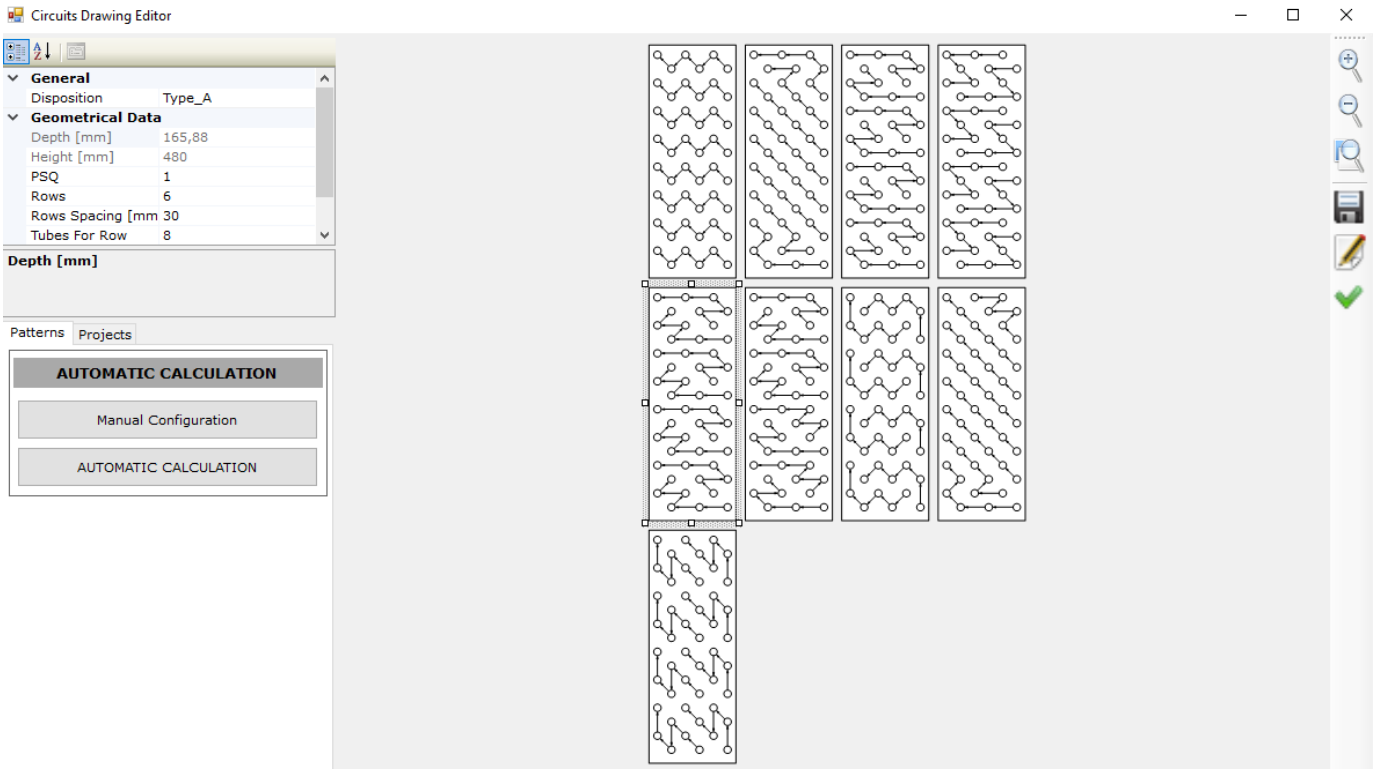


Here you can choose the number of circuits the tubes in series and the number of skipped tubes.

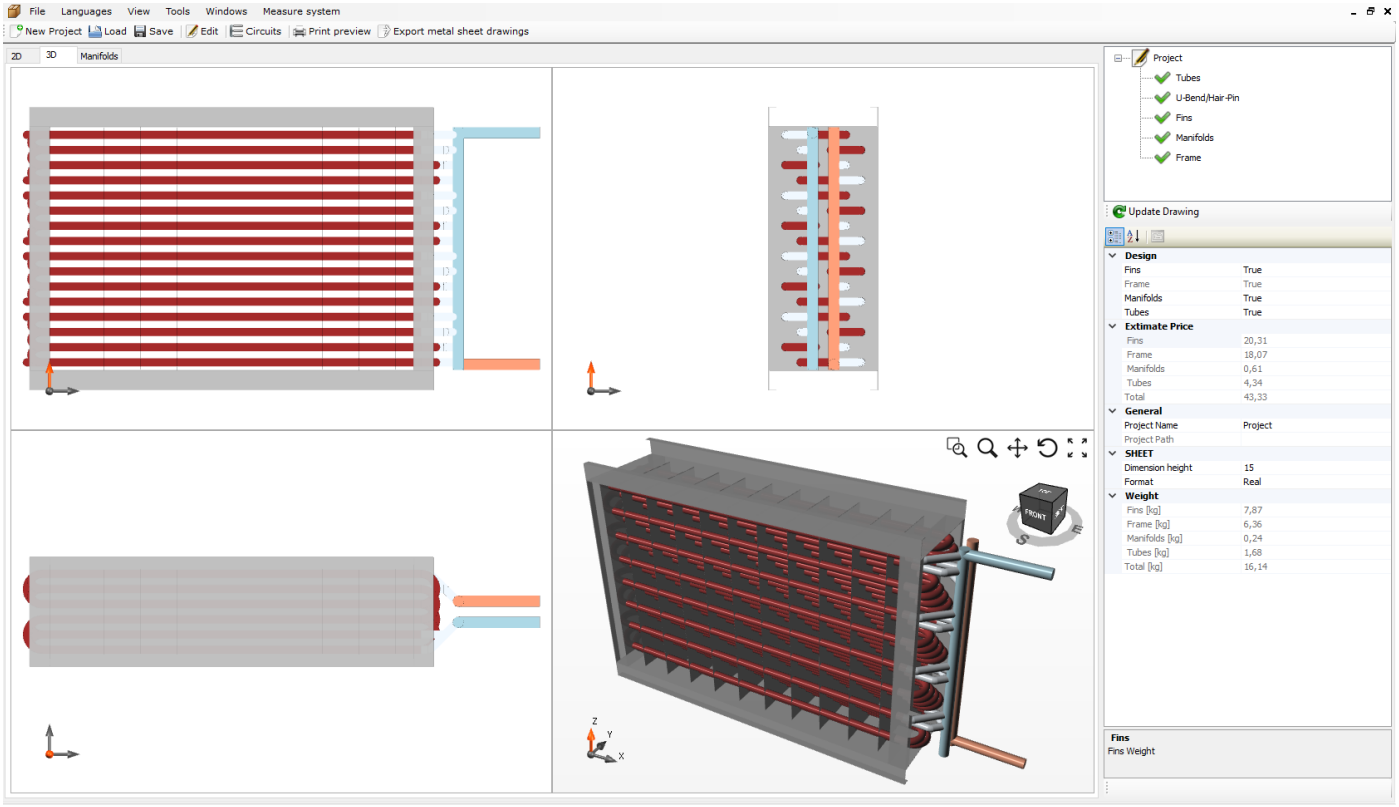
If you have some skipped tubes you can click on "OK" and it will appears this mask where you can select which are skipped tubes



Then you can click on "OK"

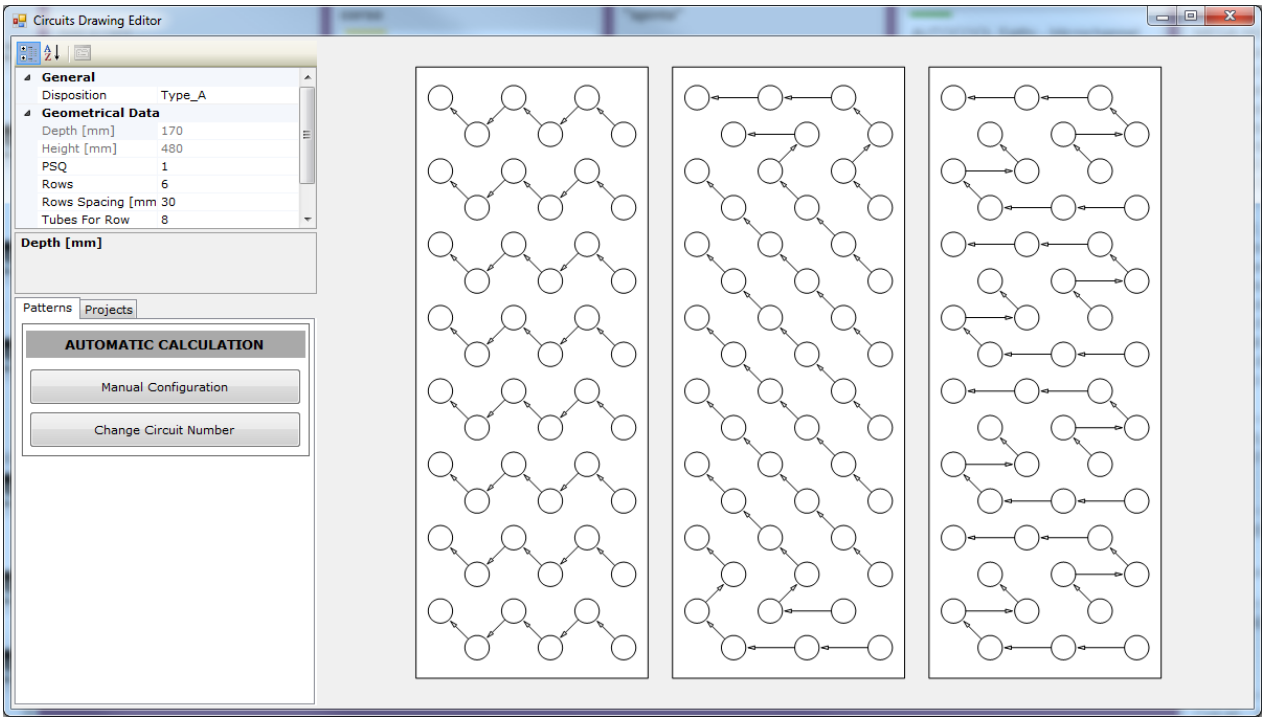


Here you can choose the circuit pattern that will best suits your needs double clicking on it, you will obtain:

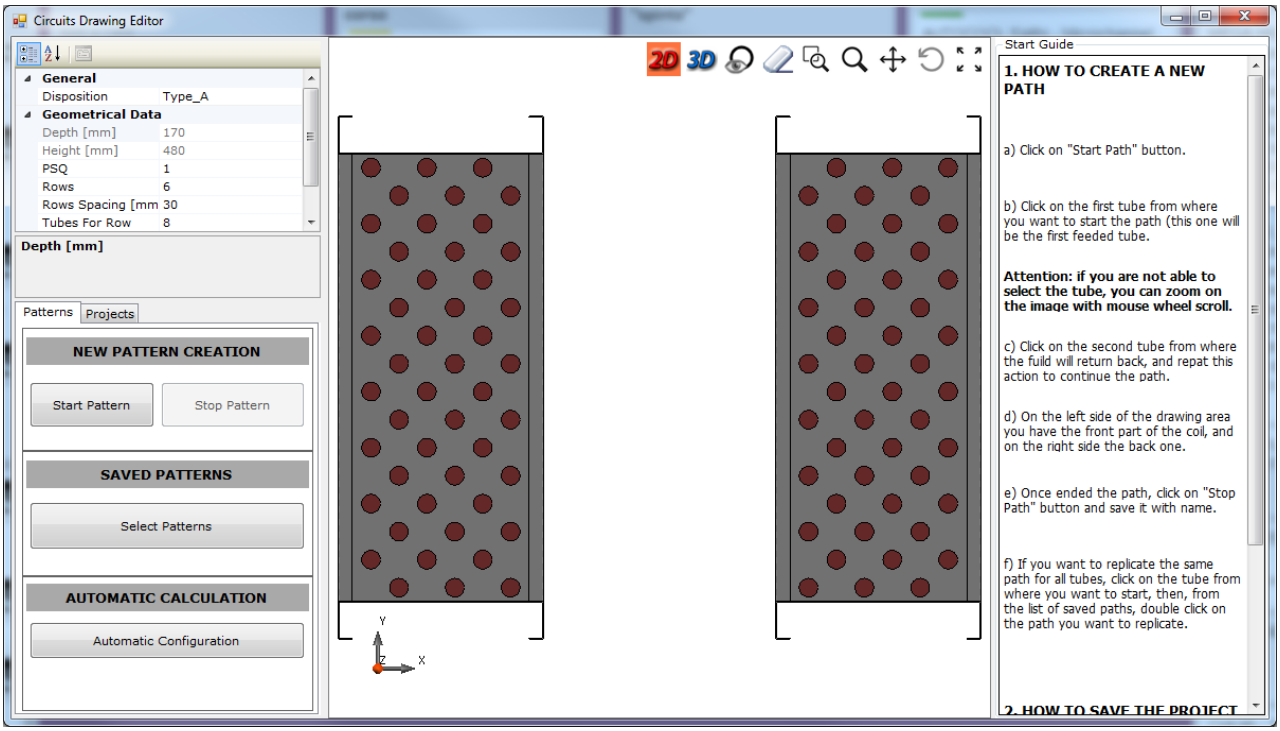


You can also go back and draw the circuit manually as explained in the next section.

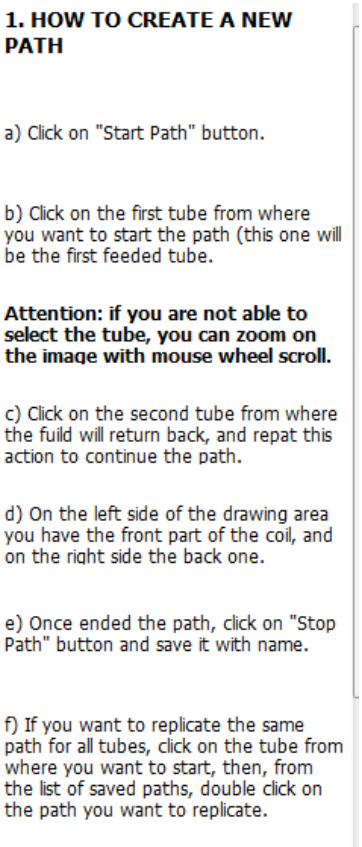
MANUAL CIRCUIT DRAWING EXAMPLE



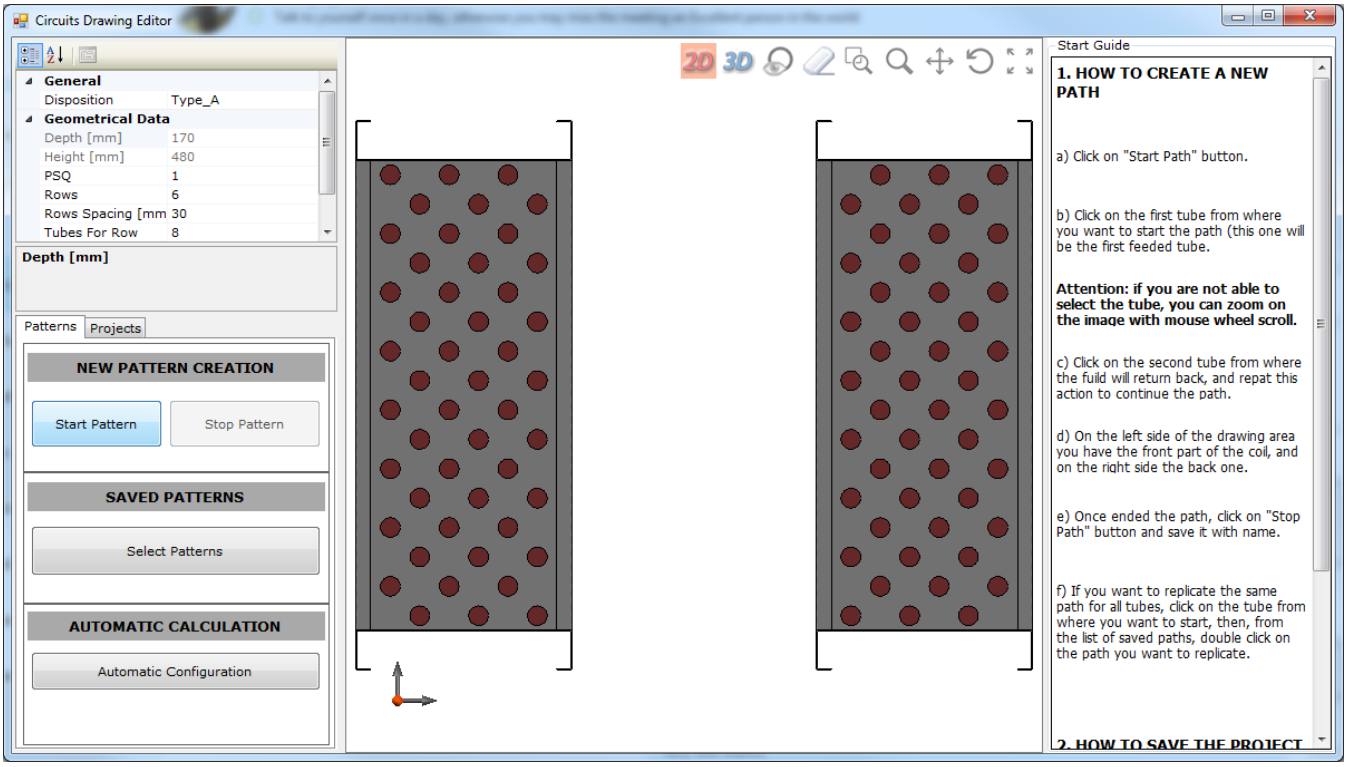
From the above screen, which we came on from the automatic circuit, we can click on "Manual Configuration"
We will get this



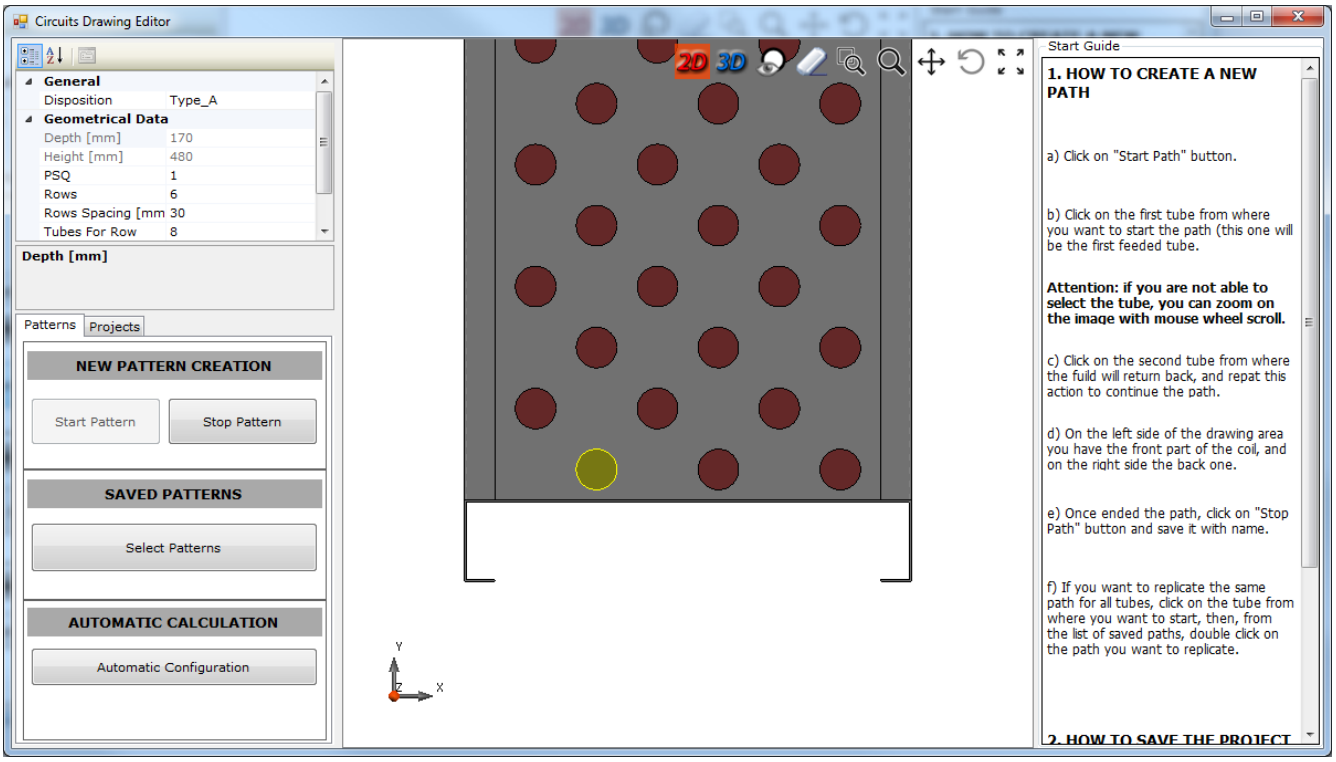
We can follow the instructions on the right on STEP 1



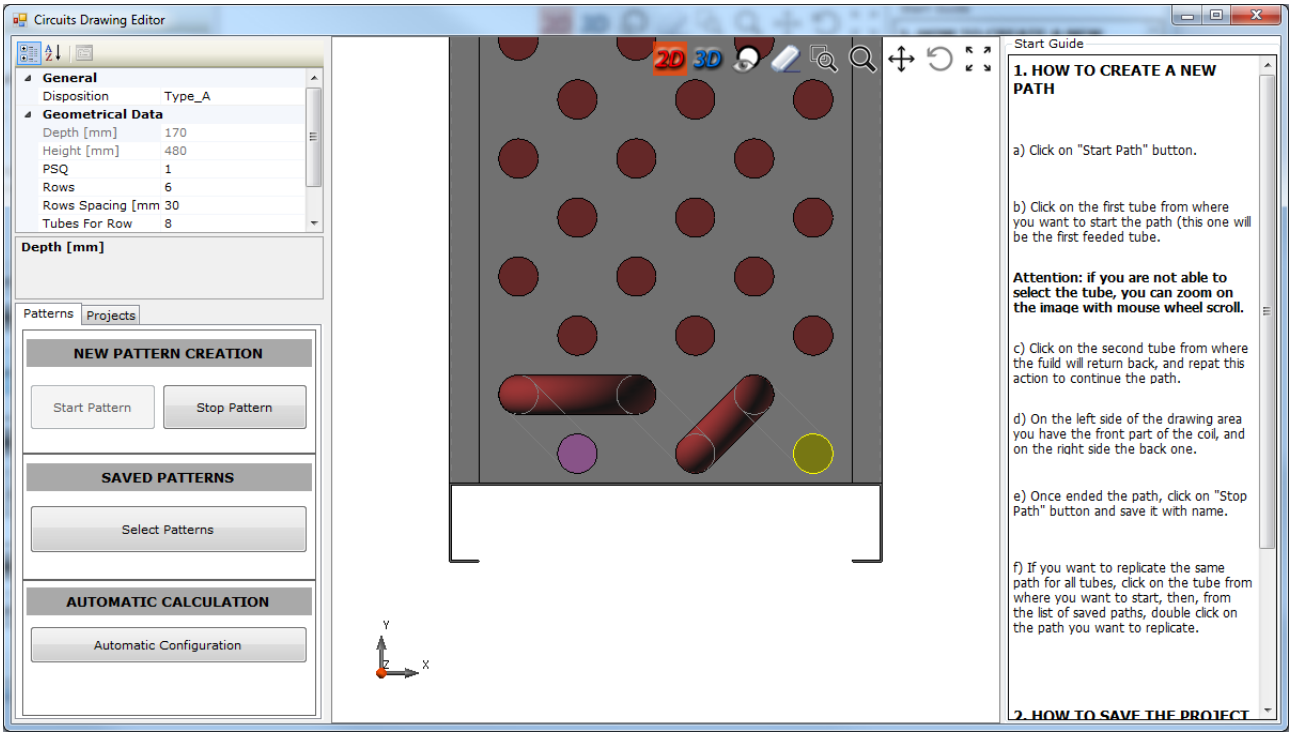
So We click on click on "Start Path"



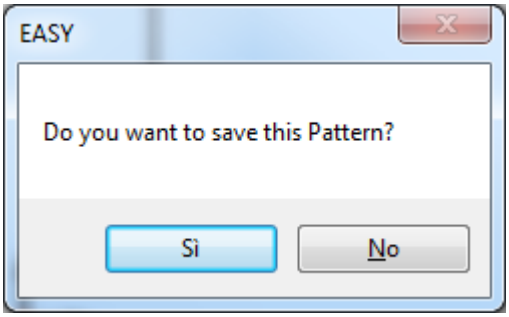
At this point we see this, we click on the first tube and we will see something like this



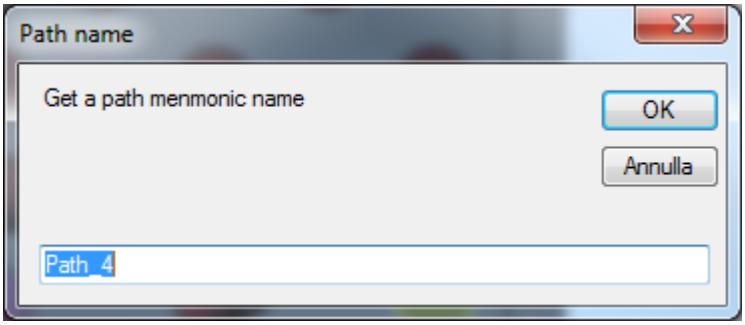
We will continue with the remaining part



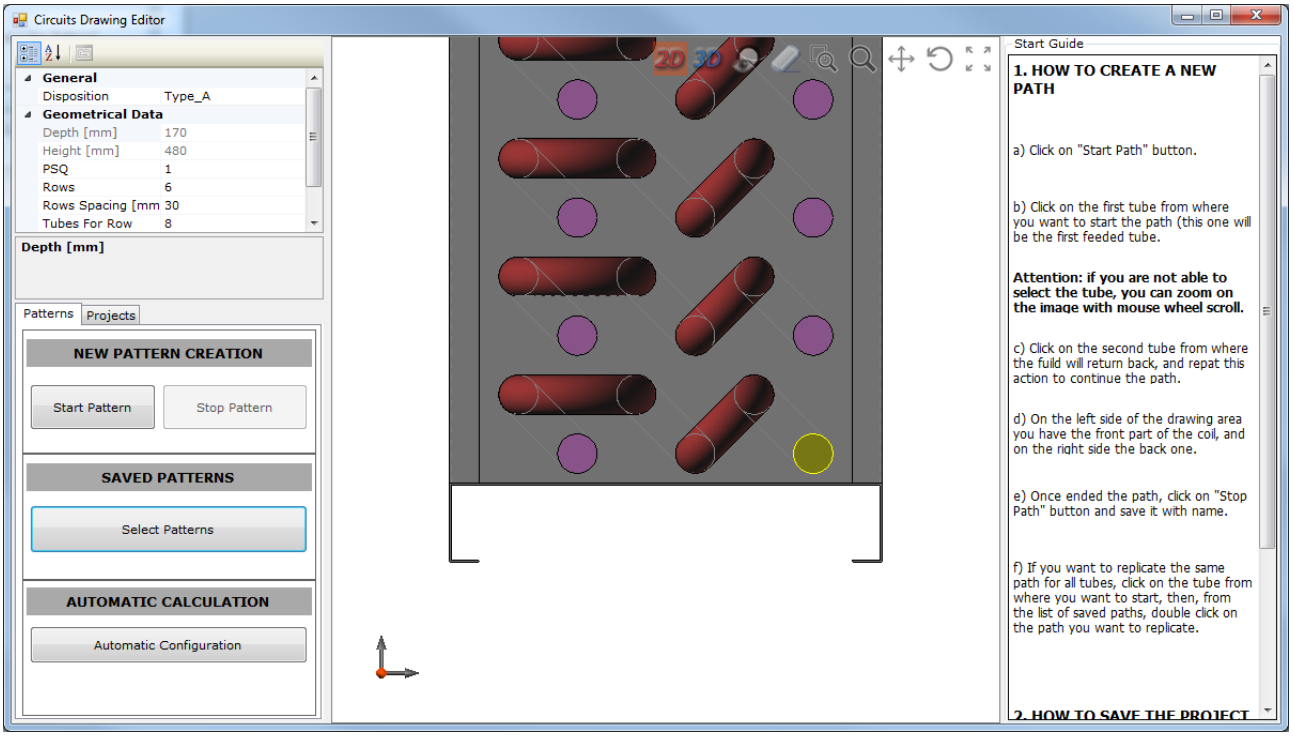
At this point we can click on "Stop Pattern" and we will see this



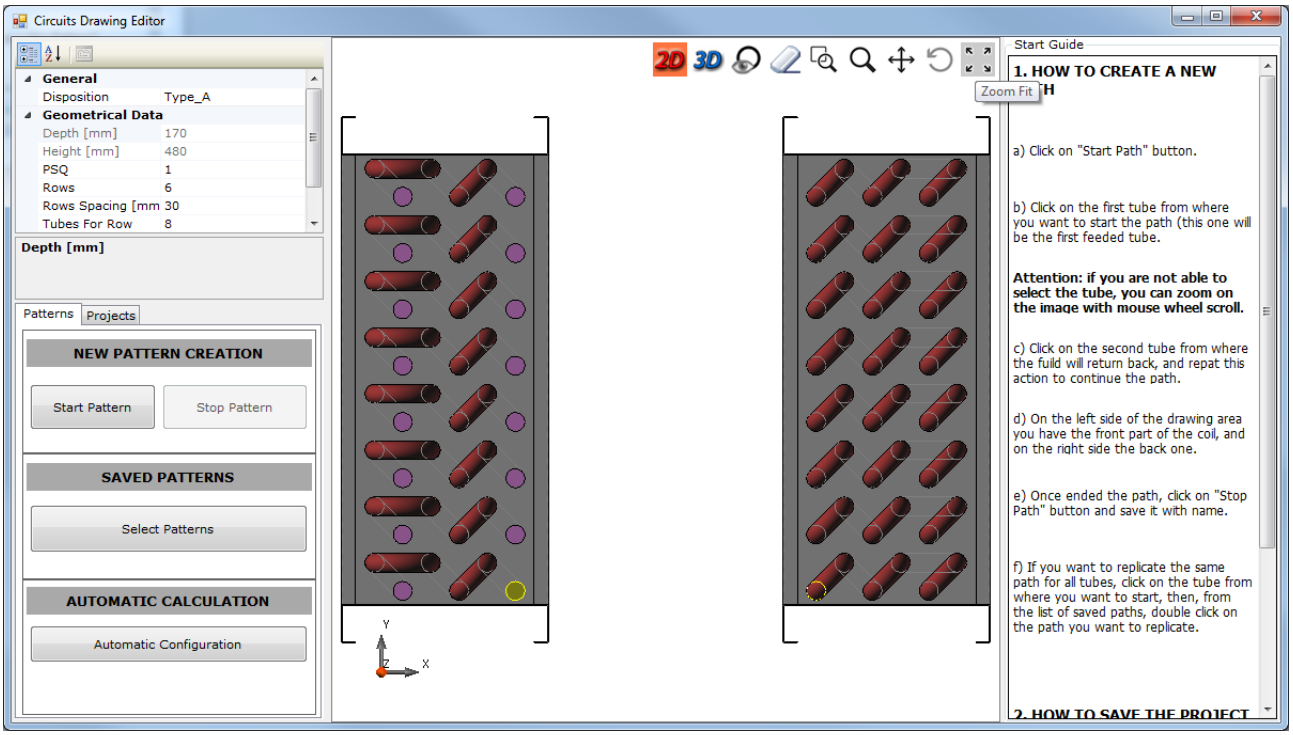
We can save the pattern on Yes and get



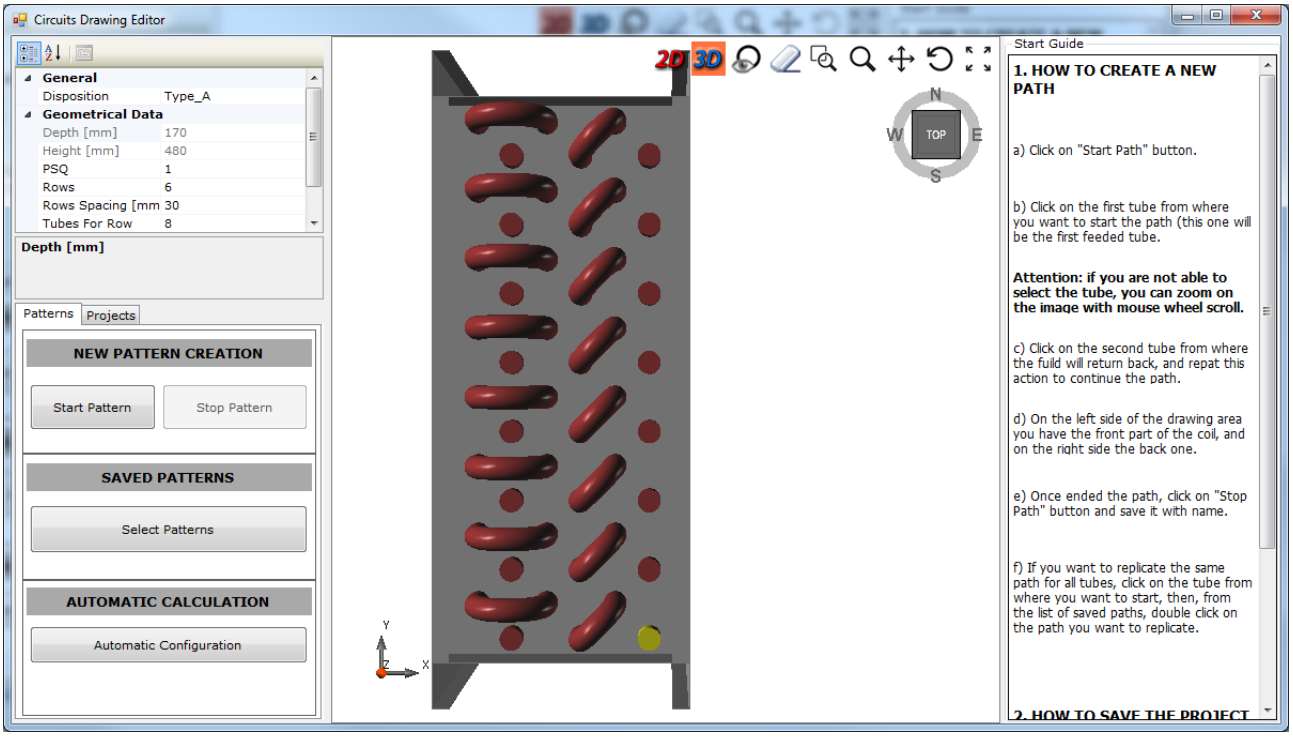
We can click on OK. Then we can decide to repeat the pattern



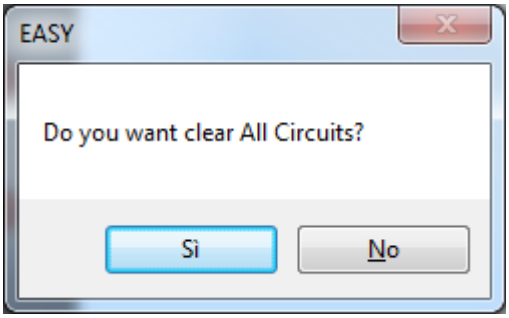
We can see the complete  , and we will get



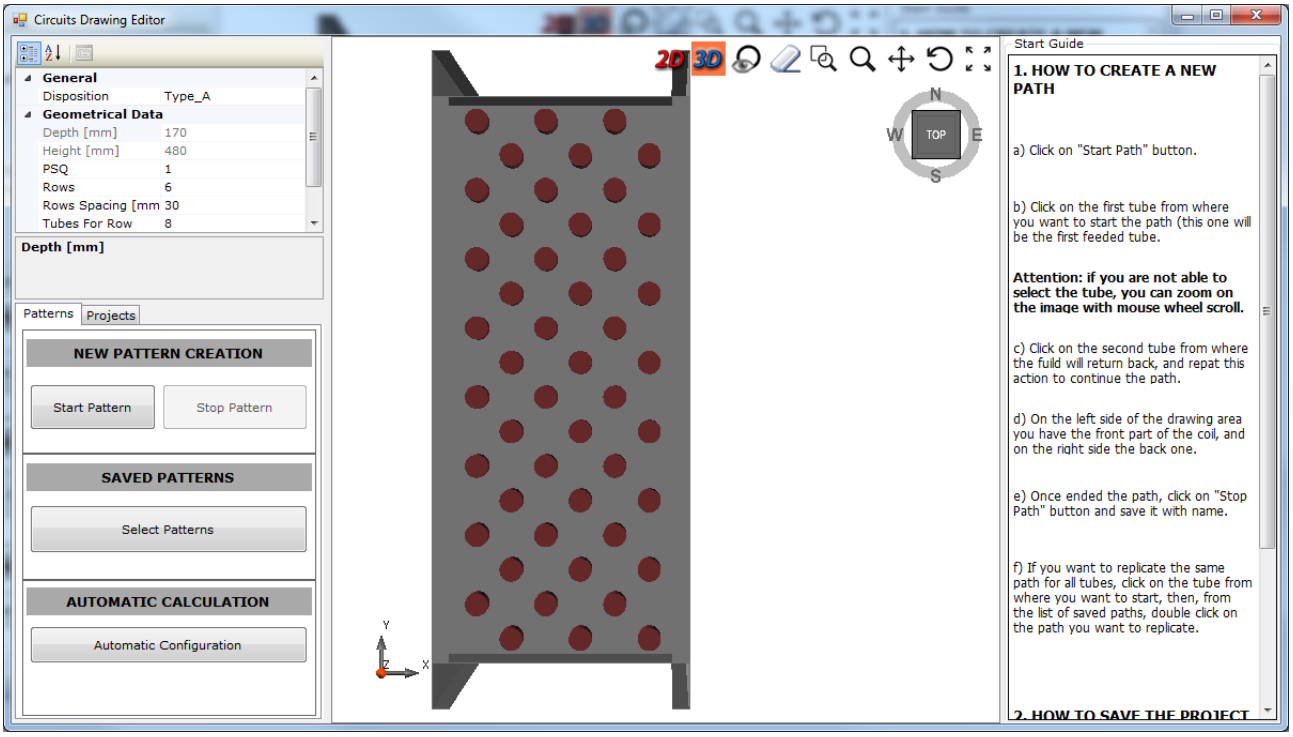
If we click on the  button, you will see this



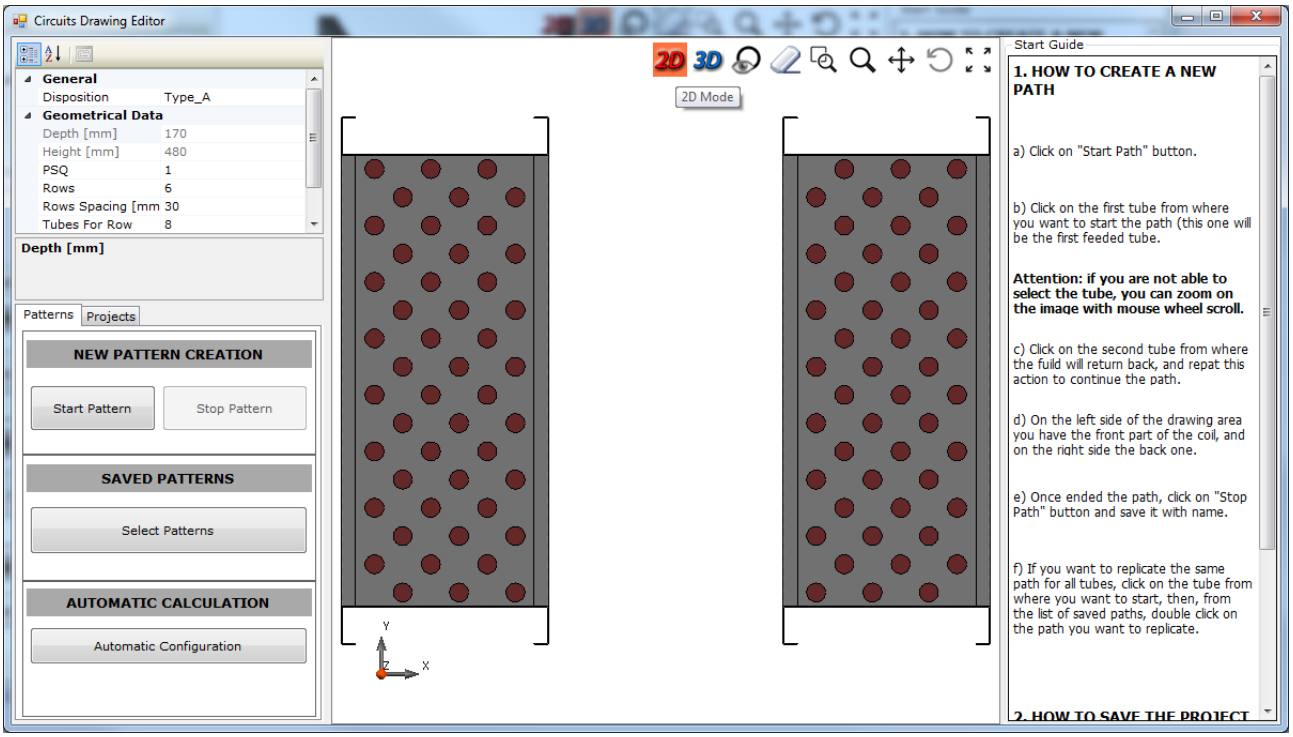
Now we will draw different patterns, first we click on  we will see



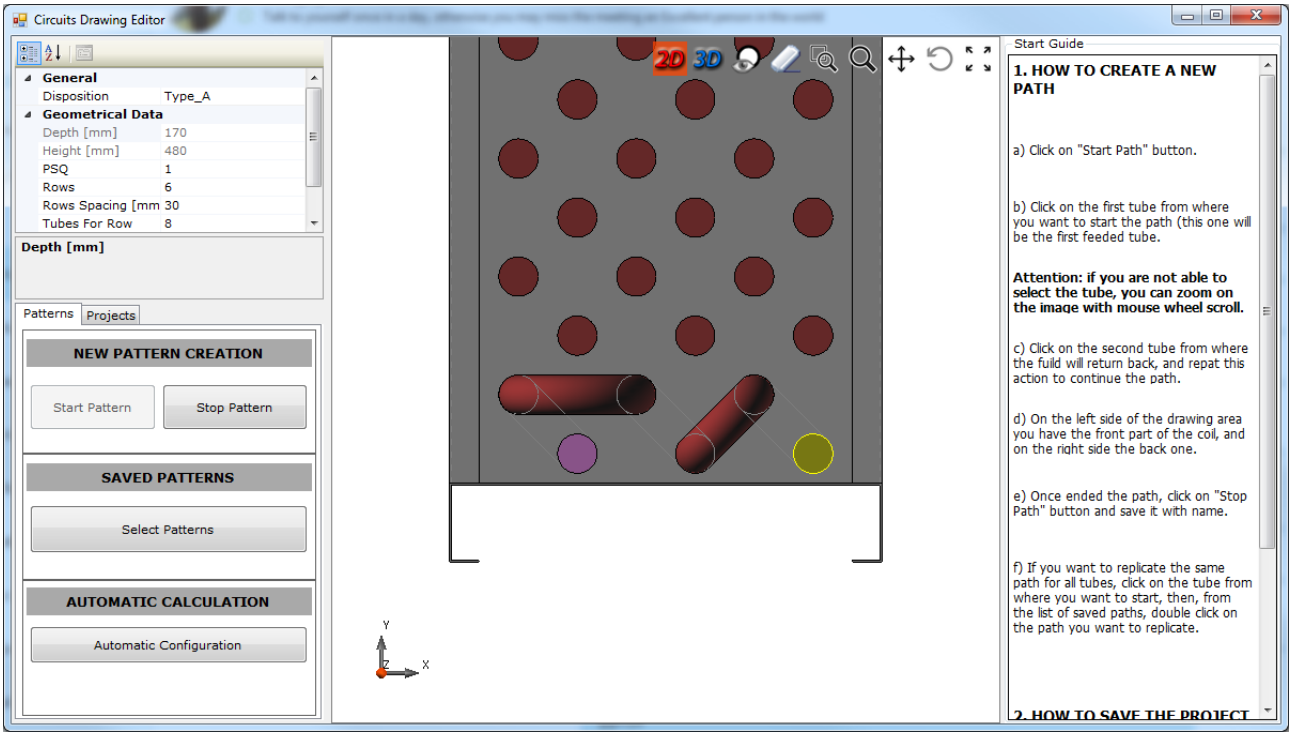
If we click on Yes



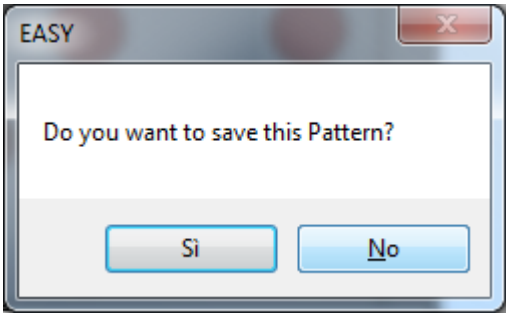
Then we click on 2D



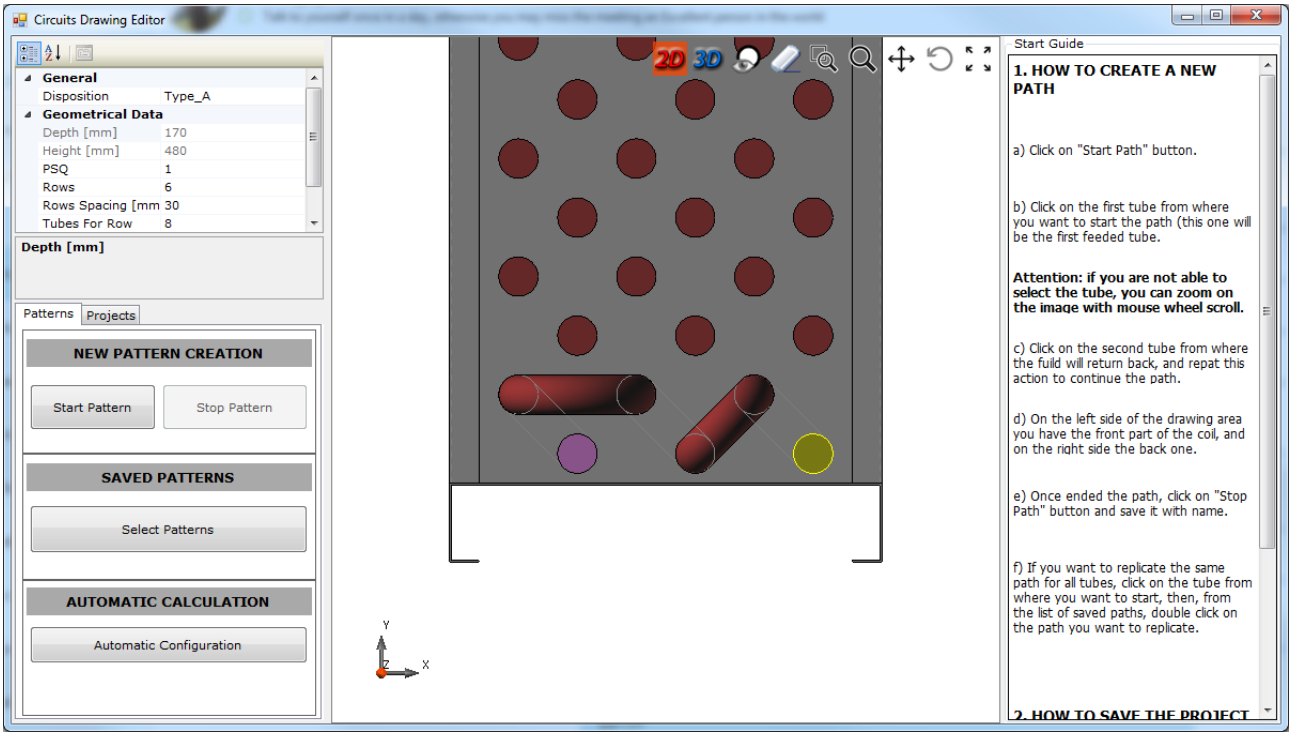
Then we can draw all the patterns



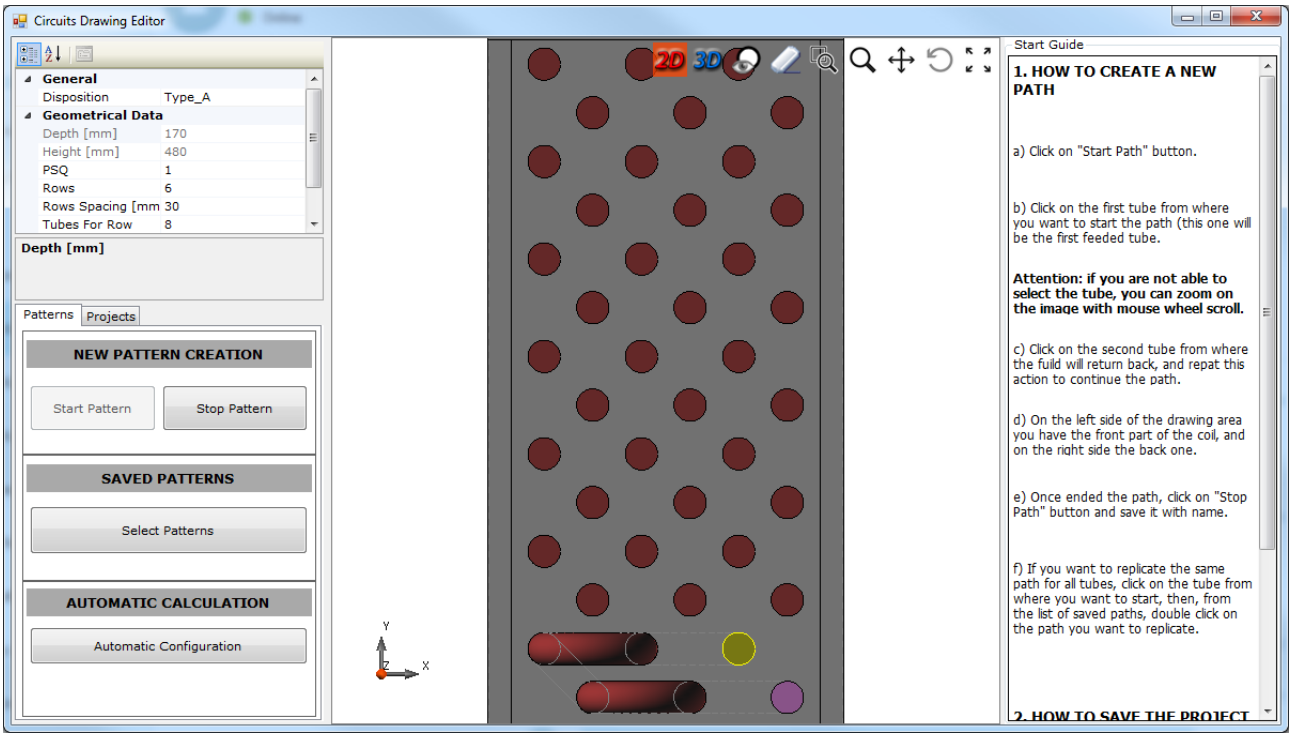
Then we can click on Stop Pattern and get



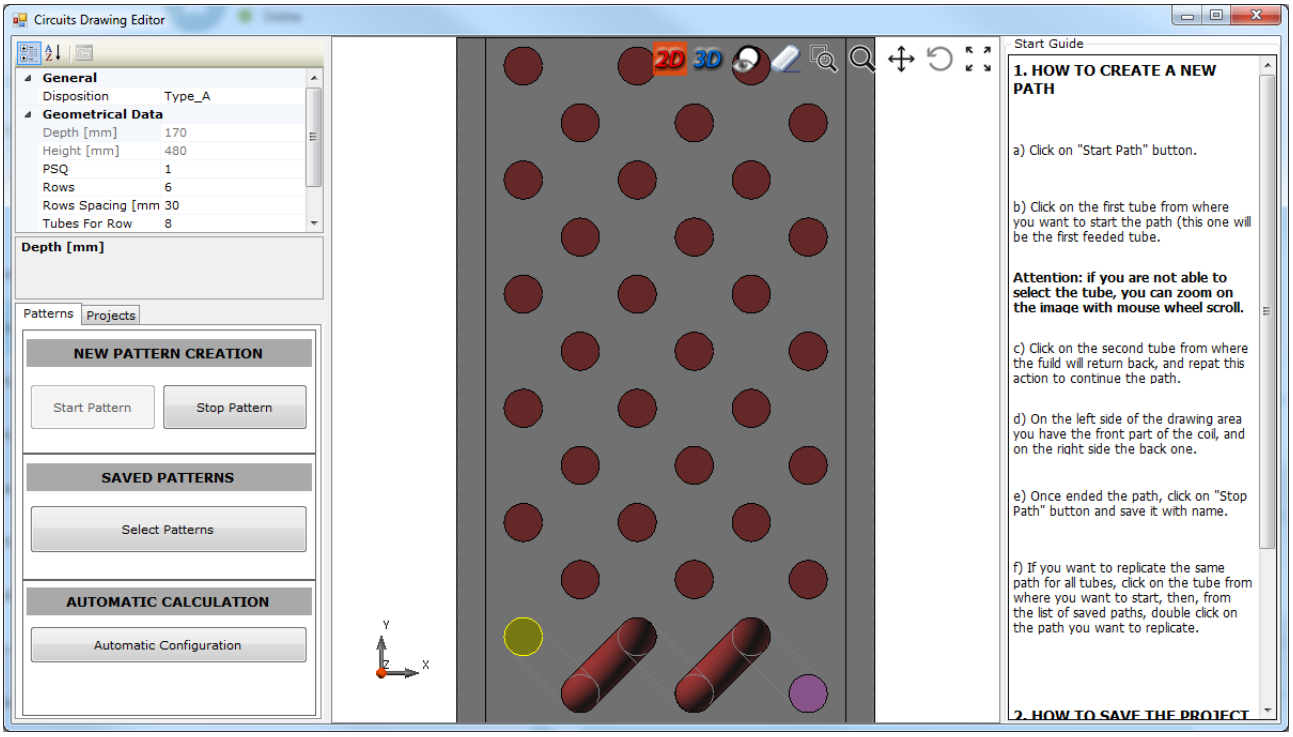
We can decide to save or not the pattern, if click on "No", we get



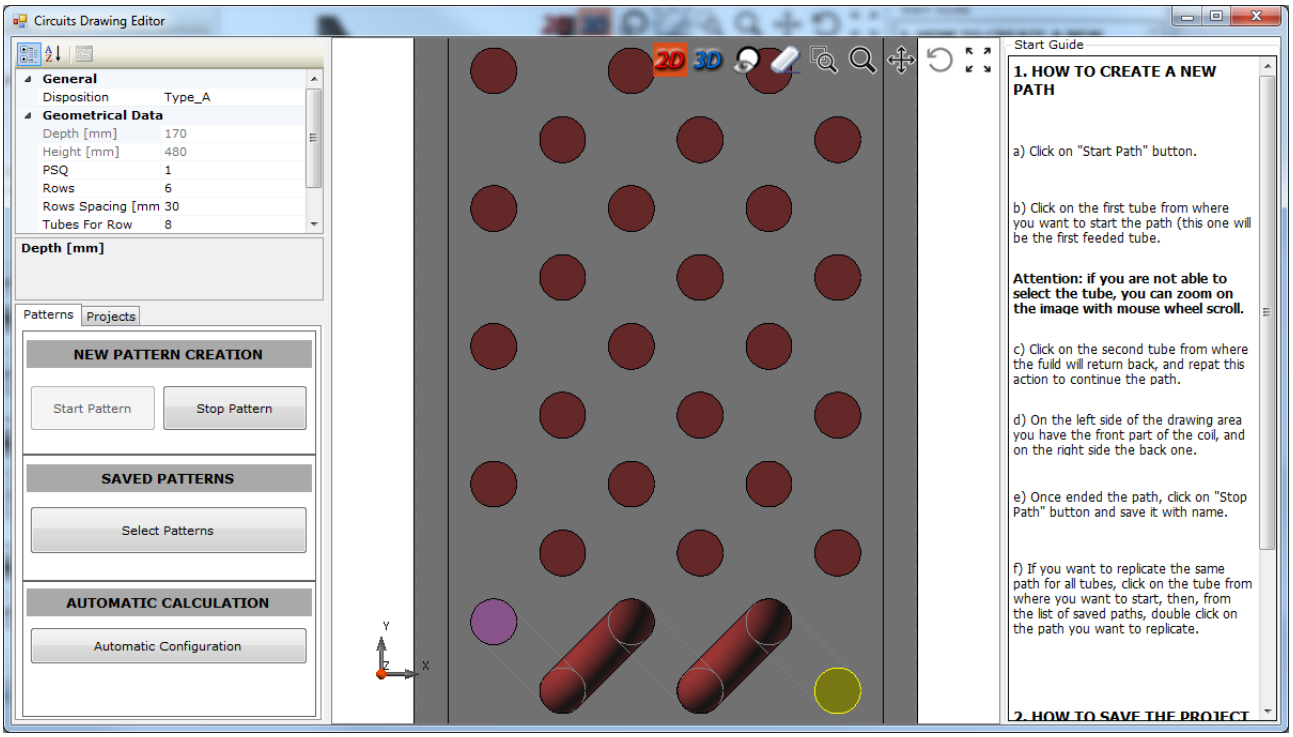
We can start the following pattern



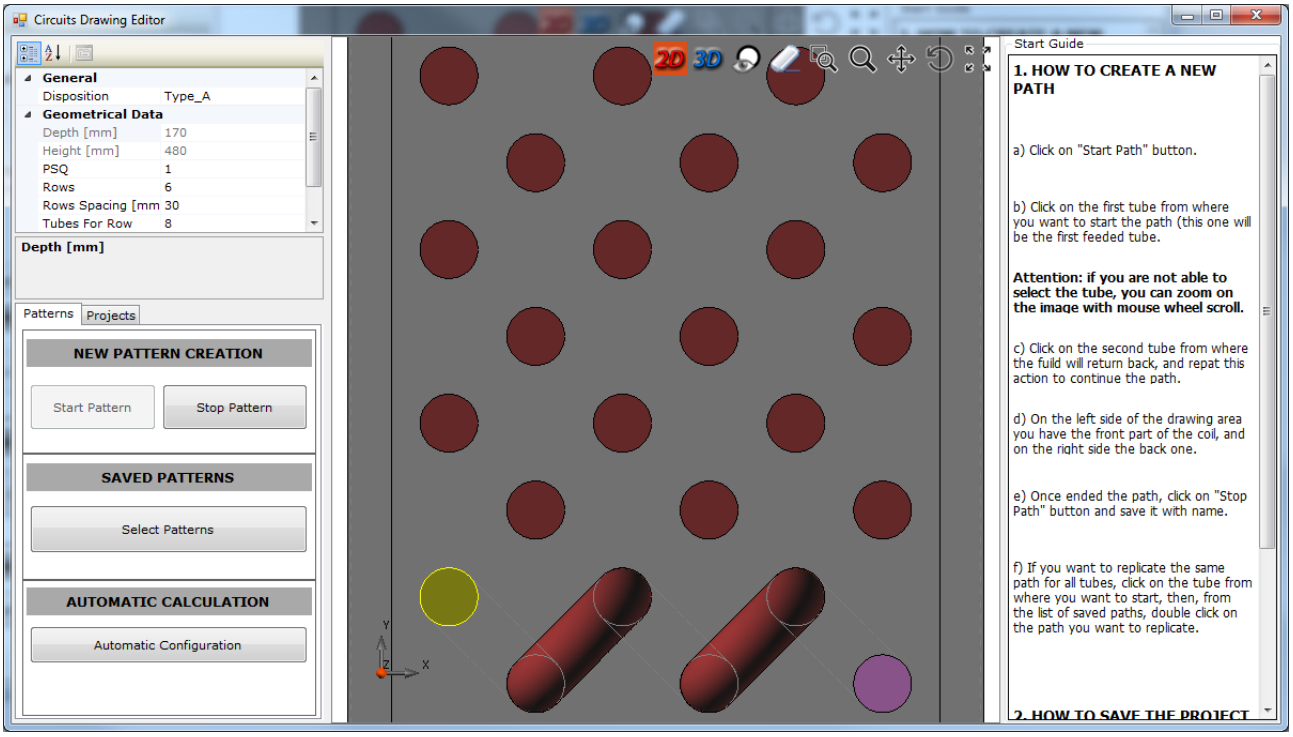
Now we can click on "Stop Pattern" and then we can proceed with the next pattern



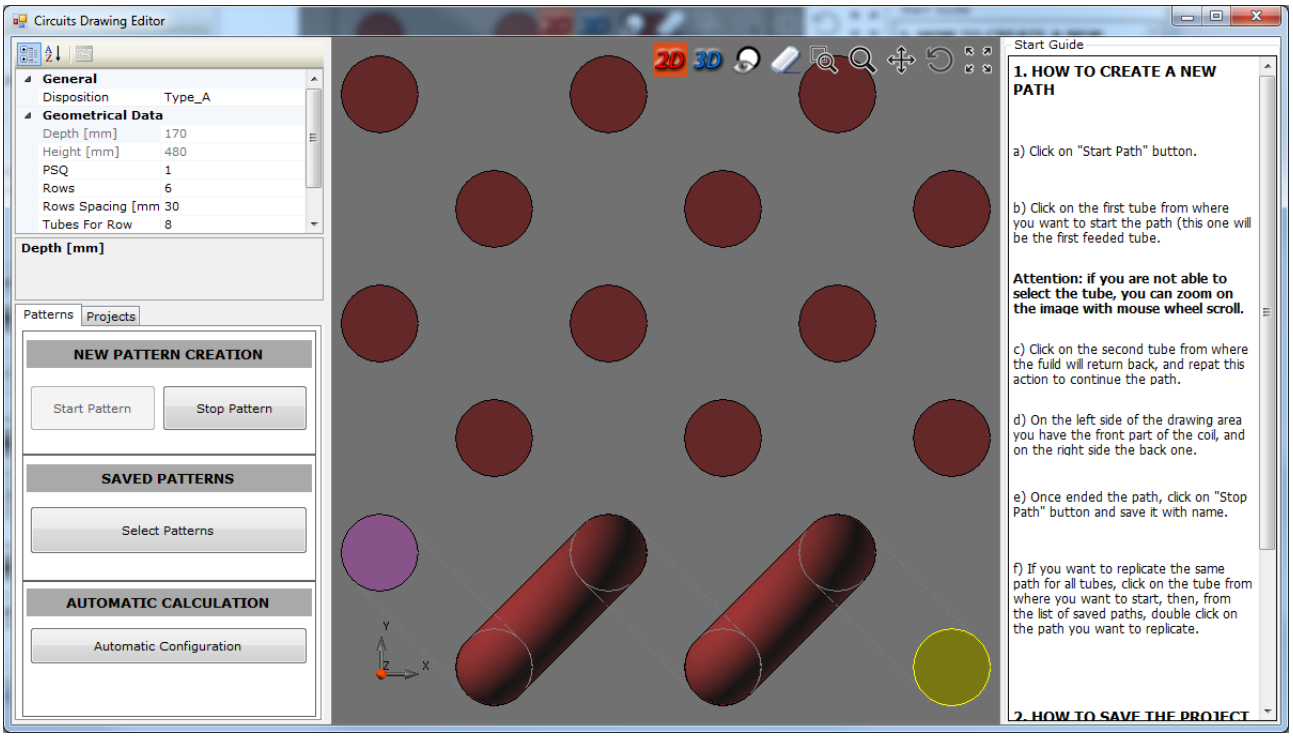
We can continue with this formula: START PATTERN, then you go to STOP PATTERN



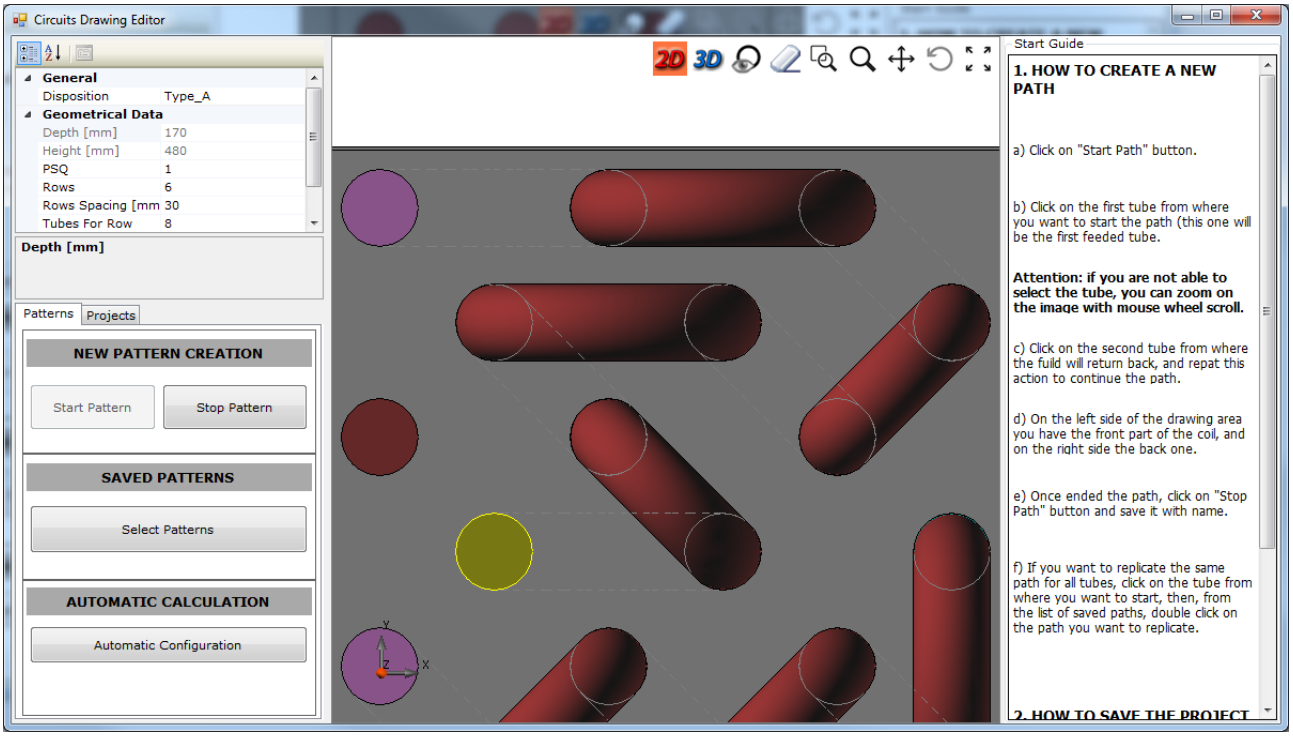
Then we can continue on that



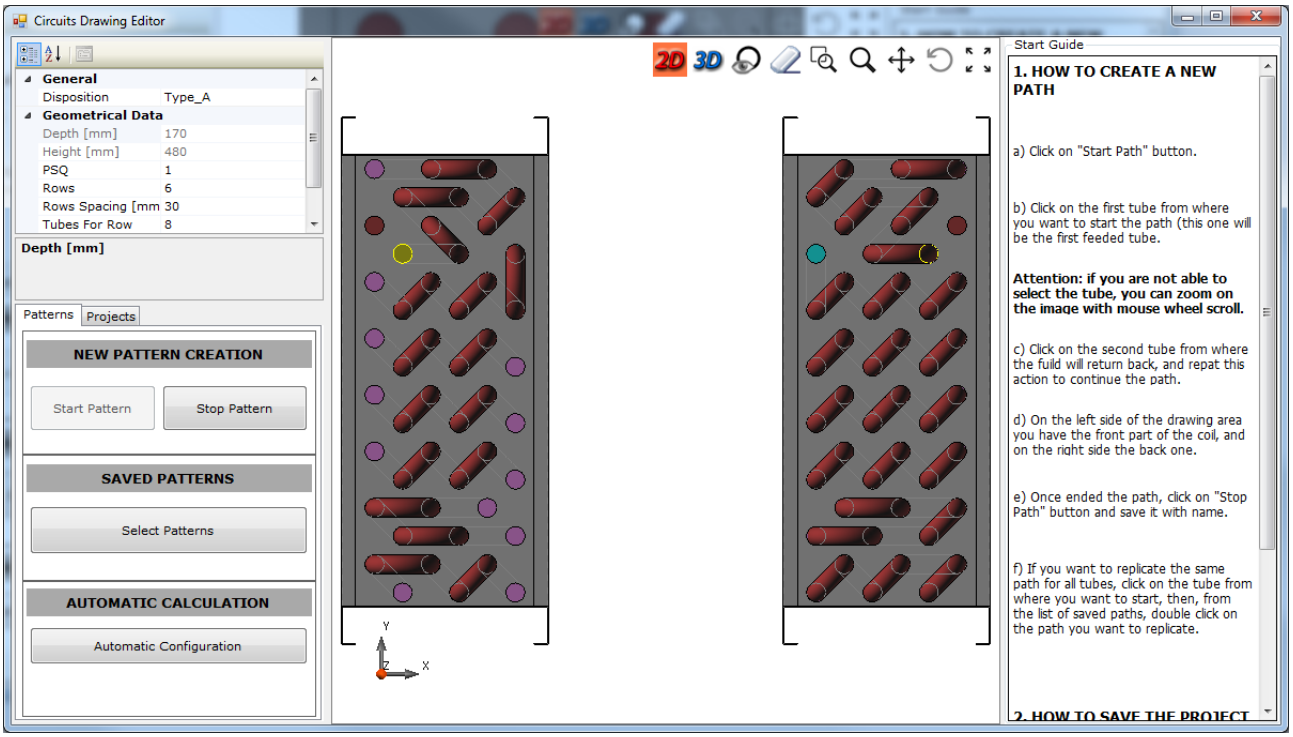
And we can continue again



Continue

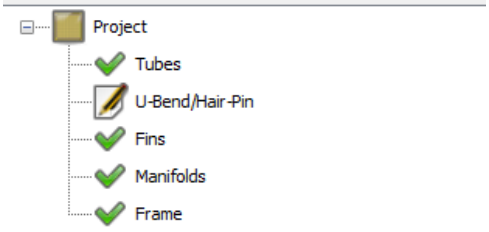


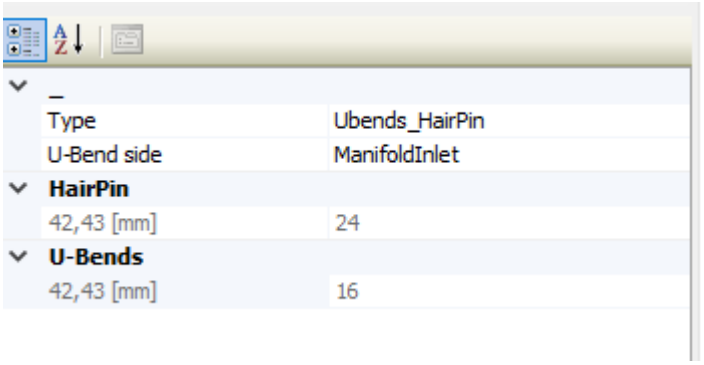
Then we click on "x" and we get



U-Bend and Hair-Pin calculation

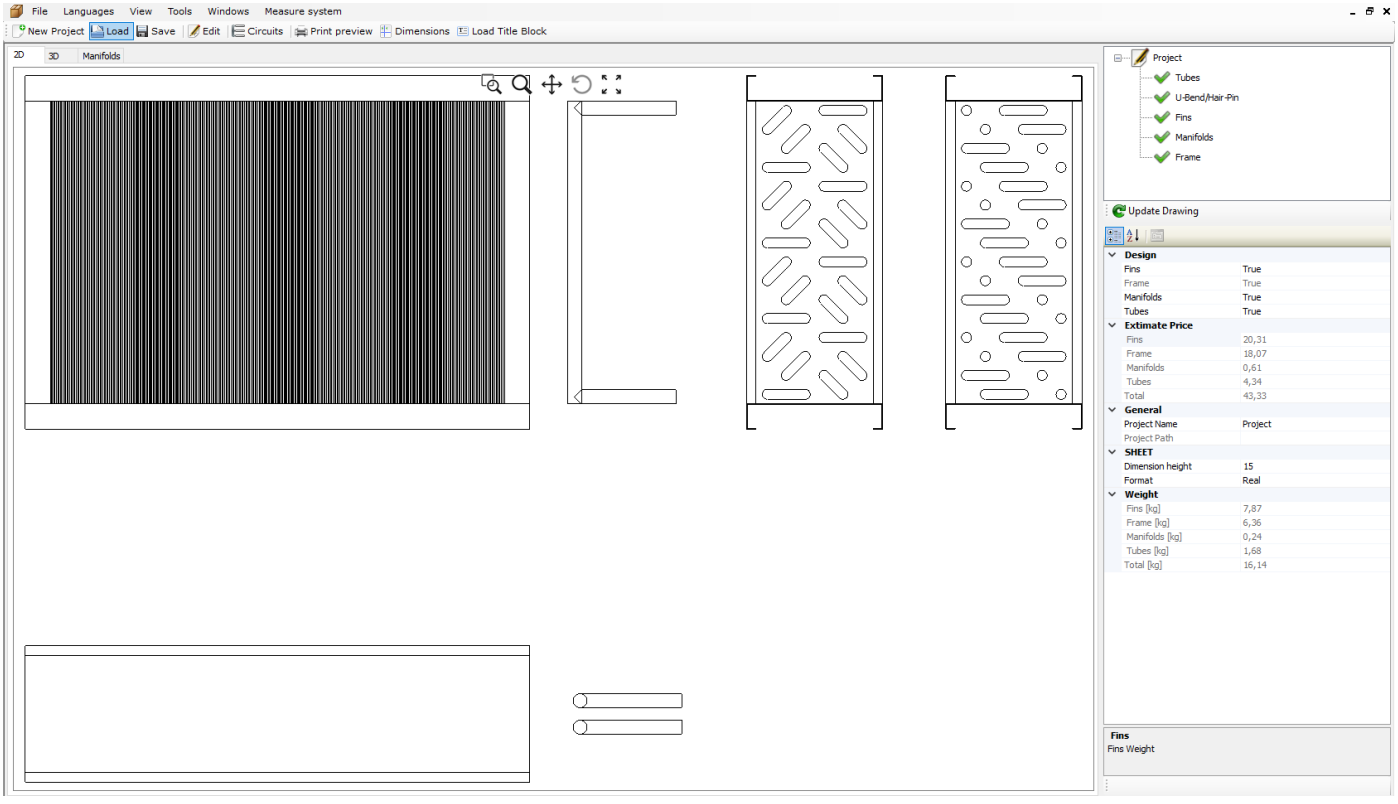
After we have already chosed circuits, we ca see on the right side of the working window





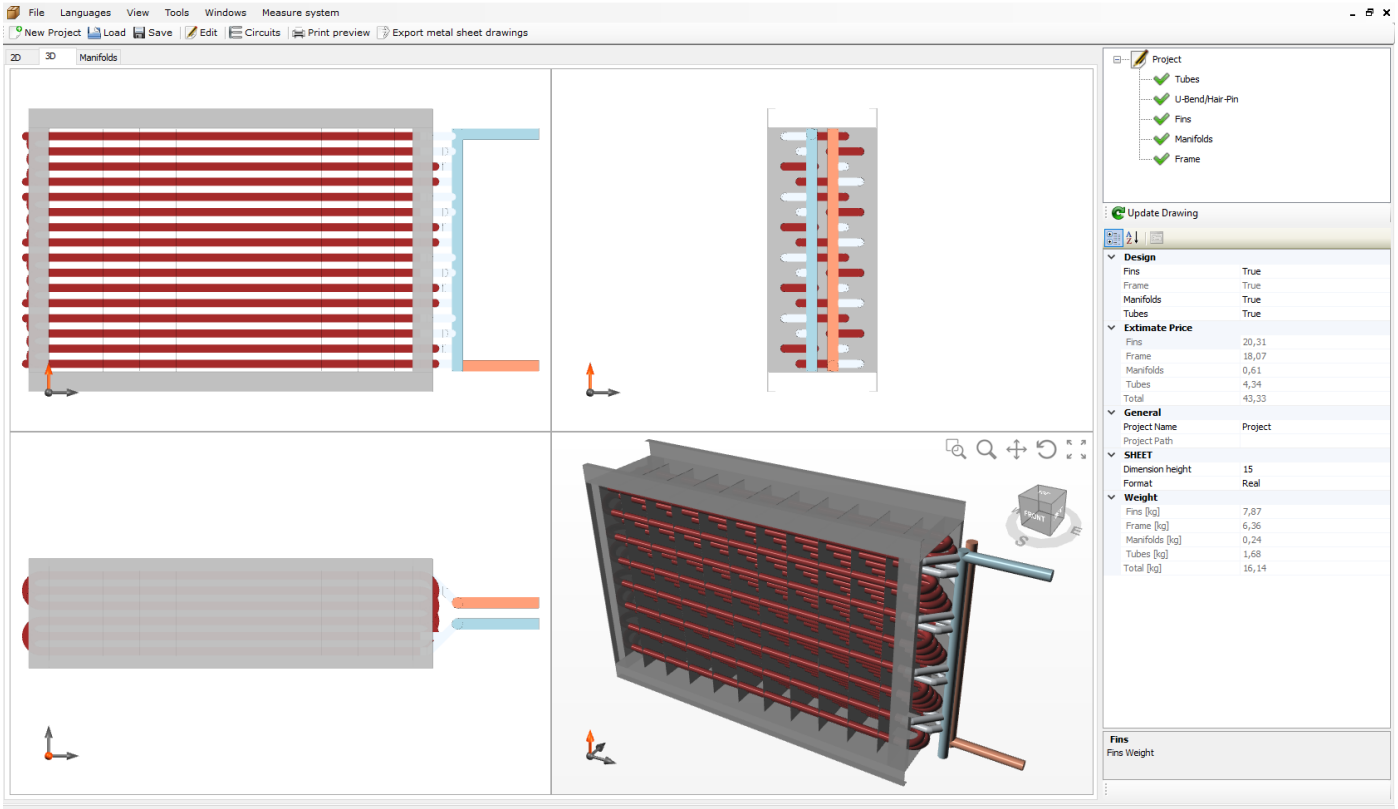
EXPORT METAL SHEET DRAWINGS

Once we have a preview for the circuit



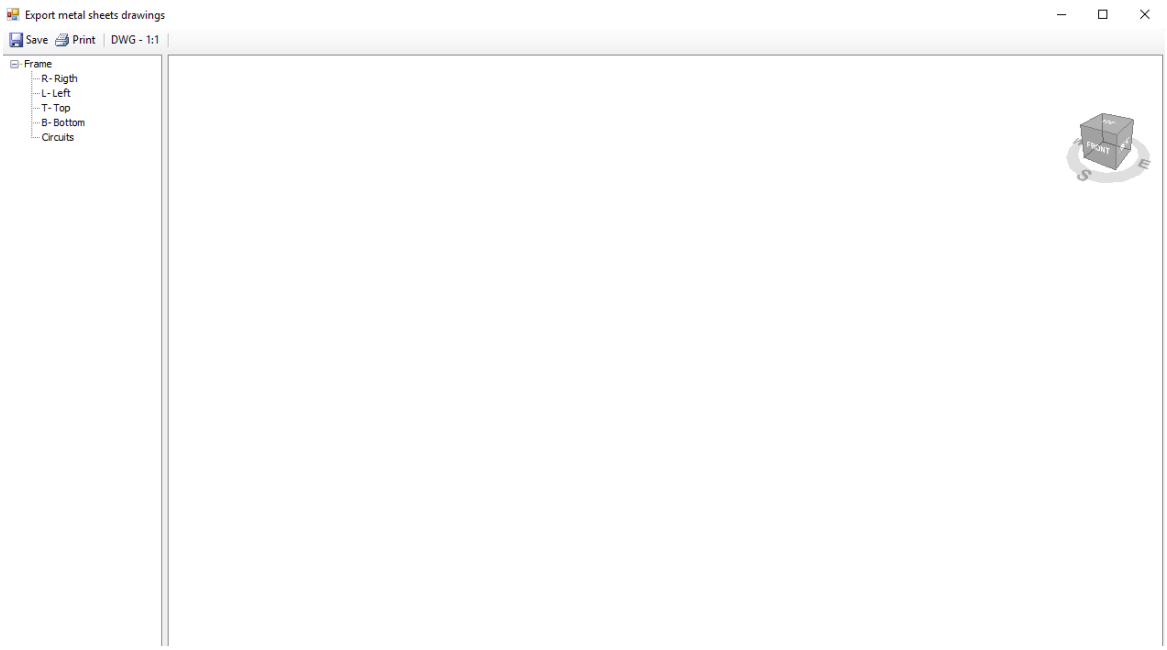
We can click on 3D panel, then we 

then we get

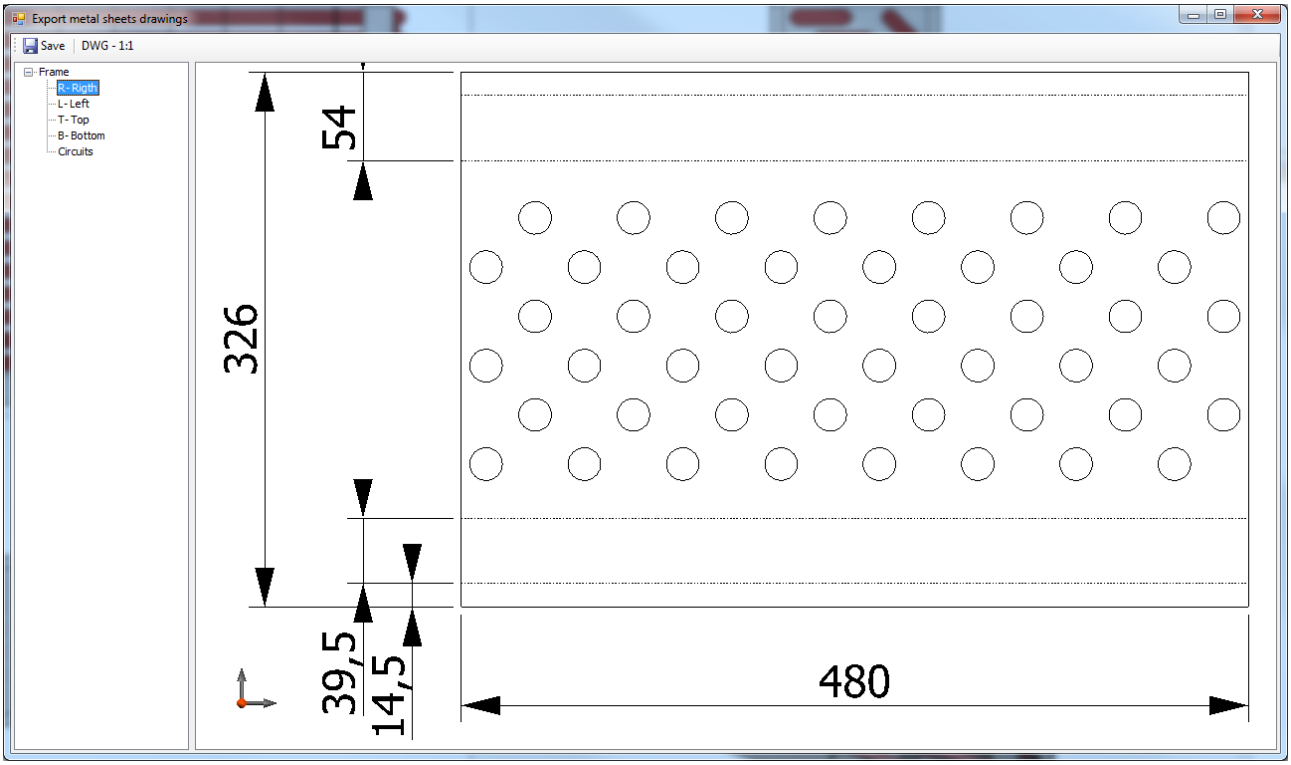


Then we click on " 

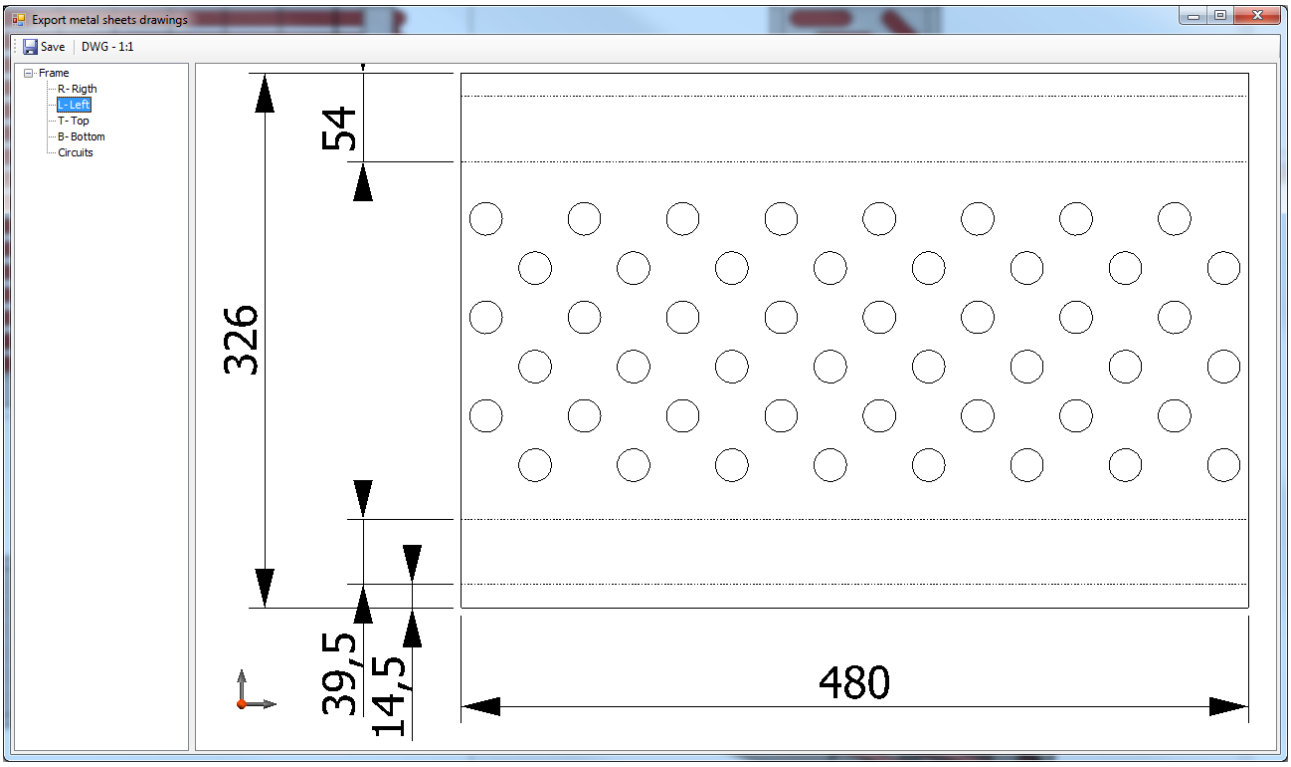
" and we get



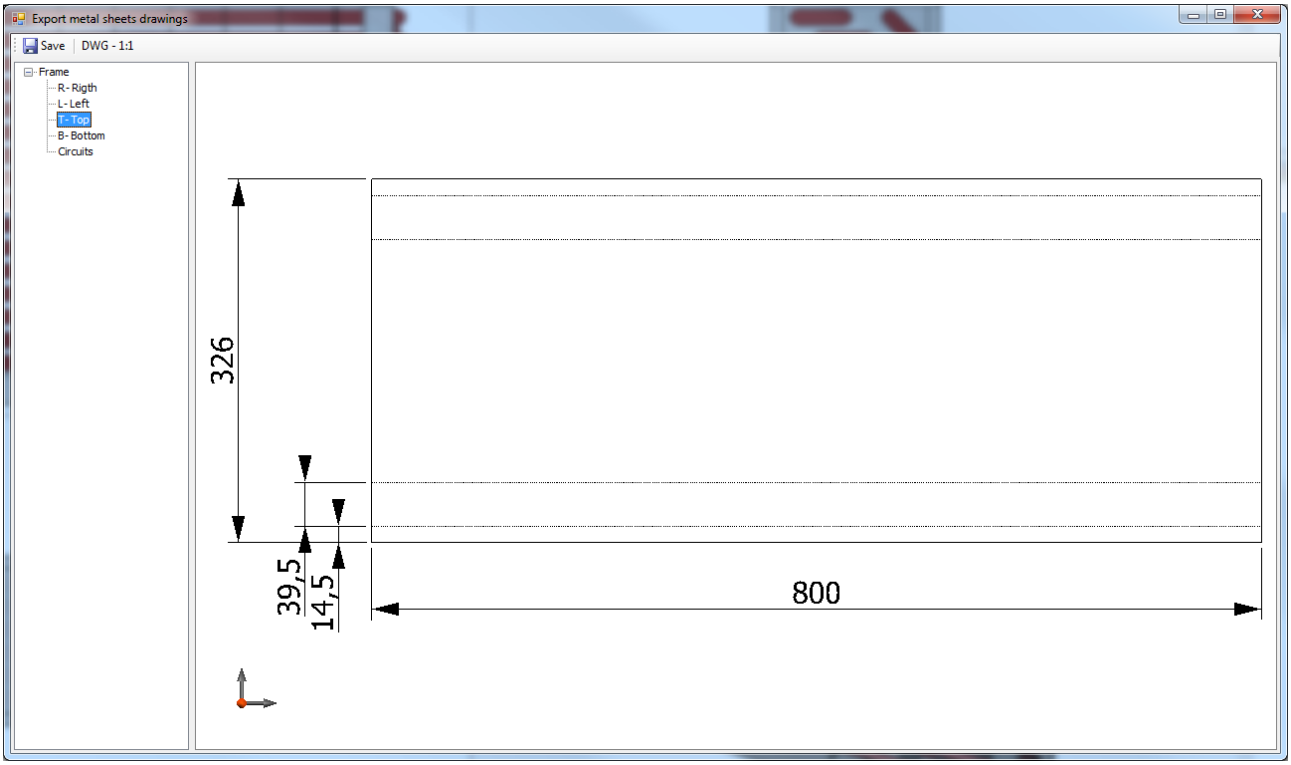
We can click on R-right menu and see the right view



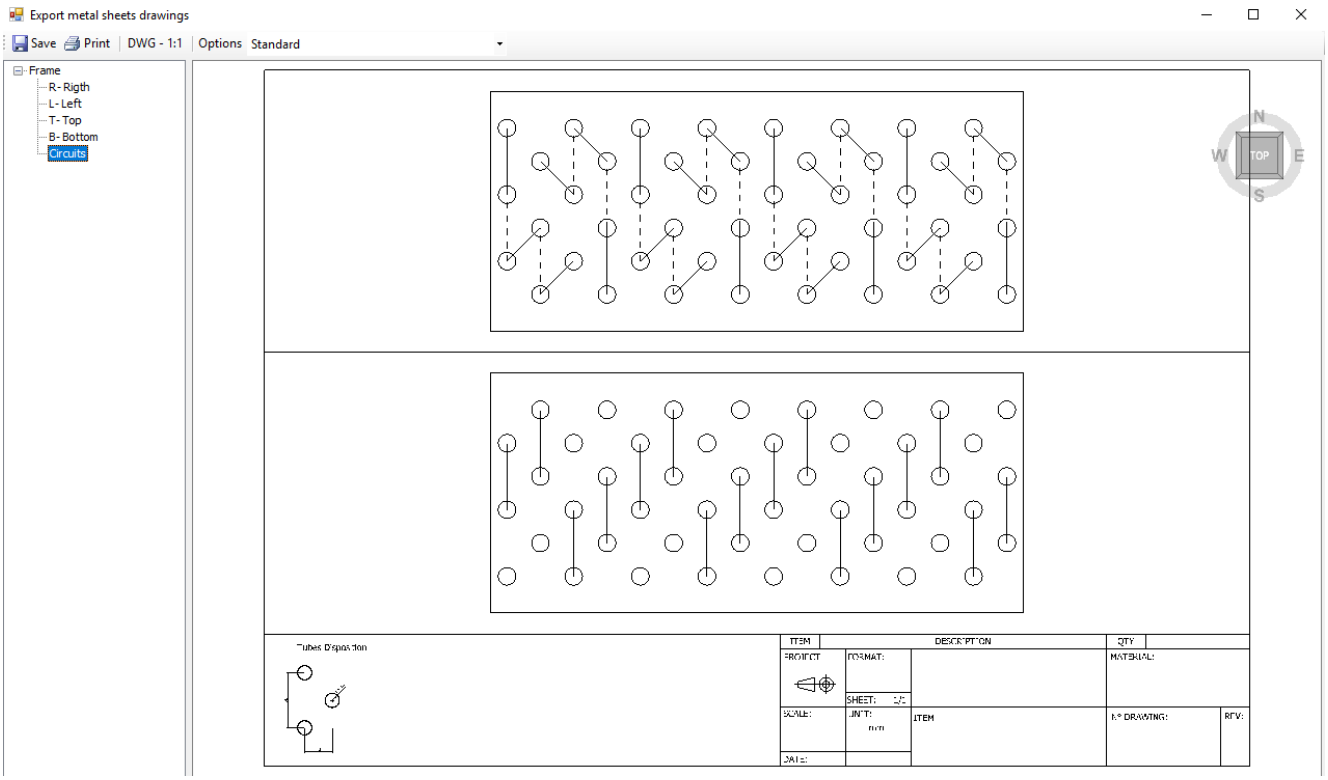
Left view



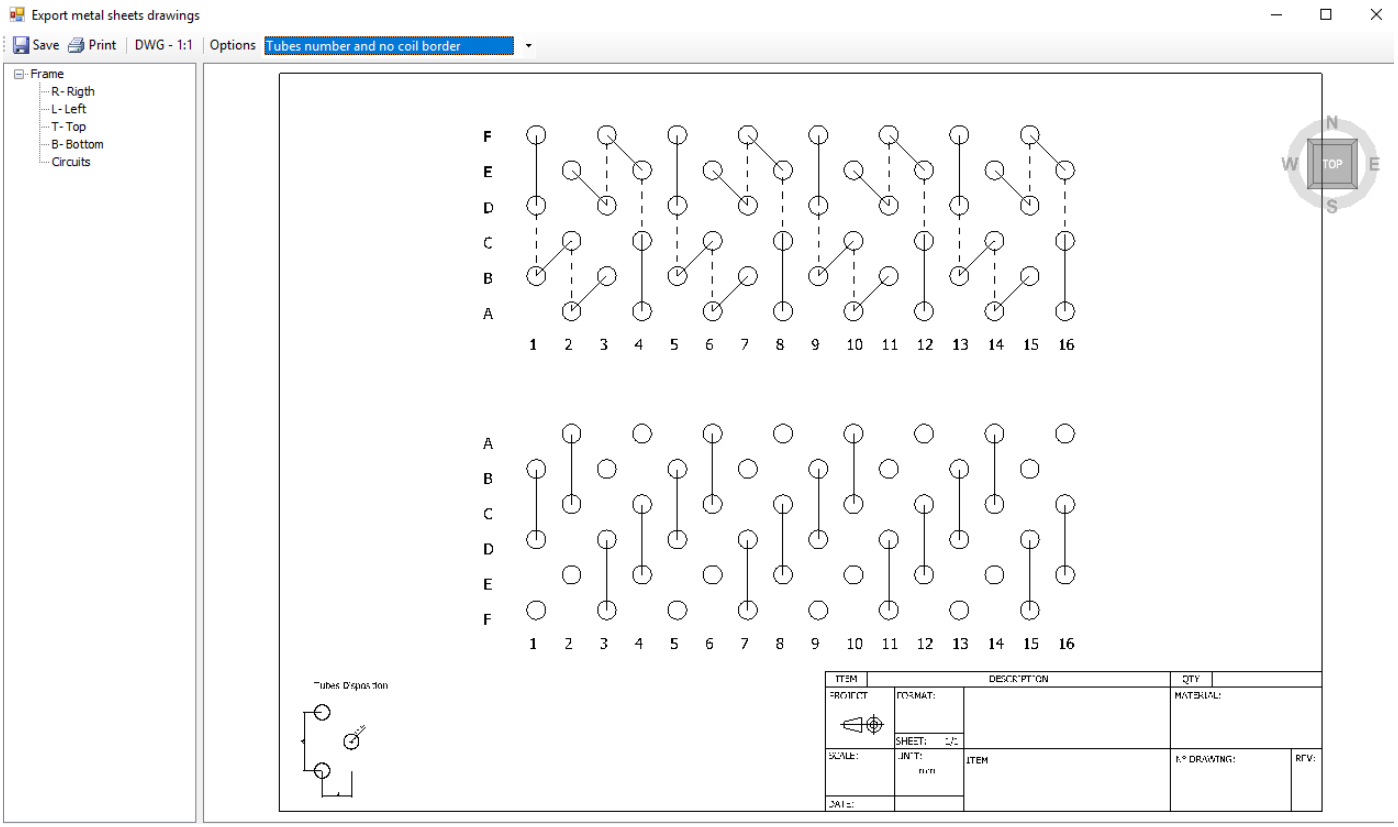
Top view and bottom view



The circuits view can be shown as "Standard" choosing it in the combo "Options"



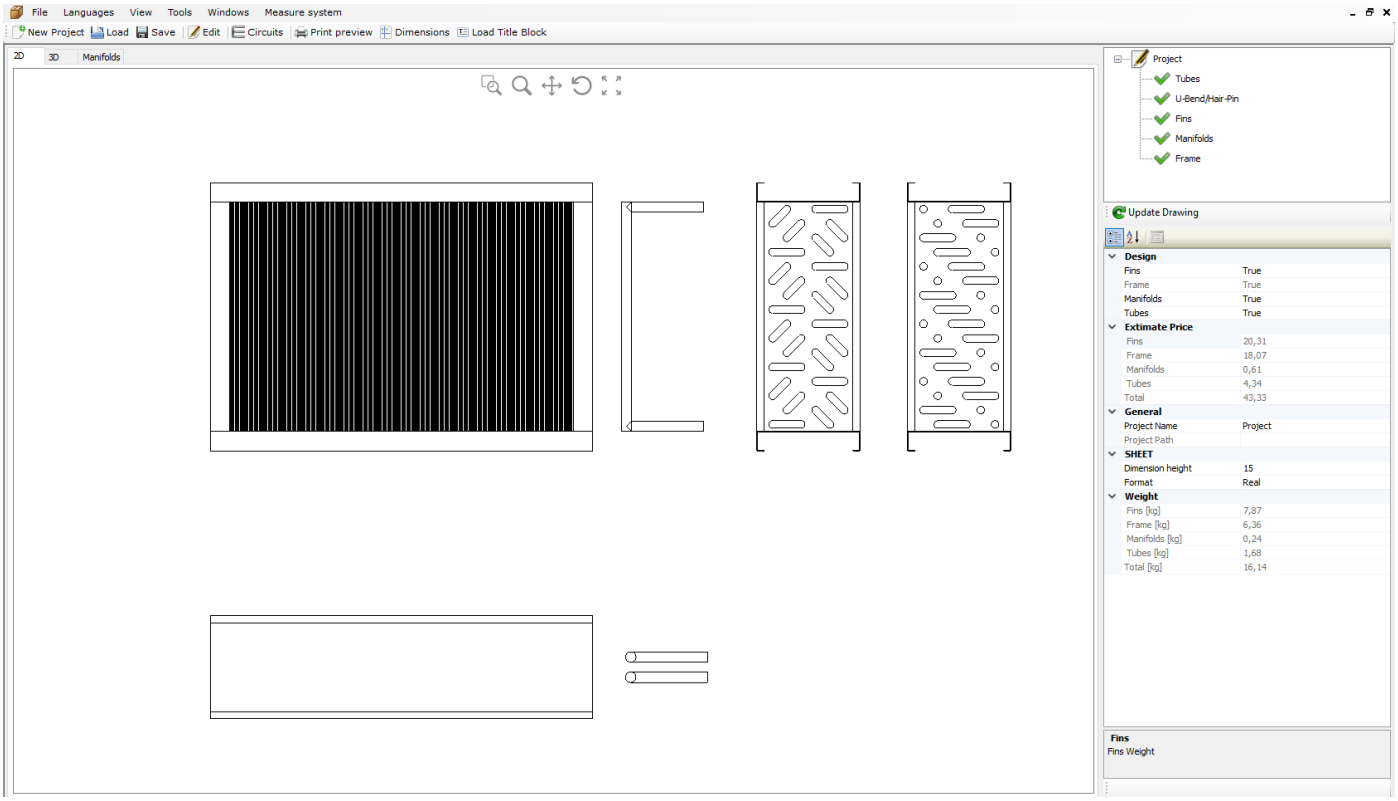
Or as "Tubes number and no coil border", choosing it in the same combo

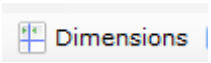


DIMENSIONS

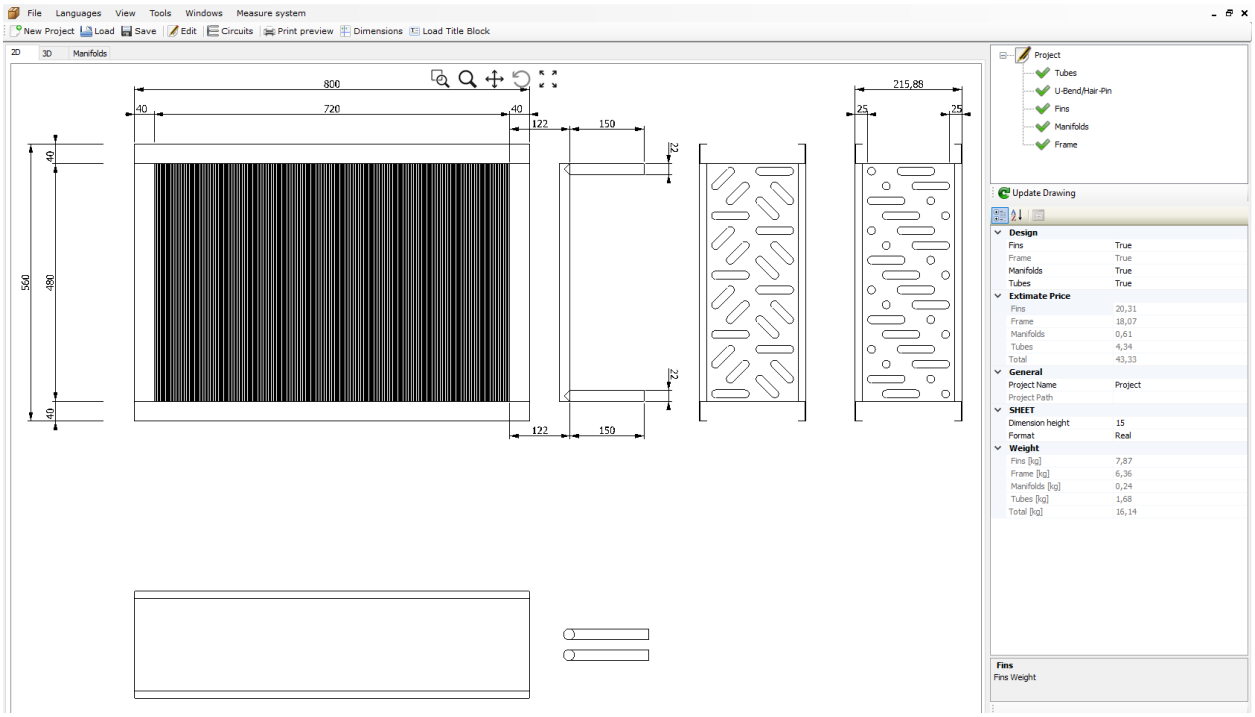
To see the dimensions, we need to click on 2D 

, we will see:

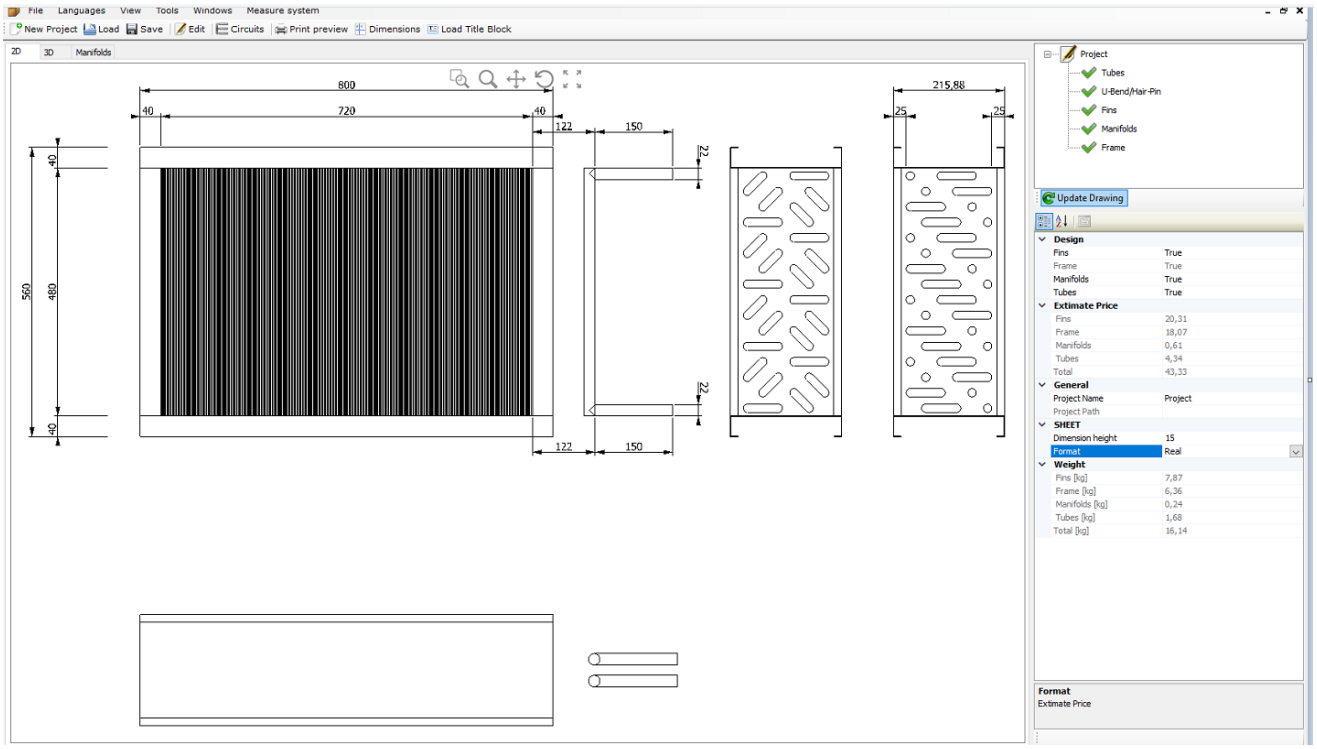


Then we will click on the "Dimensions" 

button and get

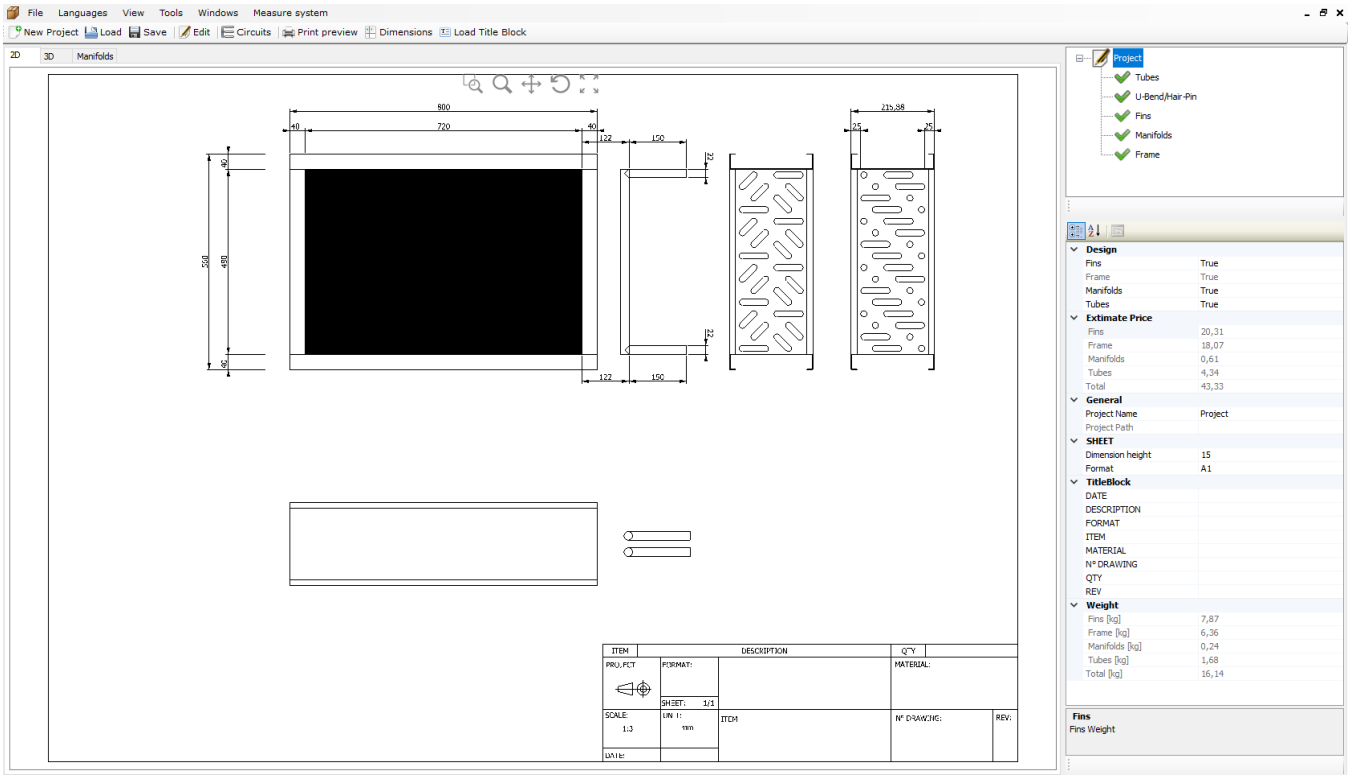


We can also change the dimensions height setting a new value, we need to change field and click on "Update Drawing":



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

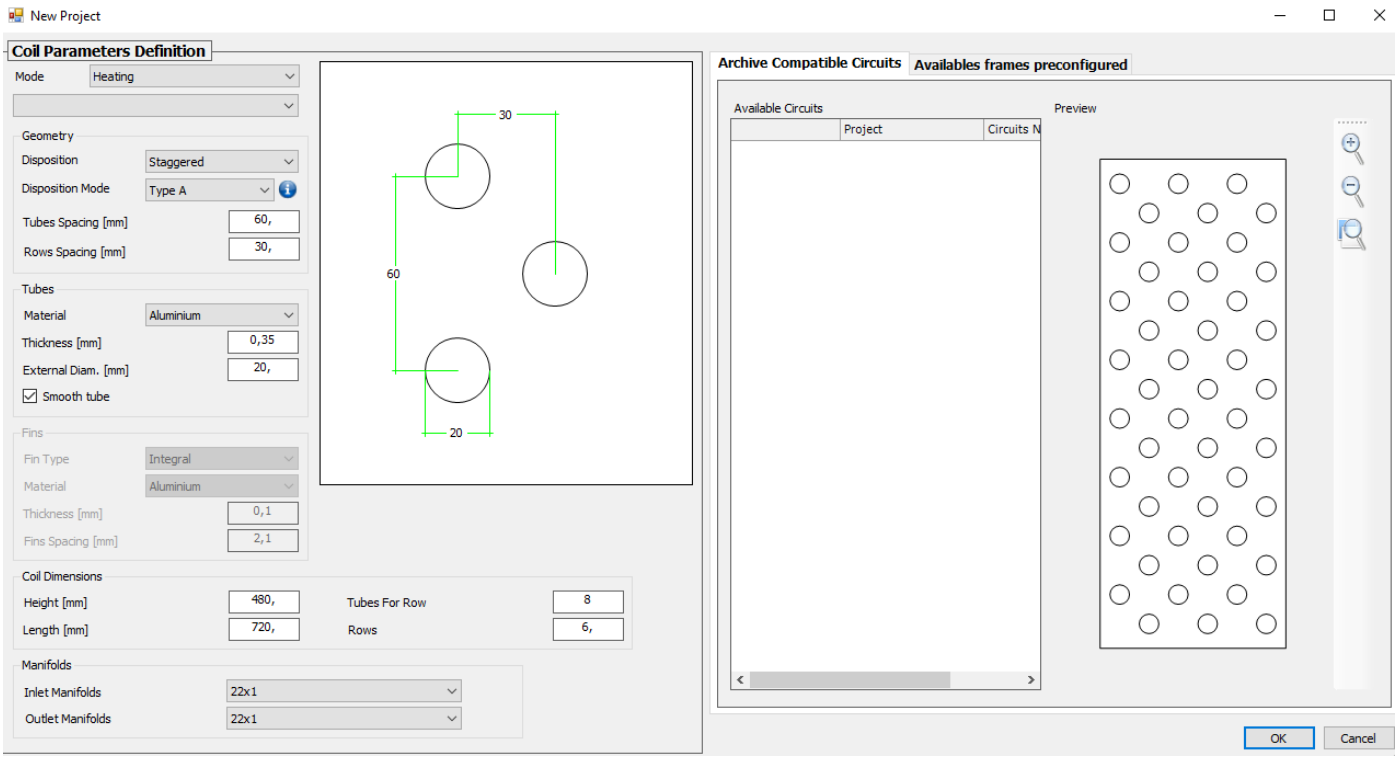
TitleBlock	
DATE	**13/09/2018**
DESCRIPTION	**AAA**
FORMAT	**1**
ITEM	**1**
MATERIAL	**NO**
N° DRAWING	**3**
QTY	**1**
REV	**OK**

At this point we will see the inserted data

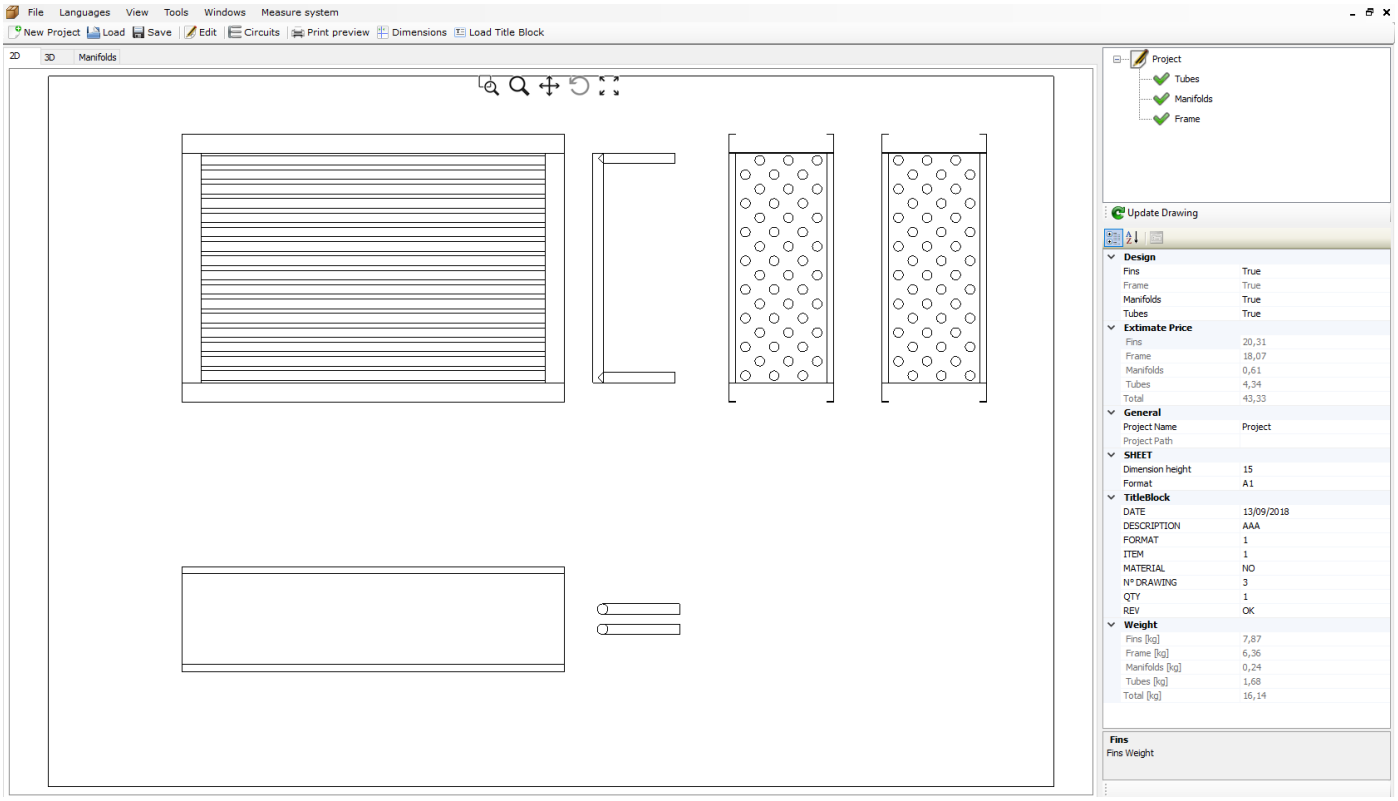
ITEM	DESCRIPTION		QTY	1
PROJECT	FORMAT: 1 SHEET: 1/1	AAA	MATERIAL: NO	
SCALE: 1:3	UNIT: mm	ITEM 1	Nº DRAWING: 3	REV: OK
DATE:	13/09/2018			

SMOOTH TUBE EXAMPLE

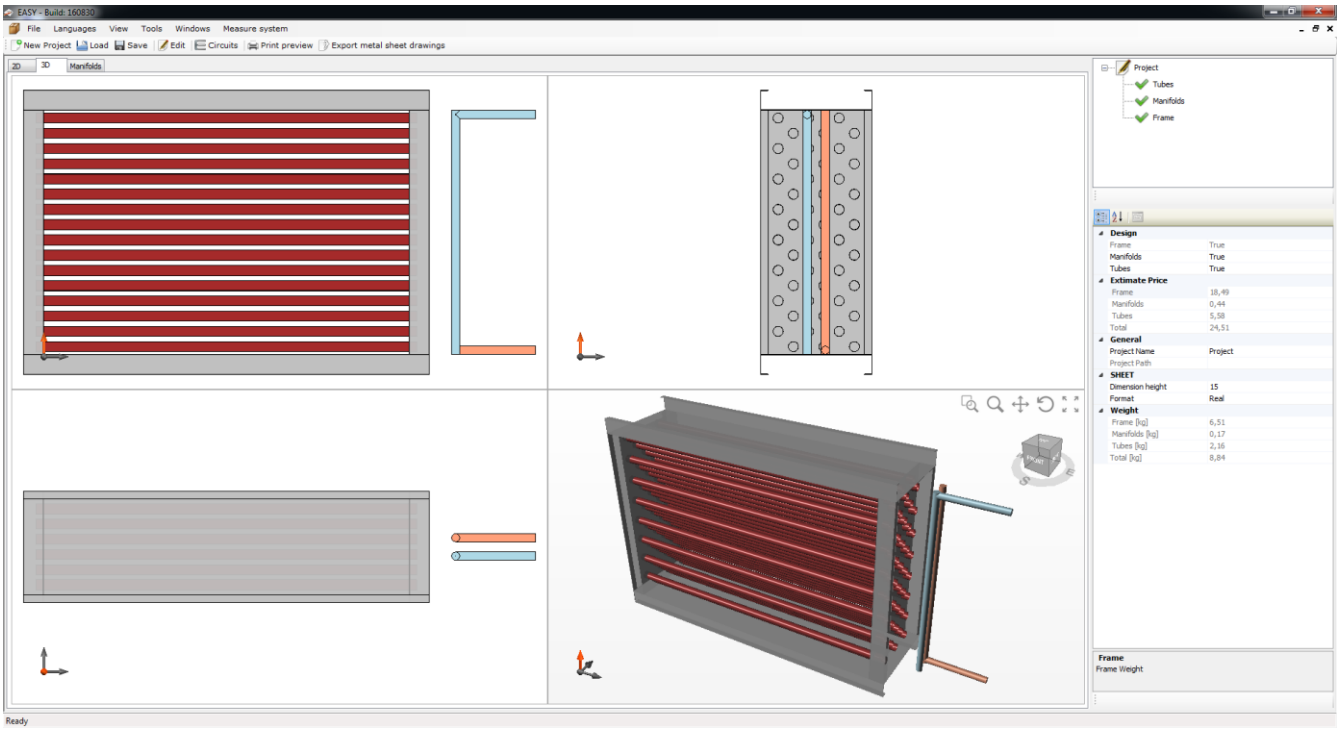
Let us open a new project and we check the option "Smooth tube"



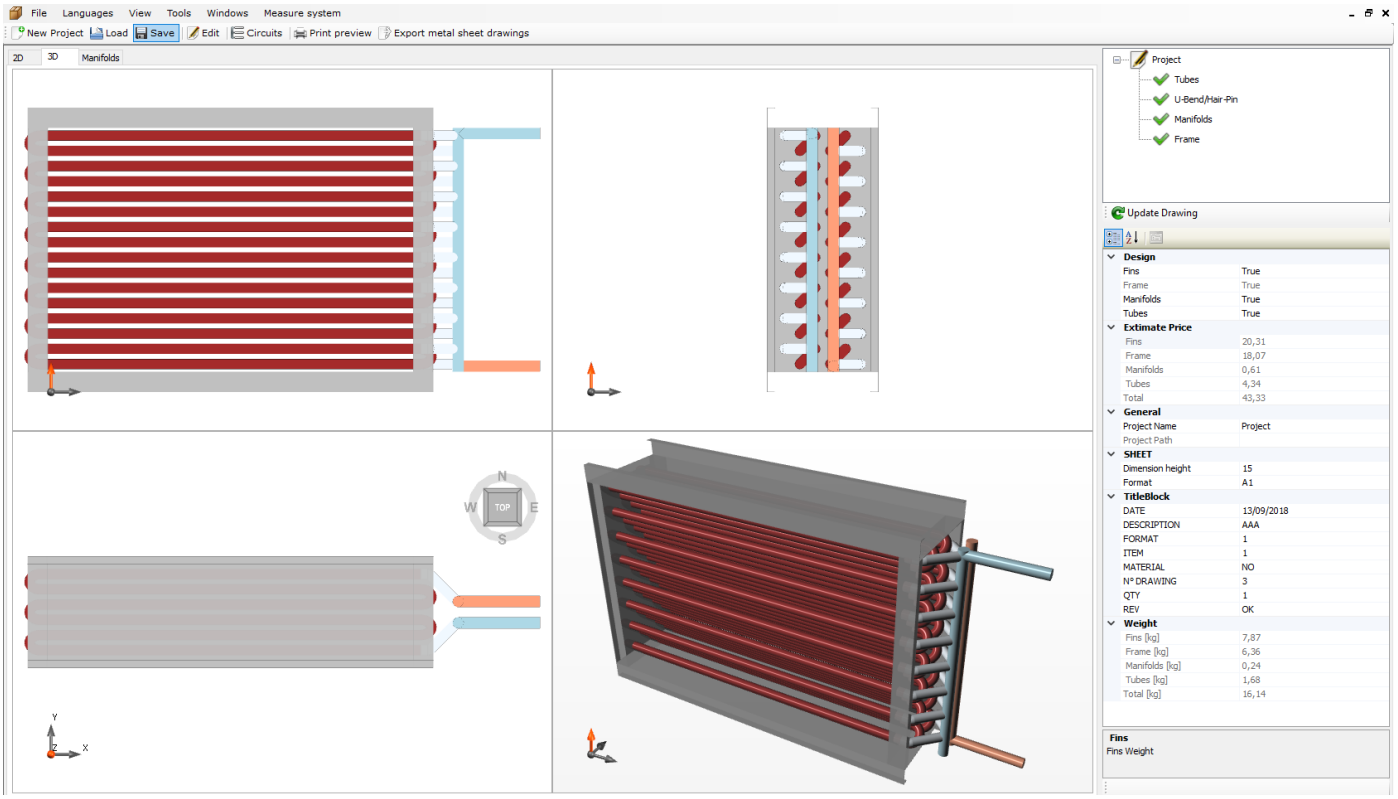
Then we can click on "OK" and we can see



If we click on 3D we can see the coils

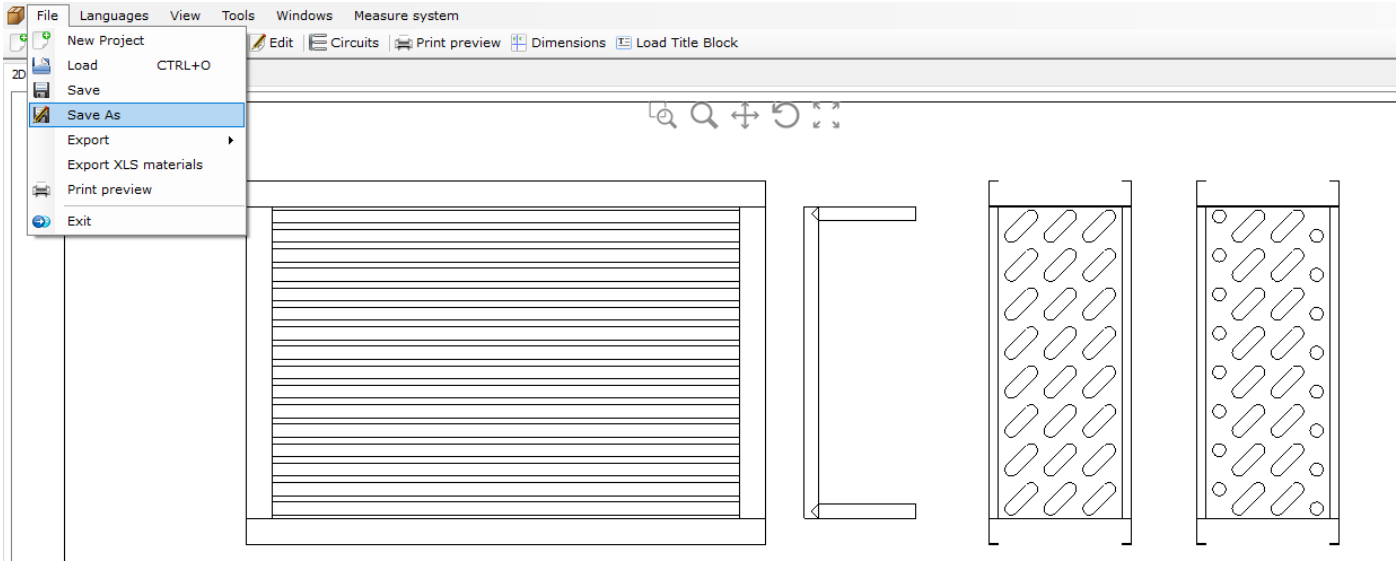


And if you draw the circuit you can have it complete like this

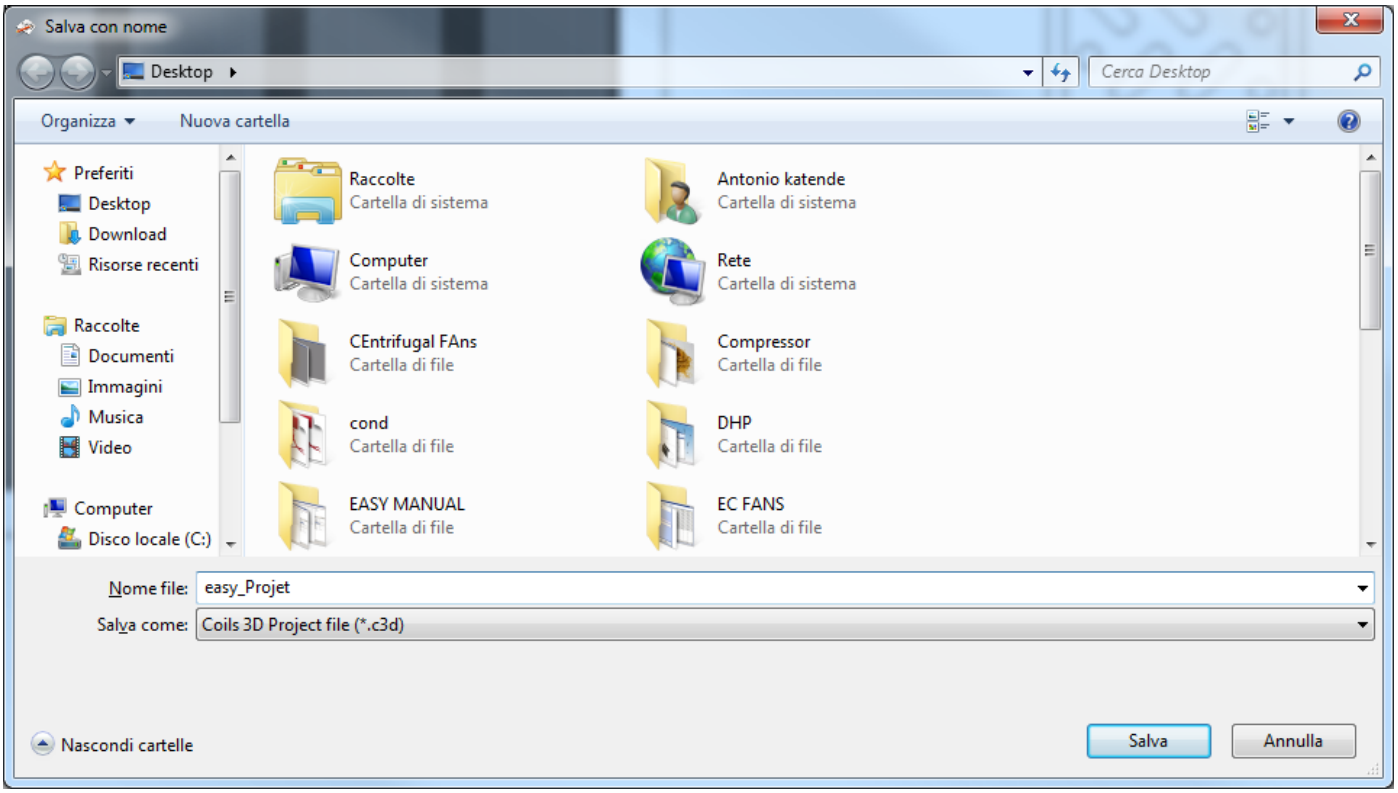


How To Save Easy Coils Projects

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



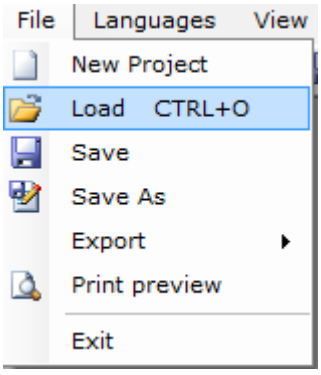
Then you will see this



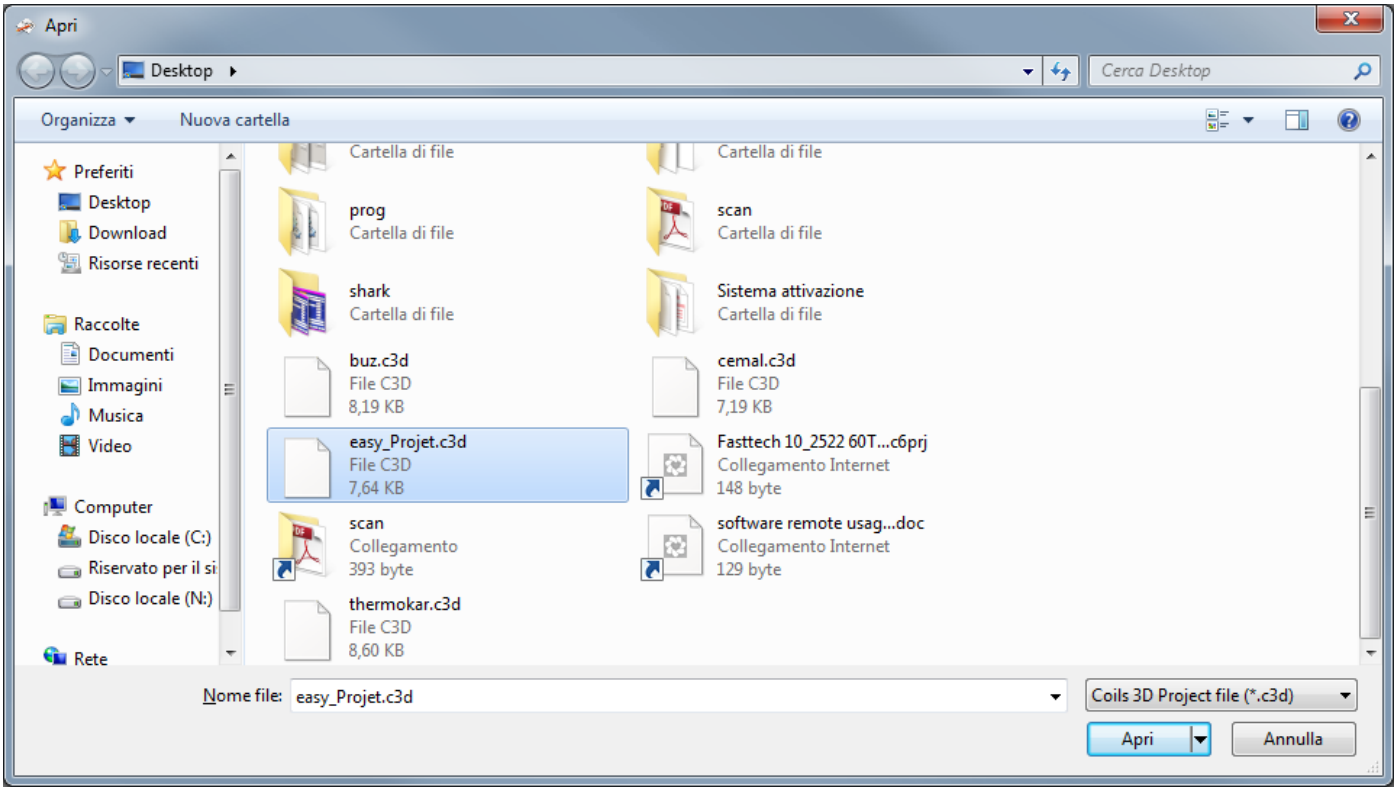
Then we click on "Save"

How To Open Easy projects

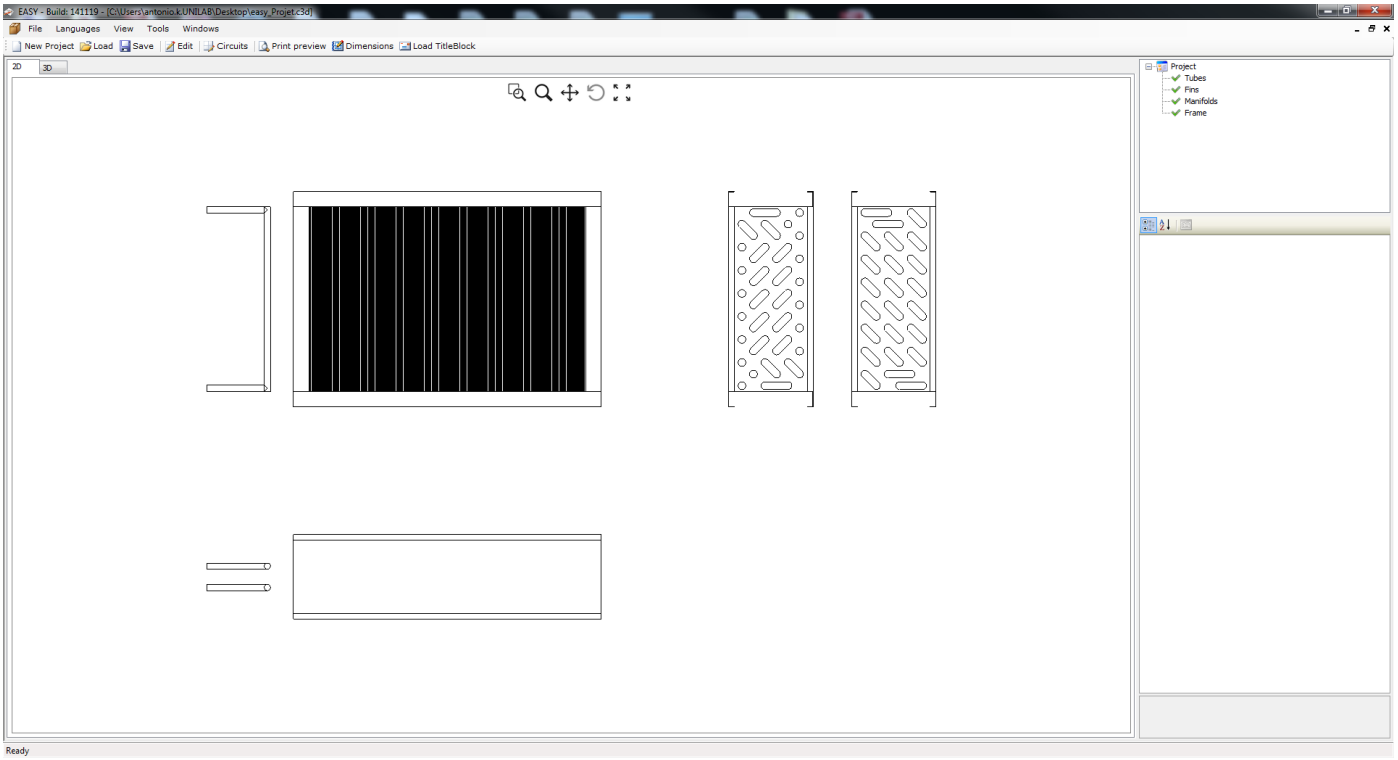
To open a project of EASY software we click on File-> Load



Then we will see

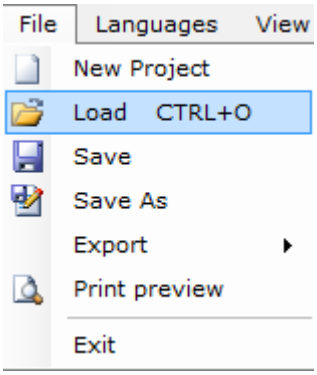


Then we click on open and get

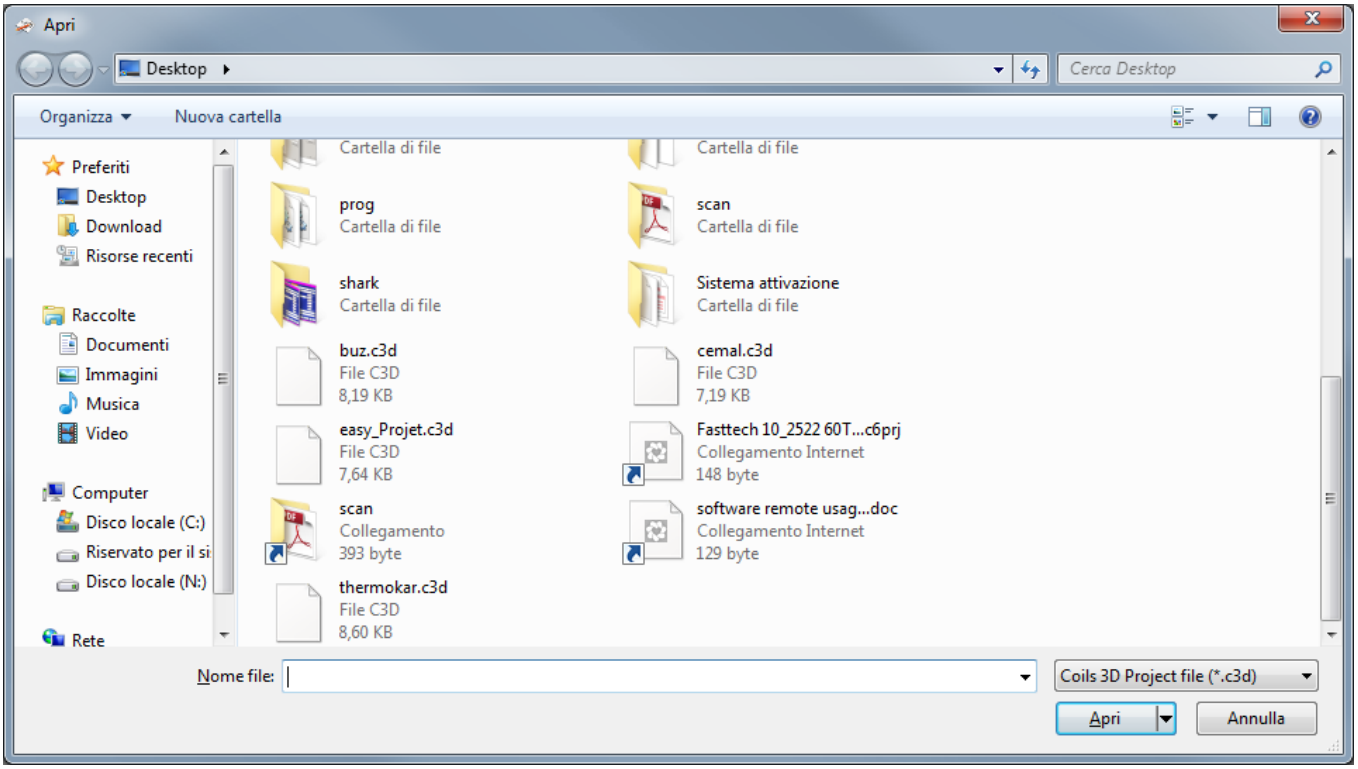


How To open in Easy projects saved in Coils software

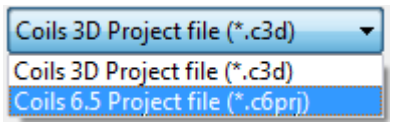
In Unilab Easy, we can open project that are saved using the software Unilab Coils, to do so please go to File Menu->Load



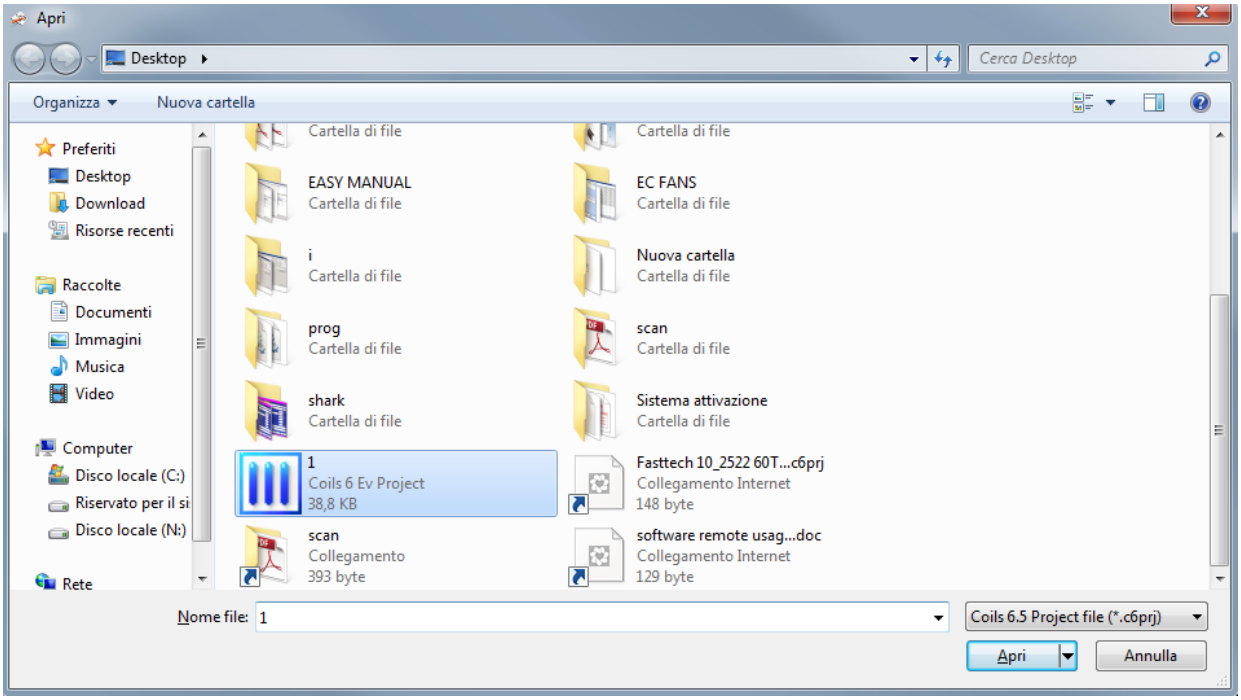
And we will see



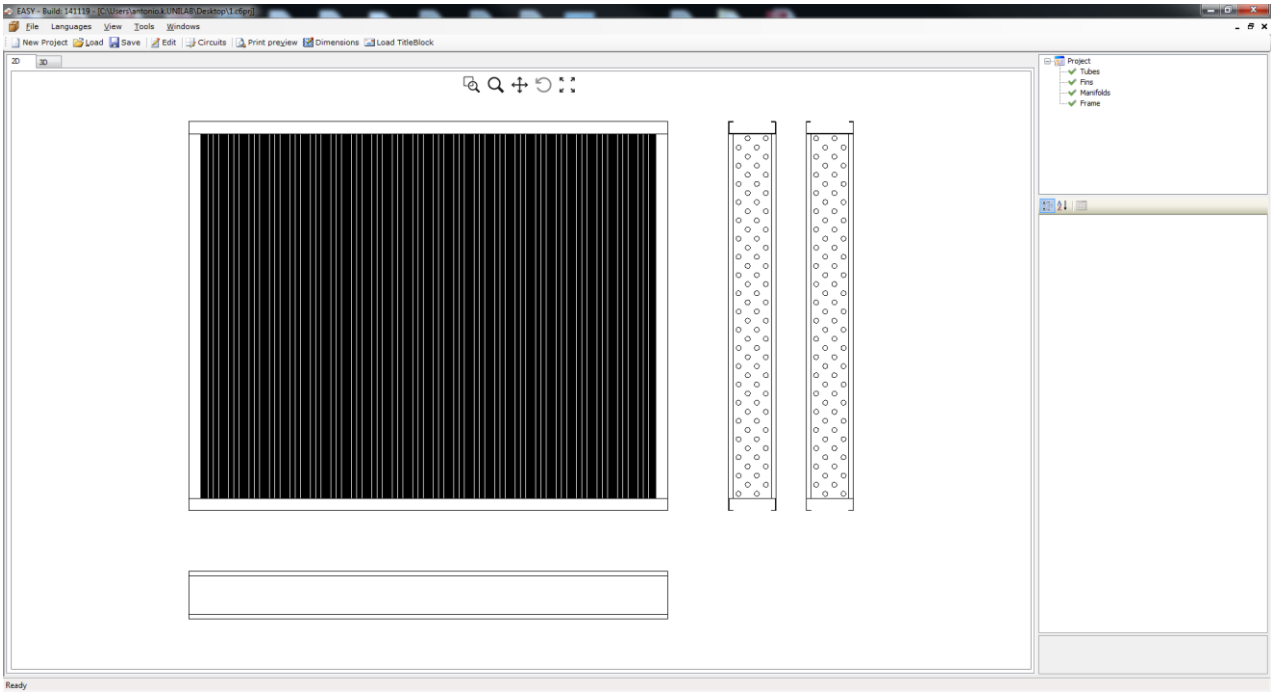
Now we click on side and choose Coils 6.5 project file



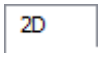
We will see

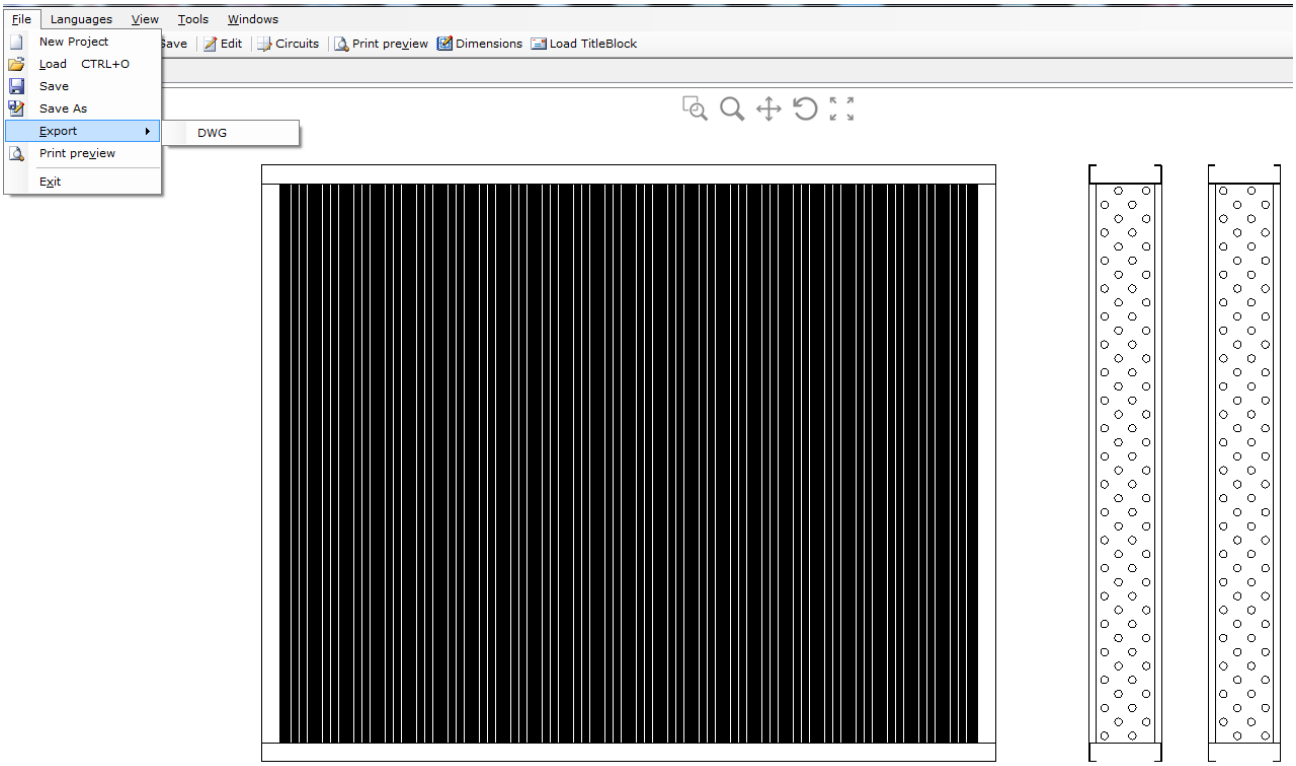


Then you click on open and we will see



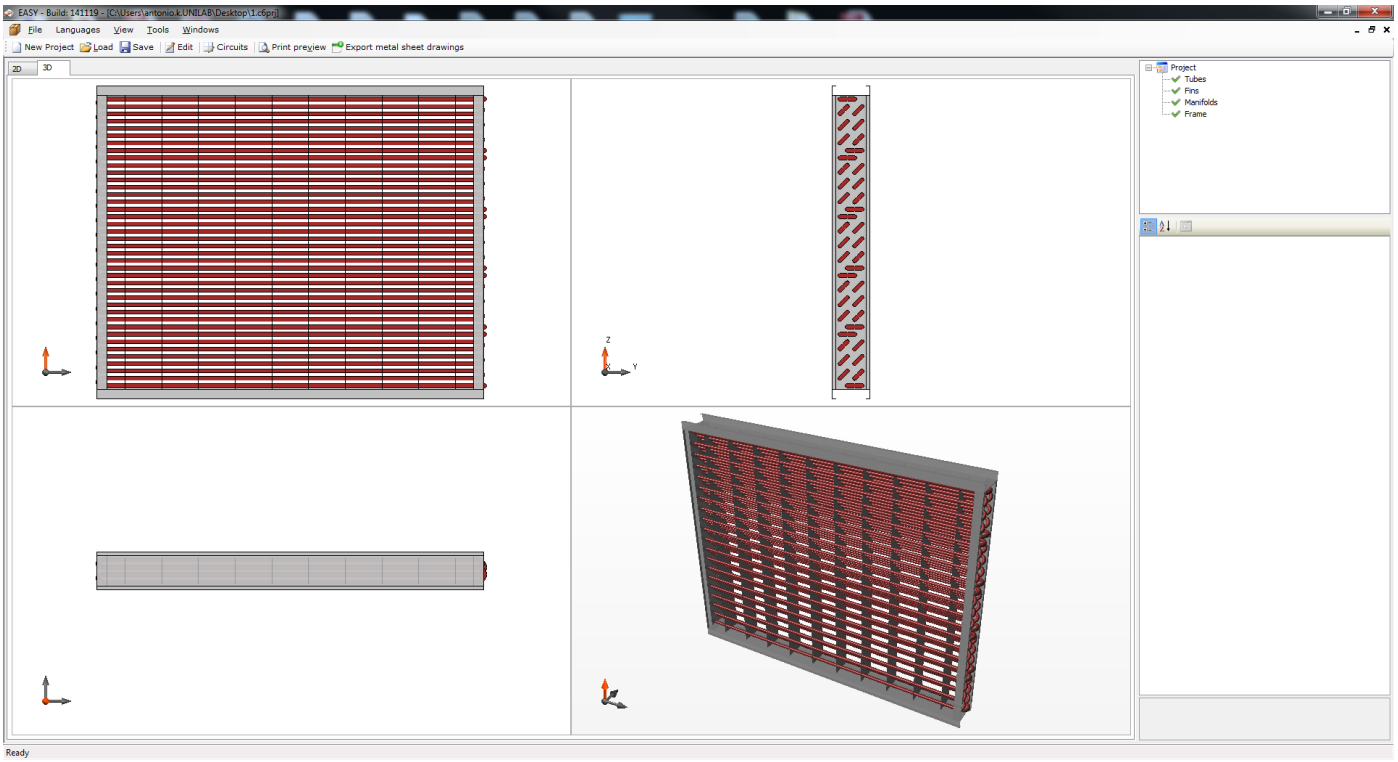
How To Export from 2D

If we click on 2D  we will see, then we can click on File->Export

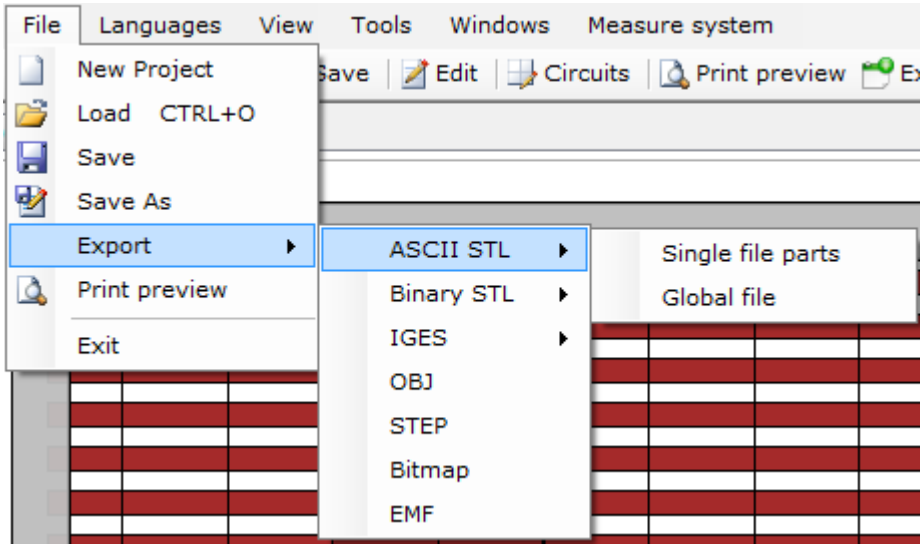


How To Export from 3D

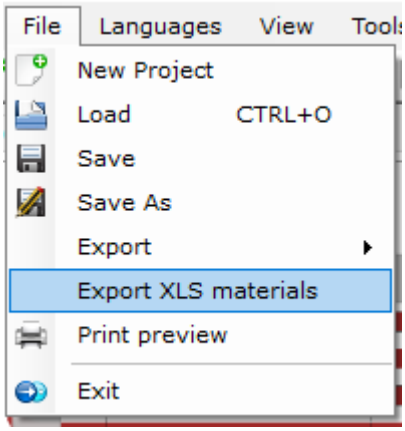
Then we click on 3D  and we get



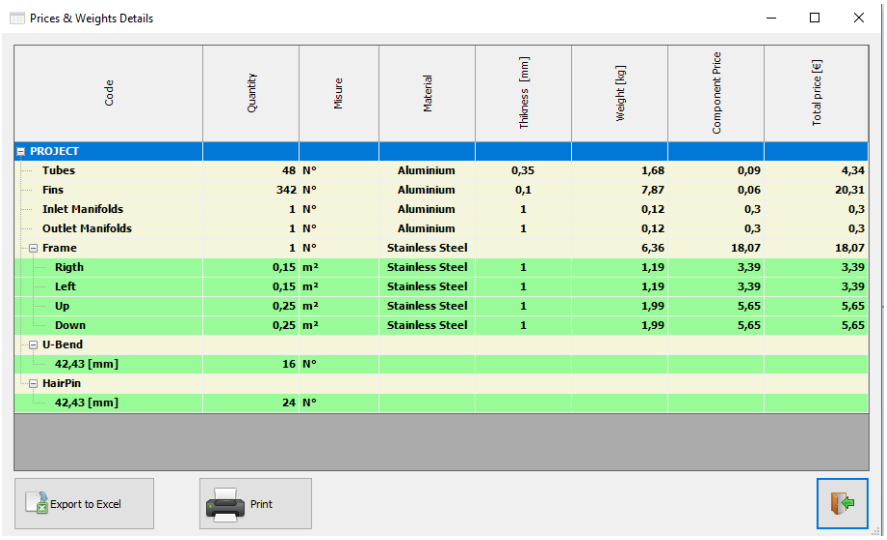
Then we if i click on File->Export we can choose differents file types and if we want a global file or one file for each part:



How To Export the list of materials

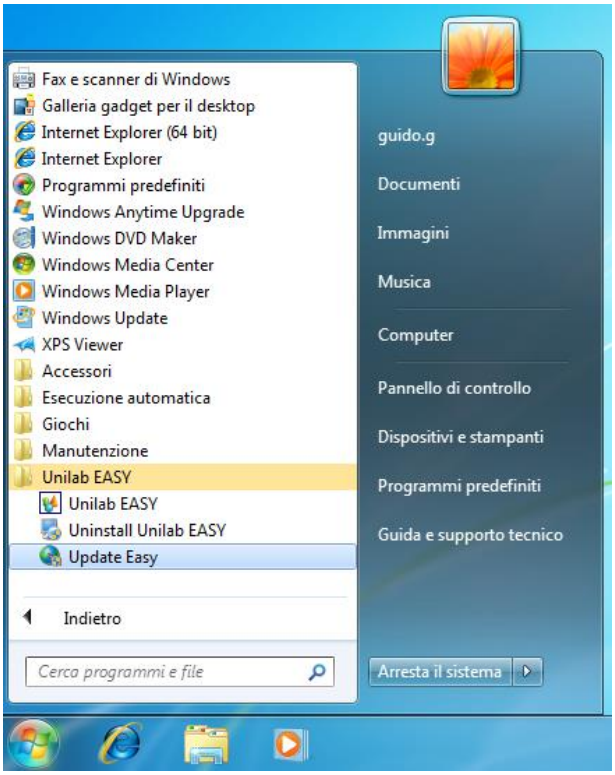


If we go to export XLS materials, we will see this:

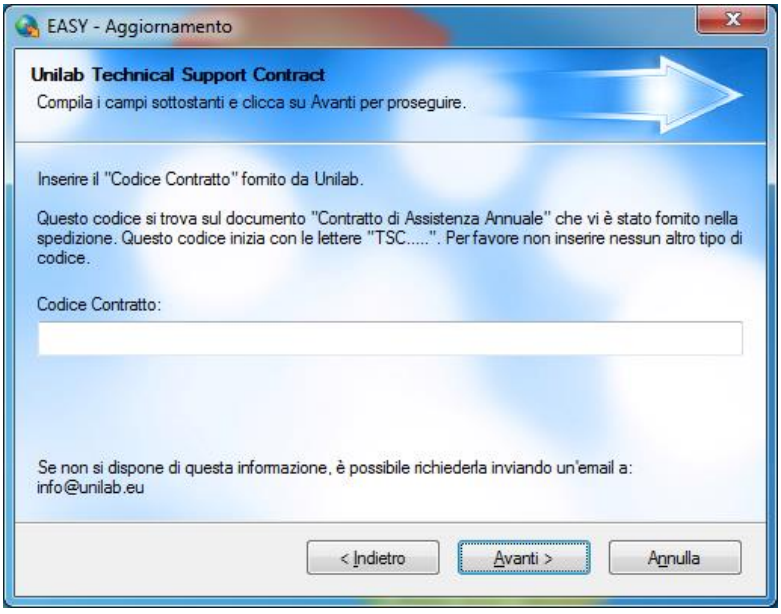


UPDATES

In order to update the software you have to go on "Start" → "Programs"→ "Unilab Easy" → "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

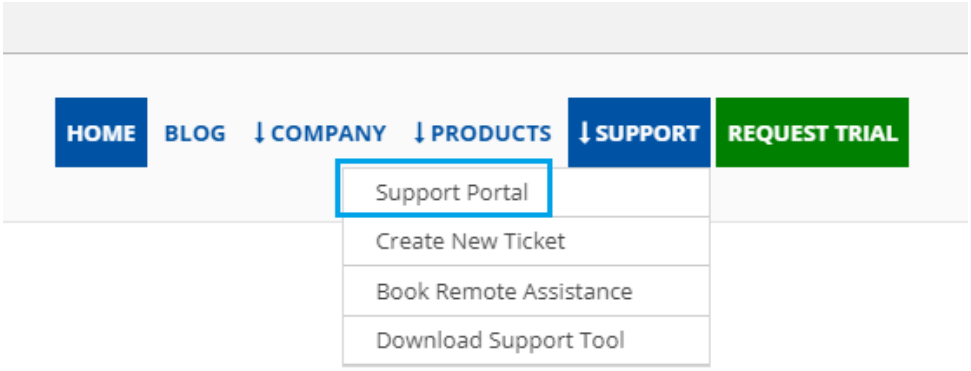


UNILAB EASY SOFTWARE RECOMMENDATIONS

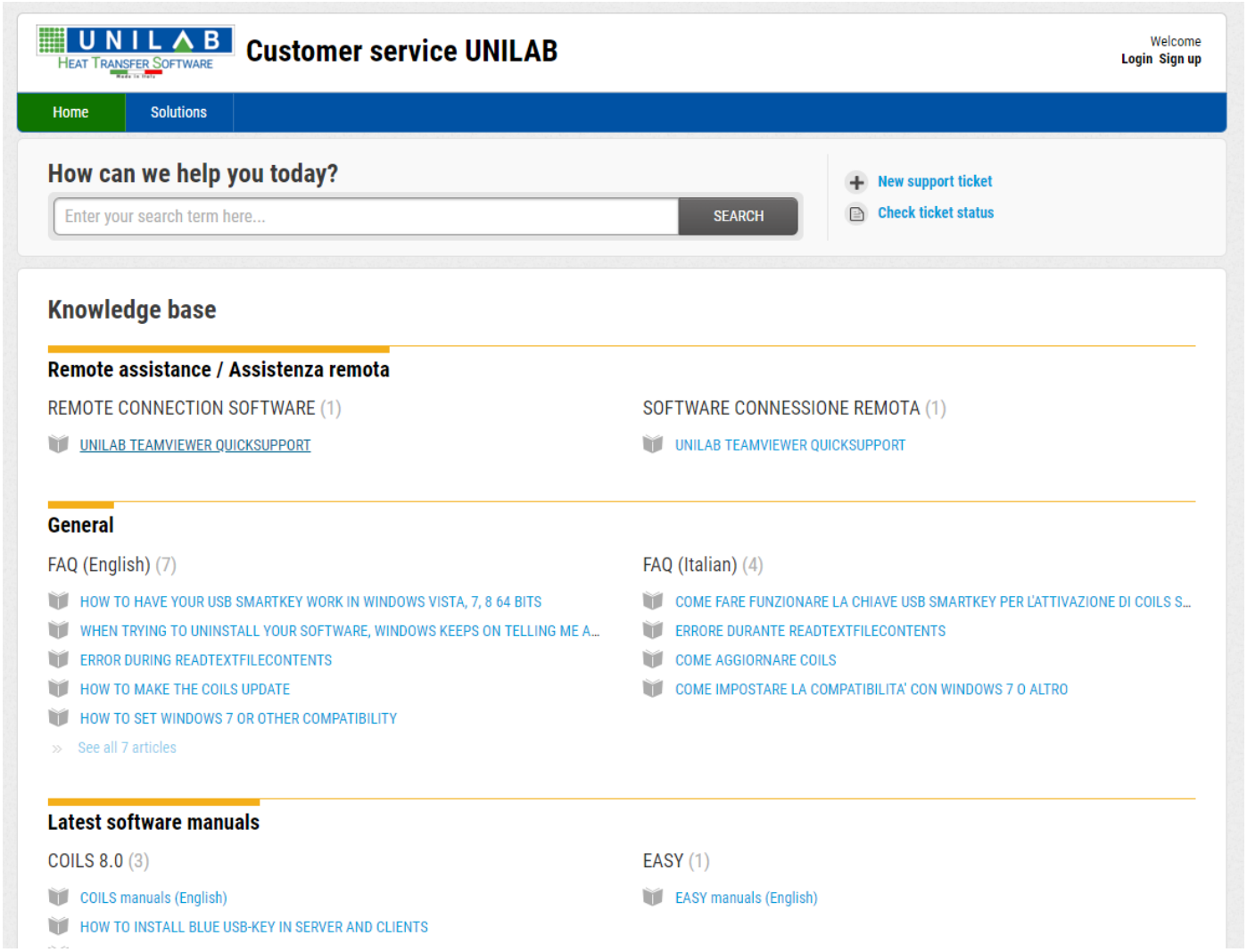
We advice to use unilab easy according to the pc hardware specifics, so that the memory usage would still be available, that is not to use it with several other memory consuming software at the same time. We also suggest for those who have the software Unilab coils, to use both one at a time, that is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

How to get in contact with Unilab Technical Support

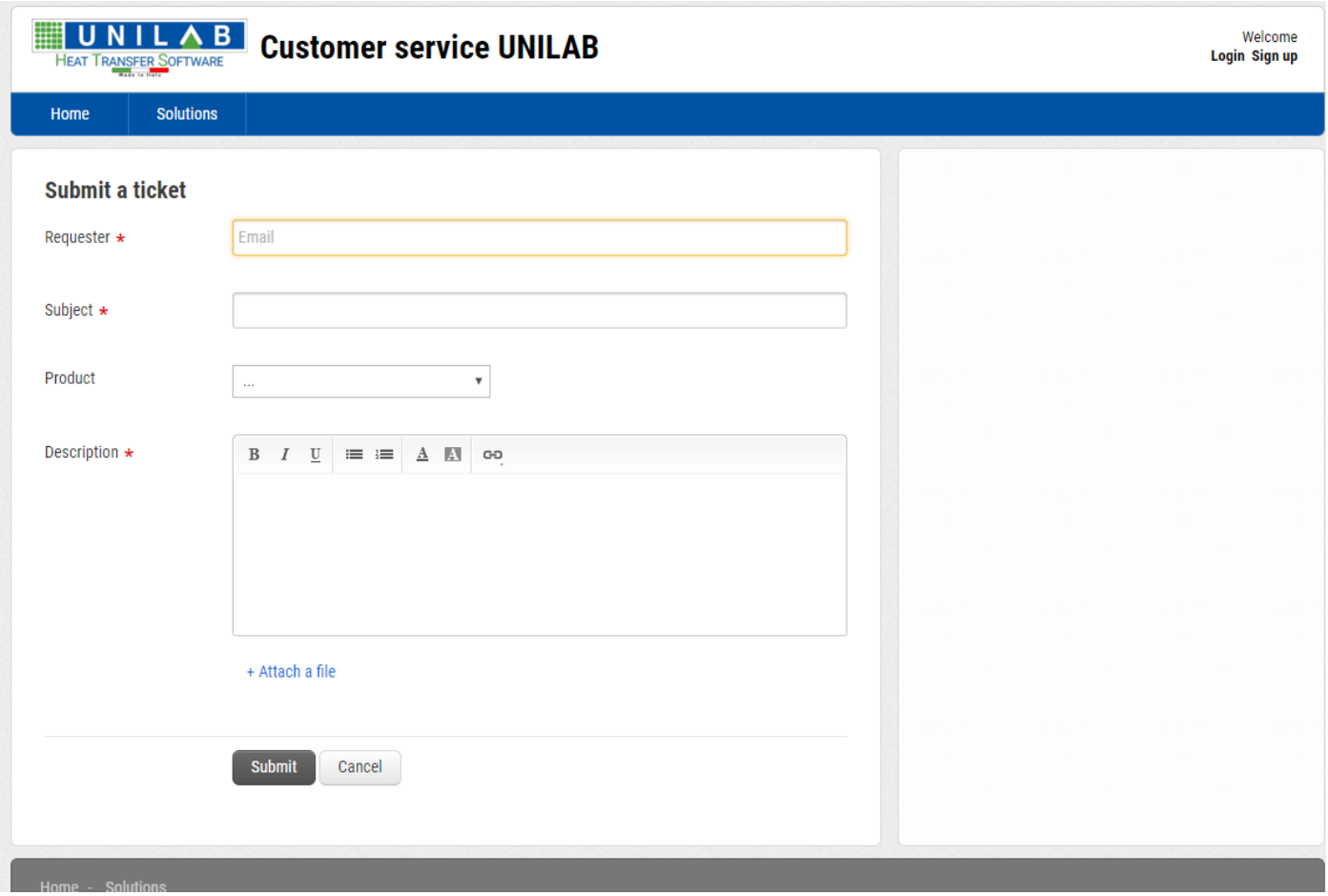
Please visit our website www.unilab.eu and click on "Suppor Portal".



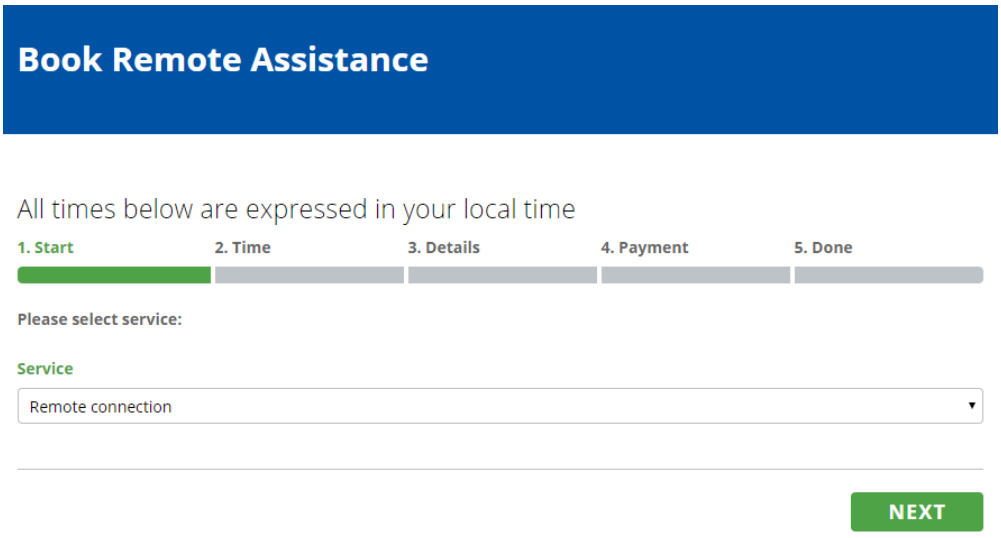
In this section, you will find some useful tools for you (example FAQs and useful documentations).



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



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



Book Remote Assistance

All times below are expressed in your local time

1. Start — 2. Time — 3. Details — 4. Done

Below you can find a list of available time slots for **Remote connection** by **Customer Care**.
Click on a time slot to proceed with booking.

Mon, Aug 27	Thu, Aug 30	Tue, Sep 04	Fri, Sep 07	Wed, Sep 12	Mon, Sep 17
10:00 am	10:00 am	10:00 am	10:00 am	10:00 am	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	10:00 am	10:00 am	10:00 am	10:00 am	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	10:00 am	10:00 am	10:00 am	10:00 am	10:00 am
3:00 pm	3:00 pm	3:00 pm	3:00 pm	3:00 pm	3:00 pm

BACK >

Book Remote Assistance

All times below are expressed in your local time

1. Start — 2. Time — 3. Details — 4. Done

You selected a booking for **Remote connection** by **Customer Care** at **10:00 am** on **29/08/2018**.
Please provide your details in the form below to proceed with booking.

Name **Phone** **Email**

312 345 6789

Software Name

Description of the Problem

BACK NEXT