



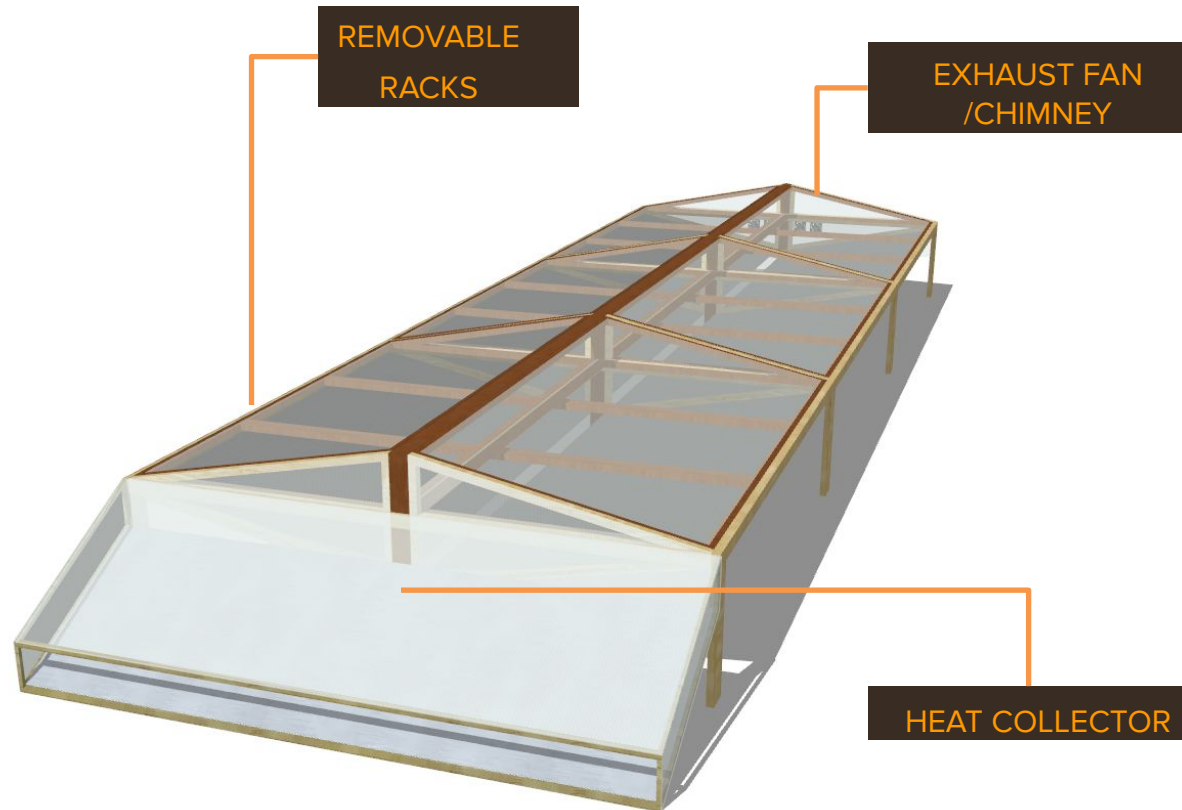
**FISH SOLAR DRYER**  
**CONSTRUCTION**  
**GUIDELINE**

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1. **Overview**
2. Materials & Tools
3. Construction Guidelines

**Fish solar dryer utilize solar and wind energy to dry various raw products, preparing them for adequate storage, processing, and export. Inside the dryer, the commodity is evenly distributed across tables or drying racks.**



### **Main advantages**

- The solar dryer is equipped with an exhaust fan intake to force dry air heated by solar collector into the drying chamber, providing active drying.
- The doors are designed for easy spreading of commodities on the racks and for inspecting the drying process, while optimizing available space.
- Solar collector is an additional feature developed for maximizing hot air intake to internal circulation for better drying process.

The polycarbonate sheet has a high transmittance level (approximately 0.5), providing an effective greenhouse effect, making it ideal as the dryer's cover. We also utilize wood structure for adequate thermal insulation to retain heat inside the chamber.

**Bottom – Black Polycarbonate**

To maximize heat absorption and retain it inside the closed solar drying chamber

**Roofing – Transparent Polycarbonate**

Transparent, allowing direct light exposure into the chamber while utilizing the “greenhouse effect” for heating

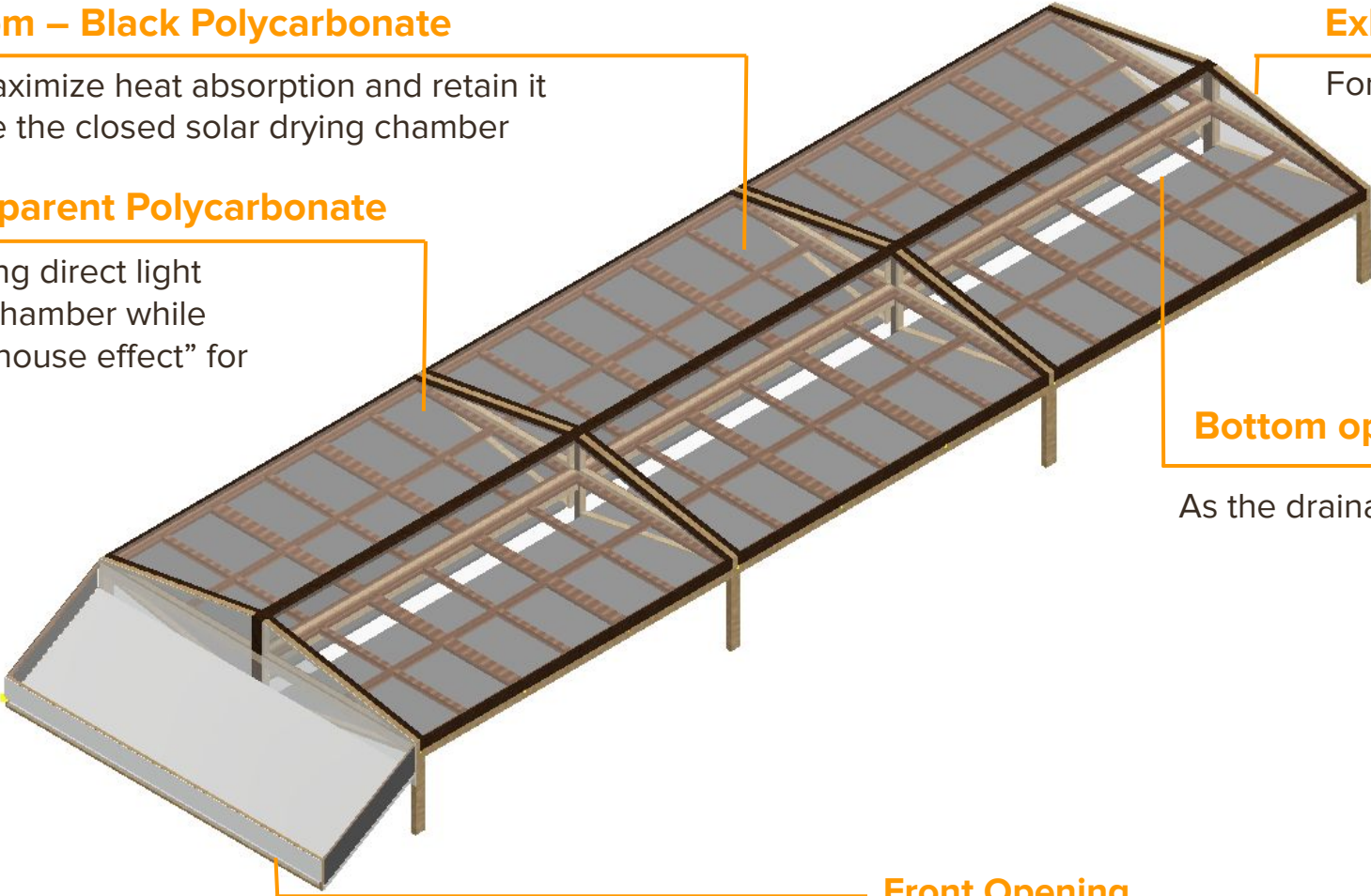
**Exhaust with fan**

For air circulation (exhaust)

**Bottom opening**

As the drainage section for excess water

**Front Opening**



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## Below are the materials needed for the construction of the solar dryer:

PART	PURPOSE	ITEM	SIZE	QUANTITY
Main frame	Footings	Wood beam	5 × 10 cm – 70 cm	12 units
	Body Frame	Kaso wood/Light Steel	5 × 7 cm – 956,5 cm	2 units
	Tray frame	Kaso wood/Light Steel	5 × 7 cm – 317 cm	4 units
	Roofing frame	Ironwood/Light Steel	5 × 10 cm – 30 cm	4 units
		Wooden board	2 × 20 cm – 322 cm	3 units
	Roofing frame support (upper side)	Batten wood	2,5 × 5 cm – 157 cm	8 units
		Batten wood	2,5 × 5 cm – 30 cm	8 units
	Polycarbonate support (bottom side)	Batten wood	2,5 × 5 cm – 157 cm	8 units
		Batten wood	2,5 × 5 cm – 30 cm	8 units
	Railing	Wood beam	7 × 14 – 956,5 cm	1 unit

## Below are the tools and consumables needed for the construction of the solar dryer (1/2)

PART	PURPOSE	ITEM	SIZE	QUANTITY
Tray	Tray frame	Batten wood	2,5 × 5 cm – 104 cm	36 units
	Tray frame	Batten wood	2,5 × 5 cm – 154 cm	36 units
	Support frame (+)	Batten wood	2,5 × 5 cm – 103 cm	18 units
	Support frame (+)	Batten wood	2,5 × 5 cm – 153 cm	18 units
	Net		154 × 104 cm	36 units
Solar collector	Collector frame	Batten wood	2,5 × 5 cm – 105 cm	4 units
		Batten wood	2,5 × 5 cm – 317 cm	2 units
		Batten wood	2,5 × 5 cm – 26 cm	2 units
		Steel sheet	0.3 mm, 105 × 317 cm	1 units
Exhaust Outlet	Air circulation	Exhaust fan		6 units



# Below are the tools and consumables needed for the construction of the solar dryer (2/2)



Silicone Adhesive  
(for Polycarbonate + frame)



Hinges



Drill



Hammer and nails



Grinder



Exhaust Fan

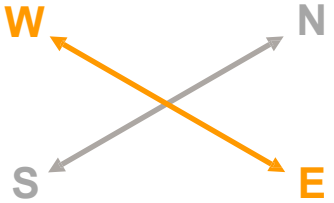
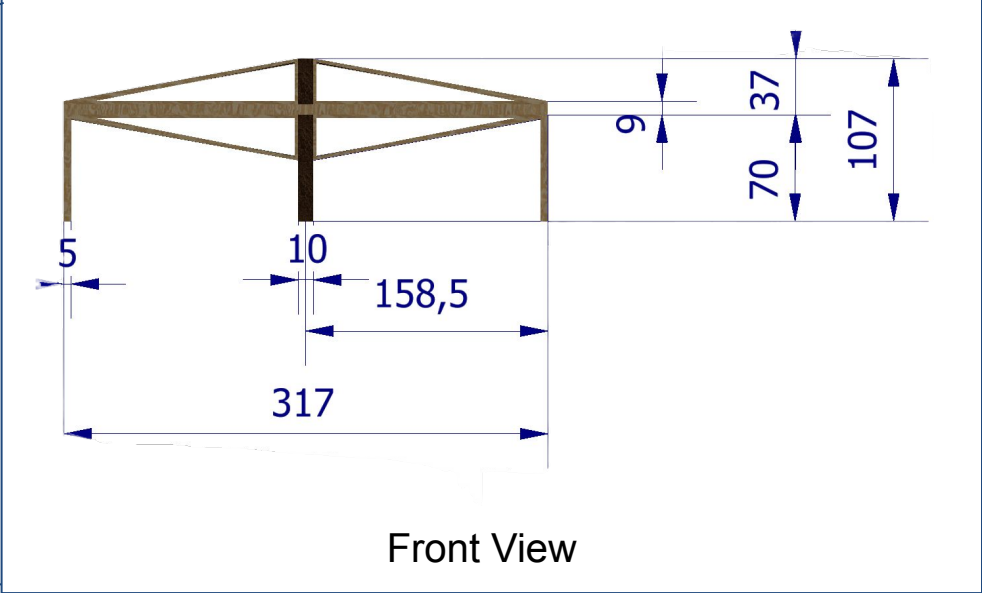
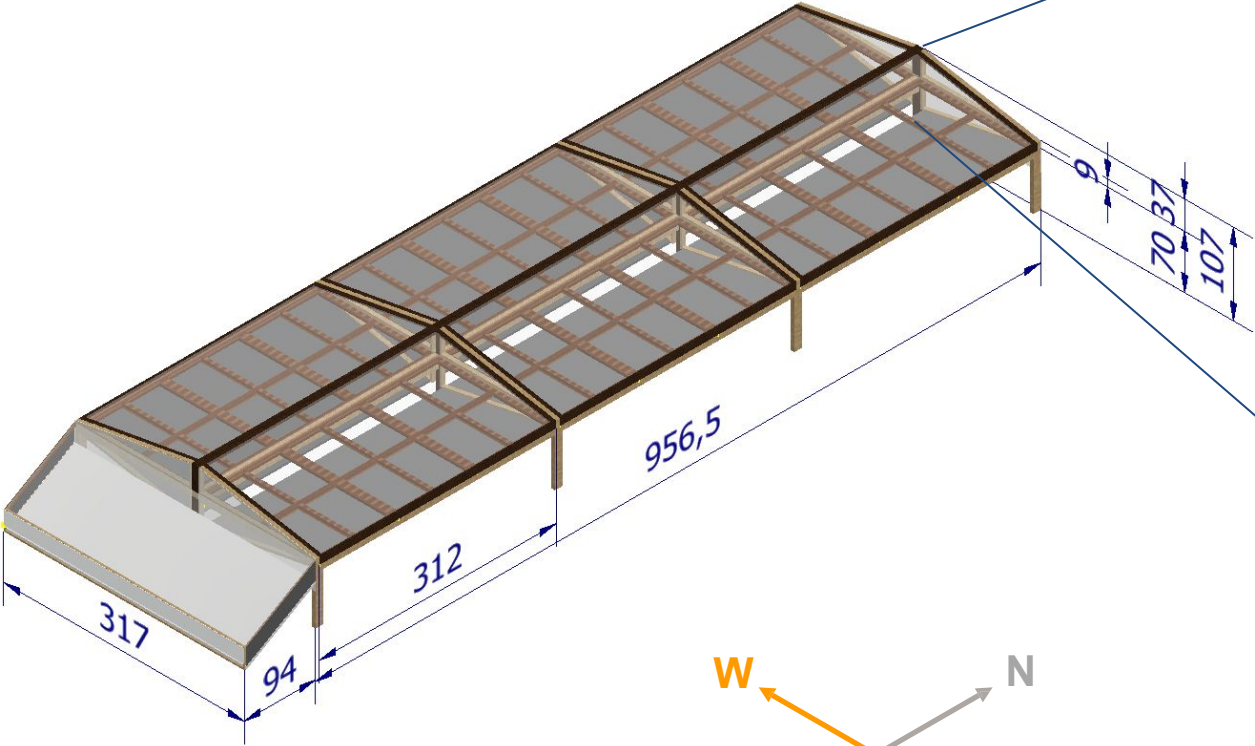


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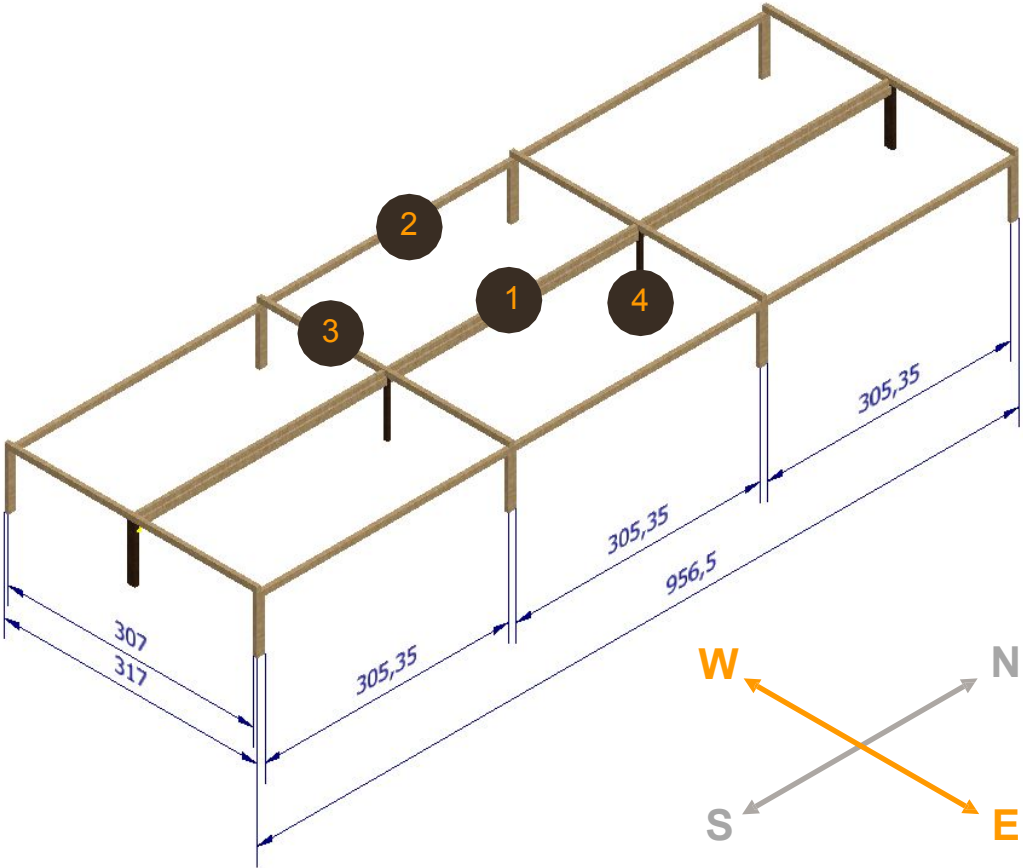
This solar dryer is **10.5 m x 3.17 m x 1.07 m** in size and has 40-45 kg in capacity.

Full size



# Step 1: build the main frame using grid wood-joints

## Series of frame sections with spacing (cm)



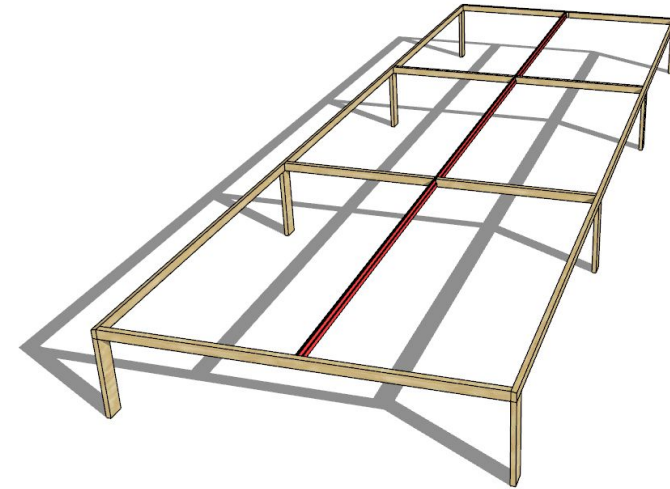
## List of materials for the main frame

No	Material	Qty.
1	Wood beam 7 × 14 – 956,5 cm	1 units
2	Kaso wood 5 × 7 cm 956,5 cm	2 units
3	Batten wood 2,5 × 5 cm – 157 cm	8 units
4	Wood beam 5 × 10 cm – 70 cm	12 units

## Step 1: build the main frame as the structure of the solar dryer

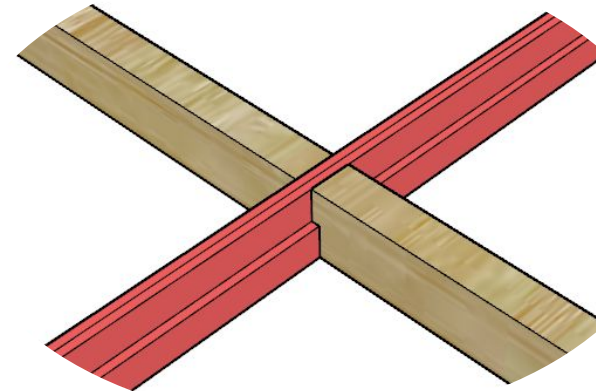
### Main frame section

- The construction of the main frame should align with the North-South orientation.
- This will maximize the solar radiation input on daily basis

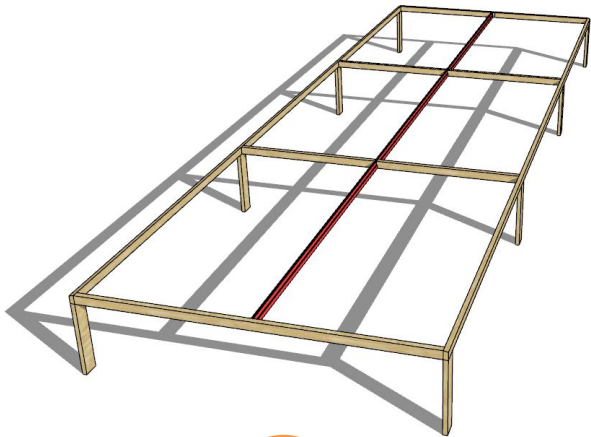


### Middle Frame

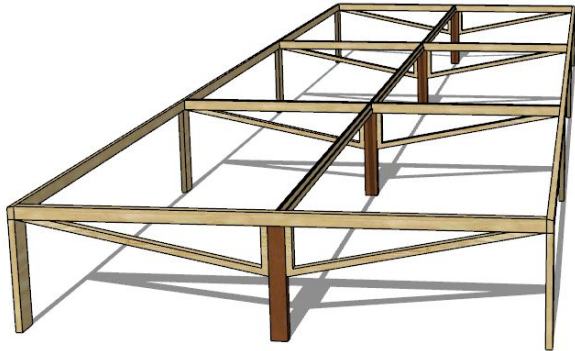
- Made of wood beam for main support
- Modified in the shape of a rail to hold the trays on fixed position



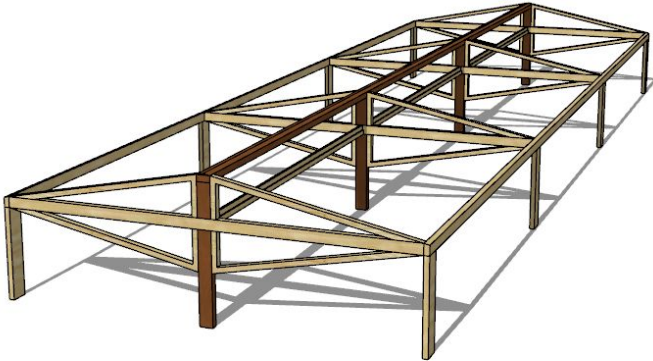
# Step 2: build the main frame using grid wood-joints



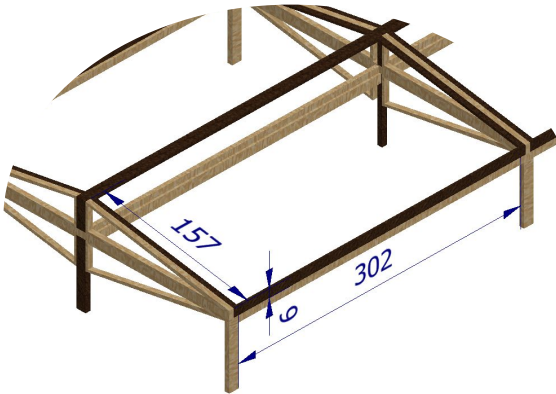
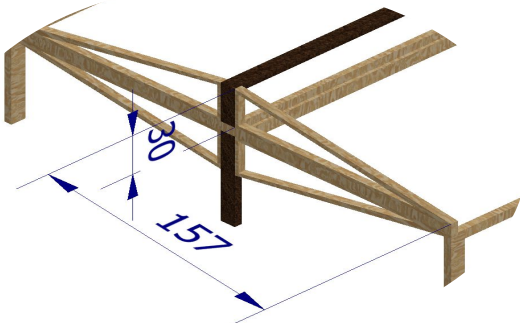
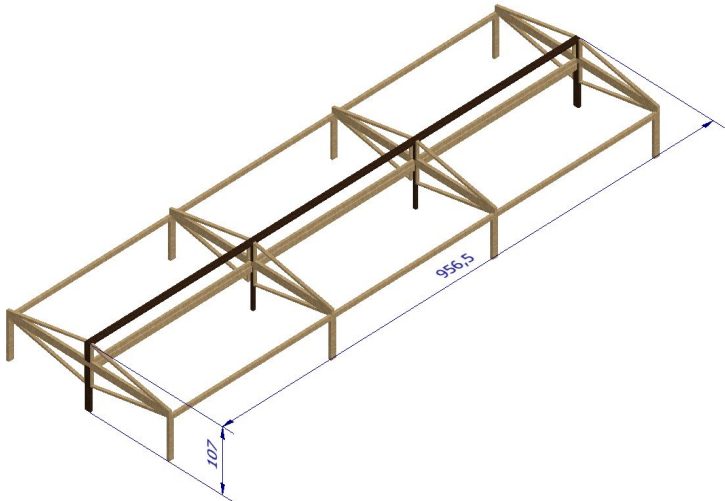
1



2

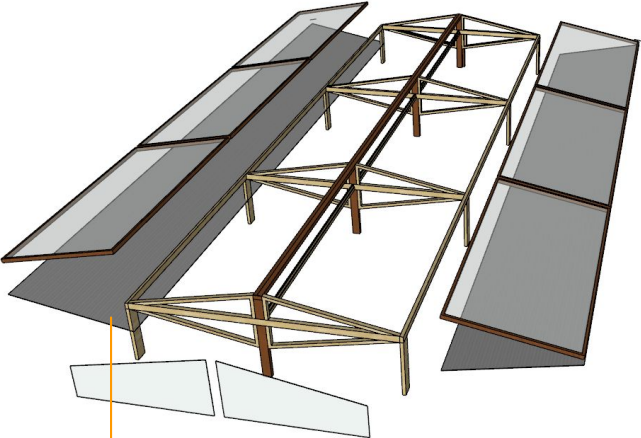


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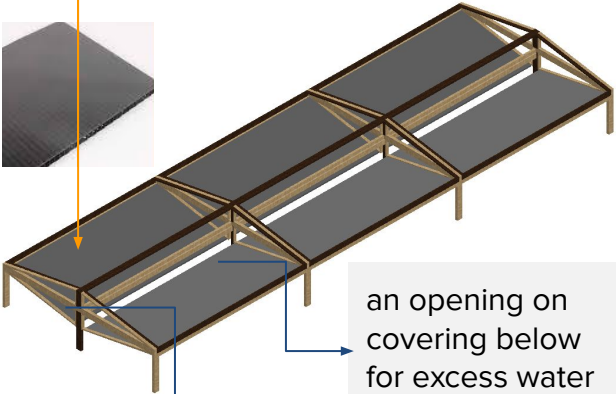




# Step 3: assemble the polycarbonate roof and covers

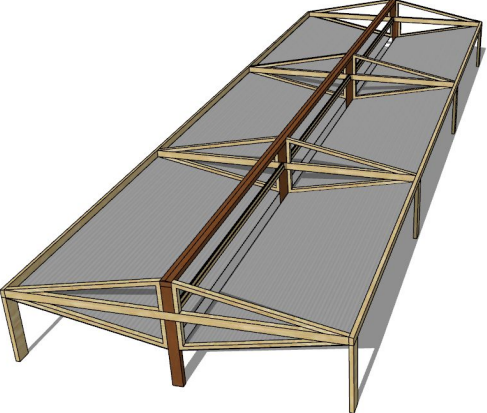


1

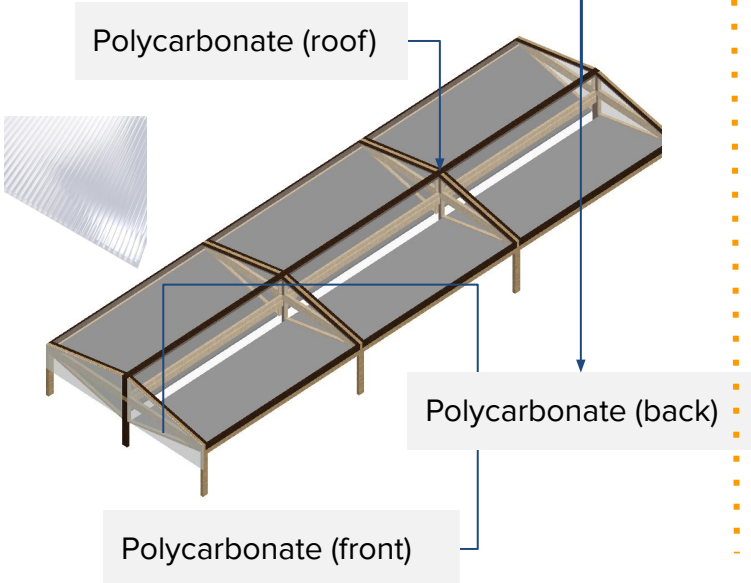


an opening on covering below for excess water and ventilation

Polycarbonate (bottom)



2



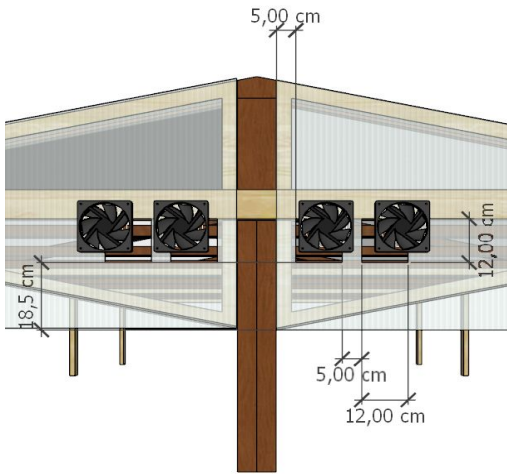
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# Step 3: install fans for the solar collector intake and rear exhaust

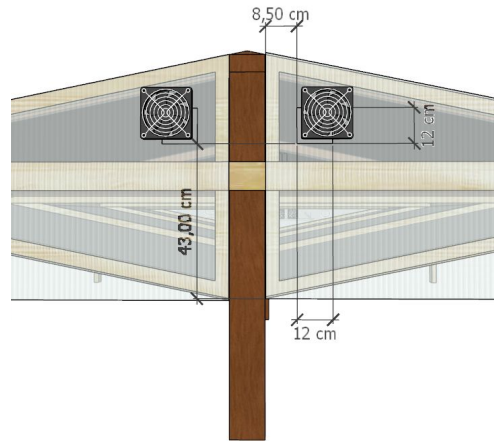


1

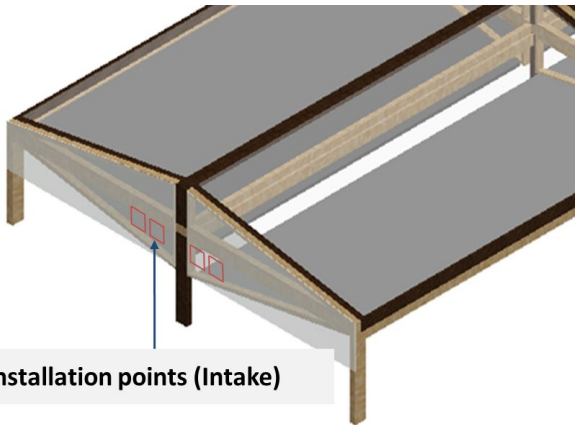
Specifications	Qty	Unit
Voltage	12.13	VDC
Current	0.69	A
Rated power	5	W
Power connection	3	pins
Airflow	31.81	CFM
Fan speed	1200	rpm
Model Type	EC-6025HH12C	
Bearing Type	Hydraulic	
Dimension:		
length	120	mm
width	120	mm
height	25	mm



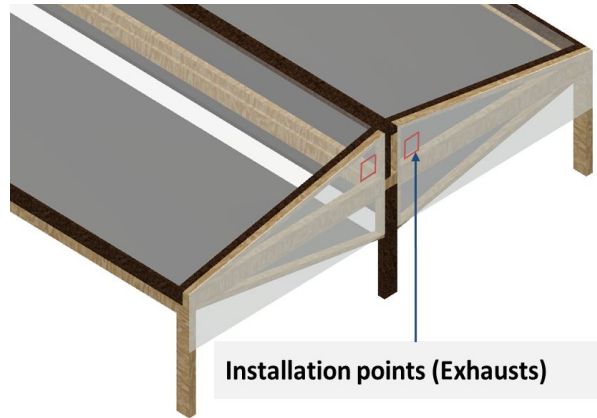
2



3



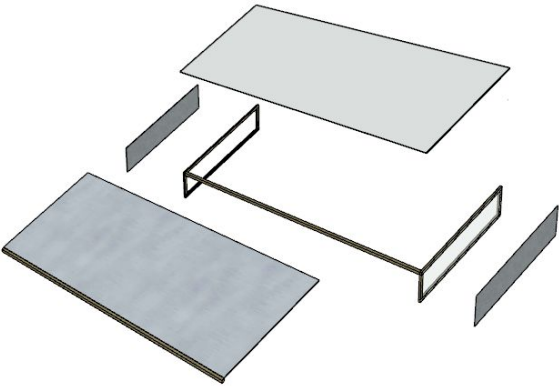
Installation points (Intake)



Installation points (Exhausts)



# Step 4: assemble the solar collector



1

Opening: 5-6 cm

Top: transparent polycarbonate

Bottom: Steel plate

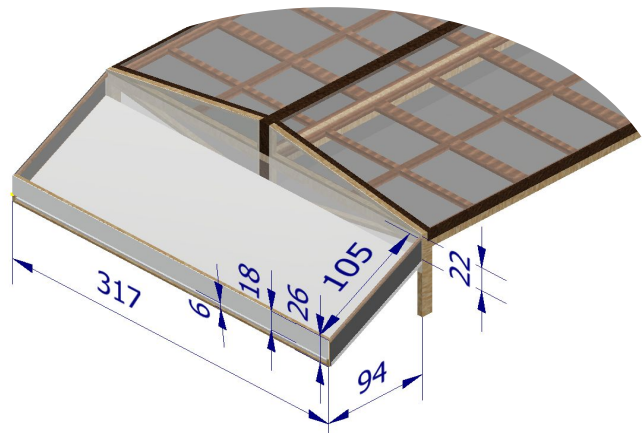
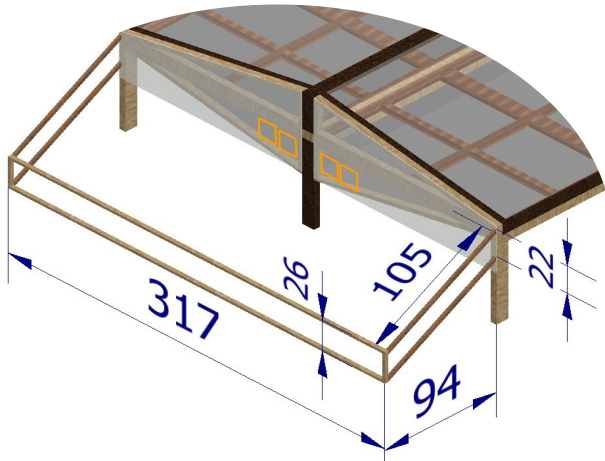
Sides: black polycarbonate



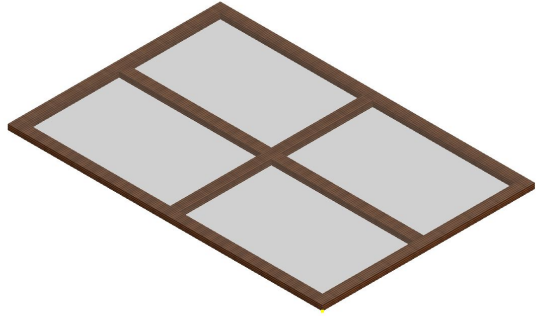
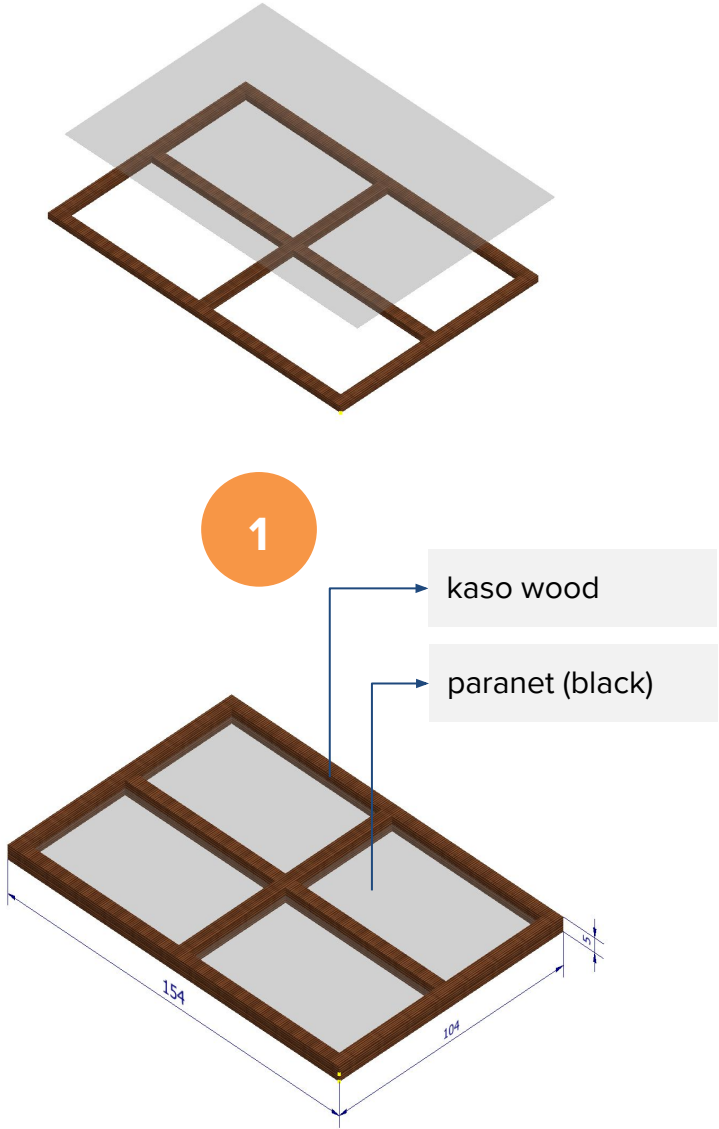
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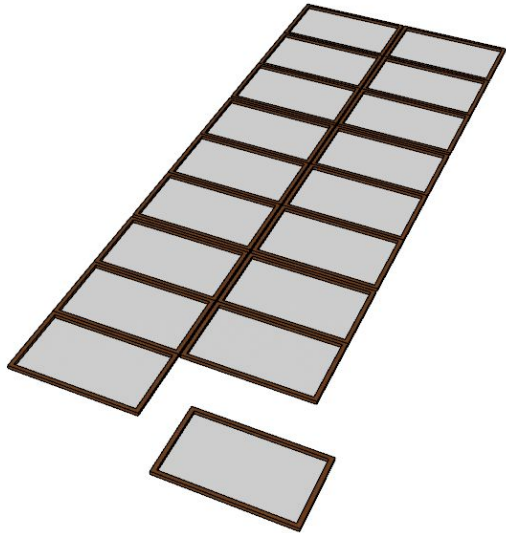
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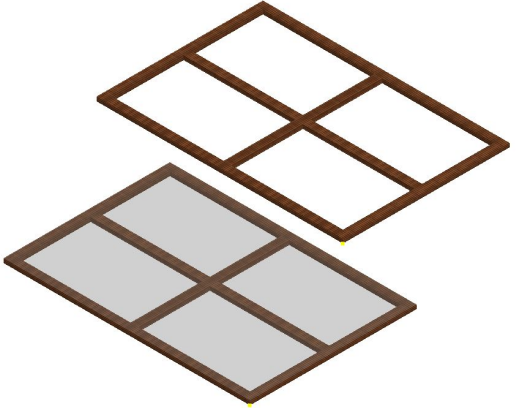
# Step 5: assemble the trays and install them into solar dryer



2



3



**Final Step:** ensure all components fit securely in place

