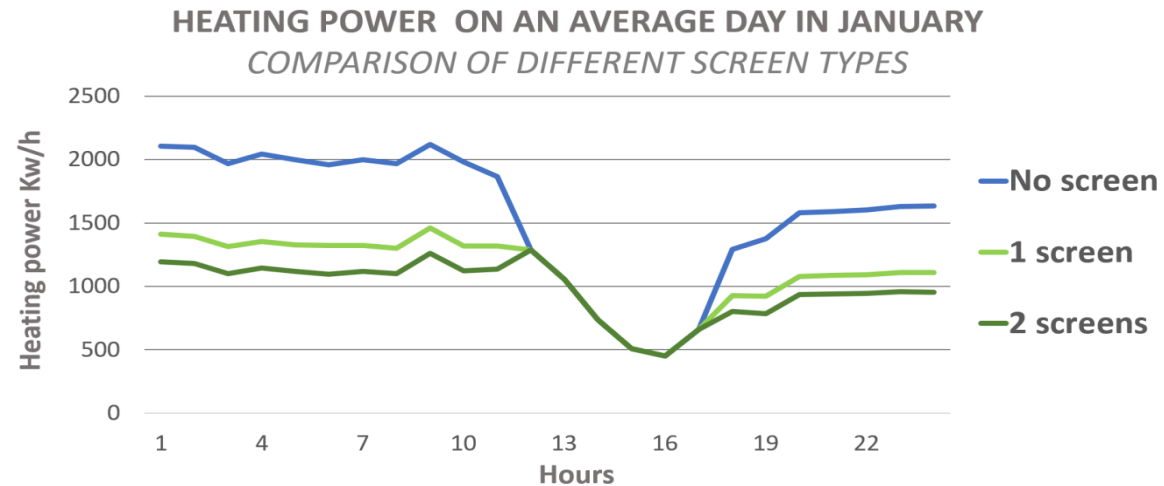




HORTINERGY

ONLINE SOFTWARE TO DESIGN ENERGY EFFICIENT GREENHOUSE



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CEO, Hortinergy

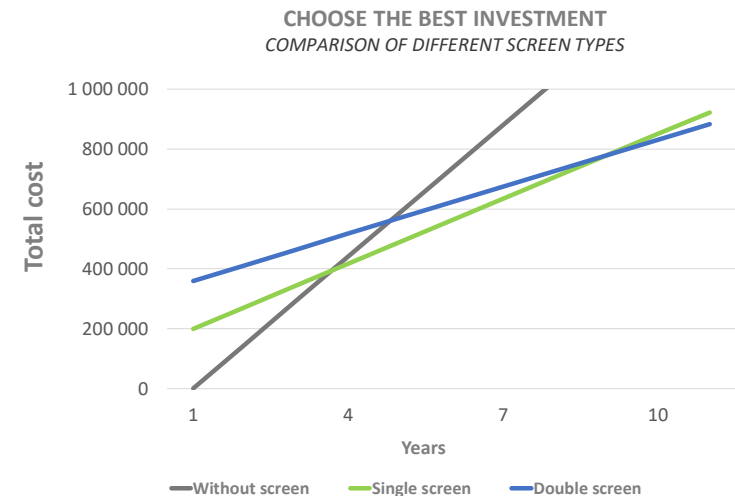
Hortinergy: a friendly online software to design greenhouse

You can simulate all over the world:

- Greenhouse type
 - Glass, plastic
 - Classic, semi closed, closed...
- Equipment (screen, pad & fan)
- Climate setpoints same as a climate computer
- Assimilation light (LED, HPS)...
- For several crop: tomato, cannabis...

Outputs: hourly simulation for a typical year

- Inner climate
 - Energy consumption : heating, cooling, deshu...
 - Scenarios comparison
- > **define the best investment**



Input form

Location of your greenhouse

Latitude * ?

In decimal degrees (4 decimals)

Please enter a value between **-90** and **90**.

Longitude * ?

In decimal degrees (4 decimals) (Becareful: west to the Greenwich Meridian, values are negative - click on the red star for help)

Please enter a value between **-180** and **180**.

CHECK MY COORDINATES

Altitude * ?



m (integer)


Check my coordinates




-> Generate a weather file

Characteristics of your greenhouse

Type of greenhouse shape *  Type of greenhouse shape * 


Venlo 

- Venlo
- Venlo**
- Large span saw tooth
- Flat arch or dome shape
- Gothic

Orientation * 


(integer) Direction in degrees of the "north wall"

Please enter a value between **-180** and **180**.

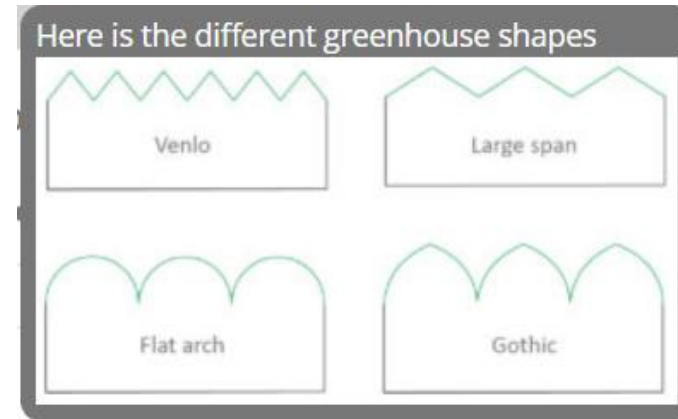
Length * 

In m (2 decimals)

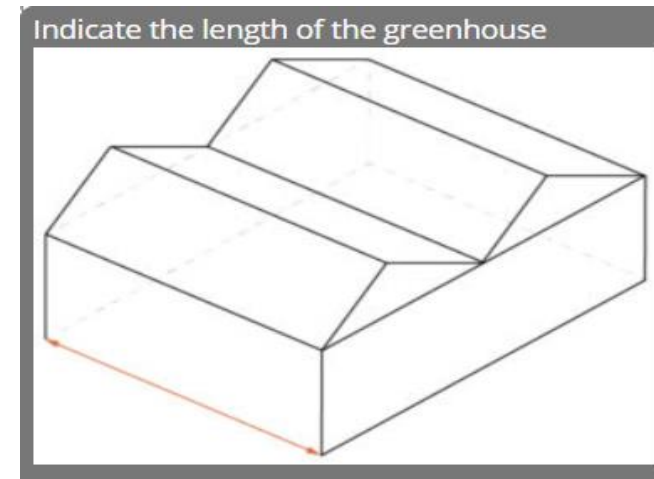
Please enter a value between **0.1** and **1000**.

Span - chapel width * 

In m (2 decimals) (gutter to gutter)



Type



Dimensions

Cover and screen

Cover selection in a library

Roof cover * ?

4mm clear glass

4mm clear glass

4mm clear glass 1AR coating

4mm clear glass 2AR coatings

Double inflated plastic film

4mm diffuse glass

4mm diffuse glass 1AR coating

4mm diffuse glass 2AR coatings

6mm clear glass

Double glazing

Low-E double glazing

ETFE

Double inflated ETFE

Glass and ETFE

Polycarbonate 8mm

Polycarbonate 10mm

Polycarbonate 16mm

Polycarbonate 32mm

Single plastic film

ARK Sprung membrane ®

Opaque

Screen selection and specification

1st climate screen type * ?

Upper screen

Thermal

Thermal and Shade (aluminium)

Thermal and Shade (white strips diffuse)

Shade and Open (aluminium)

Shade and Open (white strips diffuse)

Black out

1st climate screen: Shade percentage *
(integer)

13

Please enter a value between 1 and 100.

1st climate screen: Energy Efficiency *

47

Please enter a value between 0 and 99.

Crop selection

Type of crop * ?

Tomato ▼

Tomato

Cannabis

Cucumber

Cut flower

Strawberry

Lettuce

Pot plant

Seedling

Pepper



-> Crop transpiration calculation

Climate settings

Same settings as a climate computer:

- Temperature set points: heating, cooling
- Humidity: relative humidity or humidity deficit
- Screen regulation
- Assimilation lighting (DLI, PAR..)

Period 1 - T°C Day *

Please enter a value between -30 and 40.

Period 1 - T°C Night *

Please enter a value between -30 and 40.

Other features

- Semi closed greenhouse
- Closed greenhouse
- Pad & fan
- Fog
- Assimilation lighting
- Heating and buffer tank
- Greenhouse gas emission

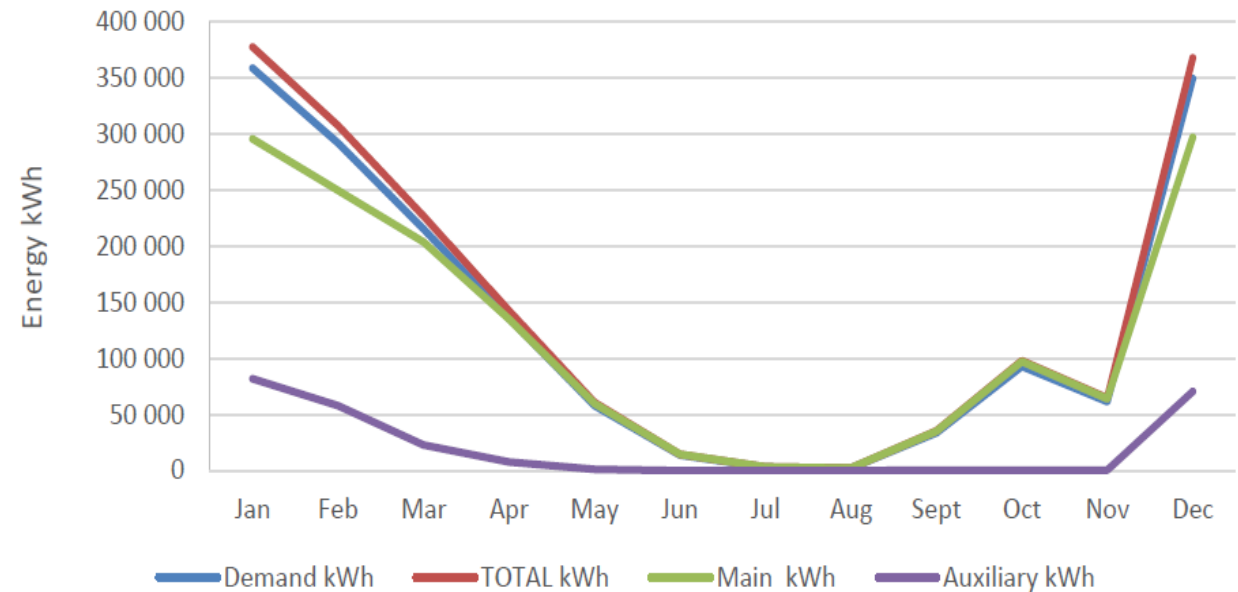
Report

Energy consumption

Annual overview: energy consumption and expenditures

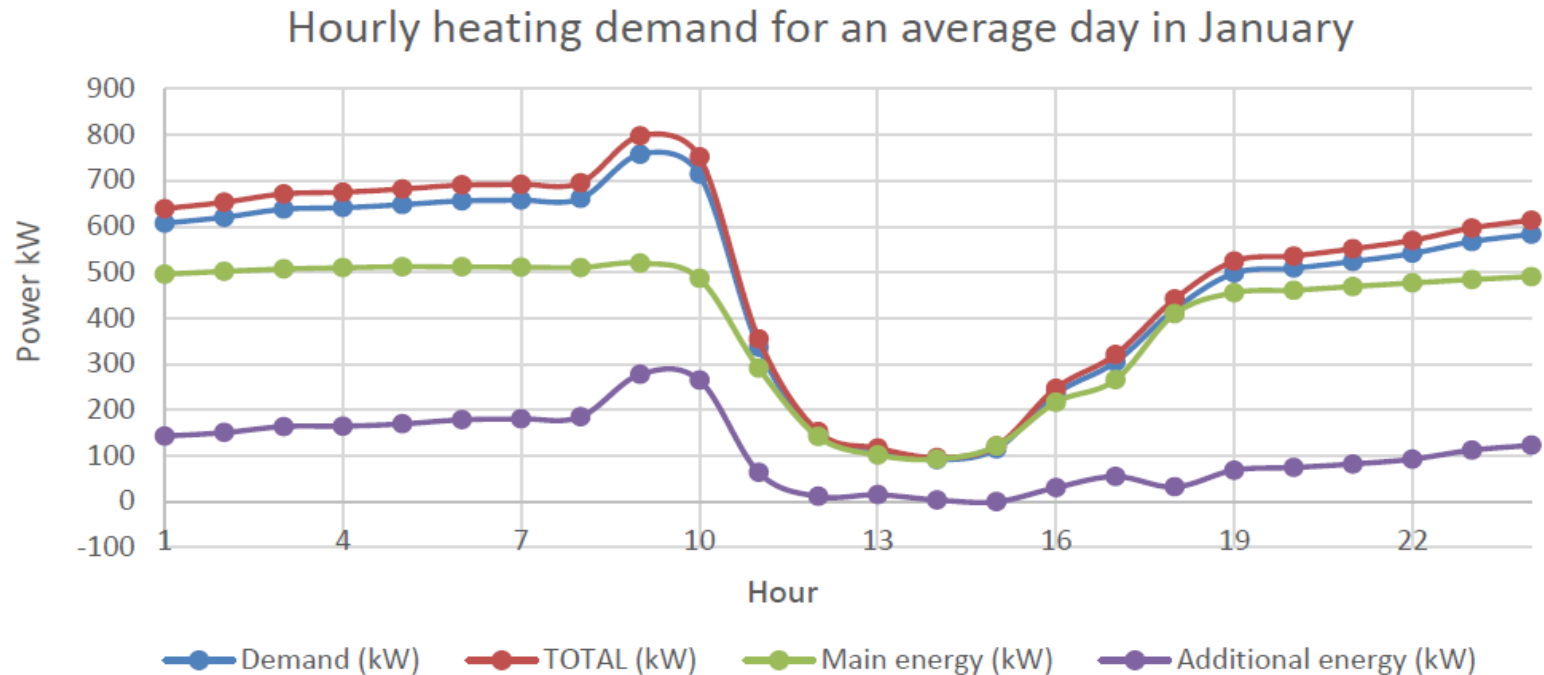
	Total	Main	Auxiliary
Energy source		CHP - recovery heat	Gas
Unit price (€/MWh)		10	40
Expenditure (€)	24 196	14 588	9 607
€/m ²	2.5	1.5	1.0
Main vs Auxiliary (cost %)		60%	40%
Consumption MWh	1 702	1 459	240
Consumpt. / unit (kWh/m ²)	177	152	25
Main vs Auxiliary (energy %)		86%	14%

Monthly detail



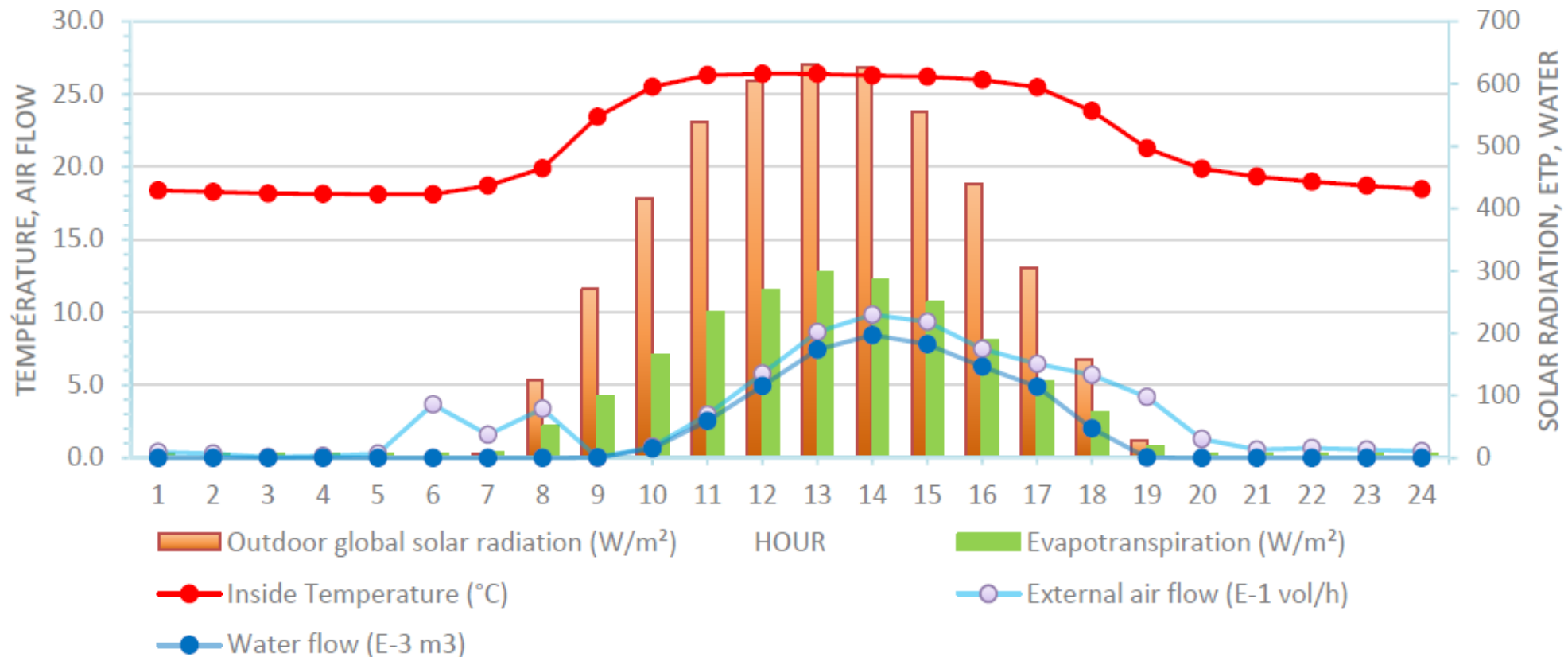
Hourly heating demand

You can see the heating demand of your greenhouse for a typical day each month



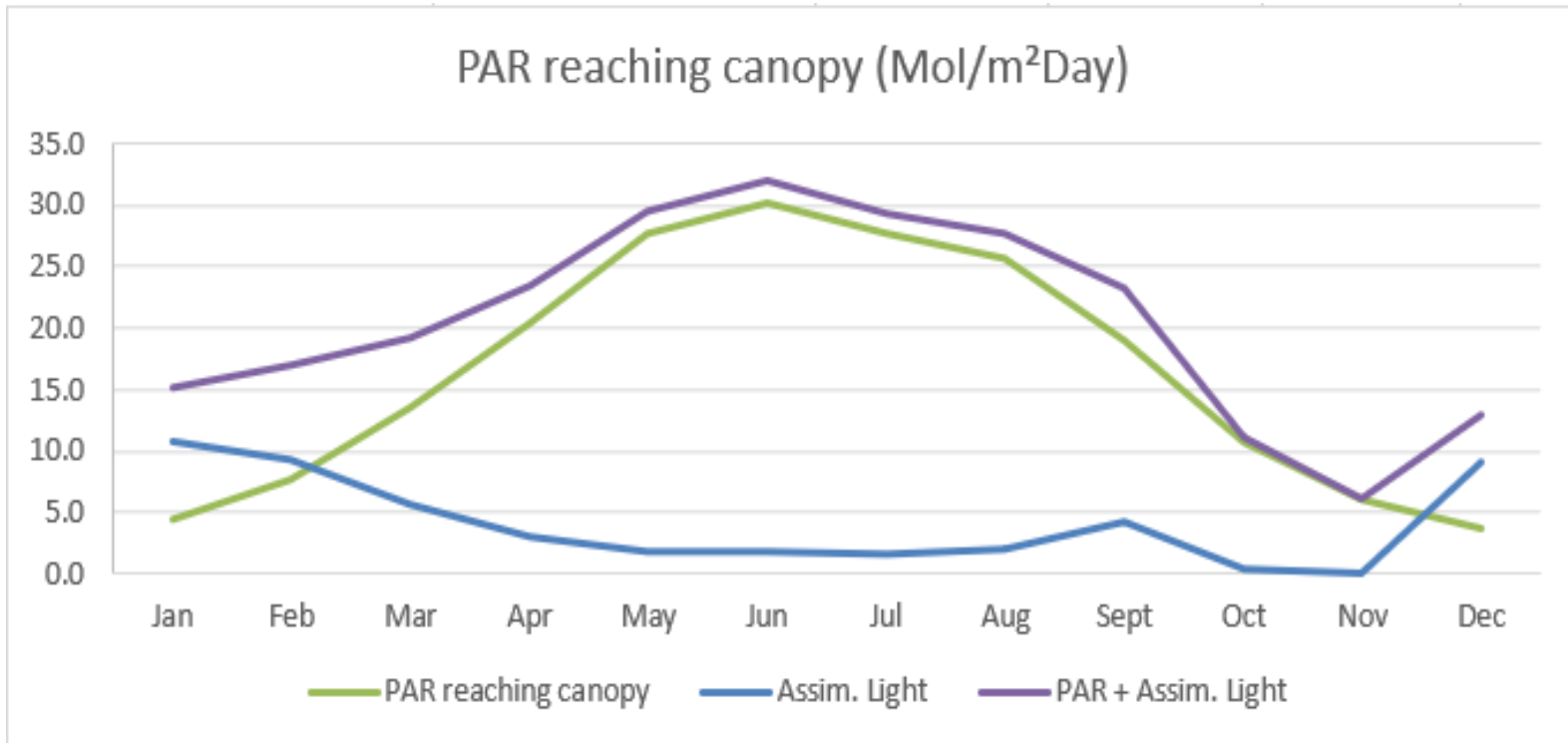
Indoor climate simulation

Indoor climate for typical days for different months



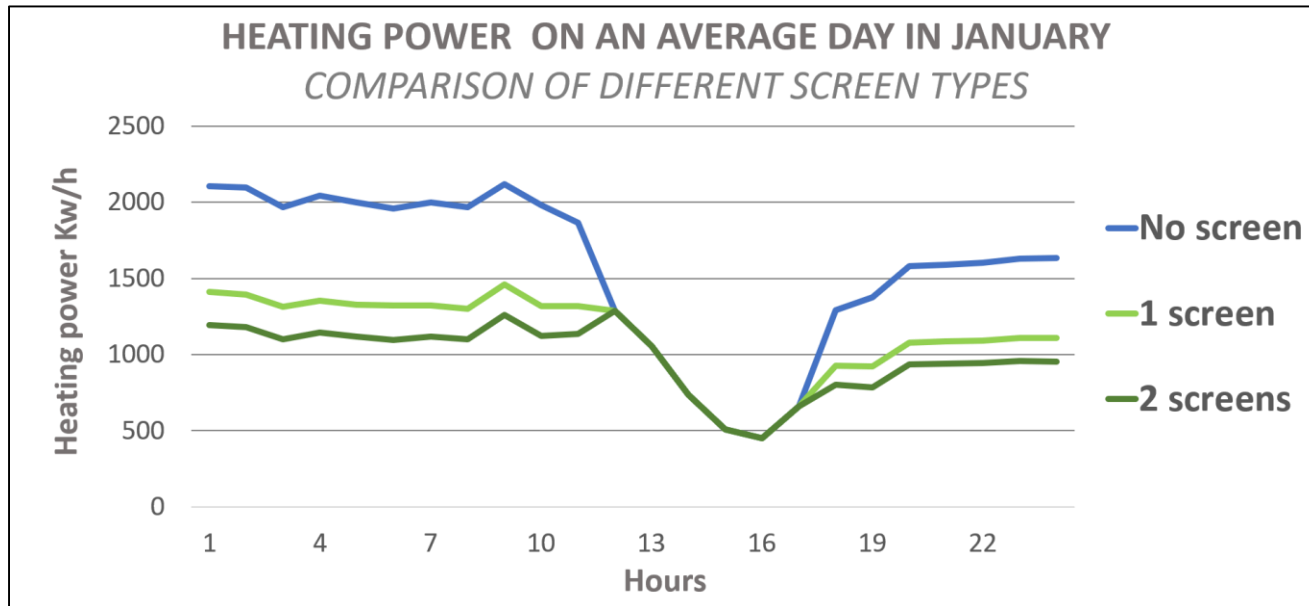
Light

Solar radiation and assimilation light reaching the canopy

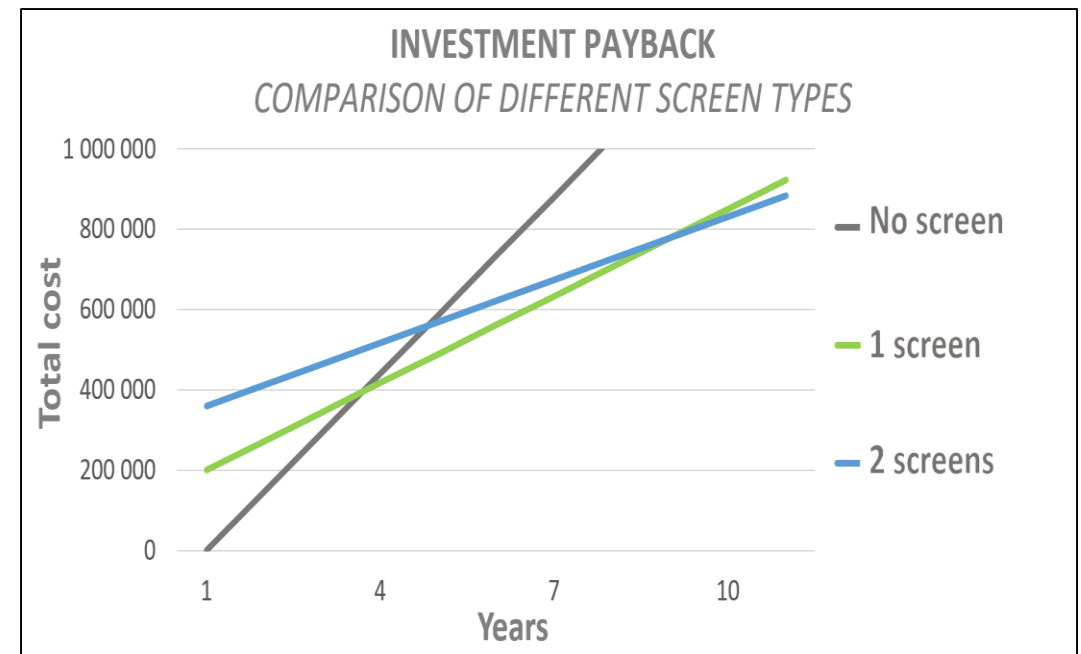


	Electricity consumption		Expenditure	
	MWh	kWh/m ²	€	€/m ²
Jan	208.1	21.7	24 969.6	2.6
Feb	143.3	14.9	17 193.6	1.8
Mar	121.7	12.7	14 601.6	1.5
Apr	77.0	8.0	9 244.8	1.0
May	27.4	2.9	3 283.2	0.3
Jun	41.0	4.3	4 924.8	0.5
Jul	36.7	3.8	4 406.4	0.5
Aug	61.2	6.4	7 344.0	0.8
Sept	77.8	8.1	9 331.2	1.0
Oct	38.2	4.0	4 579.2	0.5
Nov	0.0	0.0	0.0	0.0
Dec	126.7	13.2	15 206.4	1.6
Total	959.0	99.9	115 084.8	12.0

SCENARIOS COMPARISON



-> choose best configuration





Hortinergy

Climate analysis for
greenhouse project

THANK YOU

Check our website **HORTINERGY.COM**

contact@hortinergy.com