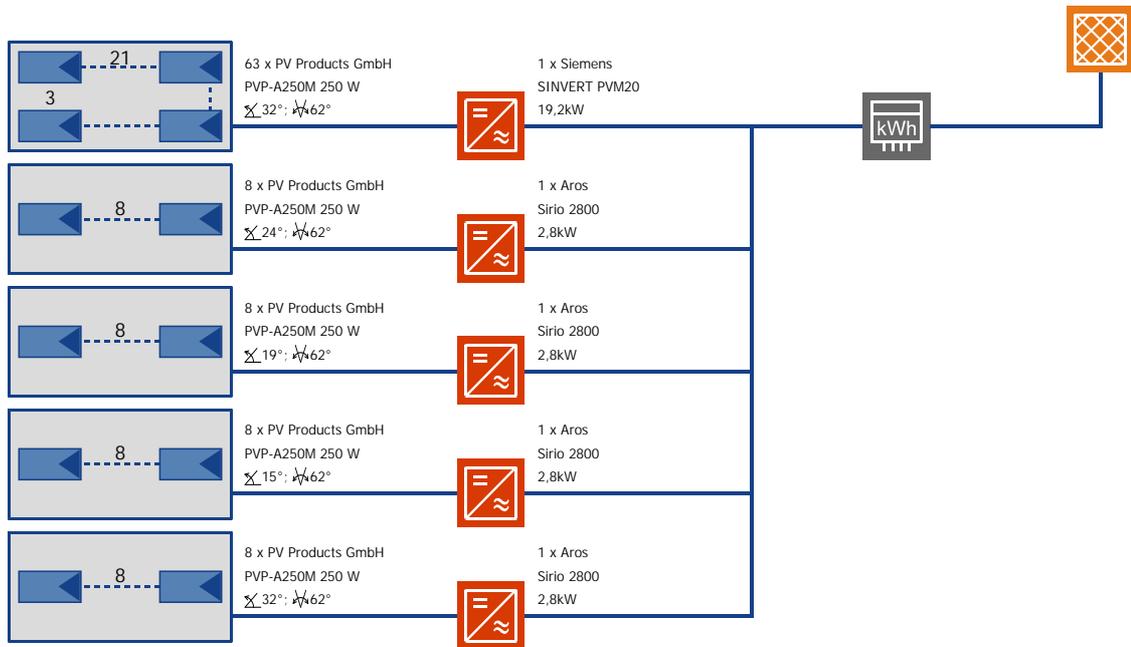




Project Name: Telese Indach  
 Variant Reference: Gebäude A-A1 West  
 Designer: Hannes Pecaver

17.11.2011



Location:	Telese Terme
Climate Data Record:	Telese Terme (1981-2000)
PV Output:	23,75 kWp
Gross/Active PV Surface Area:	153,05 / 153,29 m <sup>2</sup>

PV Array Irradiation:	235.504 kWh
Energy Produced by PV Array (AC):	30.299 kWh
Grid Feed-in:	30.299 kWh
Yield Reduction Due to Shading:	1 %

System Efficiency:	12,9 %
Performance Ratio:	82,9 %
Specific Annual Yield:	1.274 kWh/kWp
CO2 Emissions Avoided:	26.816 kg/a

The results are determined by a mathematical model calculation. The actual yields of the photovoltaic system can deviate from these values due to fluctuations in the weather, the efficiency of modules and inverters, and other factors. The System Diagram above does not represent and cannot replace a full technical drawing of the solar system.



Project Name:	Telese Indach	17.11.2011
Variant Reference:	Gebäude A-A1 West	
Designer:	Hannes Pecaver	

#### System in Grid Connected Operation

Location:	Telese Terme	PV Output:	23,75 kWp
Climate Data Record:	Telese Terme	Gross/Active PV Surface Area:	153,1 m <sup>2</sup> / 153,3 m <sup>2</sup>
Number of Arrays:	5		

#### Array 1: Anlage 1

Output:	15,75 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	101,5 m <sup>2</sup> / 101,7 m <sup>2</sup>	Output Losses due to...:	
PV Module:	63 x	deviation from AM 1.5:	1,0 %
Manufacturer:	PV Products GmbH	deviation from Manufacturer's Specification:	2,0 %
Model:	PVP-A250M	in Diodes:	0,5 %
Nominal Output:	250 W	due to Pollution:	0,0 %
Power Rating Deviation:	0 %	Inverter:	1 x
Efficiency (STC):	15,5 %	Manufacturer:	Siemens
No. of Modules in Series:	21	Model:	SINVERT PVM20
MPP Voltage (STC):	641 V	Output:	19,20 kW
Orientation:	62,0 °	European Efficiency:	97,8 %
Inclination:	31,9 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	480 V To 850 V
Shade:	Yes		

#### Array 2: Anlage 4

Output:	2,00 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	12,9 m <sup>2</sup> / 12,9 m <sup>2</sup>	Output Losses due to...:	
PV Module:	8 x	deviation from AM 1.5:	1,0 %
Manufacturer:	PV Products GmbH	deviation from Manufacturer's Specification:	2,0 %
Model:	PVP-A250M	in Diodes:	0,5 %
Nominal Output:	250 W	due to Pollution:	0,0 %
Power Rating Deviation:	0 %	Inverter:	1 x
Efficiency (STC):	15,5 %	Manufacturer:	Aros
No. of Modules in Series:	8	Model:	Sirio 2800
MPP Voltage (STC):	244 V	Output:	2,80 kW
Orientation:	62,0 °	European Efficiency:	96,0 %
Inclination:	24,1 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	150 V To 450 V
Shade:	Yes		

#### Array 3: Anlage 3

Output:	2,00 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	12,9 m <sup>2</sup> / 12,9 m <sup>2</sup>	Output Losses due to...:	
PV Module:	8 x	deviation from AM 1.5:	1,0 %
Manufacturer:	PV Products GmbH	deviation from Manufacturer's Specification:	2,0 %
Model:	PVP-A250M	in Diodes:	0,5 %
Nominal Output:	250 W	due to Pollution:	0,0 %
Power Rating Deviation:	0 %	Inverter:	1 x
Efficiency (STC):	15,5 %	Manufacturer:	Aros
No. of Modules in Series:	8	Model:	Sirio 2800
MPP Voltage (STC):	244 V	Output:	2,80 kW
Orientation:	62,0 °	European Efficiency:	96,0 %
Inclination:	18,8 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	150 V To 450 V
Shade:	Yes		

#### Array 4: Anlage 2

Output:	2,00 kW	Ground Reflection:	20,0 %
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Project Name:	Telese Indach	17.11.2011
Variant Reference:	Gebäude A-A1 West	
Designer:	Hannes Pecaver	

Gross/Active Solar Surface Area:	12,9 m <sup>2</sup> / 12,9 m <sup>2</sup>	Output Losses due to...	
PV Module	8 x	deviation from AM 1.5:	1,0 %
Manufacturer:	PV Products GmbH	deviation from Manufacturer's Specification:	2,0 %
Model:	PVP-A250M	in Diodes:	0,5 %
Nominal Output:	250 W	due to Pollution:	0,0 %
Power Rating Deviation:	0 %	Inverter	1 x
Efficiency (STC):	15,5 %	Manufacturer:	Aros
No. of Modules in Series:	8	Model:	Sirio 2800
MPP Voltage (STC):	244 V	Output:	2,80 kW
Orientation:	62,0 °	European Efficiency:	96,0 %
Inclination:	14,8 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	150 V To 450 V
Shade:	Yes		

<b>Array 5: Anlage 5</b>			
Output:	2,00 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	12,9 m <sup>2</sup> / 12,9 m <sup>2</sup>	Output Losses due to...	
PV Module	8 x	deviation from AM 1.5:	1,0 %
Manufacturer:	PV Products GmbH	deviation from Manufacturer's Specification:	2,0 %
Model:	PVP-A250M	in Diodes:	0,5 %
Nominal Output:	250 W	due to Pollution:	0,0 %
Power Rating Deviation:	0 %	Inverter	1 x
Efficiency (STC):	15,5 %	Manufacturer:	Aros
No. of Modules in Series:	8	Model:	Sirio 2800
MPP Voltage (STC):	244 V	Output:	2,80 kW
Orientation:	62,0 °	European Efficiency:	96,0 %
Inclination:	31,9 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	150 V To 450 V
Shade:	Yes		

### Simulation Results for Total System

Irradiation onto Horizontal:	236.765 kWh	Energy from Grid:	32 kWh
PV Array Irradiation:	235.504 kWh	Own Use:	32,1 kWh
Irradiation minus Reflection:	228.072 kWh	Energy Produced by PV Array:	31.639 kWh
Irradiation without Shade:	241.087 kWh	System Efficiency:	12,9 %
Energy from Inverter (AC):	30.299 kWh	Performance Ratio:	82,9 %
Consumption Requirement:	0 kWh	Final Yield:	3,5 h/d
Specific Annual Yield:	1.274 kWh/kWp		

### Results for Array 1: Anlage 1

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	20.974 kWh
Array Irradiation:	155.589 kWh	System Efficiency:	13,1 %
Irradiation without Shade:	159.342 kWh	Performance Ratio:	84,5 %
Energy Produced (AC):	20.375 kWh	Specific Annual Yield:	1.294 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,5 %
Inverter Efficiency:	97,1 %		

### Results for Array 2: Anlage 4

Irradiation onto Horizontal:	19.941 kWh	Energy Produced (DC):	2.673 kWh
Array Irradiation:	20.020 kWh	System Efficiency:	12,4 %
Irradiation without Shade:	20.476 kWh	Performance Ratio:	79,9 %
Energy Produced (AC):	2.487 kWh	Specific Annual Yield:	1.240 kWh/kWp
Own Use:	7 kWh	Array Efficiency:	13,5 %
Inverter Efficiency:	92,8 %		

### Results for Array 3: Anlage 3

Irradiation onto Horizontal:	19.941 kWh	Energy Produced (DC):	2.677 kWh
Array Irradiation:	20.067 kWh	System Efficiency:	12,4 %
Irradiation without Shade:	20.526 kWh	Performance Ratio:	79,9 %
Energy Produced (AC):	2.491 kWh	Specific Annual Yield:	1.242 kWh/kWp



Project Name:	Telese Indach	17.11.2011
Variant Reference:	Gebäude A-A1 West	
Designer:	Hannes Pecaver	

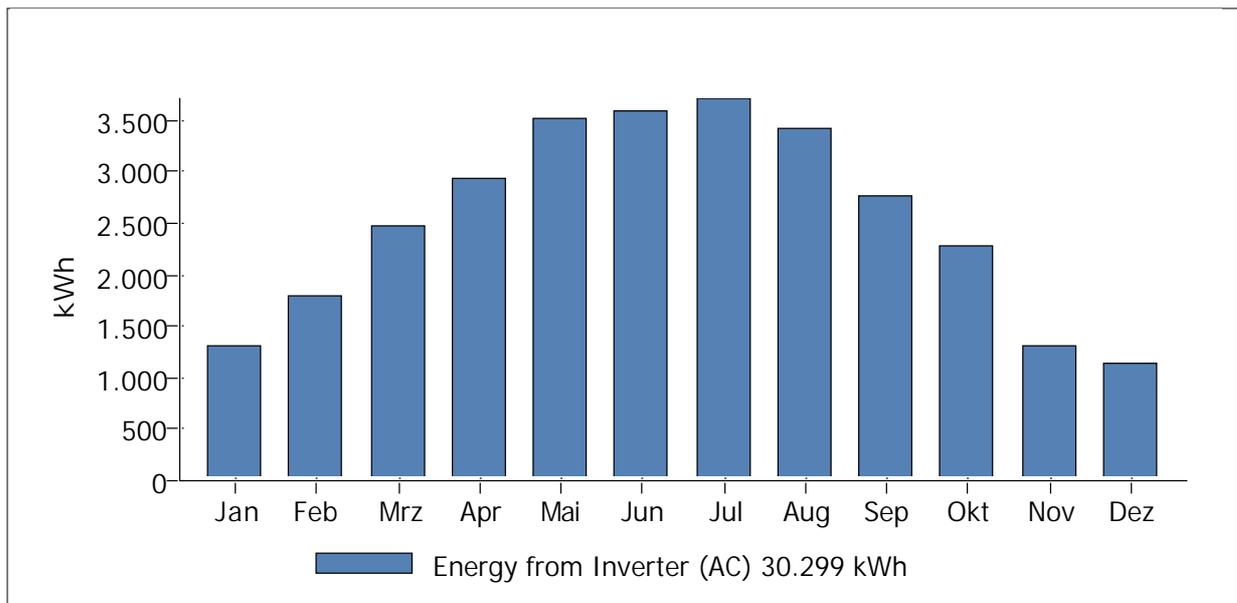
Own Use:	7 kWh	Array Efficiency:	13,5 %
Inverter Efficiency:	92,8 %		

Results for Array 4: Anlage 2

Irradiation onto Horizontal:	19.941 kWh	Energy Produced (DC):	2.670 kWh
Array Irradiation:	20.049 kWh	System Efficiency:	12,4 %
Irradiation without Shade:	20.510 kWh	Performance Ratio:	79,8 %
Energy Produced (AC):	2.485 kWh	Specific Annual Yield:	1.239 kWh/kWp
Own Use:	7 kWh	Array Efficiency:	13,5 %
Inverter Efficiency:	92,8 %		

Results for Array 5: Anlage 5

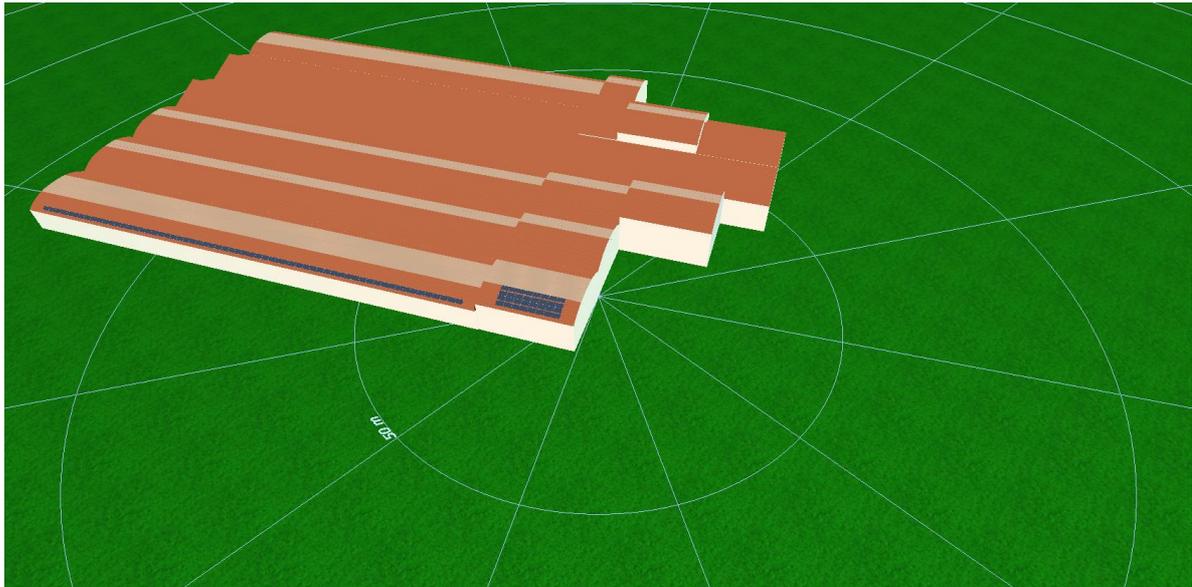
Irradiation onto Horizontal:	19.941 kWh	Energy Produced (DC):	2.646 kWh
Array Irradiation:	19.779 kWh	System Efficiency:	12,4 %
Irradiation without Shade:	20.234 kWh	Performance Ratio:	80,0 %
Energy Produced (AC):	2.460 kWh	Specific Annual Yield:	1.226 kWh/kWp
Own Use:	7 kWh	Array Efficiency:	13,6 %
Inverter Efficiency:	92,7 %		





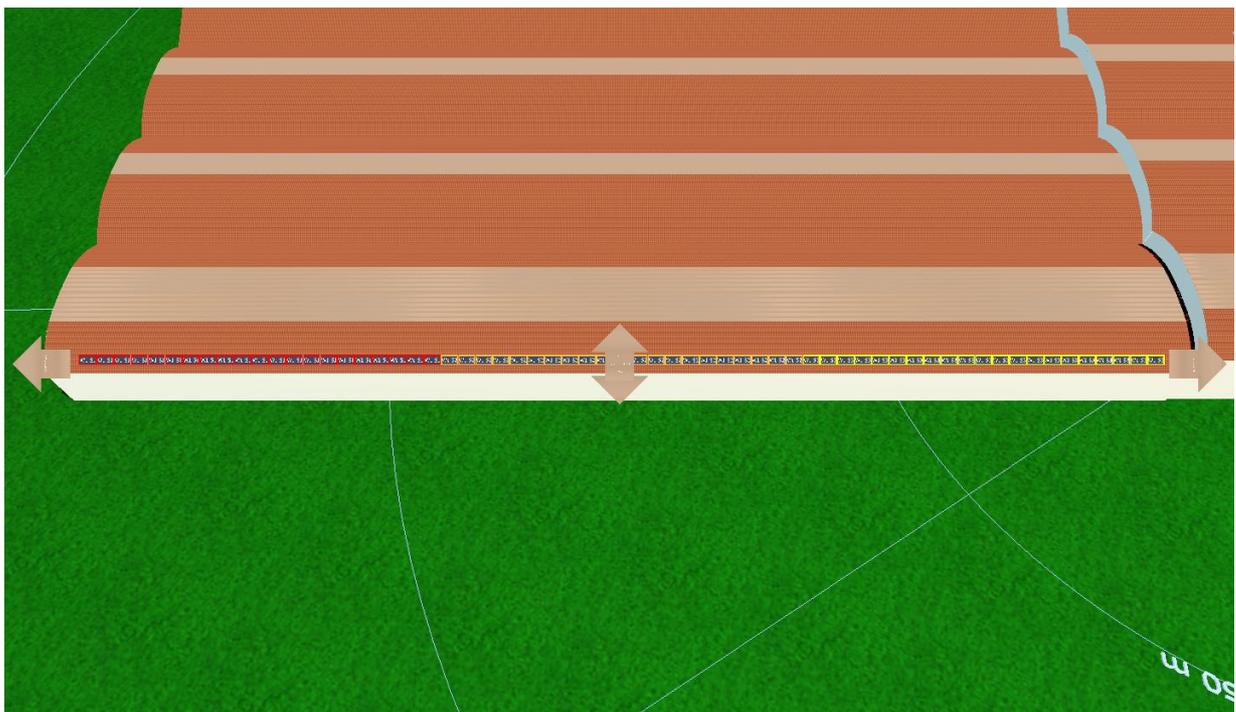
## System Visualisation Screenshots

### Environment

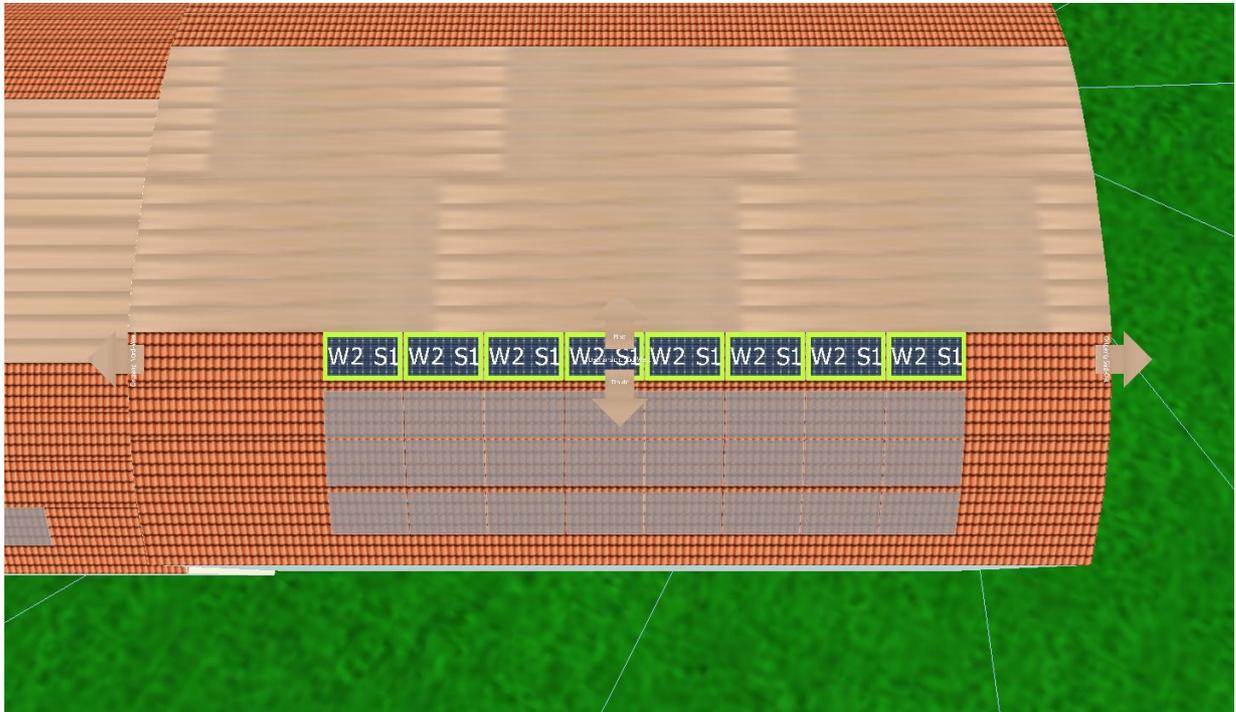


Screenshot4

### Module Configuration

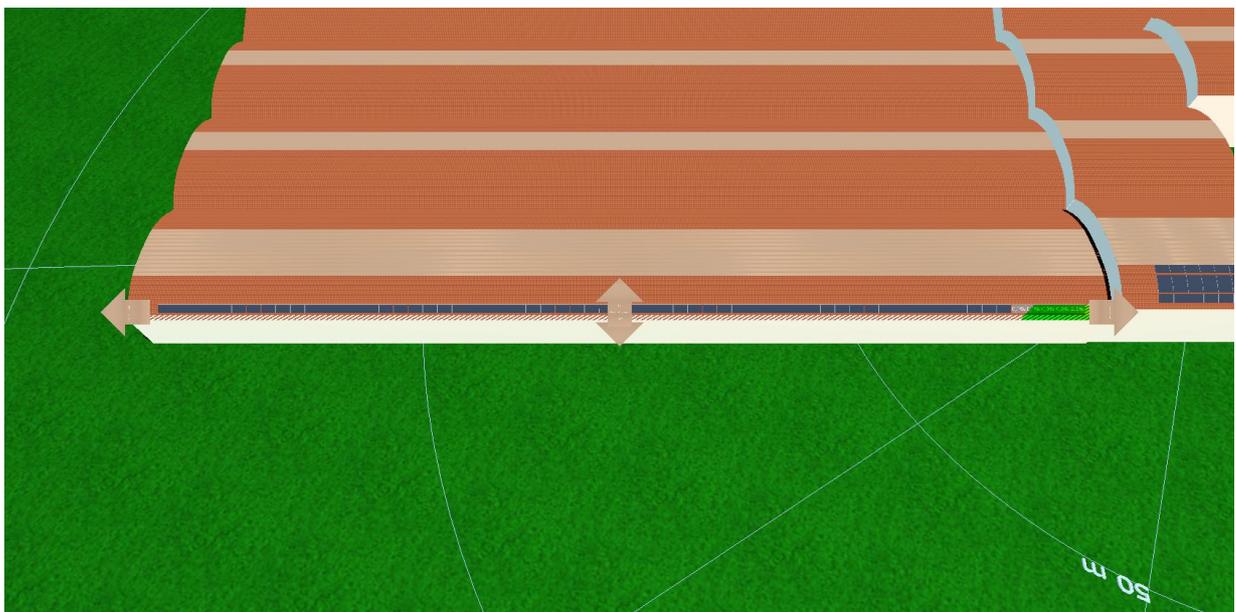


Screenshot2



Screenshot3

### Frequency Distribution



Screenshot1