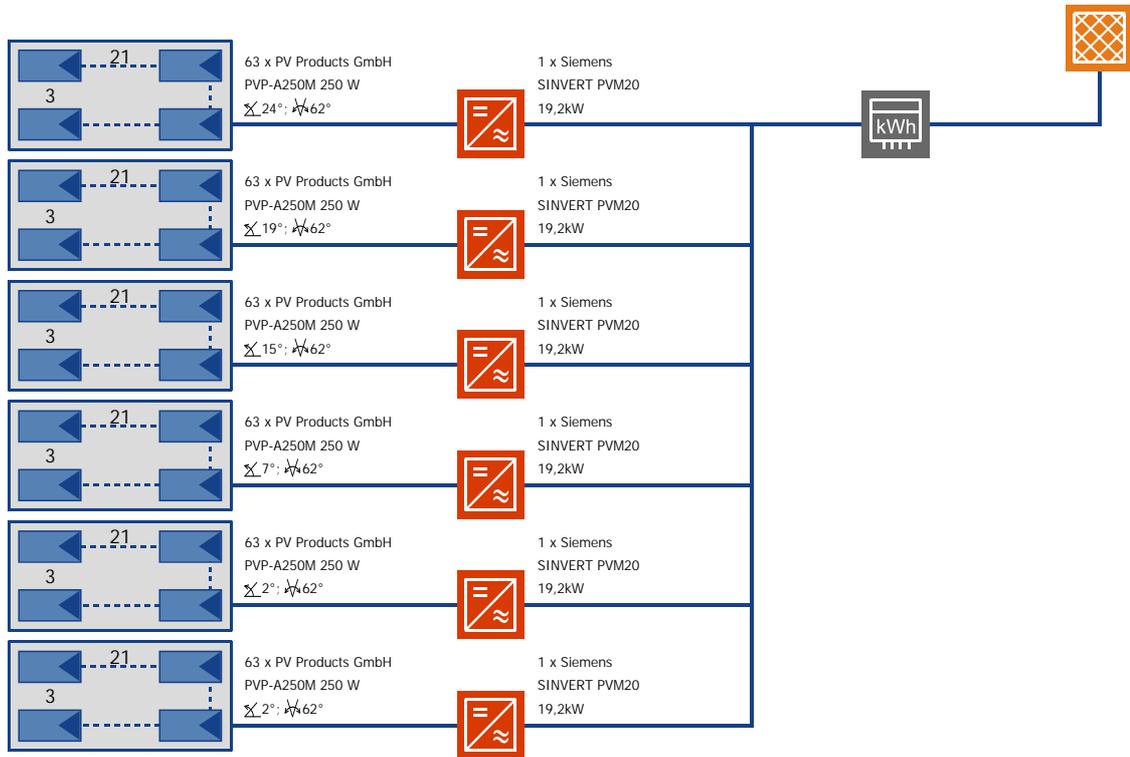




Project Name: Telese Indach
 Variant Reference: Gebäude C West
 Designer: Hannes Pecaver

18.11.2011



Location:	Telese Terme
Climate Data Record:	Telese Terme (1981-2000)
PV Output:	94,50 kWp
Gross/Active PV Surface Area:	608,99 / 609,92 m ²

PV Array Irradiation:	936.035 kWh
Energy Produced by PV Array (AC):	121.396 kWh
Grid Feed-in:	121.396 kWh
Yield Reduction Due to Shading:	2 %

System Efficiency:	13,0 %
Performance Ratio:	83,7 %
Specific Annual Yield:	1.284 kWh/kWp
CO2 Emissions Avoided:	107.545 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.

waterproof roof
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Project Name: Telese Indach
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Variant Reference:	Gebäude C West	
Designer:	Hannes Pecaver	

System in Grid Connected Operation

Location:	Telese Terme	PV Output:	94,50 kWp
Climate Data Record:	Telese Terme	Gross/Active PV Surface Area:	609,0 m ² / 609,9 m ²
Number of Arrays:	6		

Array 1: System 6

Output:	15,75 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	101,5 m ² / 101,7 m ²	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:	24,1 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	480 V To 850 V
Shade:	Yes		

Array 2: System 5

Output:	15,75 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	101,5 m ² / 101,7 m ²	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:	18,8 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	480 V To 850 V
Shade:	Yes		

Array 3: System 4

Output:	15,75 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	101,5 m ² / 101,7 m ²	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:	14,8 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	480 V To 850 V
Shade:	Yes		

Array 4: System 3

Output:	15,75 kW	Ground Reflection:	20,0 %
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Project Name:	Telese Indach	18.11.2011
Variant Reference:	Gebäude C West	
Designer:	Hannes Pecaver	

Gross/Active Solar Surface Area:	101,5 m ² / 101,7 m ²	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:	6,8 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	480 V To 850 V
Shade:	Yes		

Array 5: System 2			
Output:	15,75 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	101,5 m ² / 101,7 m ²	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:	2,5 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	480 V To 850 V
Shade:	Yes		

Array 6: System 1			
Output:	15,75 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	101,5 m ² / 101,7 m ²	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:	2,4 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	480 V To 850 V
Shade:	Yes		

Simulation Results for Total System

Irradiation onto Horizontal:	942.076 kWh	Energy from Grid:	14 kWh
PV Array Irradiation:	936.035 kWh	Own Use:	14,1 kWh
Irradiation minus Reflection:	899.121 kWh	Energy Produced by PV Array:	124.844 kWh
Irradiation without Shade:	960.759 kWh	System Efficiency:	13,0 %
Energy from Inverter (AC):	121.396 kWh	Performance Ratio:	83,7 %
Consumption Requirement:	0 kWh	Final Yield:	3,5 h/d
Specific Annual Yield:	1.284 kWh/kWp		

Results for Array 1: System 6

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	20.864 kWh
Array Irradiation:	156.834 kWh	System Efficiency:	12,9 %



Project Name:	Telese Indach	18.11.2011
Variant Reference:	Gebäude C West	
Designer:	Hannes Pecaver	

Irradiation without Shade:	161.251 kWh	Performance Ratio:	83,4 %
Energy Produced (AC):	20.271 kWh	Specific Annual Yield:	1.287 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,3 %
Inverter Efficiency:	97,1 %		

Results for Array 2: System 5

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	21.083 kWh
Array Irradiation:	157.633 kWh	System Efficiency:	13,0 %
Irradiation without Shade:	161.639 kWh	Performance Ratio:	83,9 %
Energy Produced (AC):	20.498 kWh	Specific Annual Yield:	1.301 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,4 %
Inverter Efficiency:	97,2 %		

Results for Array 3: System 4

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	21.074 kWh
Array Irradiation:	157.589 kWh	System Efficiency:	13,0 %
Irradiation without Shade:	161.515 kWh	Performance Ratio:	83,9 %
Energy Produced (AC):	20.494 kWh	Specific Annual Yield:	1.301 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,4 %
Inverter Efficiency:	97,2 %		

Results for Array 4: System 3

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	20.802 kWh
Array Irradiation:	155.884 kWh	System Efficiency:	13,0 %
Irradiation without Shade:	159.903 kWh	Performance Ratio:	83,8 %
Energy Produced (AC):	20.236 kWh	Specific Annual Yield:	1.285 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,4 %
Inverter Efficiency:	97,3 %		

Results for Array 5: System 2

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	20.512 kWh
Array Irradiation:	154.071 kWh	System Efficiency:	12,9 %
Irradiation without Shade:	158.252 kWh	Performance Ratio:	83,6 %
Energy Produced (AC):	19.950 kWh	Specific Annual Yield:	1.266 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,3 %
Inverter Efficiency:	97,2 %		

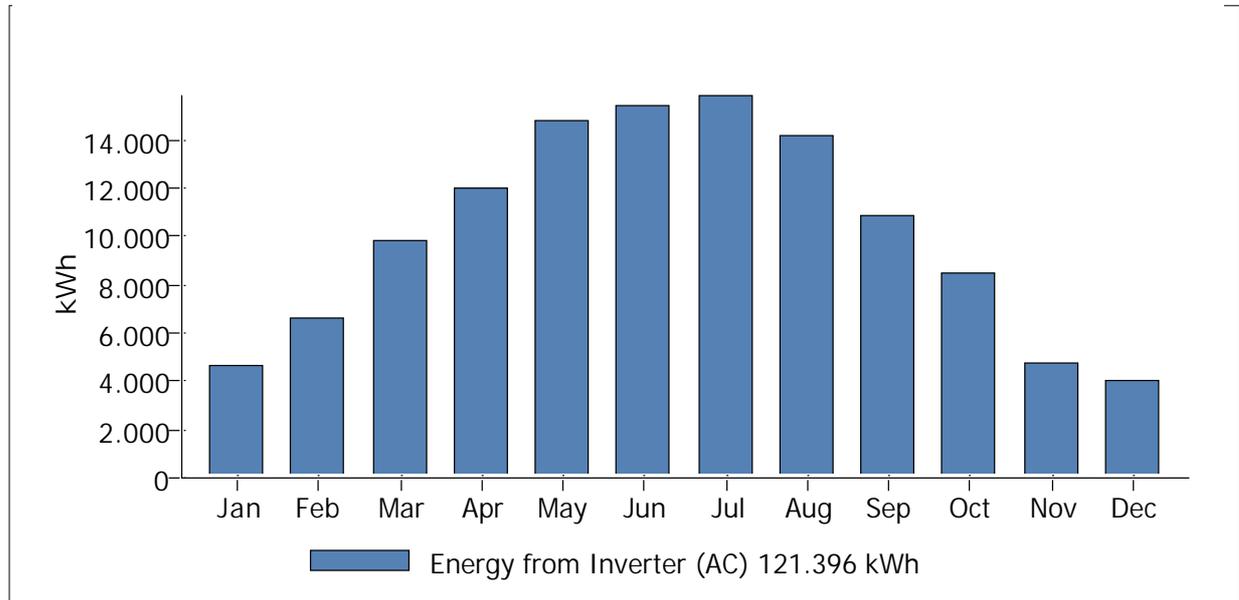
Results for Array 6: System 1

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	20.509 kWh
Array Irradiation:	154.025 kWh	System Efficiency:	12,9 %
Irradiation without Shade:	158.200 kWh	Performance Ratio:	83,6 %
Energy Produced (AC):	19.947 kWh	Specific Annual Yield:	1.266 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,3 %
Inverter Efficiency:	97,2 %		



Project Name: Telese Indach
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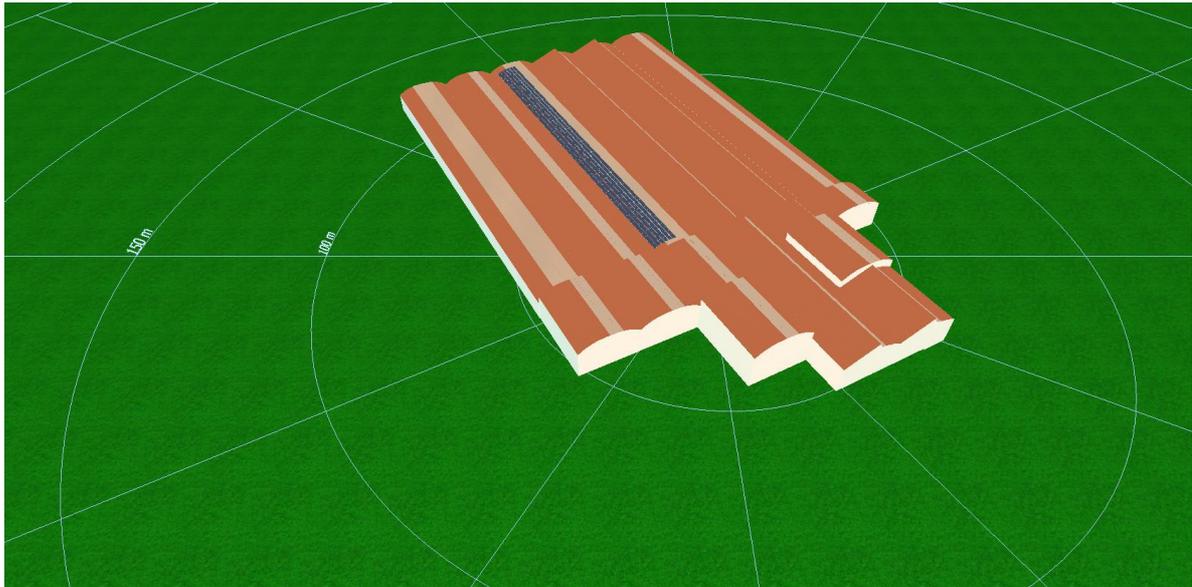
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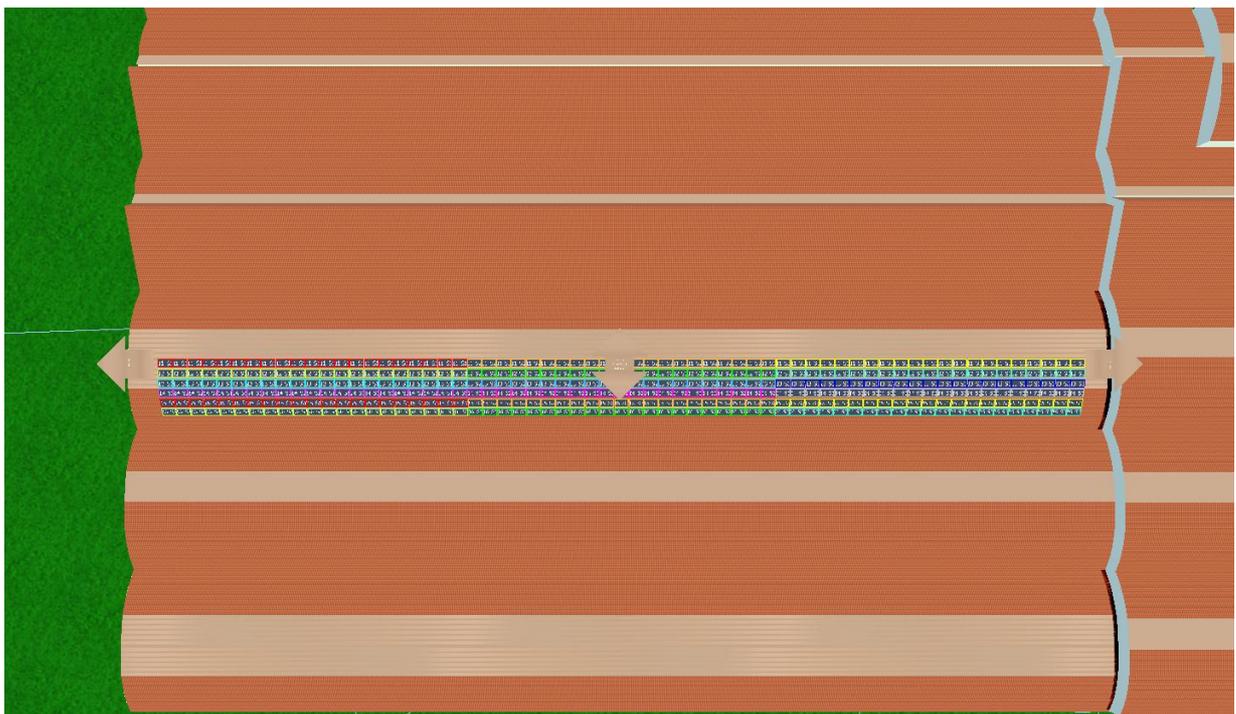
System Visualisation Screenshots

Environment



Screenshot3

Module Configuration



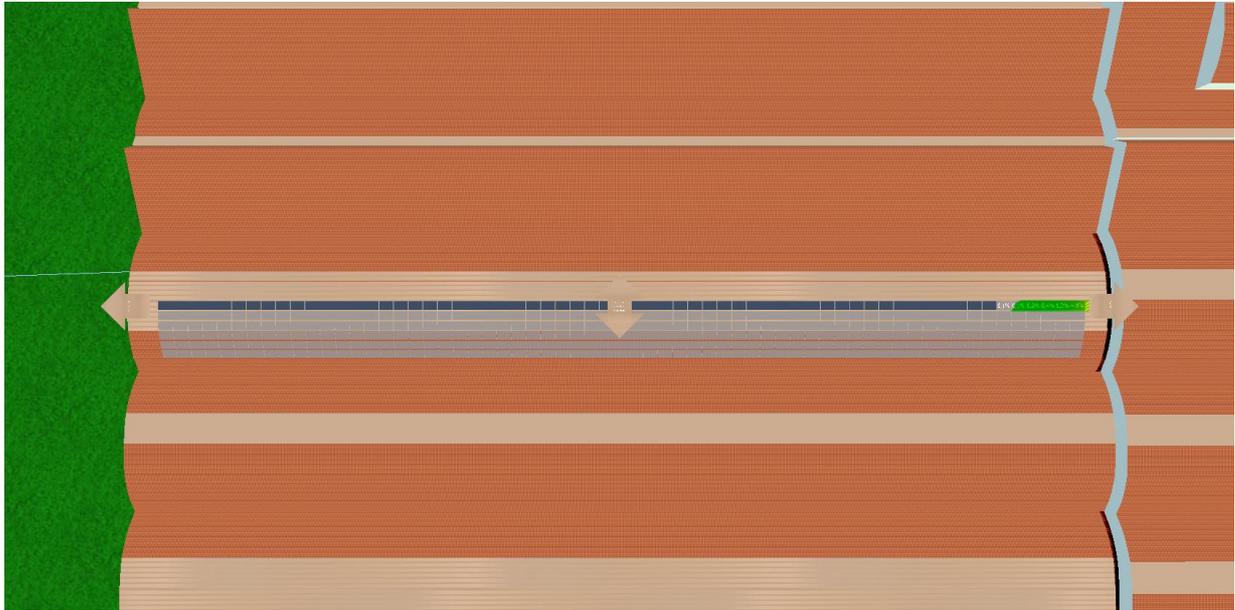
Screenshot2



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Frequency Distribution



Screenshot1