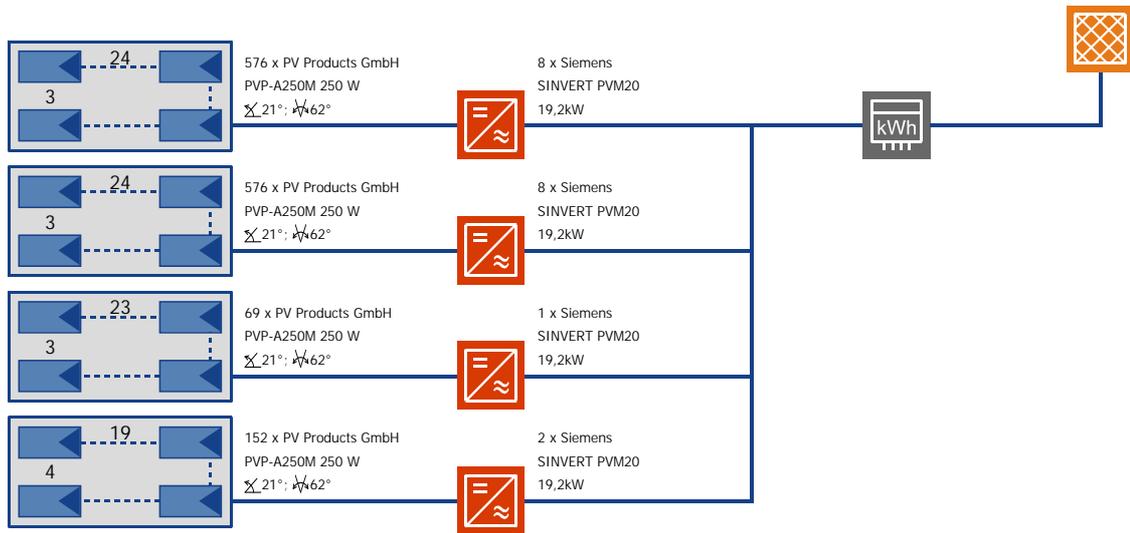




Project Name: Telese Indach  
 Variant Reference: Gebäude D West  
 Designer: Hannes Pecaver

17.11.2011



Location:	Telese Terme
Climate Data Record:	Telese Terme (1981-2000)
PV Output:	343,25 kWp
Gross/Active PV Surface Area:	2.212,01 / 2.215,40 m <sup>2</sup>

PV Array Irradiation:	3.409.878 kWh
Energy Produced by PV Array (AC):	437.723 kWh
Grid Feed-in:	437.723 kWh
Yield Reduction Due to Shading:	3 %

System Efficiency:	12,8 %
Performance Ratio:	82,8 %
Specific Annual Yield:	1.275 kWh/kWp
CO2 Emissions Avoided:	387.783 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 D West	
Designer:	Hannes Pecaver	

#### System in Grid Connected Operation

Location:	Telese Terme	PV Output:	343,25 kWp
Climate Data Record:	Telese Terme	Gross/Active PV Surface Area:	2.212,0 m <sup>2</sup> / 2.215,4 m <sup>2</sup>
Number of Arrays:	4		

#### Array 1: Anlage 1

Output:	144,00 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	928,0 m <sup>2</sup> / 929,4 m <sup>2</sup>	Output Losses due to...	
PV Module	576 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	8 x
Efficiency (STC):	15,5 %	Manufacturer:	Siemens
No. of Modules in Series:	24	Model:	SINVERT PVM20
MPP Voltage (STC):	732 V	Output:	19,20 kW
Orientation:	62,0 °	European Efficiency:	97,8 %
Inclination:	21,0 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	480 V To 850 V
Shade:	Yes		

#### Array 2: System 1

Output:	144,00 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	928,0 m <sup>2</sup> / 929,4 m <sup>2</sup>	Output Losses due to...	
PV Module	576 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	8 x
Efficiency (STC):	15,5 %	Manufacturer:	Siemens
No. of Modules in Series:	24	Model:	SINVERT PVM20
MPP Voltage (STC):	732 V	Output:	19,20 kW
Orientation:	62,0 °	European Efficiency:	97,8 %
Inclination:	21,0 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	480 V To 850 V
Shade:	Yes		

#### Array 3: System 2

Output:	17,25 kW	Ground Reflection:	20,0 %
Gross/Active Solar Surface Area:	111,2 m <sup>2</sup> / 111,3 m <sup>2</sup>	Output Losses due to...	
PV Module	69 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:	23	Model:	SINVERT PVM20
MPP Voltage (STC):	702 V	Output:	19,20 kW
Orientation:	62,0 °	European Efficiency:	97,8 %
Inclination:	21,0 °	No. of MPP Trackers:	1
Mount:	with Ventilation	MPP Tracking:	480 V To 850 V
Shade:	Yes		

#### Array 4: System 2

Output:	38,00 kW	Ground Reflection:	20,0 %
---------	----------	--------------------	--------



Project Name:	Telese Indach	17.11.2011
Variant Reference:	Gebäude D West	
Designer:	Hannes Pecaver	

Gross/Active Solar Surface Area:	244,9 m <sup>2</sup> / 245,3 m <sup>2</sup>	Output Losses due to...	
PV Module	152 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	2 x
Efficiency (STC):	15,5 %	Manufacturer:	Siemens
No. of Modules in Series:	19	Model:	SINVERT PVM20
MPP Voltage (STC):	580 V	Output:	19,20 kW
Orientation:	62,0 °	European Efficiency:	97,8 %
Inclination:	21,0 °	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:	3.421.879 kWh	Energy from Grid:	45 kWh
PV Array Irradiation:	3.409.878 kWh	Own Use:	44,7 kWh
Irradiation minus Reflection:	3.293.486 kWh	Energy Produced by PV Array:	453.178 kWh
Irradiation without Shade:	3.520.986 kWh	System Efficiency:	12,8 %
Energy from Inverter (AC):	437.723 kWh	Performance Ratio:	82,8 %
Consumption Requirement:	0 kWh	Final Yield:	3,5 h/d
Specific Annual Yield:	1.275 kWh/kWp		

### Results for Array 1: Anlage 1

Irradiation onto Horizontal:	1.435.538 kWh	Energy Produced (DC):	191.762 kWh
Array Irradiation:	1.436.081 kWh	System Efficiency:	12,9 %
Irradiation without Shade:	1.477.122 kWh	Performance Ratio:	83,4 %
Energy Produced (AC):	185.581 kWh	Specific Annual Yield:	1.289 kWh/kWp
Own Use:	19 kWh	Array Efficiency:	13,4 %
Inverter Efficiency:	96,8 %		

### Results for Array 2: System 1

Irradiation onto Horizontal:	1.435.538 kWh	Energy Produced (DC):	189.513 kWh
Array Irradiation:	1.427.955 kWh	System Efficiency:	12,8 %
Irradiation without Shade:	1.477.122 kWh	Performance Ratio:	82,4 %
Energy Produced (AC):	182.249 kWh	Specific Annual Yield:	1.265 kWh/kWp
Own Use:	19 kWh	Array Efficiency:	13,3 %
Inverter Efficiency:	96,2 %		

### Results for Array 3: System 2

Irradiation onto Horizontal:	171.959 kWh	Energy Produced (DC):	22.768 kWh
Array Irradiation:	171.390 kWh	System Efficiency:	12,9 %
Irradiation without Shade:	176.947 kWh	Performance Ratio:	83,4 %
Energy Produced (AC):	22.140 kWh	Specific Annual Yield:	1.283 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,3 %
Inverter Efficiency:	97,2 %		

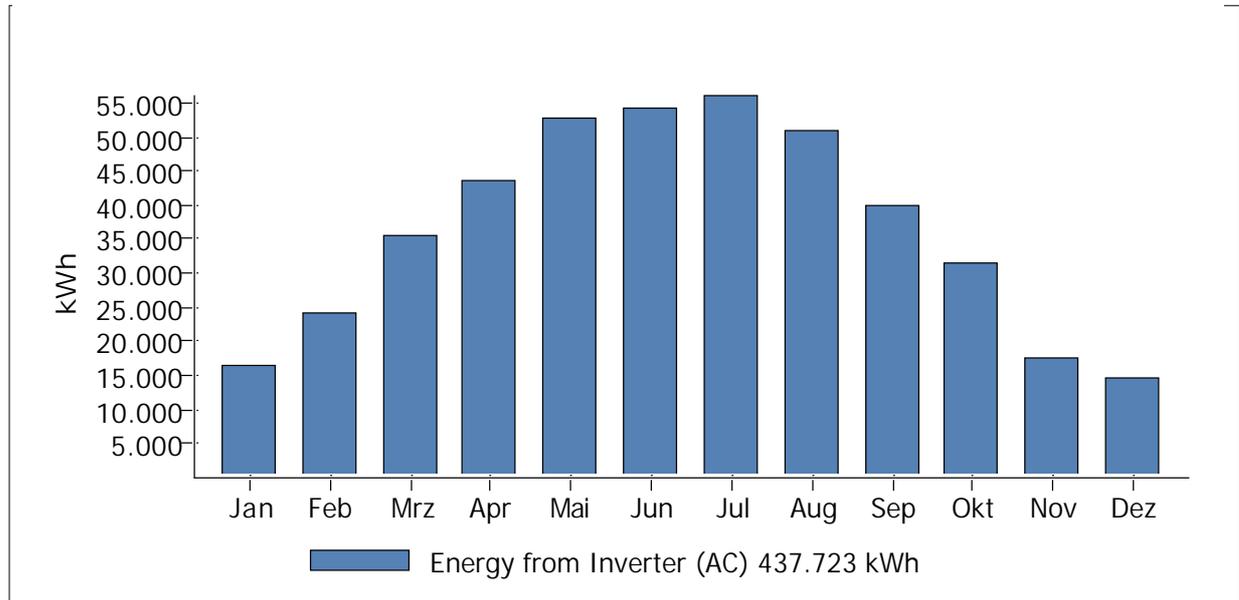
### Results for Array 4: System 2

Irradiation onto Horizontal:	378.825 kWh	Energy Produced (DC):	49.135 kWh
Array Irradiation:	374.453 kWh	System Efficiency:	12,8 %
Irradiation without Shade:	389.796 kWh	Performance Ratio:	82,3 %
Energy Produced (AC):	47.753 kWh	Specific Annual Yield:	1.257 kWh/kWp
Own Use:	5 kWh	Array Efficiency:	13,1 %
Inverter Efficiency:	97,2 %		



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

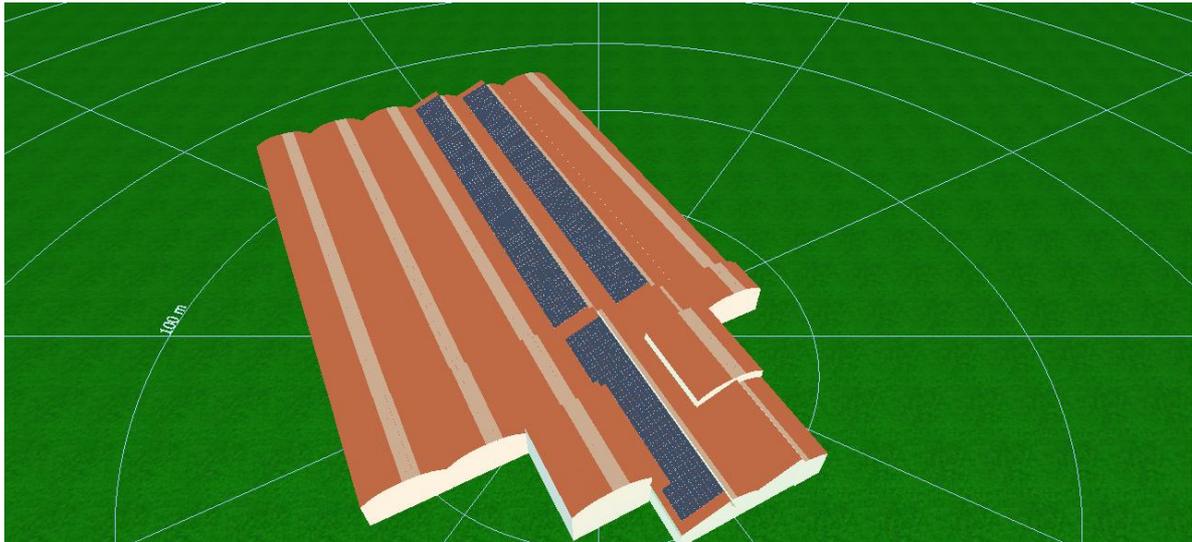
17.11.2011





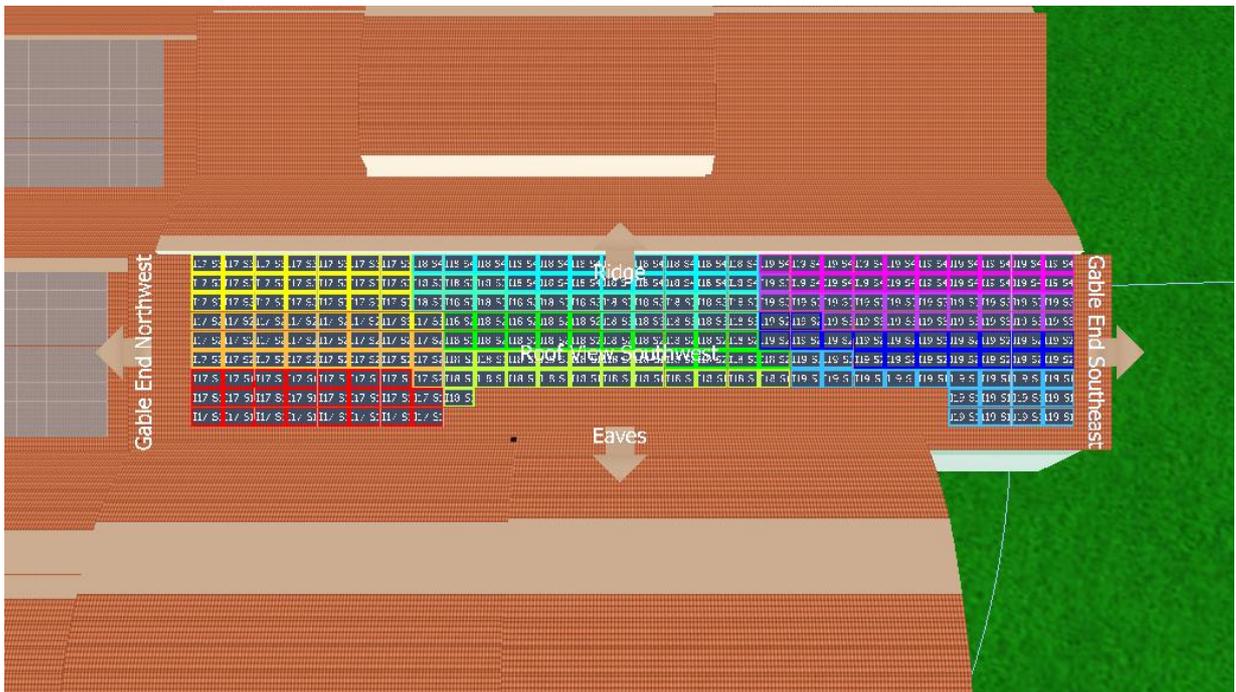
## System Visualisation Screenshots

### Environment



Screenshot2

### Module Configuration

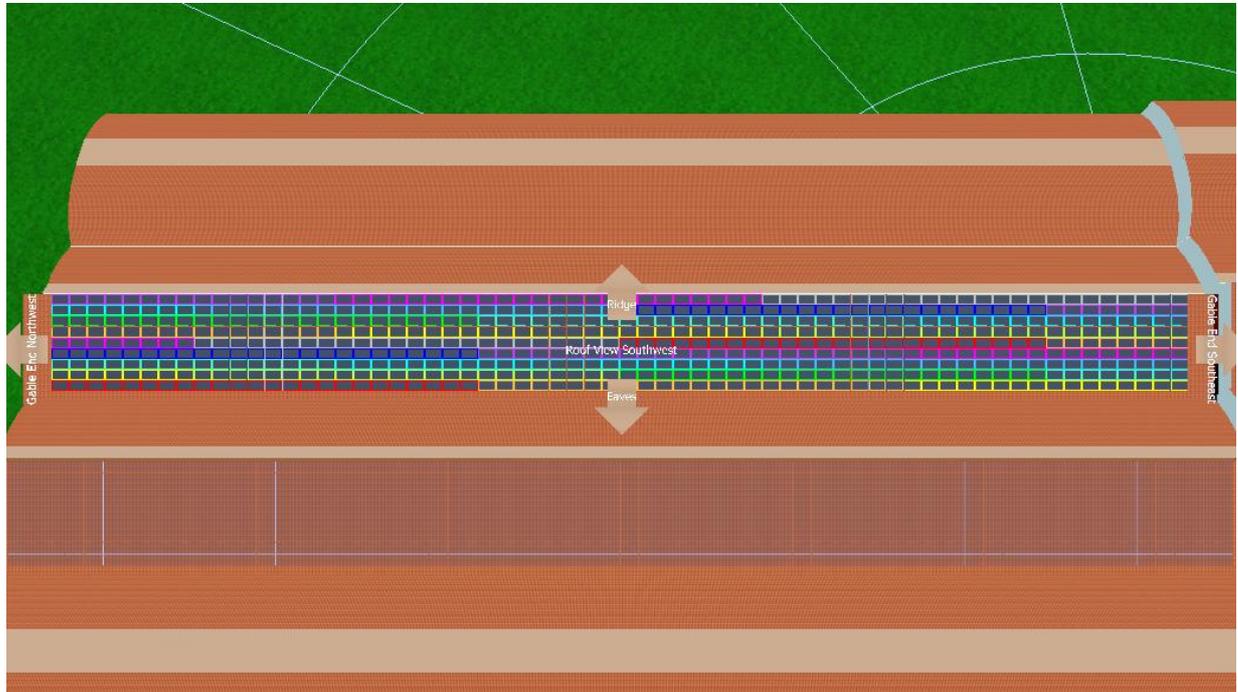


Screenshot3

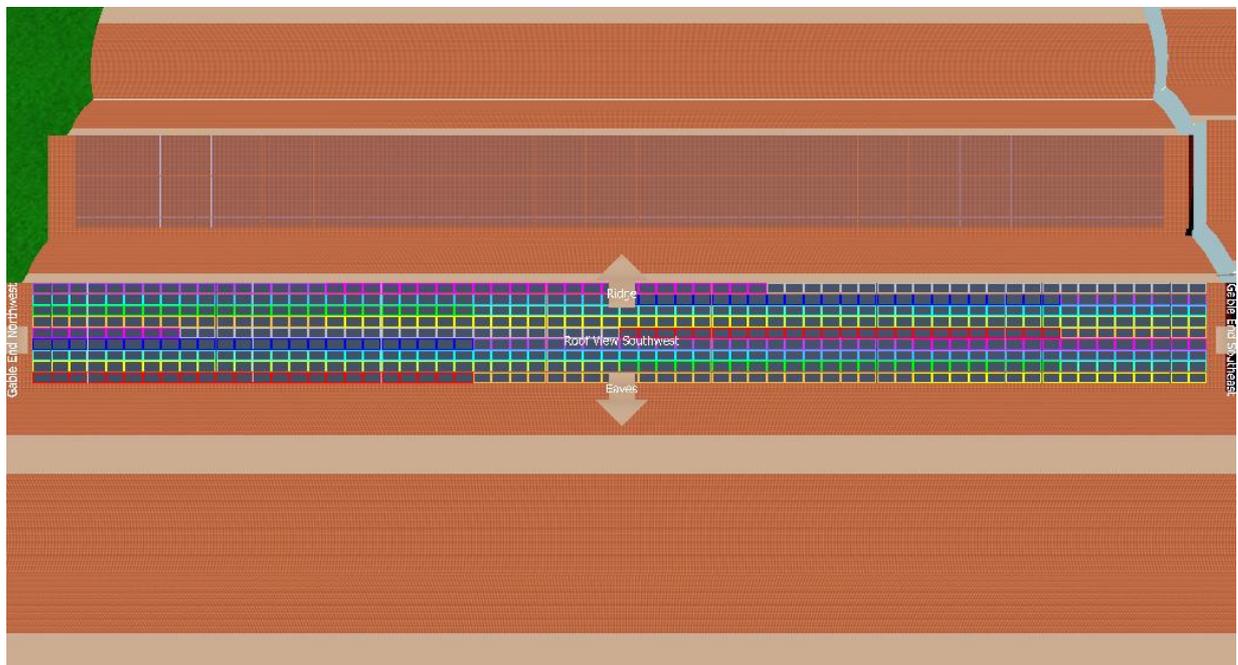


Project Name: Telese Indach  
Variant Reference: Gebäude D West  
Designer: Hannes Pecaver

17.11.2011



Screenshot4



Screenshot5

### Frequency Distribution

