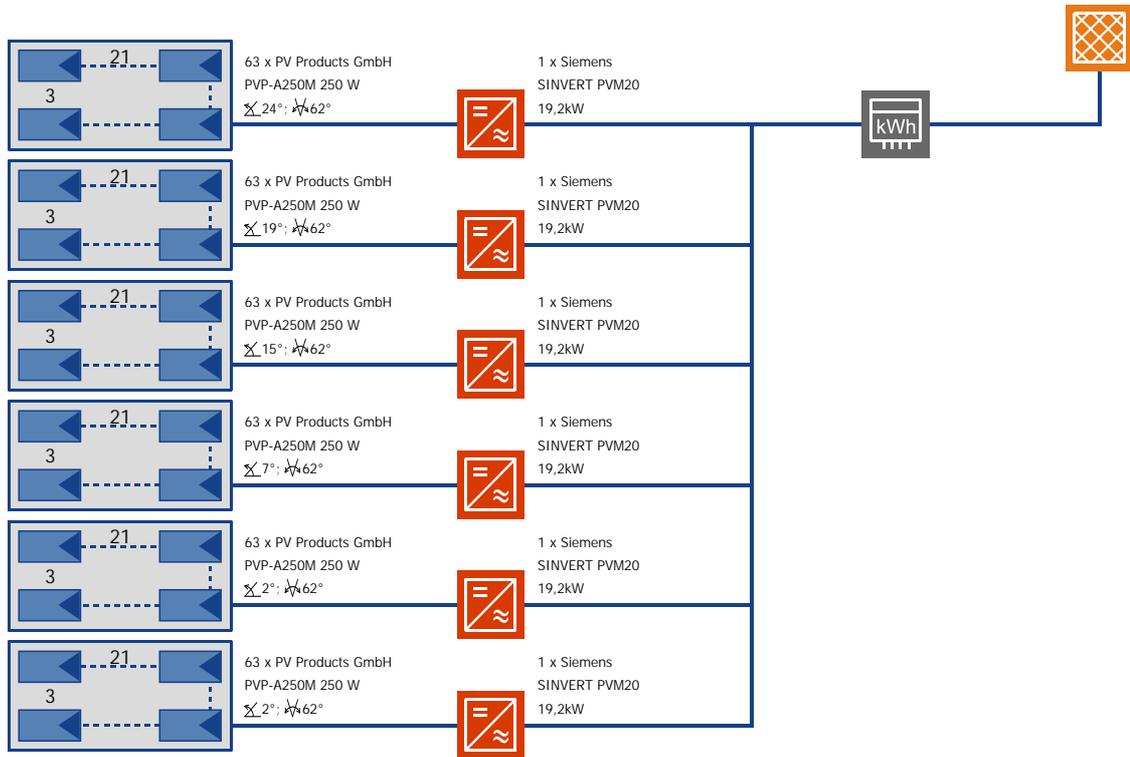




Project Name: Telese Indach
 Variant Reference: Gebäude F West
 Designer: Hannes Pecaver

17.11.2011



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:	932.084 kWh
Energy Produced by PV Array (AC):	120.046 kWh
Grid Feed-in:	120.046 kWh
Yield Reduction Due to Shading:	3 %

System Efficiency:	12,9 %
Performance Ratio:	83,1 %
Specific Annual Yield:	1.270 kWh/kWp
CO2 Emissions Avoided:	106.348 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
Dachmanagement GmbH
Sandwirtgasse 16/1/15
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Project Name: Telese Indach
Variant Reference: Gebäude F West
Designer: Hannes Pecaver

17.11.2011



Project Name:	Telese Indach	17.11.2011
Variant Reference:	Gebäude F 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: Anlage 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: Anlage 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: Anlage 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: Anlage 3

Output:	15,75 kW	Ground Reflection:	20,0 %
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Project Name:	Telese Indach	17.11.2011
Variant Reference:	Gebäude F 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: Anlage 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: Anlage 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:	932.084 kWh	Own Use:	14,1 kWh
Irradiation minus Reflection:	895.437 kWh	Energy Produced by PV Array:	123.531 kWh
Irradiation without Shade:	960.759 kWh	System Efficiency:	12,9 %
Energy from Inverter (AC):	120.046 kWh	Performance Ratio:	83,1 %
Consumption Requirement:	0 kWh	Final Yield:	3,5 h/d
Specific Annual Yield:	1.270 kWh/kWp		

Results for Array 1: Anlage 6

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	20.270 kWh
Array Irradiation:	155.043 kWh	System Efficiency:	12,7 %



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

Irradiation without Shade:	161.251 kWh	Performance Ratio:	81,9 %
Energy Produced (AC):	19.667 kWh	Specific Annual Yield:	1.249 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,1 %
Inverter Efficiency:	97,0 %		

Results for Array 2: Anlage 5

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	20.697 kWh
Array Irradiation:	156.560 kWh	System Efficiency:	12,8 %
Irradiation without Shade:	161.639 kWh	Performance Ratio:	82,9 %
Energy Produced (AC):	20.101 kWh	Specific Annual Yield:	1.276 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,2 %
Inverter Efficiency:	97,1 %		

Results for Array 3: Anlage 4

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	20.888 kWh
Array Irradiation:	157.099 kWh	System Efficiency:	12,9 %
Irradiation without Shade:	161.515 kWh	Performance Ratio:	83,4 %
Energy Produced (AC):	20.300 kWh	Specific Annual Yield:	1.289 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,3 %
Inverter Efficiency:	97,2 %		

Results for Array 4: Anlage 3

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	20.702 kWh
Array Irradiation:	155.584 kWh	System Efficiency:	12,9 %
Irradiation without Shade:	159.903 kWh	Performance Ratio:	83,5 %
Energy Produced (AC):	20.130 kWh	Specific Annual Yield:	1.278 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,3 %
Inverter Efficiency:	97,2 %		

Results for Array 5: Anlage 2

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	20.483 kWh
Array Irradiation:	153.895 kWh	System Efficiency:	12,9 %
Irradiation without Shade:	158.252 kWh	Performance Ratio:	83,5 %
Energy Produced (AC):	19.919 kWh	Specific Annual Yield:	1.265 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,3 %
Inverter Efficiency:	97,2 %		

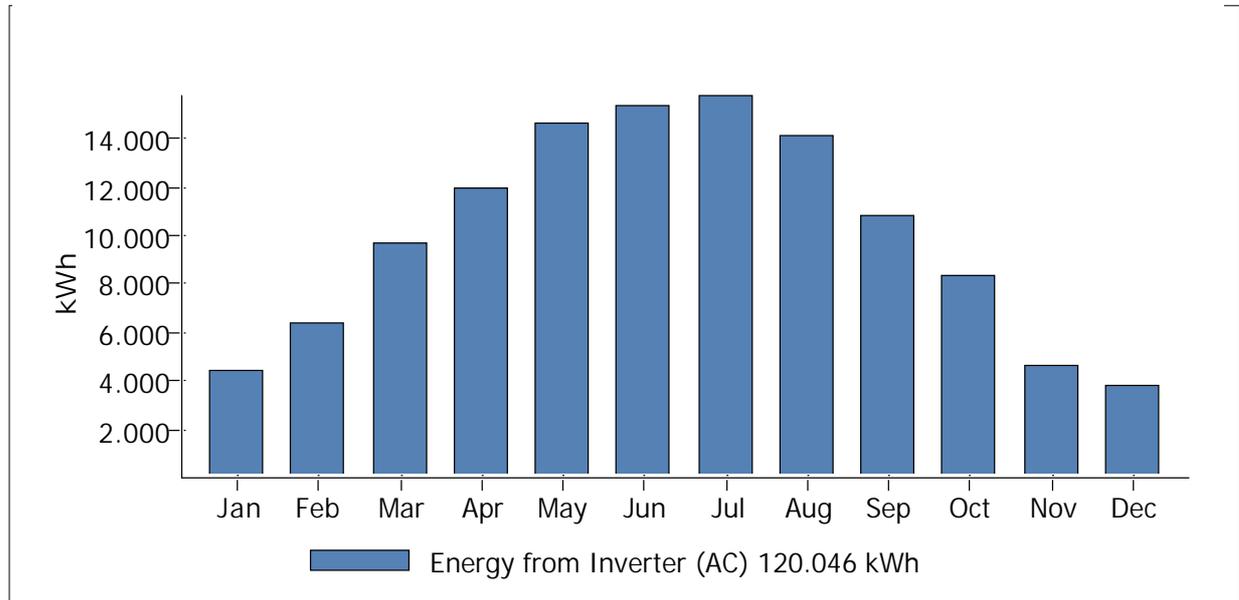
Results for Array 6: Anlage 1

Irradiation onto Horizontal:	157.007 kWh	Energy Produced (DC):	20.492 kWh
Array Irradiation:	153.903 kWh	System Efficiency:	12,9 %
Irradiation without Shade:	158.200 kWh	Performance Ratio:	83,6 %
Energy Produced (AC):	19.929 kWh	Specific Annual Yield:	1.265 kWh/kWp
Own Use:	2 kWh	Array Efficiency:	13,3 %
Inverter Efficiency:	97,2 %		



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

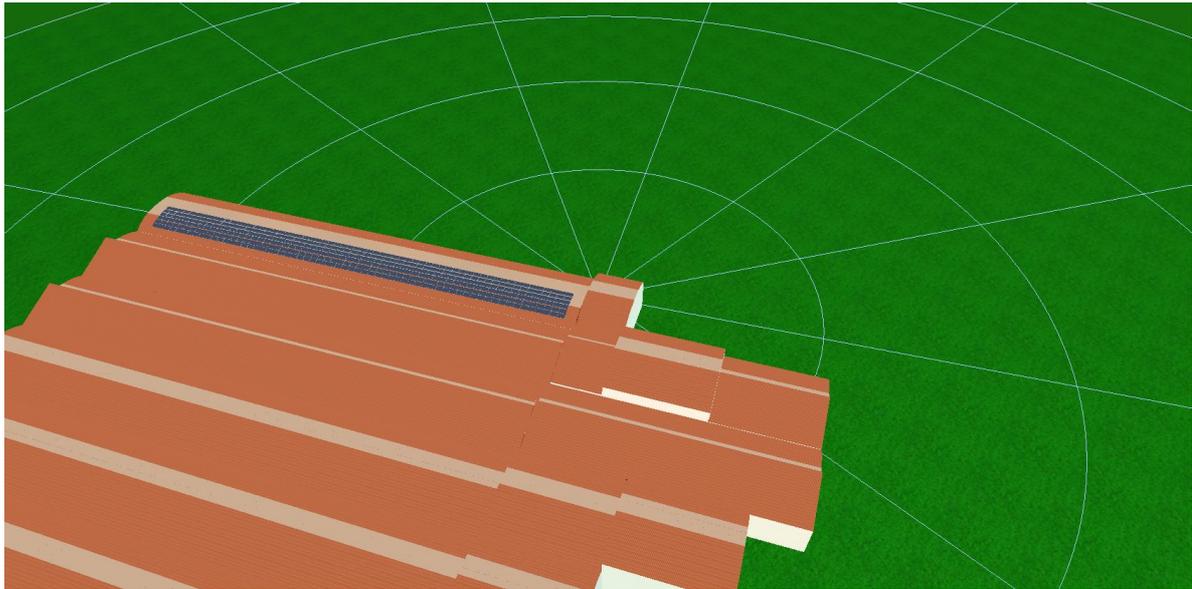
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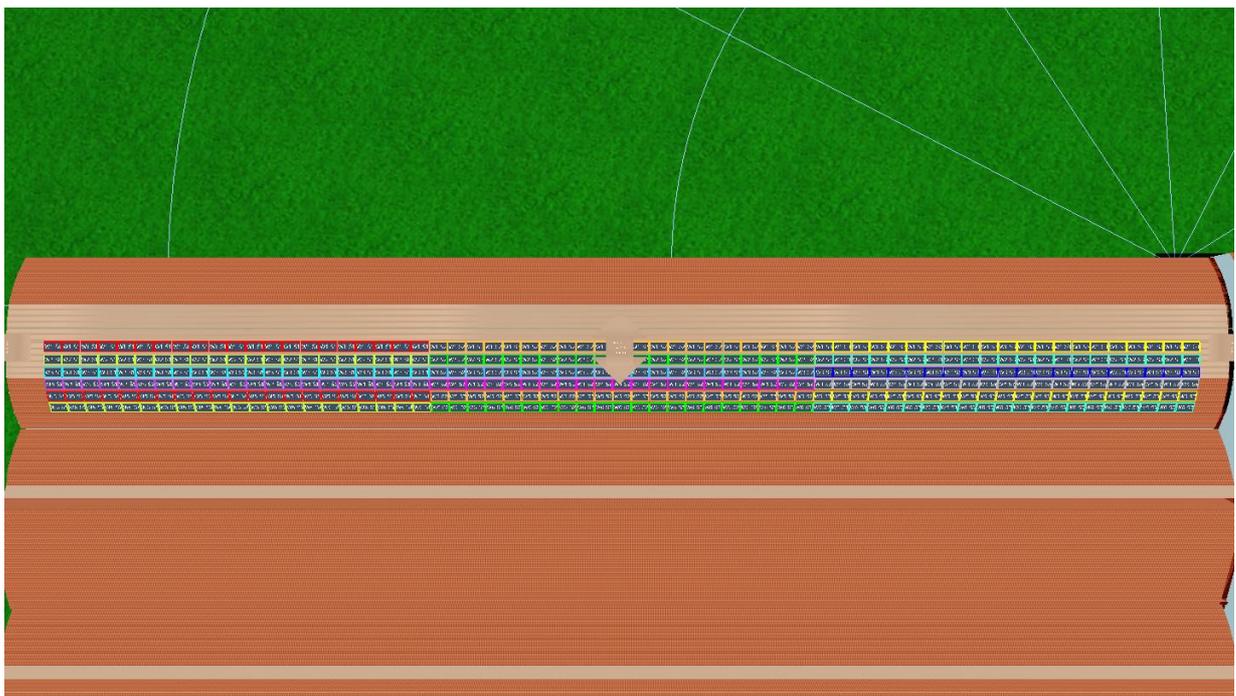
System Visualisation Screenshots

Environment



Screenshot4

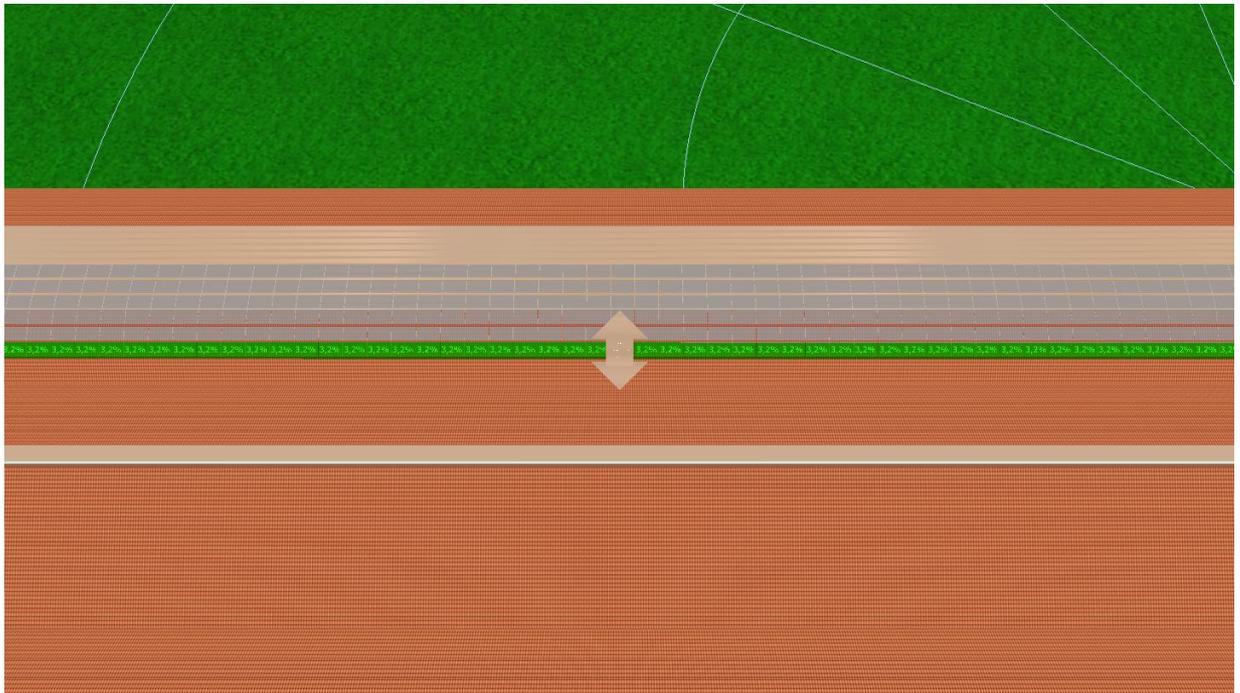
Module Configuration



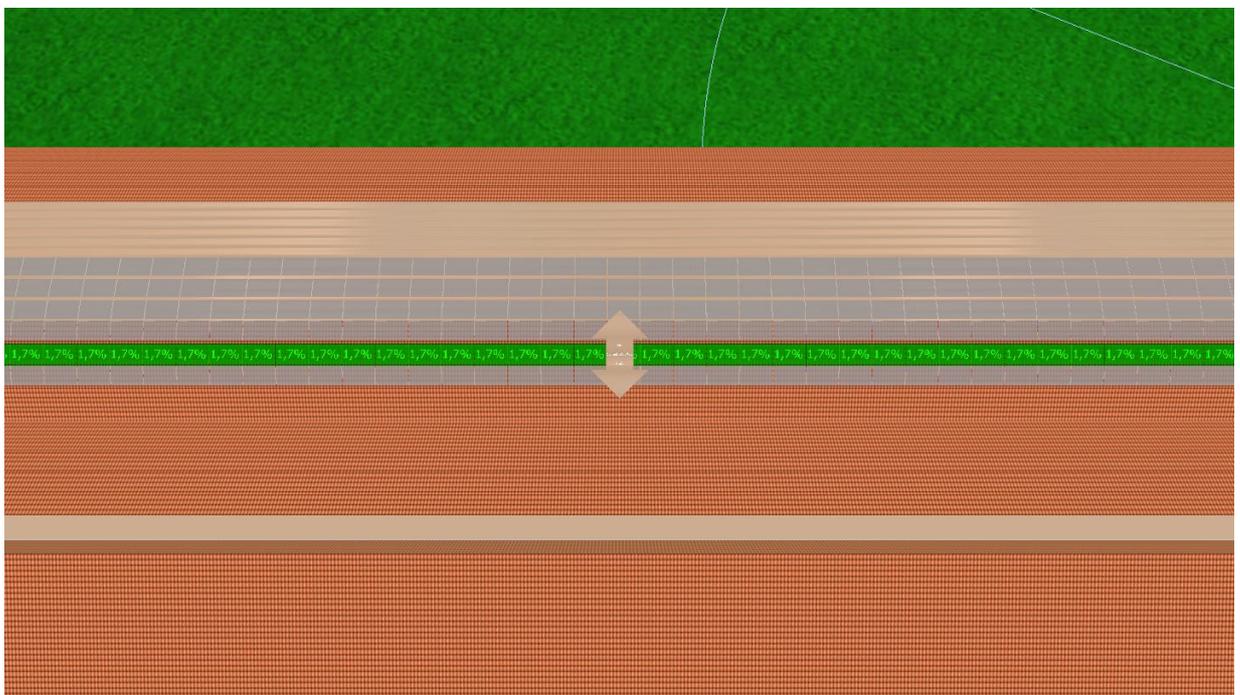
Screenshot1



Frequency Distribution



Screenshot2



Screenshot3