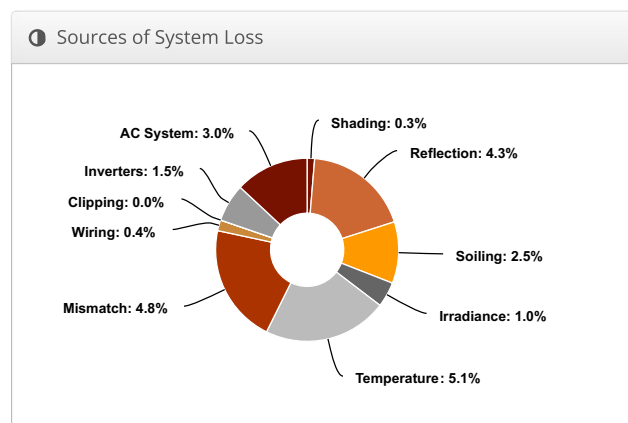
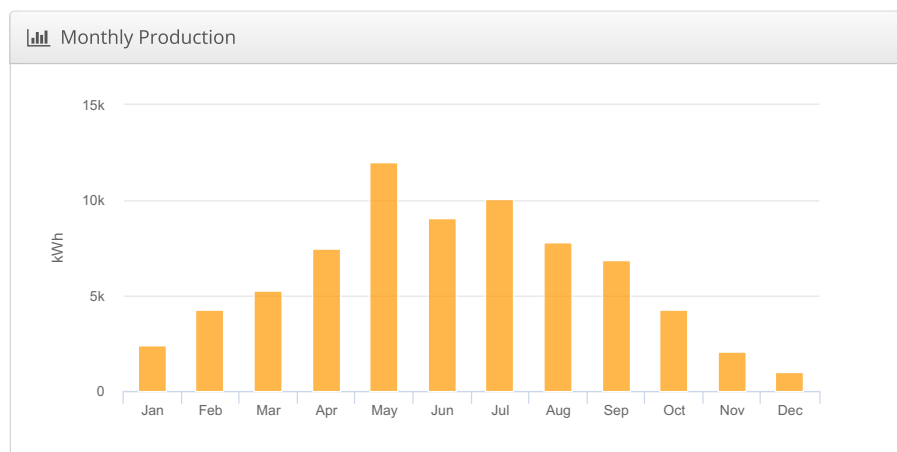
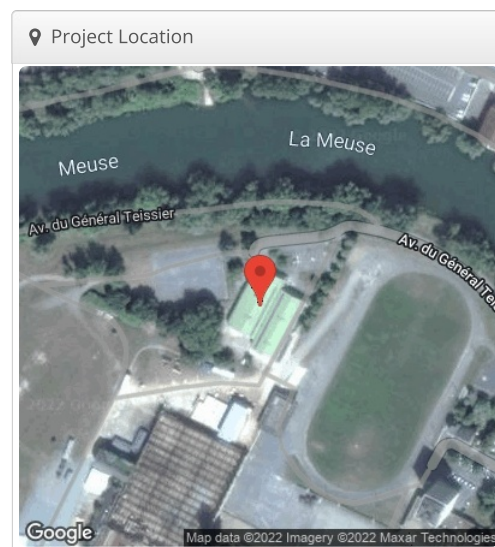


### coté sud est BOULODROME, 6 Avenue Général Teissier 08000 Charleville Mézières

Report	
Project Name	BOULODROME
Project Address	6 Avenue Général Teissier 08000 Charleville Mézières
Prepared By	kh hk tomleyerzi@vusra.com

System Metrics	
Design	coté sud est
Module DC Nameplate	75.5 kW
Inverter AC Nameplate	60.0 kW Load Ratio: 1.26
Annual Production	72.59 MWh
Performance Ratio	79.1%
kWh/kWp	962.0
Weather Dataset	TMY, unknown, ECMWF/ERA (custom)
Simulator Version	1c4970a1bc-3a5ddec254-65a9530ee5-2b61bd9f97



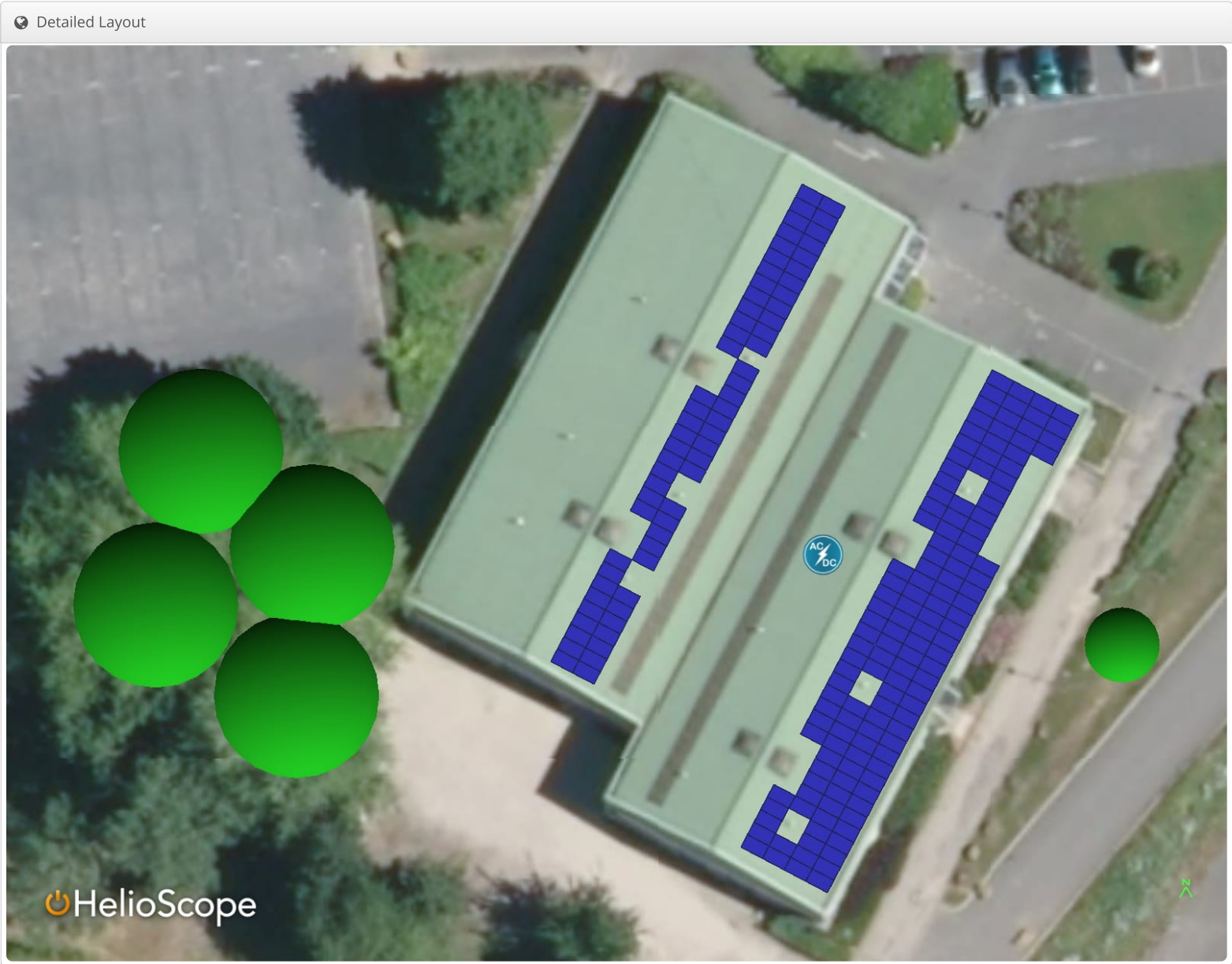
Annual Production			
	Description	Output	% Delta
Irradiance (kWh/m <sup>2</sup> )	Annual Global Horizontal Irradiance	1,130.8	
	POA Irradiance	1,216.3	7.6%
	Shaded Irradiance	1,212.6	-0.3%
	Irradiance after Reflection	1,160.3	-4.3%
	Irradiance after Soiling	1,131.3	-2.5%
	<b>Total Collector Irradiance</b>	<b>1,131.3</b>	<b>0.0%</b>
Energy (kWh)	Nameplate	85,371.5	
	Output at Irradiance Levels	84,498.4	-1.0%
	Output at Cell Temperature Derate	80,228.2	-5.1%
	Output After Mismatch	76,343.7	-4.8%
	Optimal DC Output	76,009.4	-0.4%
	Constrained DC Output	76,009.1	0.0%
	Inverter Output	74,837.7	-1.5%
	<b>Energy to Grid</b>	<b>72,592.6</b>	<b>-3.0%</b>
Temperature Metrics			
	Avg. Operating Ambient Temp		12.0 °C
	Avg. Operating Cell Temp		25.7 °C
Simulation Metrics			
	Operating Hours		4240
	Solved Hours		4240

☁ Condition Set													
Description	Condition Set 1												
Weather Dataset	TMY, unknown, ECMWF/ERA (custom)												
Solar Angle Location	Meteo Lat/Lng												
Transposition Model	Perez Model												
Temperature Model	Sandia Model												
Temperature Model Parameters	Rack Type		a		b		Temperature Delta						
	Fixed Tilt		-3.56		-0.075		3°C						
	Flush Mount		-2.81		-0.0455		0°C						
Soiling (%)	J	F	M	A	M	J	J	A	S	O	N	D	
	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Irradiation Variance	5%												
Cell Temperature Spread	4° C												
Module Binning Range	-2.5% to 2.5%												
AC System Derate	3.00%												
Module Characterizations	Module					Uploaded By		Characterization					
	TARKA 126 VSBD 385 (Voltec Solar)					HelioScope		Spec Sheet Characterization, PAN					
Component Characterizations	Device		Uploaded By					Characterization					

Components		
Component	Name	Count
Inverters	SPI60K-B (KEHUA)	1 (60.0 kW)
Combiners	7 input Combiner	1
Strings	10 AWG (Copper)	7 (234.9 m)
Module	Voltec Solar, TARKA 126 VSD 385 (385W)	196 (75.5 kW)

Wiring Zones			
Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	12	13-31	Along Racking

Field Segments									
Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1	Flush Mount	Portrait (Vertical)	10°	117.77962°	0.0 m	1x1	131	131	50.4 kW
Field Segment 1 (copy 1)	Flush Mount	Portrait (Vertical)	10°	117.77962°	0.0 m	1x1	65	65	25.0 kW
Field Segment 1 (copy)	Flush Mount	Portrait (Vertical)	10°	297.77963°	0.0 m	1x1			0
Field Segment 1 (copy 2)	Flush Mount	Portrait (Vertical)	10°	297.77963°	0.0 m	1x1			0



### coté nord ouest BOULODROME, 6 Avenue Général Teissier 08000 Charleville Mézières

#### Report

Project Name	BOULODROME
Project Address	6 Avenue Général Teissier 08000 Charleville Mézières
Prepared By	kh hk tomleyerzi@vusra.com

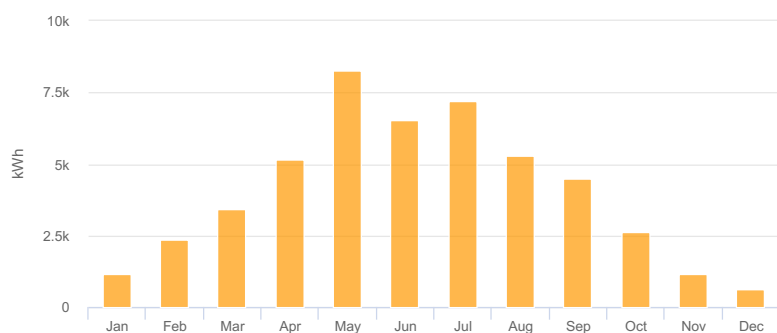
#### System Metrics

Design	coté nord ouest
Module DC Nameplate	58.9 kW
Inverter AC Nameplate	50.0 kW Load Ratio: 1.18
Annual Production	48.25 MWh
Performance Ratio	79.0%
kWh/kWp	819.2
Weather Dataset	TMY, unknown, ECMWF/ERA (custom)
Simulator Version	1c4970a1bc-3a5ddec254-65a9530ee5-2b61bd9f97

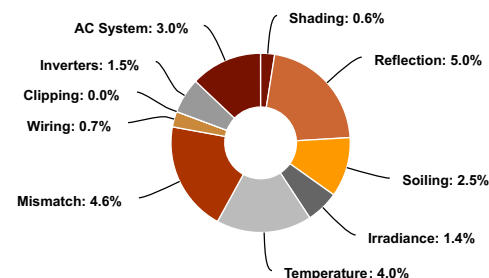
#### Project Location



#### Monthly Production



#### Sources of System Loss



#### Annual Production

	Description	Output	% Delta
Irradiance (kWh/m <sup>2</sup> )	Annual Global Horizontal Irradiance	1,130.8	
	POA Irradiance	1,037.4	-8.3%
	Shaded Irradiance	1,031.3	-0.6%
	Irradiance after Reflection	979.8	-5.0%
	Irradiance after Soiling	955.3	-2.5%
	<b>Total Collector Irradiance</b>	<b>955.3</b>	<b>0.0%</b>
Energy (kWh)	Nameplate	56,273.2	
	Output at Irradiance Levels	55,500.0	-1.4%
	Output at Cell Temperature Derate	53,281.5	-4.0%
	Output After Mismatch	50,824.3	-4.6%
	Optimal DC Output	50,492.3	-0.7%
	Constrained DC Output	50,492.1	0.0%
	Inverter Output	49,744.8	-1.5%
	<b>Energy to Grid</b>	<b>48,252.4</b>	<b>-3.0%</b>
Temperature Metrics			
	Avg. Operating Ambient Temp		12.0 °C
	Avg. Operating Cell Temp		23.5 °C
Simulation Metrics			
	Operating Hours	4240	
	Solved Hours	4240	

#### Condition Set

Description	Condition Set 1											
Weather Dataset	TMY, unknown, ECMWF/ERA (custom)											
Solar Angle Location	Meteo Lat/Lng											
Transposition Model	Perez Model											
Temperature Model	Sandia Model											
Temperature Model Parameters	Rack Type			a		b			Temperature Delta			
	Fixed Tilt			-3.56		-0.075			3°C			
	Flush Mount			-2.81		-0.0455			0°C			
Soiling (%)	J	F	M	A	M	J	J	A	S	O	N	D
	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Irradiation Variance	5%											
Cell Temperature Spread	4° C											
Module Binning Range	-2.5% to 2.5%											
AC System Derate	3.00%											
Module Characterizations	Module					Uploaded By			Characterization			
	TARKA 126 VSBD 385 (Voltec Solar)					HelioScope			Spec Sheet Characterization, PAN			
Component Characterizations	Device			Uploaded By					Characterization			



Components		
Component	Name	Count
Inverters	SPI50K-B (KEHUA)	1 (50.0 kW)
Home Runs	12 AWG (Copper)	2 (47.7 m)
Combiners	2 input Combiner	1
Combiners	3 input Combiner	1
Strings	10 AWG (Copper)	5 (105.4 m)
Module	Voltec Solar, TARKA 126 VSBD 385 (385W)	153 (58.9 kW)

Wiring Zones			
Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	12	13-31	Along Racking

Field Segments									
Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1 (copy)	Flush Mount	Portrait (Vertical)	10°	297.77963°	0.0 m	1x1	51	51	19.6 kW
Field Segment 1 (copy 2)	Flush Mount	Portrait (Vertical)	10°	297.77963°	0.0 m	1x1	102	102	39.3 kW

