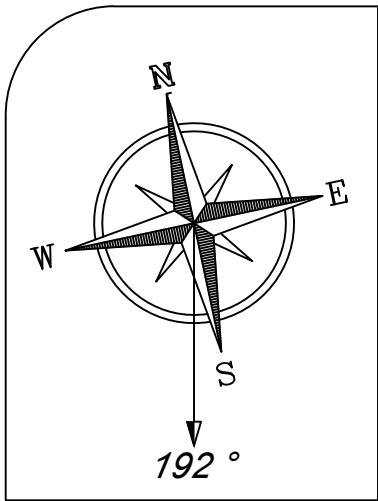
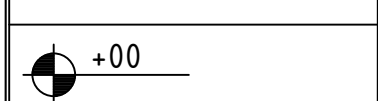
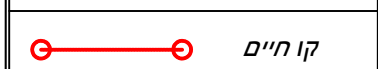
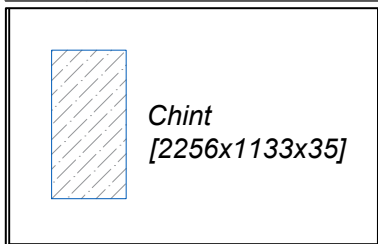




ביצוע כל עבודה בכפוף
להוראות ממונה הבטיחות

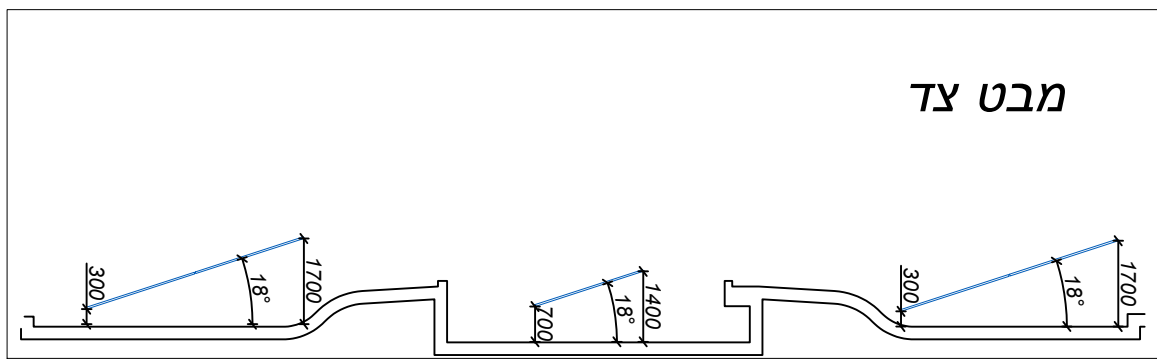
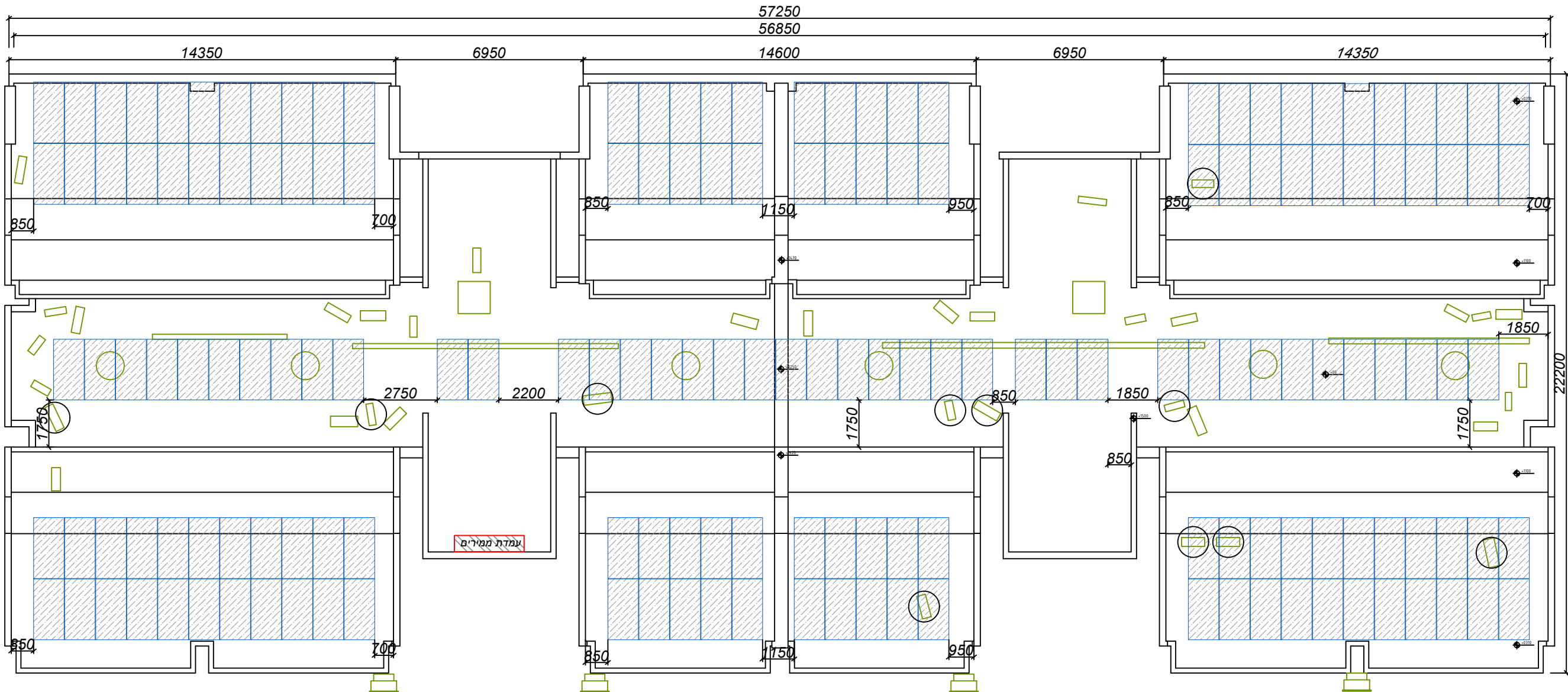
Inverters	Quant'
Type :1 SolarEdge 66.6kW	1
Type :2 ----	----
T.Power:	66.6kVA

Panels	
Manuf:' Chint [2256x1133x35]	
Model: 540W	
Quant:' 168	
Tilt: 18°	
Azimuth: 192 °	
T.Power: 90.72kWp	



Comments

###	###
###	



רמת אפעל, רמת גן - חלוקה לסטרינגים/ממירים						540		הספק פאנל בודד (W)	
						168		מ"ס פאנלים כללי :	
						67 kVA		הספק כללי AC (kVA) :	
						91 kWp		הספק כללי DC (kWp) :	
						136.22%		יחס AC/DC :	
AC/DC	הספק AC (kVA)	הספק DC (kWp)	מ"ס סטרינגים אופטימיזר P1100 מ"ס פאנלים			UNIT	סוג ממיר (kW)	ממיר	גג
136.22%	66.60 kVA	90.72 kWp	28	14	3	A	SolarEdge 66.6kW	1	בטון
			28	14					
			28	14					
			28	14					
			28	14					
136.22%	66.60 kVA	90.72 kWp	28	14	3	B			
			28	14					
136.22%	66.60 kVA	90.72 kWp	168	84	6	סה"כ:			

DRAWING NUMBER:
Ramat Efal - G001

Client:
שחר אנרגיה

Site location:
רמת גן

☒ לאישור

☐ לביצוע

☐ ASMADE

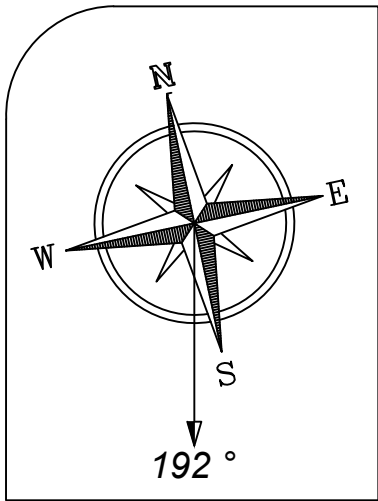
Date:
28/02/22

Print Size:
A3

Designer:
Roi N.

TITLE:

הצבת פאנלים



ביצוע כל עבודה בכפוף
להוראות ממונה הבטיחות

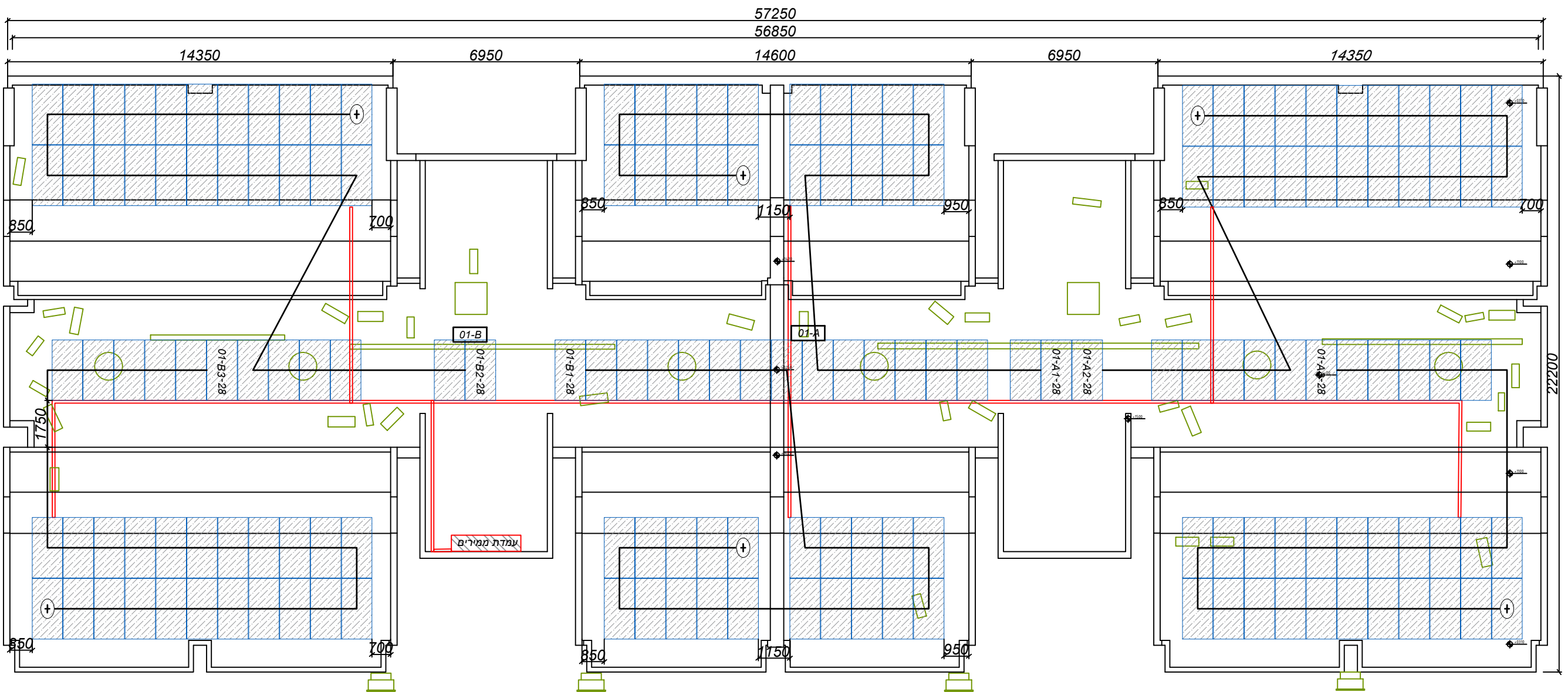
Inverters	Quant'
Type :1 SolarEdge 66.6kW	1
Type :2 ----	----
T.Power:	66.6kVA

Panels	
Manuf:' Chint [2256x1133x35]	
Model: 540W	
Quant:' 168	
Tilt: 18°	
Azimuth: 192 °	
T.Power: 90.72kWp	

מקרא חיווט:

XX - YY - ZZ
XX - מספר ממיר
YY - mppt
ZZ - כמות פאנלים
⊕ — כיוון חיבור סטרינג
01-A קופסת איסוף סטרינג
== תעלת רשת DC

Comments	###
###	



עץ לגיזום

רמת אפעל, רמת גן - חלוקה לסטרינגים/ממירים						540		הספק פאנל בודד (W)				
						168		מ"ס פאנלים כללי :				
						67 kVA		הספק כללי AC (kVA) :				
						91 kWp		הספק כללי DC (kWp) :				
						136.22%		יחס AC/DC :				
AC/DC	הספק AC (kVA)	הספק DC (kWp)	מ"ס פאנלים		אופטימיזר P1100	מ"ס סטרינגים	UNIT	סוג ממיר (kW)	ממיר	גג		
136.22%	66.60 kVA	90.72 kWp	28	14	3	A	SolarEdge 66.6kW	1	בטון			
			28	14								
			28	14								
			28	14	3	B						
			28	14								
136.22%	66.60 kVA	90.72 kWp	168	84	6	סה"כ:						

DRAWING NUMBER:
Ramat Efal - G002

Client:
שחר אנרגיה

Site location:
רמת גן

☒ לאישור

☐ לביצוע

☐ ASMADE

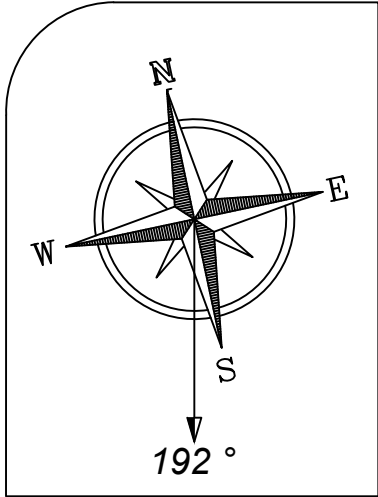
Date:
28/02/22

Print Size:
A3

Designer:
Roi N.

TITLE:

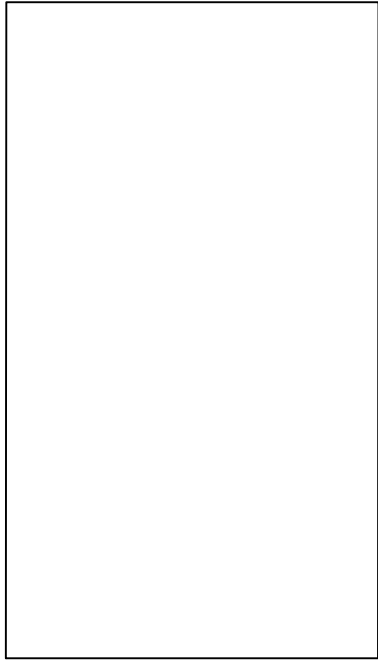
חיווט פאנלים



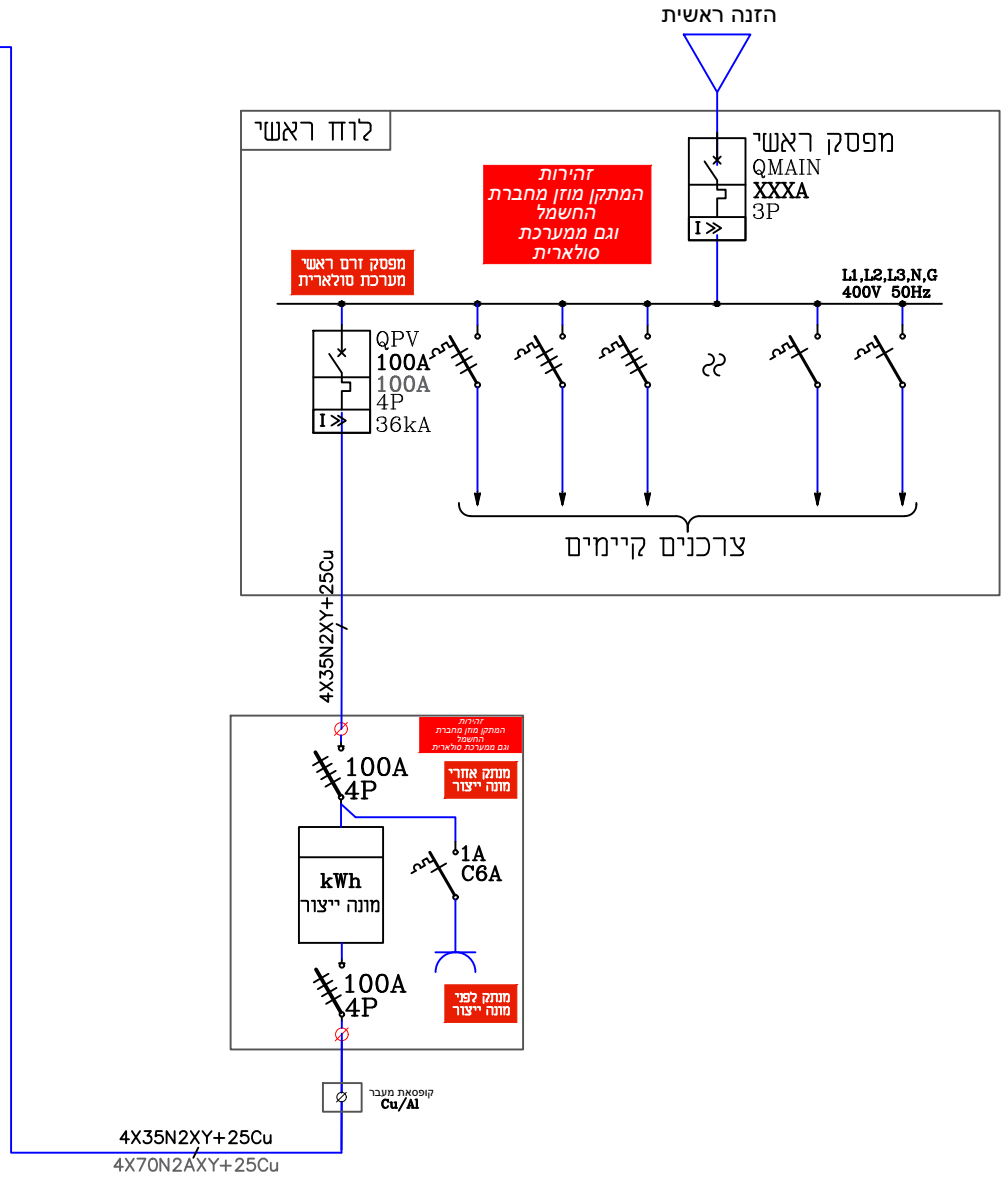
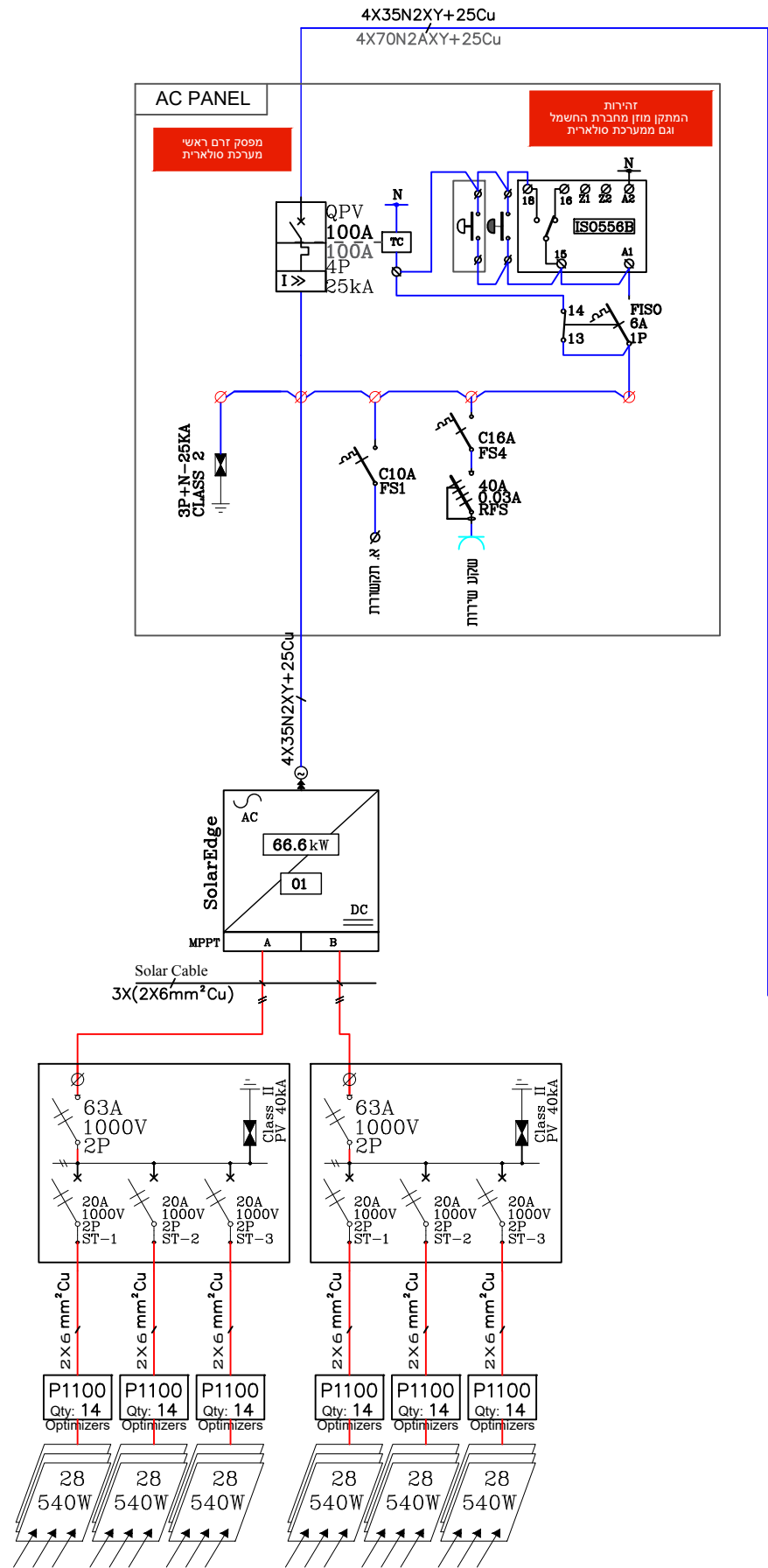
ביצוע כל עבודה בכפוף
להוראות ממונה הבטיחות

Inverters	Quant'
Type :1 SolarEdge 66.6kW	1
Type :2 -----	-----
T.Power:	66.6kVA

Panels	
Manuf:' Chint [2256x1133x35]	
Model: 540W	
Quant': 168	
Tilt: 18°	
Azimuth: 192 °	
T.Power: 90.72kWp	



Comments	
###	###
###	



רמת אפעל, רמת גן - חלוקה לסטרינגים/ממירים						540		הספק פאנל בודד(W)					
						168		מ"ס פאנלים כללי :					
						67 kVA		הספק כללי AC (kVA) :					
						91 kWp		הספק כללי DC (kWp) :					
						136.22%		יחס AC/DC :					
AC/DC	הספק AC (kVA)	הספק DC (kWp)	מ"ס פאנלים		אופטימיזר P1100	מ"ס סטרינגים	UNIT	סוג ממיר (kW)	ממיר	גג			
136.22%	66.60 kVA	90.72 kWp	28	14	3	A	SolarEdge 66.6kW	1		בטון			
			28	14									
			28	14									
			28	14	3	B							
			28	14									
136.22%	66.60 kVA	90.72 kWp	168	84	6	סה"כ:							

DRAWING NUMBER: **Ramat Efal - G004**

Client: **שחר אנרגיה**

Site location: **רמת גן**

☒ לאישור

☐ לביצוע

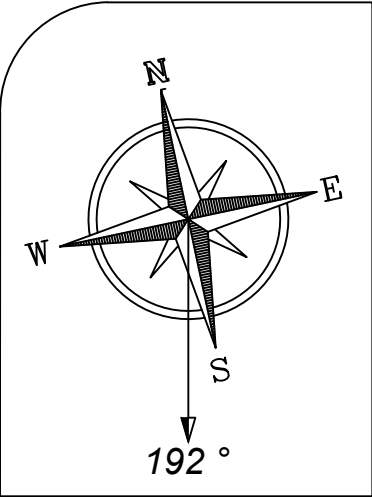
☐ ASMADE

Date: **28/02/22**

Print Size: **A3**

Designer: **Roi N.**

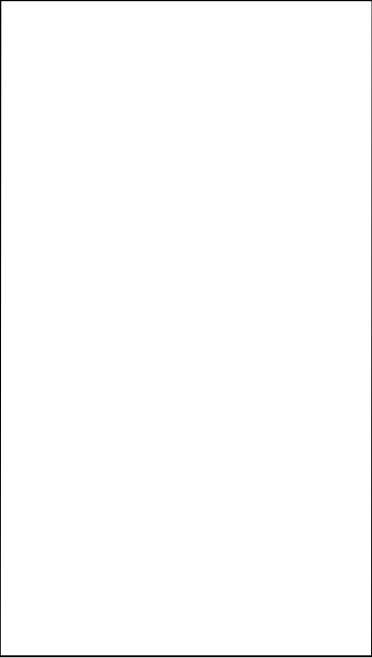
TITLE: **תכנית חד קוויית**



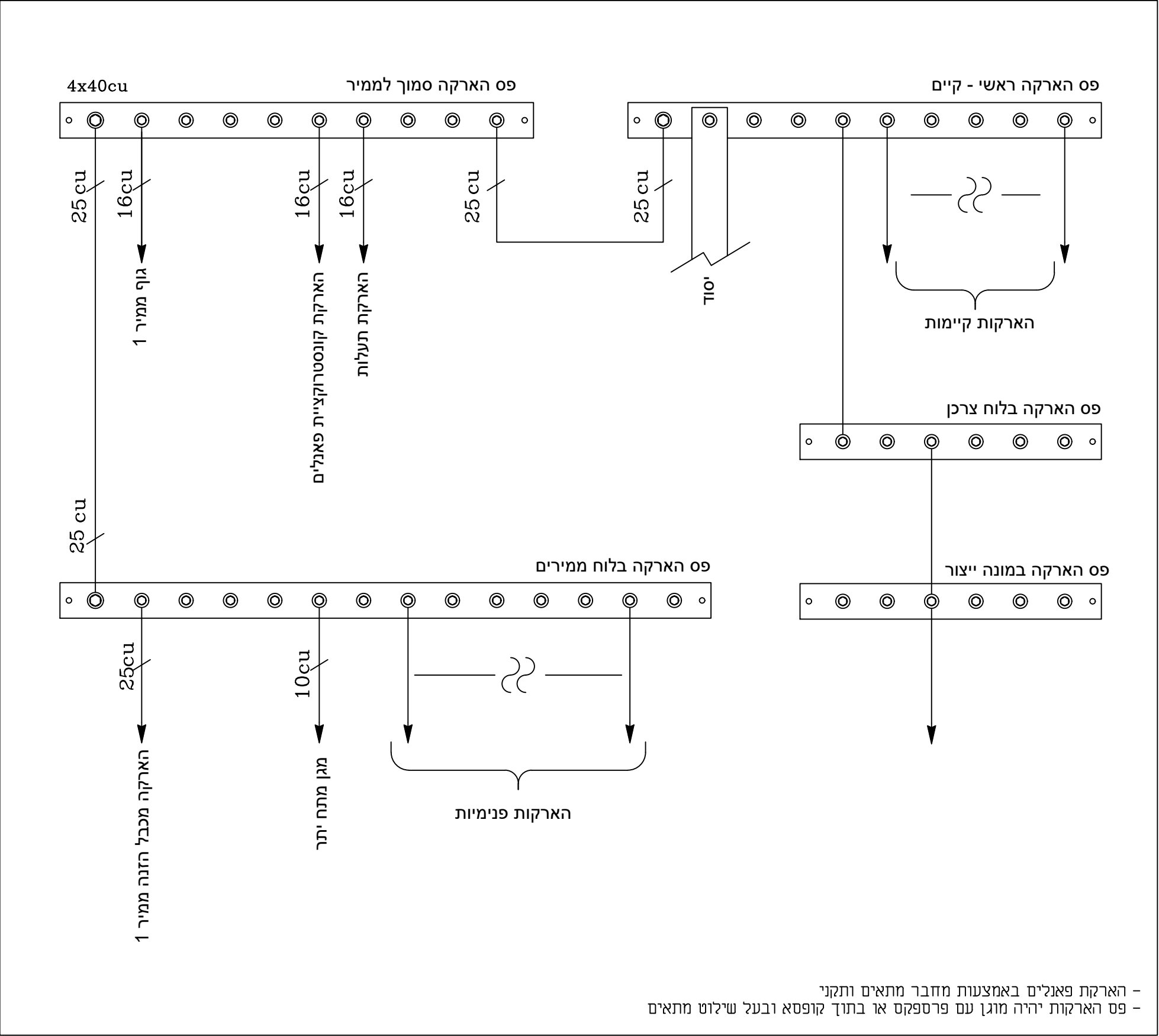
ביצוע כל עבודה בכפוף
להוראות ממונה הבטיחות

Inverters		Quant'
Type :1	SolarEdge 66.6kW	1
Type :2	----	----
T.Power:		66.6kVA

Panels	
Manuf.:	Chint [2256x1133x35]
Model:	540W
Quant.:	168
Tilt:	18°
Azimuth:	192 °
T.Power:	90.72kWp



Comments	
###	###
###	



DRAWING NUMBER: Ramat Efal - G005	
Client: שחר אנרגיה	Site location: רמת גן

☒ לאישור	☐ לביצוע	☐ ASMADE
Date: 28/02/22	Print Size: A3	Designer: Roi N.

TITLE: תכנית הארקות

PVsyst - Simulation report

Grid-Connected System

Project: SHR - RamatGan -RamatEfal

Variant: New simulation variant

Tables on a building

System power: 90.7 kWp

Ramat Yitzhak - Israel



Project: SHR - RamatGan -RamatEfal

Variant: New simulation variant

PVsyst V7.2.2

VC0, Simulation date:
28/02/22 11:53
with v7.2.2

Project summary

Geographical Site

Ramat Yitzhak

Israel

Situation

Latitude 32.07 °N

Longitude 34.83 °E

Altitude 52 m

Time zone UTC+2

Project settings

Albedo 0.20

Meteo data

Ramat Gan

Meteonorm 8.0 (1991-2010), Sat=100% - Synthetic

System summary

Grid-Connected System

PV Field Orientation

Fixed plane

Tilt/Azimuth 18 / 12 °

Tables on a building

Near Shadings

According to strings

Electrical effect 100 %

User's needs

Unlimited load (grid)

System information

PV Array

Nb. of modules 168 units

Pnom total 90.7 kWp

Inverters

Nb. of units 2 units

Pnom total 66.6 kWac

Pnom ratio 1.362

Results summary

Produced Energy 149.5 MWh/year Specific production 1648 kWh/kWp/year Perf. Ratio PR 81.68 %

Table of contents

Project and results summary	2
General parameters, PV Array Characteristics, System losses	3
Near shading definition - Iso-shadings diagram	5
Main results	6
Loss diagram	7
Special graphs	8

**PVsyst V7.2.2**

VC0, Simulation date:

28/02/22 11:53

with v7.2.2

General parameters**Grid-Connected System****PV Field Orientation****Orientation**

Fixed plane

Tilt/Azimuth 18 / 12 °

Horizon

Free Horizon

Tables on a building**Sheds configuration**

Nb. of sheds 11 units

Sizes

Sheds spacing 8.26 m

Collector width 4.03 m

Ground Cov. Ratio (GCR) 48.8 %

Shading limit angle

Limit profile angle 15.7 °

Near Shadings

According to strings

Electrical effect 100 %

Models used

Transposition Perez

Diffuse Perez, Meteonorm

Circumsolar separate

User's needs

Unlimited load (grid)

PV Array Characteristics**PV module**

Manufacturer

Longi Solar

Model

LR5-72 HIH 540 M

(Original PVsyst database)

Unit Nom. Power

540 Wp

Number of PV modules

168 units

Nominal (STC)

90.7 kWp

SolarEdge Power Optimizer

Model

P1100 Worldwide

Unit Nom. Power

1100 W

Modules

1 String x 2 in series

Array #1 - PV Array

Number of PV modules

84 units

Nominal (STC)

45.4 kWp

Optimizer Array

3 Strings x 14 In series

At operating cond. (50°C)

Pmpp

41.5 kWp

Output of optimizers

Voper

750 V

I at Poper

55 A

Array #2 - Sub-array #2

Number of PV modules

84 units

Nominal (STC)

45.4 kWp

Optimizer Array

3 Strings x 14 In series

At operating cond. (50°C)

Pmpp

41.5 kWp

Output of optimizers

Voper

750 V

I at Poper

55 A

Total PV power

Nominal (STC)

91 kWp

Total

168 modules

Module area

429 m²

Cell area

389 m²

Inverter

Manufacturer

SolarEdge

Model

SE33.3K-EU-APAC/AUS (400V)

(Original PVsyst database)

Unit Nom. Power

33.3 kWac

Number of inverters

2 units

Total power

66.6 kWac

Number of inverters

1 Unit

Total power

33.3 kWac

Operating voltage

750 V

Pnom ratio (DC:AC)

1.28

Number of inverters

1 Unit

Total power

33.3 kWac

Operating voltage

750 V

Pnom ratio (DC:AC)

1.28

Total inverter power

Total power

67 kWac

Nb. of inverters

2 units

Pnom ratio

1.36

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with v7.2.2

Array losses**Array Soiling Losses**

Loss Fraction 3.0 %

Thermal Loss factor

Module temperature according to irradiance

Uc (const) 26.0 W/m²K

Uv (wind) 0.0 W/m²K/m/s

DC wiring losses

Global array res. 124 mΩ

Global wiring resistance 62 mΩ

Loss Fraction 1.0 % at STC

LID - Light Induced Degradation

Loss Fraction 2.0 %

Module Quality Loss

Loss Fraction -0.4 %

Module mismatch losses

Loss Fraction (Fixed voltage) 0.0 %

IAM loss factor

Incidence effect (IAM): User defined profile

0°	25°	45°	60°	65°	70°	75°	80°	90°
1.000	1.000	0.995	0.962	0.936	0.903	0.851	0.754	0.000

System losses**Unavailability of the system**

Time fraction 1.0 %
3.7 days,
3 periods

AC wiring losses**Inv. output line up to injection point**

Inverter voltage 400 Vac tri

Loss Fraction 1.16 % at STC

Inverter: SE33.3K-EU-APAC/AUS (400V)

Wire section (2 Inv.) Copper 2 x 3 x 25 mm²

Average wires length 55 m

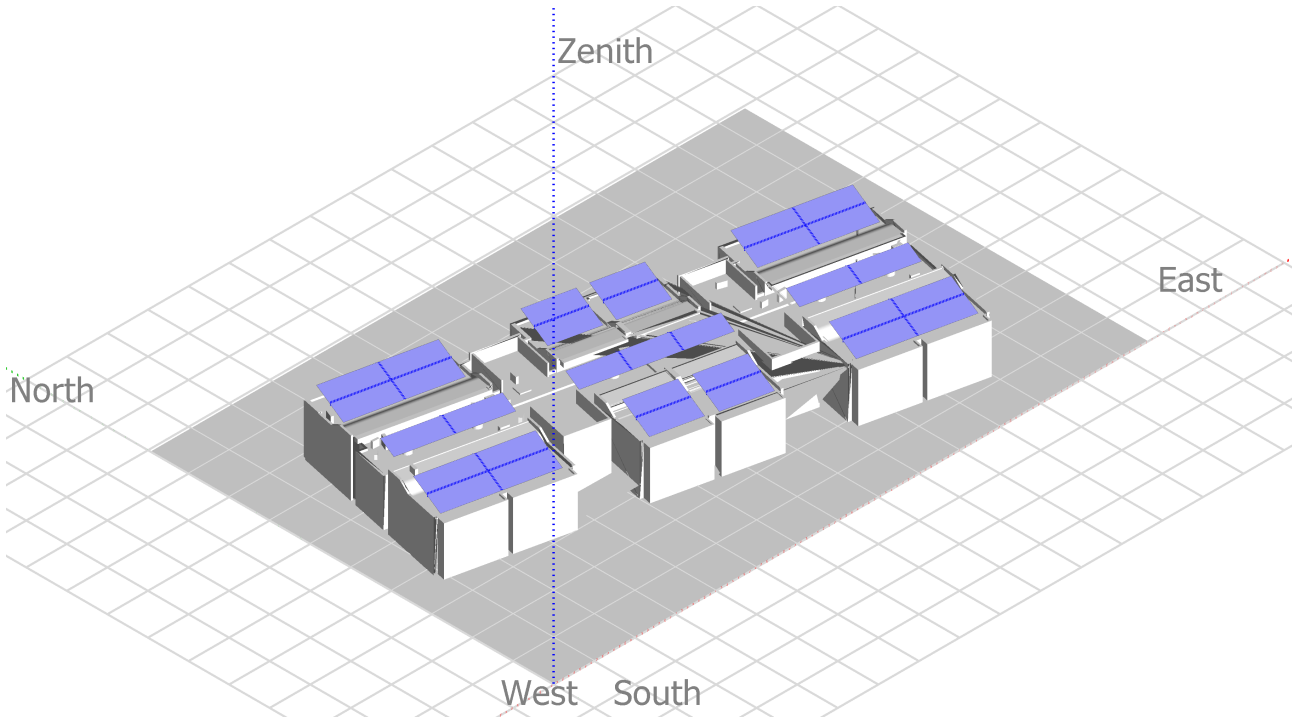


PVsyst V7.2.2

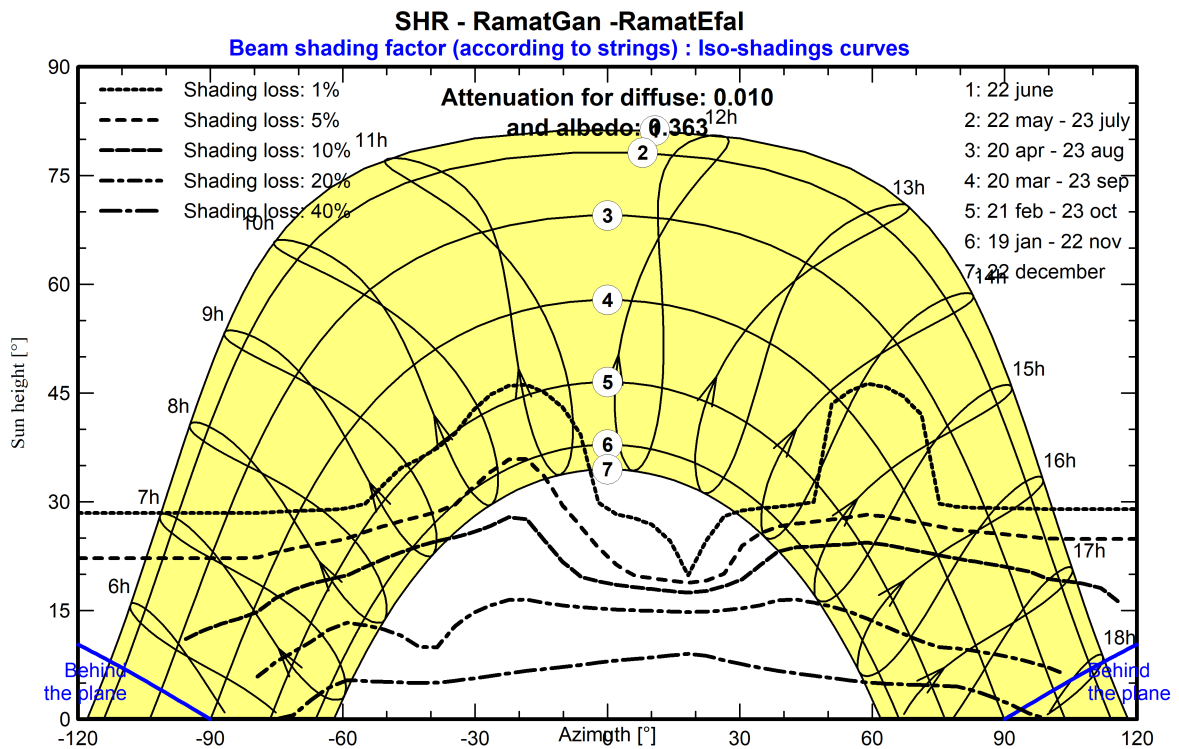
VC0, Simulation date:
28/02/22 11:53
with v7.2.2

Near shadings parameter

Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram





Project: SHR - RamatGan -RamatEfal

Variant: New simulation variant

PVsyst V7.2.2

VC0, Simulation date:
28/02/22 11:53
with v7.2.2

Main results

System Production

Produced Energy 149.5 MWh/year

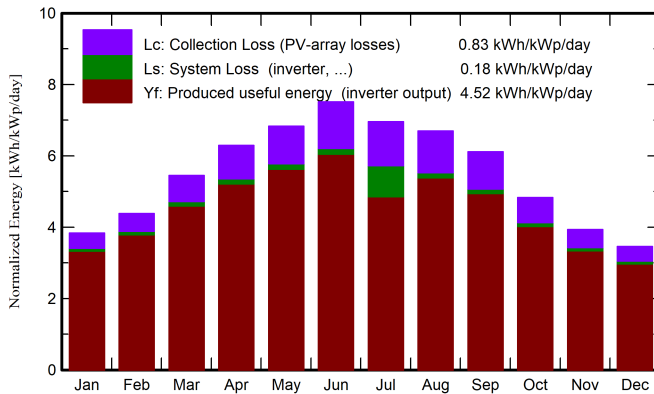
Specific production

1648 kWh/kWp/year

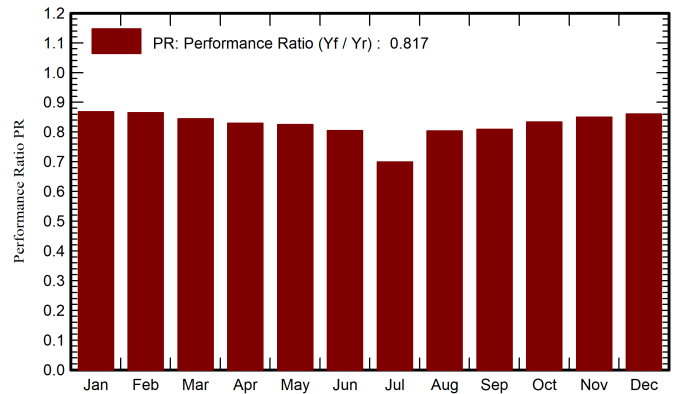
Performance Ratio PR

81.68 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

	GlobHor	DiffHor	T_Amb	GlobInc	GlobEff	EArray	E_Grid	PR
	kWh/m²	kWh/m²	°C	kWh/m²	kWh/m²	MWh	MWh	ratio
January	91.4	39.17	12.88	118.9	112.4	9.60	9.37	0.868
February	101.2	45.43	14.04	122.6	116.2	9.87	9.62	0.865
March	151.1	66.94	16.79	168.8	160.4	13.28	12.94	0.845
April	178.4	75.78	19.34	188.7	179.2	14.59	14.21	0.830
May	213.5	86.64	22.90	211.6	200.8	16.26	15.84	0.825
June	233.4	69.27	25.63	225.4	214.2	16.91	16.47	0.805
July	220.9	77.32	28.34	215.6	204.5	16.12	13.67	0.699
August	201.6	74.40	28.93	207.7	197.2	15.54	15.14	0.804
September	166.3	59.67	26.82	183.3	174.1	13.82	13.46	0.809
October	127.9	59.50	23.98	149.7	141.9	11.61	11.32	0.833
November	93.5	43.38	19.02	118.0	111.8	9.33	9.10	0.850
December	81.0	35.46	15.00	107.2	101.3	8.58	8.37	0.861
Year	1860.2	732.95	21.18	2017.7	1914.0	155.52	149.51	0.817

Legends

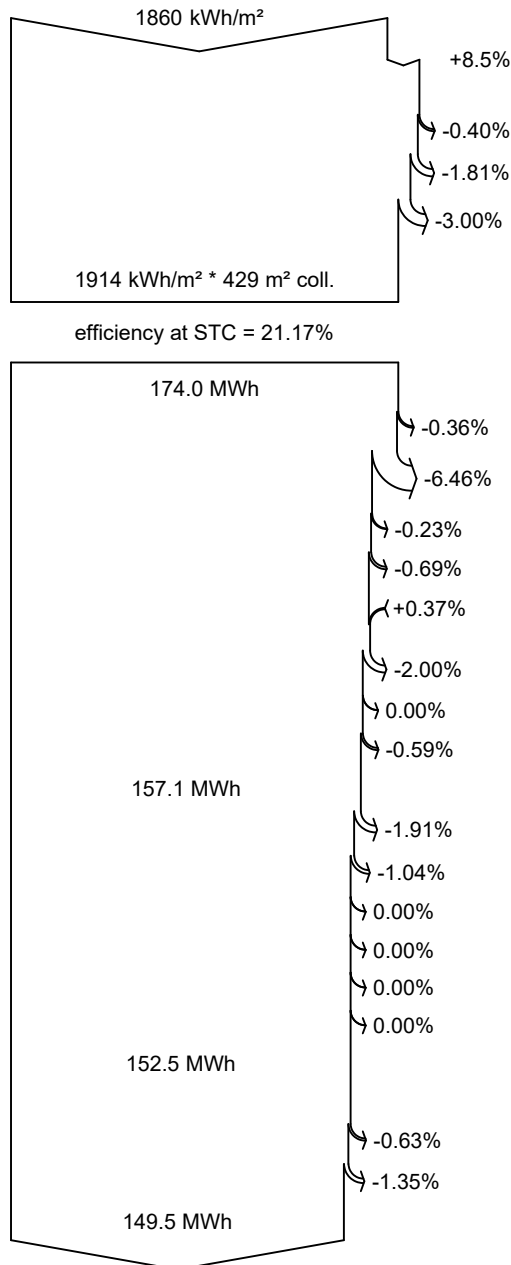
GlobHor	Global horizontal irradiation	EArray	Effective energy at the output of the array
DiffHor	Horizontal diffuse irradiation	E_Grid	Energy injected into grid
T_Amb	Ambient Temperature	PR	Performance Ratio
GlobInc	Global incident in coll. plane		
GlobEff	Effective Global, corr. for IAM and shadings		



PVsyst V7.2.2

VC0, Simulation date:
28/02/22 11:53
with v7.2.2

Loss diagram



Global horizontal irradiation

Global incident in coll. plane

Near Shadings: irradiance loss

IAM factor on global

Soiling loss factor

Effective irradiation on collectors

PV conversion

Array nominal energy (at STC effic.)

PV loss due to irradiance level

PV loss due to temperature

Shadings: Electrical Loss acc. to strings

Optimizer efficiency loss

Module quality loss

LID - Light induced degradation

Module array mismatch loss

Ohmic wiring loss

Array virtual energy at MPP

Inverter Loss during operation (efficiency)

Inverter Loss over nominal inv. power

Inverter Loss due to max. input current

Inverter Loss over nominal inv. voltage

Inverter Loss due to power threshold

Inverter Loss due to voltage threshold

Available Energy at Inverter Output

AC ohmic loss

System unavailability

Energy injected into grid

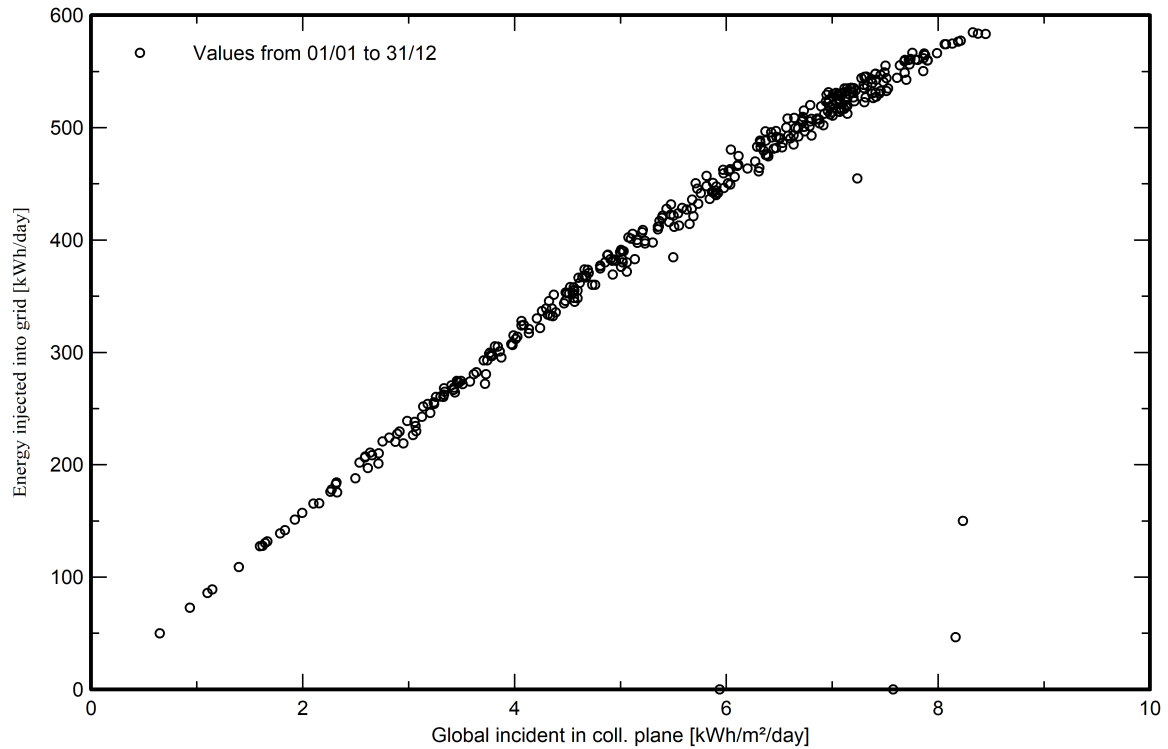


PVsyst V7.2.2

VC0, Simulation date:
28/02/22 11:53
with v7.2.2

Special graphs

Daily Input/Output diagram



System Output Power Distribution

