Version 7.4.8

# PVsyst - Simulation report

## Grid-Connected System

Project: Factory_1MW

Variant: Mahya Shahshahani_810199598

Tables on a building

System power: 986 kWp

Centretown - Canada

**Author**

**PVsyst V7.4.8**
VC0, Simulation date:
05/31/25 14:39
with V7.4.8

## Project summary

**Geographical Site**
**Centretown**
Canada

**Situation**

| | |
|---|---|
| Latitude | 45.42 °N |
| Longitude | -75.69 °W |
| Altitude | 82 m |
| Time zone | UTC-5 |

**Project settings**

| | |
|---|---|
| Albedo | 0.15 |

**Weather data**
Centretown
Meteonorm 8.1 (1991-2005), Sat=45% - Synthetic

## System summary

**Grid-Connected System**

**Tables on a building**

**PV Field Orientation**
Fixed plane
Tilt/Azimuth 30 / 0 °

**Near Shadings**
Linear shadings : Fast (table)

**User's needs**
Unlimited load (grid)

**System information**

**PV Array**

| | |
|---|---|
| Nb. of modules | 1972 units |
| Pnom total | 986 kWp |

**Inverters**

| | |
|---|---|
| Nb. of units | 5 units |
| Pnom total | 825 kWac |
| Pnom ratio | 1.195 |

## Results summary

| | | | | | |
|---|---|---|---|---|---|
| Produced Energy | 1017740 kWh/year | Specific production | 1032 kWh/kWp/year | Perf. Ratio PR | 67.14 % |

## Table of contents

**PVsyst V7.4.8**
VC0, Simulation date:
05/31/25 14:39
with V7.4.8

## General parameters

**Grid-Connected System**

**Tables on a building**

**PV Field Orientation**

| Orientation | |
|---|---|
| Fixed plane | |
| Tilt/Azimuth | 30 / 0 ° |

| Sheds configuration | |
|---|---|
| Nb. of sheds | 68 units |
| Identical arrays | |
| **Sizes** | |
| Sheds spacing | 1.09 m |
| Collector width | 1.13 m |
| Ground Cov. Ratio (GCR) | 103.6 % |
| Top inactive band | 0.02 m |
| Bottom inactive band | 0.02 m |
| **Shading limit angle** | |
| Limit profile angle | 80.6 ° |

| Models used | |
|---|---|
| Transposition | Perez |
| Diffuse | Perez, Meteonorm |
| Circumsolar | separate |

**Horizon**
Free Horizon

**Near Shadings**
Linear shadings : Fast (table)

**User's needs**
Unlimited load (grid)

## PV Array Characteristics

**PV module**

| | |
|---|---|
| Manufacturer | AE Solar |
| Model | AE 500MD-132BD |
| (Original PVsyst database) | |
| Unit Nom. Power | 500 Wp |
| Number of PV modules | 1972 units |
| Nominal (STC) | 986 kWp |
| Modules | 68 string x 29 In series |
| **At operating cond. (50°C)** | |
| Pmpp | 899 kWp |
| U mpp | 1025 V |
| I mpp | 877 A |

**Inverter**

| | |
|---|---|
| Manufacturer | Kaco new energy |
| Model | Blueplanet 165 TL3-INT |
| (Original PVsyst database) | |
| Unit Nom. Power | 165 kWac |
| Number of inverters | 5 units |
| Total power | 825 kWac |
| Operating voltage | 960-1300 V |
| Pnom ratio (DC:AC) | 1.20 |

**Total PV power**

| | |
|---|---|
| Nominal (STC) | 986 kWp |
| Total | 1972 modules |
| Module area | 4679 m² |
| Cell area | 4311 m² |

**Total inverter power**

| | |
|---|---|
| Total power | 825 kWac |
| Number of inverters | 5 units |
| Pnom ratio | 1.20 |

## Array losses

**Thermal Loss factor**
Module temperature according to irradiance
Uc (const) 20.0 W/m²K
Uv (wind) 0.0 W/m²K/m/s

**DC wiring losses**
Global array res. 19 mΩ
Loss Fraction 1.5 % at STC

**Module Quality Loss**
Loss Fraction -0.8 %

**Module mismatch losses**
Loss Fraction 2.0 % at MPP

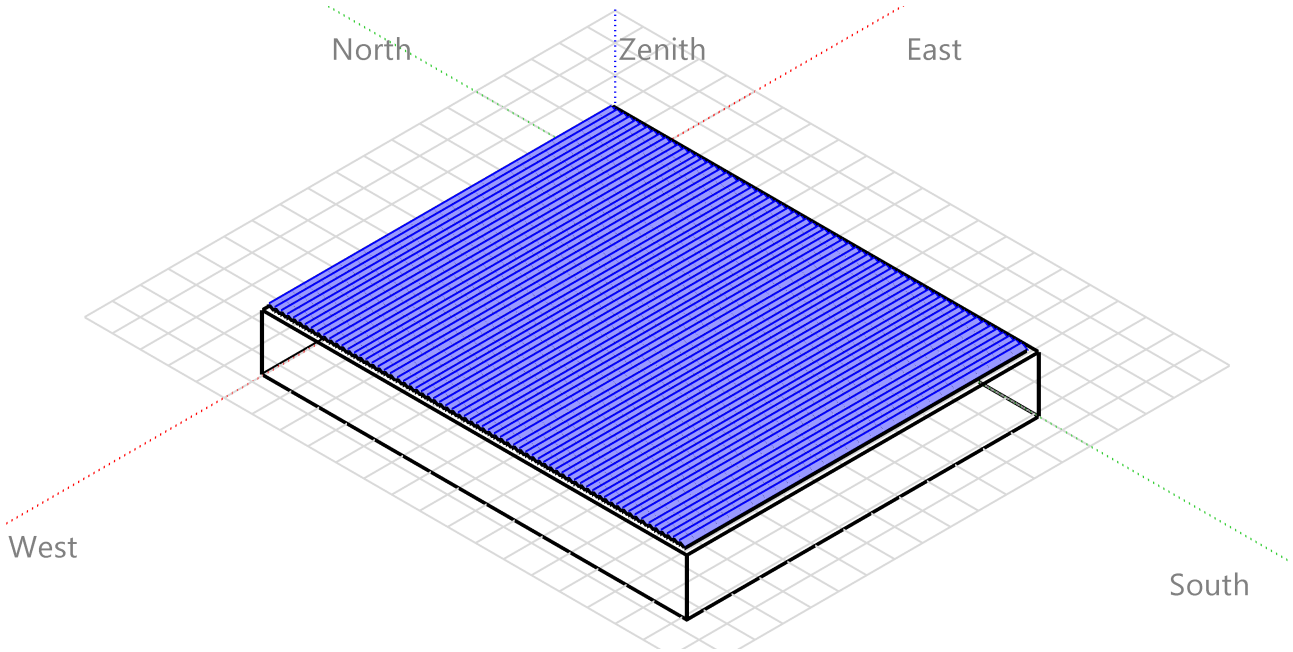
**Strings Mismatch loss**
Loss Fraction 0.2 %

**IAM loss factor**
Incidence effect (IAM): Fresnel, AR coating, n(glass)=1.526, n(AR)=1.290

| 0° | 30° | 50° | 60° | 70° | 75° | 80° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|
| 1.000 | 0.999 | 0.987 | 0.962 | 0.892 | 0.816 | 0.681 | 0.440 | 0.000 |

## Near shadings parameter

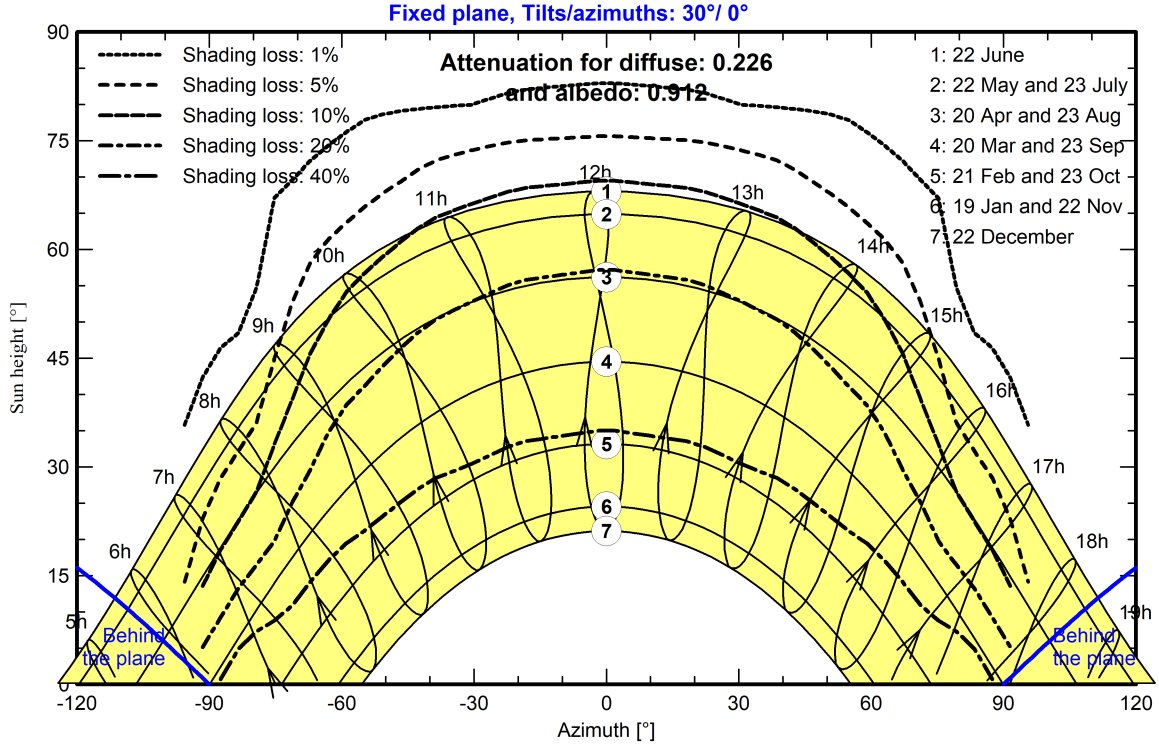
**Perspective of the PV-field and surrounding shading scene**




## Iso-shadings diagram

**Orientation #1**

**Fixed plane, Tilts/azimuths: 30°/ 0°**



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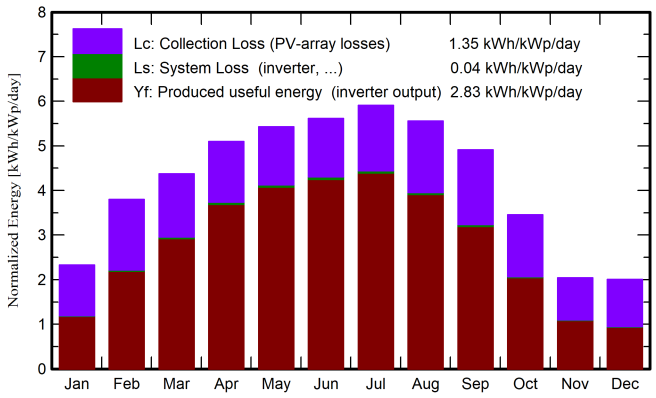
VC0, Simulation date:
05/31/25 14:39
with V7.4.8

## Main results

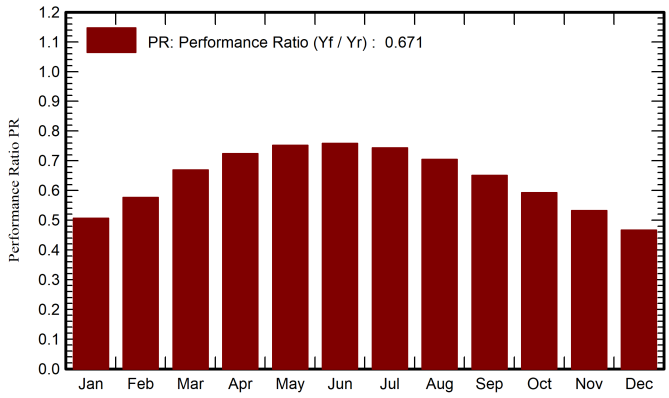
### System Production

| | | | |
|---|---|---|---|
| Produced Energy | 1017740 kWh/year | Specific production | 1032 kWh/kWp/year |
| | | Perf. Ratio PR | 67.14 % |

**Normalized productions (per installed kWp)**




**Performance Ratio PR**




**Balances and main results**

| | GlobHor kWh/m² | DiffHor kWh/m² | T_Amb °C | GlobInc kWh/m² | GlobEff kWh/m² | EArray kWh | E_Grid kWh | PR ratio |
|---|---|---|---|---|---|---|---|---|
| **January** | 43.1 | 23.96 | -9.96 | 72.1 | 36.1 | 36543 | 36013 | 0.506 |
| **February** | 69.3 | 29.43 | -8.34 | 106.4 | 61.2 | 61272 | 60495 | 0.577 |
| **March** | 107.2 | 53.40 | -2.03 | 135.5 | 92.6 | 90465 | 89320 | 0.669 |
| **April** | 137.0 | 62.72 | 6.45 | 153.0 | 117.6 | 110652 | 109259 | 0.724 |
| **May** | 167.9 | 84.01 | 14.55 | 168.3 | 139.0 | 126278 | 124763 | 0.752 |
| **June** | 173.8 | 86.36 | 19.04 | 168.4 | 142.8 | 127430 | 125879 | 0.758 |
| **July** | 185.2 | 79.25 | 22.04 | 183.2 | 154.9 | 135962 | 134338 | 0.744 |
| **August** | 157.7 | 64.86 | 20.95 | 172.3 | 136.4 | 121086 | 119619 | 0.704 |
| **September** | 120.5 | 51.91 | 16.33 | 147.5 | 105.4 | 95790 | 94664 | 0.651 |
| **October** | 78.1 | 36.53 | 9.01 | 107.1 | 67.5 | 63378 | 62591 | 0.593 |
| **November** | 41.6 | 26.39 | 1.93 | 61.3 | 33.8 | 32647 | 32191 | 0.532 |
| **December** | 34.6 | 17.73 | -5.48 | 62.2 | 29.2 | 29045 | 28610 | 0.467 |
| **Year** | 1316.0 | 616.56 | 7.13 | 1537.4 | 1116.5 | 1030547 | 1017740 | 0.671 |

### Legends

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

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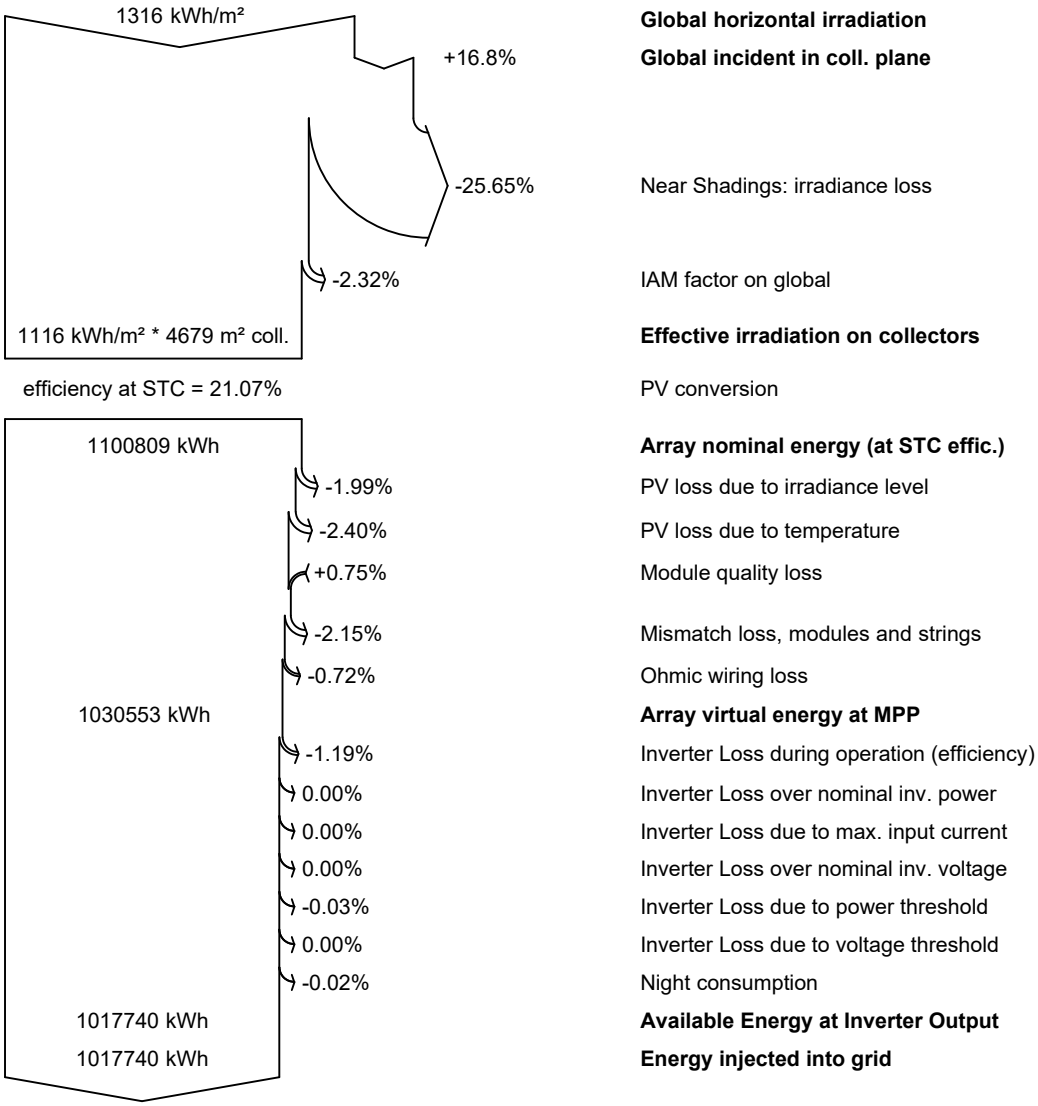
## Loss diagram



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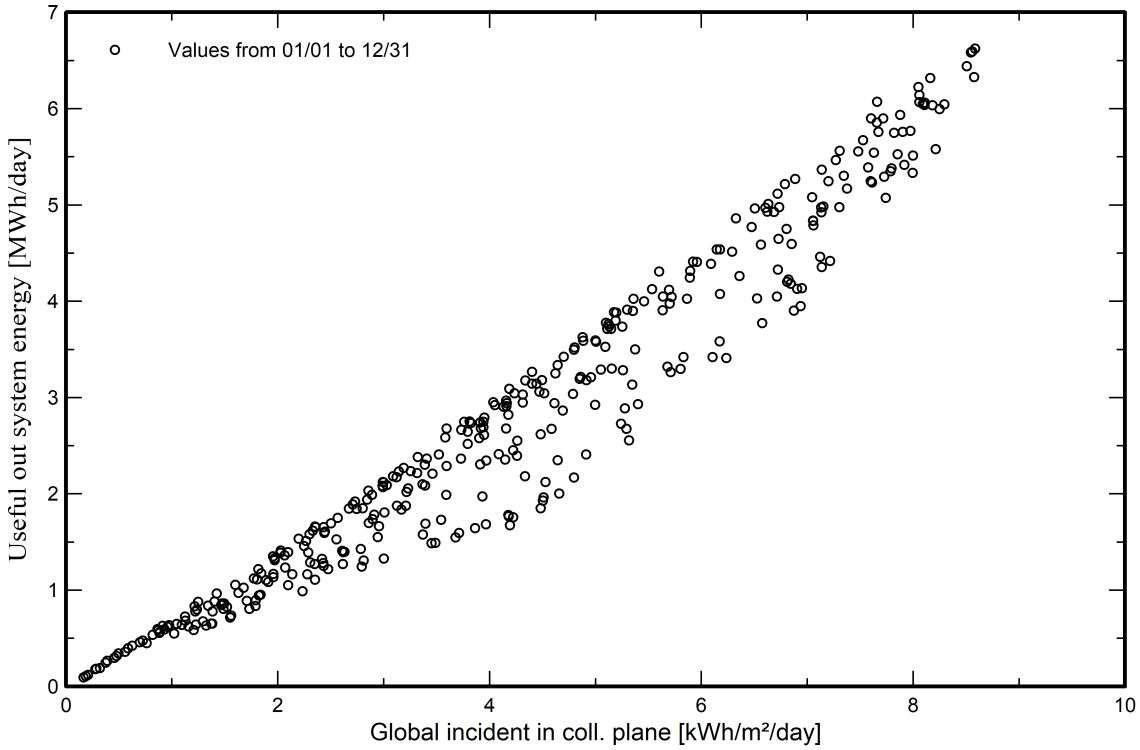
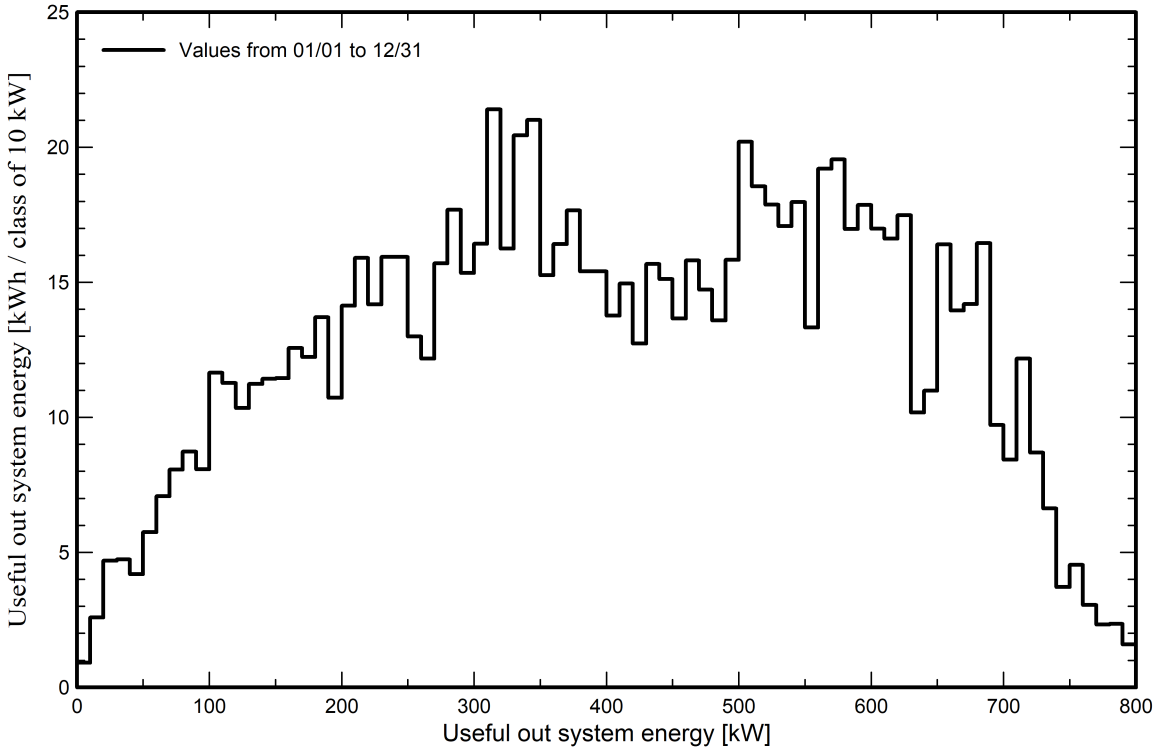
## Predef. graphs

### Daily Input/Output diagram




### System Output Power Distribution



# Single-line diagram

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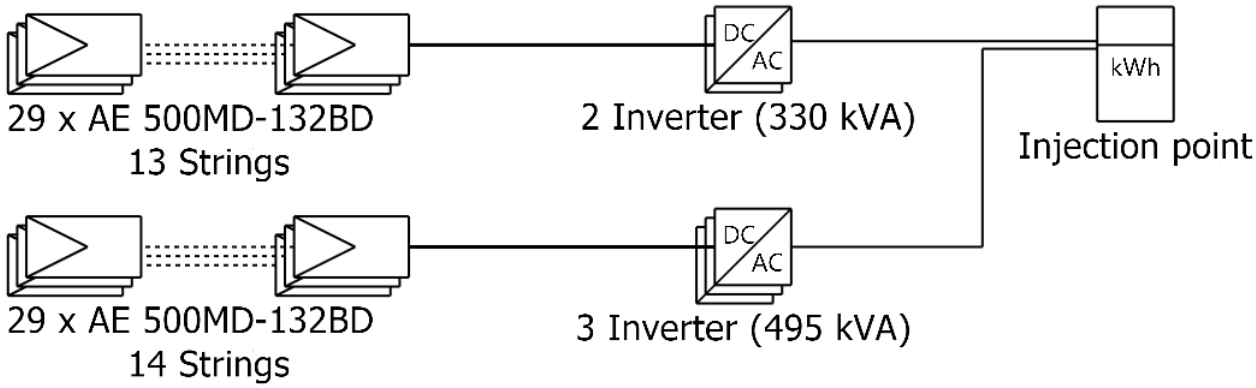


| | |
|---|---|
| PV module | AE 500MD-132BD |
| Inverter | Blueplanet 165 TL3-INT |
| String | 29 x AE 500MD-132BD |

| | | |
|---|---|---|
| | Factory_1MW | |
| | VC0 : Mahya Shahshahani_810199598 | 05/31/25 |