Introduction to the system planning with PV*SOL (PV*SOL premium)

Valentin Software
Goals

- On-grid system
- With net metering and electric vehicle
- MeteoSyn
- Load profiles
- Photo Plan, Roof view
- Polymorphic configuration and power optimizers
Can I ask questions?

- For questions, please use the chat function on the right hand side of your screen.
Can I ask questions?

- For text-based chat, please use a messaging application or email.

![MeteoSyn software interface](image)
Can I ask questions?

- For support, please chat with us.
- Search by ZIP code.
- Location information available.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SHP 125-103-03</td>
<td>SMA Solar Technologies AG</td>
<td>1</td>
<td>125</td>
<td>500</td>
<td>500</td>
<td>1000</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>SHP 150-20</td>
<td>SMA Solar Technologies AG</td>
<td>1</td>
<td>150</td>
<td>500</td>
<td>500</td>
<td>1000</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>SHP 180-100-09</td>
<td>SMA Solar Technologies AG</td>
<td>1</td>
<td>180</td>
<td>500</td>
<td>500</td>
<td>1000</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>STP 40-40</td>
<td>SMA Solar Technologies AG</td>
<td>2</td>
<td>40</td>
<td>500</td>
<td>350</td>
<td>650</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>STP 60-40</td>
<td>SMA Solar Technologies AG</td>
<td>3</td>
<td>60</td>
<td>500</td>
<td>350</td>
<td>650</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>STP 90-40</td>
<td>SMA Solar Technologies AG</td>
<td>4</td>
<td>90</td>
<td>500</td>
<td>350</td>
<td>650</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 1.5-10-40</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>1.5</td>
<td>1000</td>
<td>450</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 2.0-10-50</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>2.0</td>
<td>1000</td>
<td>500</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 2.5-10-70</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>2.5</td>
<td>1000</td>
<td>700</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 3.0-10-80</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>3.0</td>
<td>1000</td>
<td>800</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 3.5-10-90</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>3.5</td>
<td>1000</td>
<td>900</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 4.0-10-100</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>4.0</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 4.5-10-110</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>4.5</td>
<td>1000</td>
<td>1100</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 5.0-10-120</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>5.0</td>
<td>1000</td>
<td>1200</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 5.5-10-130</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>5.5</td>
<td>1000</td>
<td>1300</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 6.0-10-140</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>6.0</td>
<td>1000</td>
<td>1400</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 6.5-10-150</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>6.5</td>
<td>1000</td>
<td>1500</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 7.0-10-160</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>7.0</td>
<td>1000</td>
<td>1600</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 7.5-10-170</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>7.5</td>
<td>1000</td>
<td>1700</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 8.0-10-180</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>8.0</td>
<td>1000</td>
<td>1800</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 8.5-10-190</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>8.5</td>
<td>1000</td>
<td>1900</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 9.0-10-200</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>9.0</td>
<td>1000</td>
<td>2000</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 9.5-10-210</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>9.5</td>
<td>1000</td>
<td>2100</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 10.0-10-220</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>10.0</td>
<td>1000</td>
<td>2200</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 10.5-10-230</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>10.5</td>
<td>1000</td>
<td>2300</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SunnyBoy 11.0-10-240</td>
<td>SolarWorld AG</td>
<td>1</td>
<td>11.0</td>
<td>1000</td>
<td>2400</td>
<td>1000</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Results

#### PV System

- **PV Generator Output**: 3.1 kW
- **Spec. Annual Yield**: 5,040.26 MWh
- **Performance Ratio (PER)**: 89.5 %
- **PV Generator Energy (AC grid)**: 7,082 kWh/year
- **Zone regulation of Feed-in-Point**: 4.7 kWh

#### Appliances

- **Standby Consumption (Inverter)**: 12 kWh
- **Charge of the electric vehicle**: 3.28 kWh
- **Total Consumption**: 7,367 kWh
- **Covered by grid**: 3,296 kWh
- **Covered by solar**: 3,282 kWh
- **Solar Frac.**: 99.9 %

#### Electric vehicle

- **Charge at beginning**: 28 kWh
- **Charge of the grid**: 3.28 kWh
- **Charge of the electric vehicle (PV System)**: 777 kWh
- **Losses due to charging**: 83 kWh
- **Losses in battery**: 261 kWh
- **Consumption due to kilometers driven**: 303 kWh
- **Mileage per year**: 8020 km
- **Level of self-sufficiency**: 22.4 %

#### System Data

- **Project Name**: System planning 3D
- **Project Number**: 12816
- **Start of Operation**: 23.01.2019

#### System Type, Climate and Grid

- **Type of System**: Grid-connected Photovoltaic system, 360 Wp / 1200 Wp
- **Climate Data**: 46°C, 1600 kWh/year
- **AC Items**: 230 V, 3-phase, 140 A
- **Maximum Feed-in**: 7850 kWh

#### Consumption

- **Total Consumption**: 4400 kWh/year
- **Load Peak**: 12.8 kW

#### PV Modules

- **Module Area**: 1 x 1 m²
- **Module Data**: LG360PC O4
- **Number of PV-Modules**: 25
- **Induction**: 40°
- **Oversize**: 40%

#### Inverters

- **Model**: Sunny Tripower FZ 7 kW
- **Manufacturer**: SMA Solar Technology AG

#### Financial Analysis

- **Investment Costs**: 1,200,000 €
- **Annual Costs**: 1,300,000 €
- **Net Present Value (NPV)**: 573,000 €
- **Internal Rate of Return (IRR)**: 9.2 %

---

*Note: The table and diagram are generated by PVsOL, a software for photovoltaic systems.*
Thank you for your attention
www.valentin-software.com
webinar@valentin-software.com