Big Dutchman®

SunFarm & SunBox

Electricity generation with photovoltaics and battery storage
for greater self-sufficiency in energy consumption and reduced costs

SunFarm & SunBox

Using the power of the sun to reduce energy costs sustainably

Agricultural buildings are ideal for modern solar photovoltaic (PV) systems because they usually have large roof areas. Big Dutchman is a competent partner for customers interested in solar power generation. With a modular system tailored to scale, you can reduce your electricity costs sustainably nearly anywhere in the world using the power of the sun.

The icing on the cake is the complementary battery system. If you opt for battery storage as well as equipping your roof with a PV system, you can cover an even larger percentage of your energy requirements, thus further lowering your energy costs. Additionally, any excess electricity can be fed into the public grid.

Depending on the location and general conditions, SunFarm and SunBox can generate up to 80 % of the energy you need. Big Dutchman experts will gladly assess your location and buildings to prepare a quotation for a PV system.

SunFarm

The powerful photovoltaic system for your farm

If you want to reduce energy costs in livestock production permanently, SunFarm is the way to go. Big Dutchman will install state-of-the-art rooftop PV modules on your livestock buildings, with components from reputable manufacturers that are well-suited for use in agriculture and that guarantee a calculable output. You can use the solar power that is produced directly in your livestock buildings and then feed excess electricity into the public grid.

Advantages of SunFarm

- ✔ high overall efficiency thanks to the clever combination of suitable components;
- ✔ low additional loads on the roof, usually below 15 kg/m²;
- ✔ supply of a system that perfectly fits your requirements.

Purpose

- ✔ sustainable reduction of energy costs
- ✔ security against increasing electricity prices
- ✔ environmental protection: permanent reduction of your carbon footprint

Service

- ✔ competent consulting and individual configuration
- ✔ turn-key installation
- ✔ regular system monitoring (optional)

Technology

- ✔ robust technology suitable for agriculture
- ✔ calculable output thanks to performance guarantee

System integration

- ✔ increased efficiency thanks to direct and indirect supply to the electrical equipment in the building

Vast knowledge acquired by Big Dutchman through many projects the world over

Big Dutchman is not only your competent partner for pig and poultry equipment. Turn-key projects including PV systems and battery storage are also part of the product range. With an international network of agents and distributors, Big Dutchman can offer regional experience anywhere in the world. Whether your project is large or small, let Big Dutchman handle everything!

System power: 749 kWp

System power: 669.76 kWp

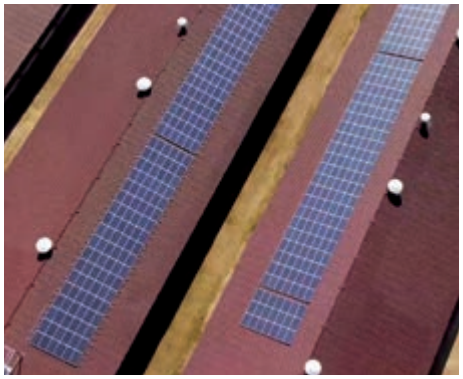
System power: 49 kWp

System power: 30 kWp

System power: 122 kWp

System power: 445 kWp

System power: 99 kWp



System power: 186 kWp

SunBox

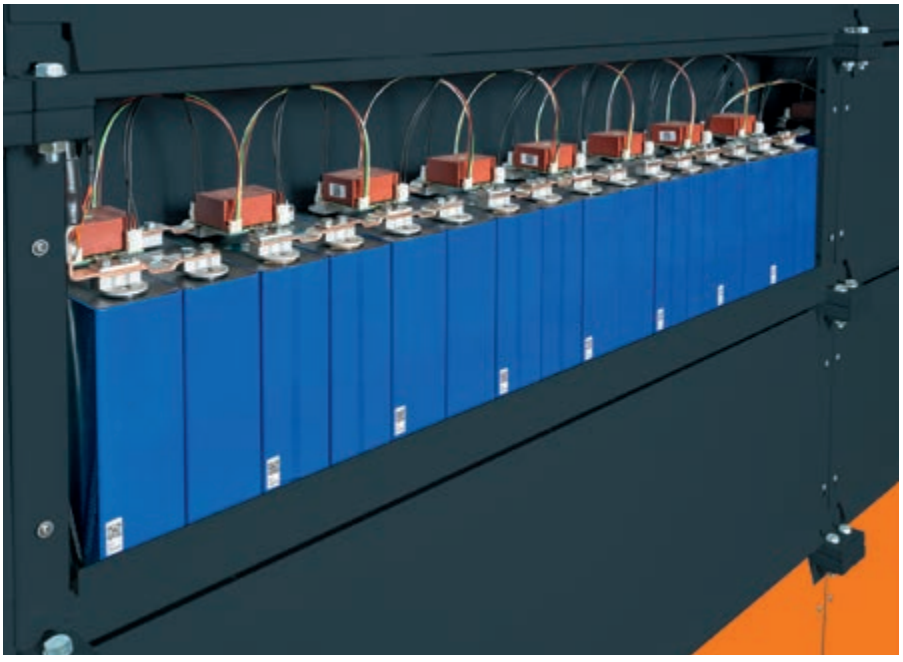
Effective battery storage for your photovoltaic system

Increase your solar coverage rate and reduce your dependence on your energy supplier! Surplus solar electricity need not only be fed into the public grid, it can be stored through the Big Dutchman battery system. This is an economic alternative because the batteries store power generated during sunny hours so it can be used during the night, which also helps to level-out load peaks.
SunBox is a stationary battery storage system with a modular design that meets the highest quality standards. Retrofitting an existing PV system with SunBox is simple because SunBox is compatible with virtually all inverters available on the market.

16 modules with a total capacity of 224 kWh

Advantages of SunBox

- ✔ stationary battery storage with a modular design;
- ✔ scalability in steps of 14 kWh up to your desired size;
- ✔ intrinsically safe battery chemistry with lithium iron phosphate (LFP) cells that are robust, have a long service life and do not contain any rare earths;
- ✔ display of cell and component diagnosis for components that require maintenance;
- ✔ cell management according to individual cell charges so charging and capacity tolerances can be balanced even under the highest loads;
- ✔ high charging and discharging power;
- ✔ storage diagnosis down to the cell level;
- ✔ open design that is easily accessible for service at every assembly group;
- ✔ high system compatibility.



16 cells per module

Technical data

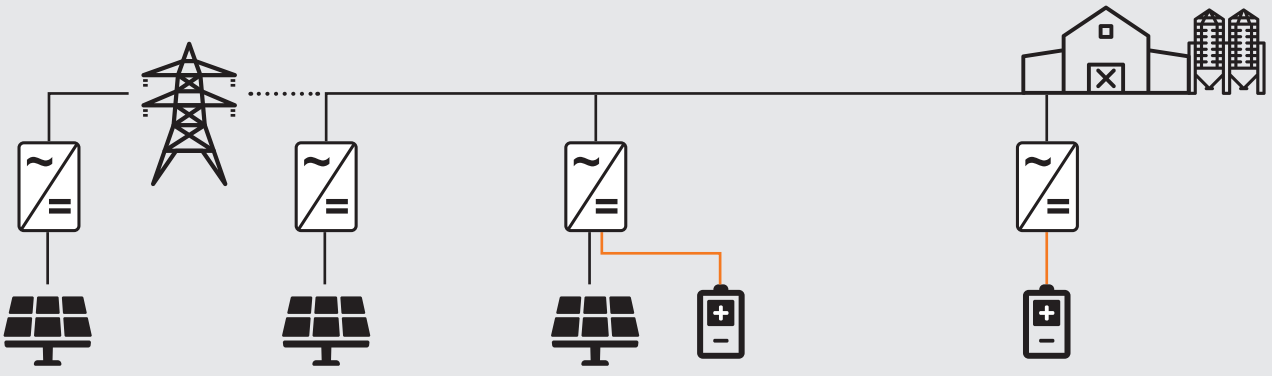
- battery chemistry: LFP cells, a very secure technology;
- capacity per module: 16 cells with 14 kWh;
- module voltage: 48 VDC;
- module size (H x W x D): 400 x 1300 x 260 mm;
- module weight: approx. 100 kg;
- operating temperature: -20 °C to 45 °C, ideal temperature between 10 °C and 35 °C;
- capacity: 1 C to 10 C (depending on the configuration);
- expected capacity loss after 10 000 cycles below 20 % for an operating temperature between 5 °C and 40 °C.

The advantages of SunFarm and SunBox at a glance

- ✔ significant and sustainable reduction of energy costs;
- ✔ long-term security against increasing electricity prices;
- ✔ up to 80 % of the total energy demand covered by the annual solar yield;
- ✔ long service life, low maintenance costs;
- ✔ no management costs;
- ✔ personal monitoring of energy production, also possible remotely;
- ✔ short amortisation periods possible;
- ✔ scalability thanks to modular design;
- ✔ systems ideally suited for agriculture with maximum functional reliability;
- ✔ reduction of CO_2 emissions by up to 80 %.

Which system concept would you like to see?

If you **fill in the checklist below** and send it to your consultant ahead of the first non-binding consultation, Big Dutchman will be able to show you preliminary figures based on this initial assessment during the meeting.



○ Full feed into grid ○ Self-consumption ○ Self-consumption with battery storage ○ Battery storage retrofit

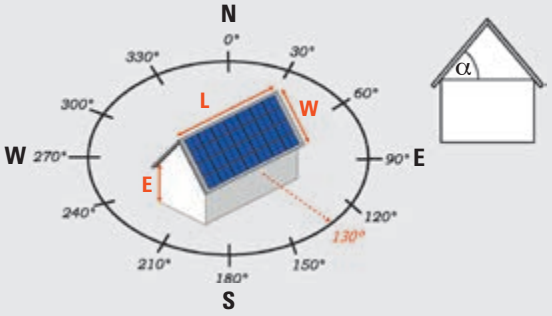
Building and roof design

Length (L) _____ m Width (W) _____ m Eaves height (E) _____ m

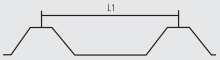
Roof pitch α _____ degrees

Roof orientation _____ degrees

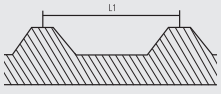
(Example: orientation in the drawing on the right = 130 degrees)



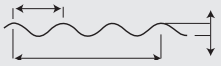
○ Trapezoidal sheet



○ Sandwich



○ Corrugated sheet



Consumption data and existing systems

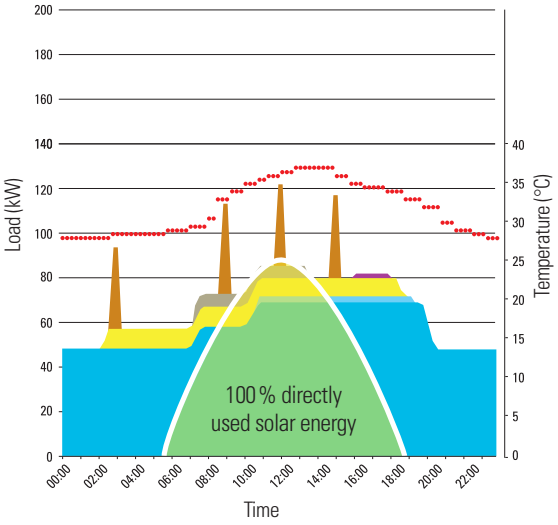
Annual power consumption _____ kWh

Existing PV system _____ kWp with _____ kVA inverter

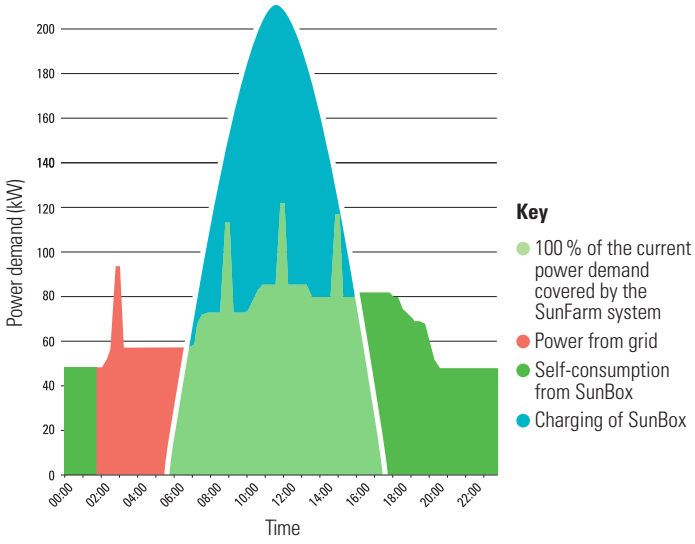
Two examples for SunFarm systems: with and without SunBox

The size of a PV system depends on many factors. The two examples below show the most economic, smallest system (on the left) and a SunFarm system with the largest self-consumption that is possible in connection with the SunBox battery storage (on the right). Of course, any size in-between can be calculated as well. The Big Dutchman experts will be glad to provide you with detailed information.

Typical load curve of a layer house:



SunFarm without battery storage.
The goal is to use 100 % of the generated electricity directly on the farm.



Larger SunFarm system with SunBox.
The goal is only having to use little or ideally no electricity from the grid.

SunFarm & SunBox	50 kWp	200 kWp + 168 kWh
Photovoltaic modules	132 units	658 units
Used roof area	approx. 245 m²	approx. 1220 m²
Battery volume	–	1.62 m³
Required power	250 000 kWh	250 000 kWh
One-time investment SunFarm	€62 500	€350 000
Electricity generation SunFarm*	45 000 kWh/year	180 000 kWh/year
Self-consumption	100 %	80 %
Savings at electricity costs of €0.30 per kWh	€13 620	€43 500
Feed-in tariff for excess electricity	–	€ 2339 per year
Amortisation period	4.6 years	7 years
Savings after amortisation	€13 620 per year	€45 840 per year

* 900 hours of sun per year
** €0.0639 per kWh

One of the knowledgeable Big Dutchman specialists will consult you and create an individual configuration of SunFarm and SunBox, customised to meet your needs. Big Dutchman experts install and commission the system on site. Afterwards, Big Dutchman will be happy to support you with the monitoring of the system, if requested.
Are you thinking about building a new livestock house? Contact Big Dutchman to learn more about complete solutions from one single source, including the building and the housing equipment.

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