



THE SOLAR TRANSFORMER

Portable Integrated Solar Power





INTRODUCTION

Spectral Utilities offers innovative micro-utility services for temporary, off-grid and smart-grid applications. We provide resources for modern demand in a fully renewable way.

The Solar Transformer is quick to deploy and easy to use, giving you renewable energy wherever you need it. Solar power is stored in a sophisticated onboard energy storage and distribution system. It can power a household or office, or be used as a portable energy station.

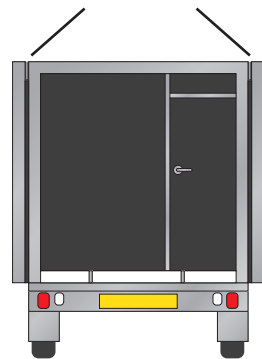
The Solar Transformer was built with a modular approach. Each of the following three modules can be detached and used as a stand-alone module:

- .01 Solar Charging Station
- .02 Peak Shaver Power Pack
- .03 Universal Hydraulics Control Station

SPECS

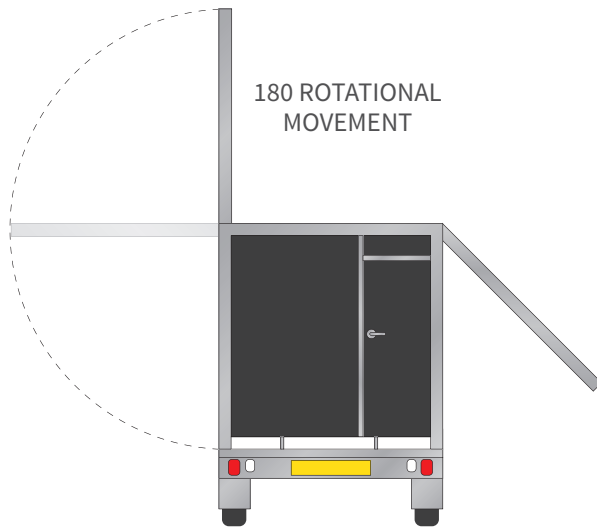
CLOSED:

GUTTERS FOR RAINWATER COLLECTION



FULLY WATERPROOF

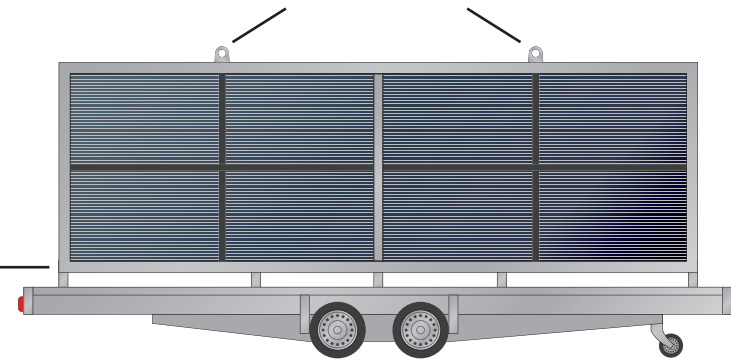
OPENED:



180 ROTATIONAL
MOVEMENT

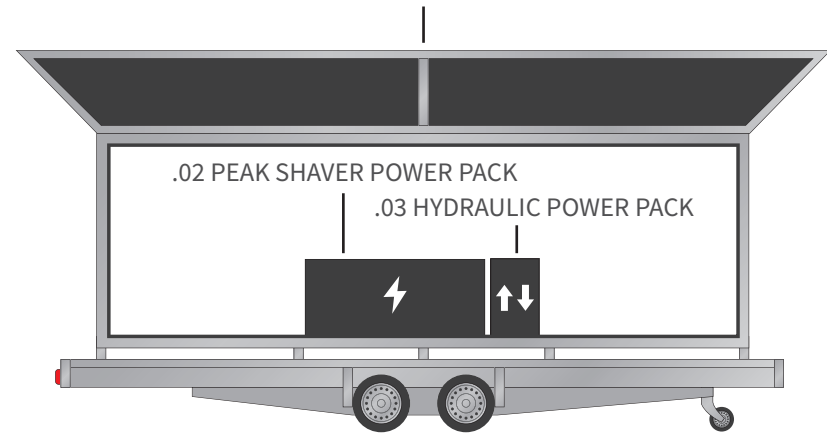
CRANE LIFTING ATTACHMENT (OPTIONAL)

DESIGNED FOR
FORKLIFTING



FITS ON A 6 METER
FLAT BED TRAILER

.01 SOLAR CHARGING STATION





BENEFITS

COMPETITIVE WITH DIESEL

The Solar Transformer can replace a diesel generator or be used in combination, drastically reducing the number of hours of generator run-time. This translates to an extended generator lifespan and thousands of euros saved on fuel and maintenance costs. It provides renewable energy silently with zero harmful emissions. When not in use as a mobile generator, the Solar Transformer can feed back electricity into the grid to pay for itself over time.

VERSATILE & MOBILE

The Solar Transformer is built in a self-contained housing. The steel frame was designed for easy mobility and fits within a standard 6-meter sea shipping container. It can also be placed on top of a 6-meter flatbed trailer for easy transport and on-site mobility. The Solar Transformer is prepared for lifting by forklift, crane, or helicopter.

The Solar Transformer can be used as a stationary power station to power a home or office, or it can be taken on the road for high-capacity portable power.

CUSTOMIZABLE

Only 25% of the floor space is used inside the Solar Transformer, leaving it highly customizable. It can be equipped with additional storage for tools and materials, transforming it into a mobile workshop powerstation. The space can be utilized to integrate additional tech systems, such as water treatment and thermal energy distribution. It can also be transformed into a bar, a mobile stage, or a kitchen.



.01 SOLAR CHARGING STATION

The Solar Charging Station provides the Solar Transformer with its renewable energy supply. It consists of a large PV array (24 solar panels) built into a steel construction that allows for easy mobility and adjustment of PV panel orientation. A large hydraulic cylinder mounted to each of the large side panels enables the user to move the PV array with the touch of a button. It can also be equipped with an automated tracking system that moves the panels to optimize PV power. Full setup takes less than 1 minute.

The roof and side-panels of the Solar Transformer create a watertight cover. The space underneath

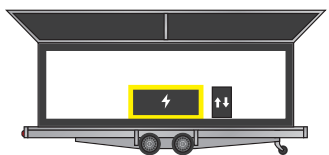
can be used as a shelter, stage, or for storage of equipment or materials. Additionally, the Solar Charging Station is equipped with gutters along the length for easy collection of rainwater.

TECHNICAL SPECS

- 24 x monocrystalline PV modules - more than 5 kWp of PV power
- MC4 parallel connectors for quick hook-up to solar charger
- Cut-off switch for safe connection of PV array
- 2 x heavy duty double-acting hydraulic

cylinders

- Durable steel frame construction with hinged side doors
- Reinforcement for forklifting and eyes for crane and helicopter logistics
- Easily fits inside of a standard 6m shipping container
- Water tight cover enables rainwater collection



.02 PEAK SHAVER POWER PACK

At its core, the Peak Shaver Power Pack is a large battery bank that includes an advanced energy management and distribution system. Where space is limited, it can be detached and removed from the Solar Transformer and used separately.

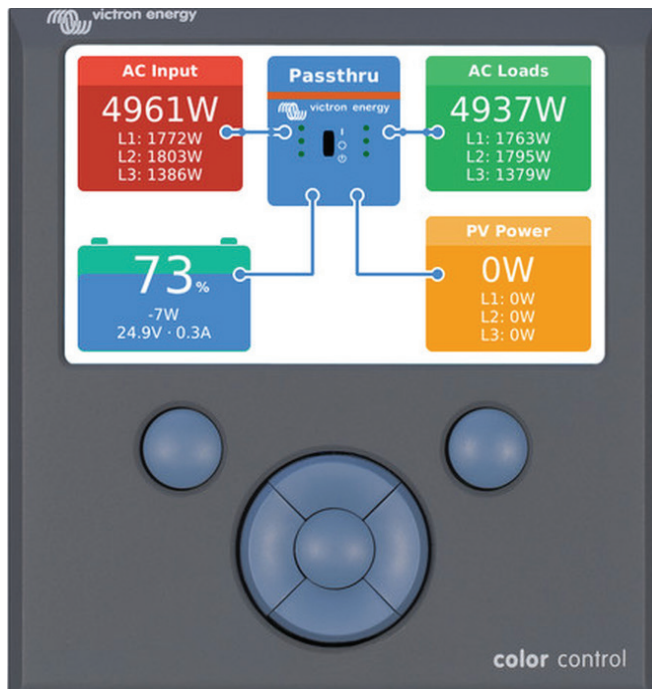
The Peak Shaver's capabilities allow you to downsize your generator or eliminate the need for a larger and more costly grid connection. You can still use the same amount of power without worrying about overloading the system. It buffers energy and absorbs peak power surges ensuring that you have uninterrupted AC power 24/7.

The Peak Shaver Power Pack's onboard control module offers sophisticated features, including GPS tracking. The data on systems performance is automatically logged and sent via WiFi to a cloud server. Using the online portal, users can quickly view historical statistics and visualizations of solar production, consumption, battery performance, and more. This provides better oversight over your energy demand and greater insight into how you use energy in your operations. The portal can also be accessed via a smartphone app and offers an open-source API for easy customization.

The Peak Shaver includes programmable relays which can auto-start a generator, or switch loads for complete demand-side management. The system can also be equipped with a different battery size or output capacity to suit your specific needs.

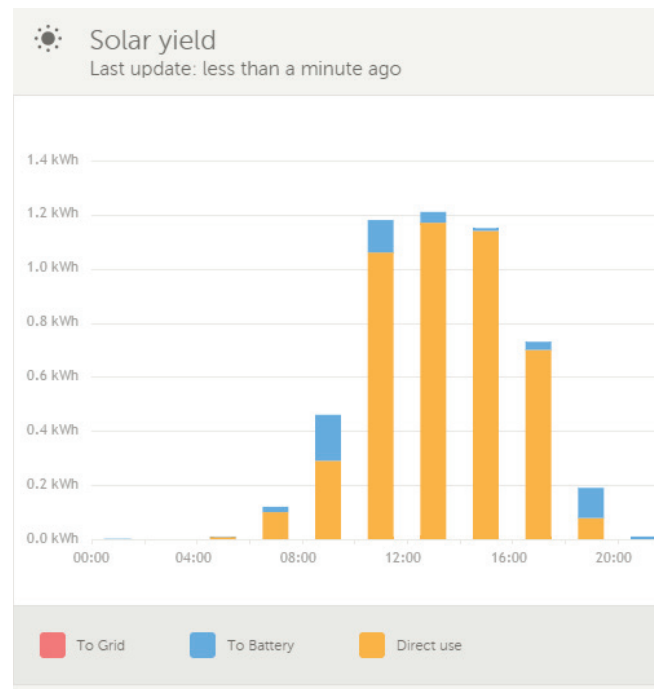
.02 PEAK SHAVER POWER PACK

The control panel provides real-time information on system performance and allows you to adaptively change settings, such as selecting the exact number of Amps to draw from an external AC source.



A rendering of the Victron Color GX Control Module

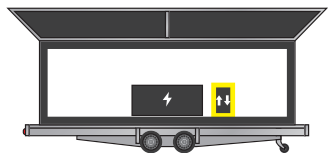
The system is easy to expand. Multiple Peak Shavers can be interconnected to create an even larger power station. Additionally, the Peak Shaver is configured to provide 3-phase AC power output for the most demanding tools and machines.



Web interface shows solar generation and battery usage

TECHNICAL SPECS

- *Continuous Power: 15 kVA*
- *Peak Power: 30 kVA*
- *AC Transfer Switch - up to 100A of 3-phase AC input*
- *Full Battery Capacity: 1000 Ah @ 48V*
- *Victron Blue Solar MPPT 150/85 Amp solar charge controller*
- *3 x Victron Multiplus 5kVA inverters / chargers*
- *Victron Color Control GX module*
- *Victron Battery Monitor*
- *Fuse box including all fuses and 30mA ground leak protection*
- *2 x 16A Shuko sockets*
- *1 x 16A 3-phase socket*
- *1 x 32A 3-phase socket*
- *1 x 63A 3-phase socket*
- *1 x 63A 3-phase input*
- *Mains cut-off switches for both AC and DC*
- *Entire assembly rated to IP65*



.03 HYDRAULICS POWER PACK

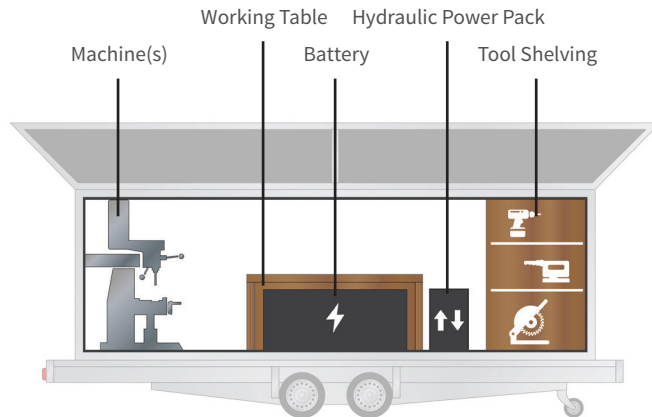
The Hydraulics Power Pack allows the user to adjust the PV arrays on the Solar Charging Station. Like the Peak Shaver, it can be detached and removed from the Solar Transformer and used as a stand-alone module to power another hydraulic machine. Quick couplers allow for easy connection and disconnection from a hydraulic setup.

The Hydraulics Power Pack comes fully equipped with a pressure gauge, two separate control panels, and all of the hardware you need to operate two double-acting hydraulic cylinders.

TECHNICAL SPECS

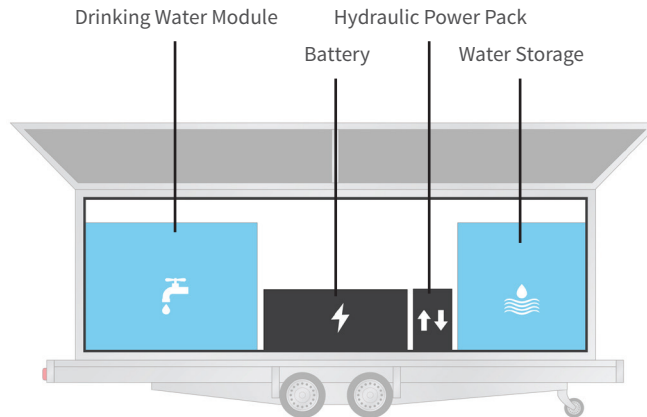
- *Onboard pressure gauge for system oversight during operation*
 - *Single assembly including pump, motor, reservoir, adjustable relief valve*
 - *Additional return-line filter*
 - *2 x Hydraulic 4-way directional control solenoid valves*
 - *2 x Up/Down arrow control panels*
 - *Hold switch for safe operation*
 - *Main cut-off switch*
 - *Ready for parallel control panel connection*
- *(for remote control)*
 - *4 x 1/2" NPT quick couplers*
 - *Entire assembly rated to IP65*

CUSTOMIZATION



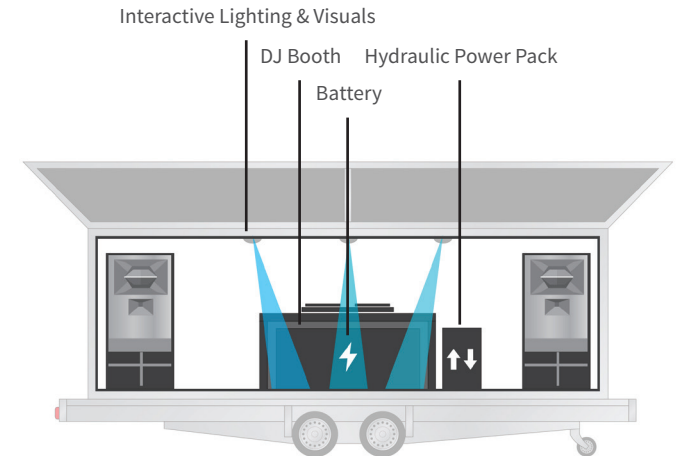
1. WORK STATION

The work station can be equipped with a working table, shelving for tools and components, and key machines for on-site construction. The Solar Transformer provides renewable energy for tools and equipment used on-site, supporting a team using welders, grinders, power tools, and appliances simultaneously.



2. WATER FILTRATION MODEL

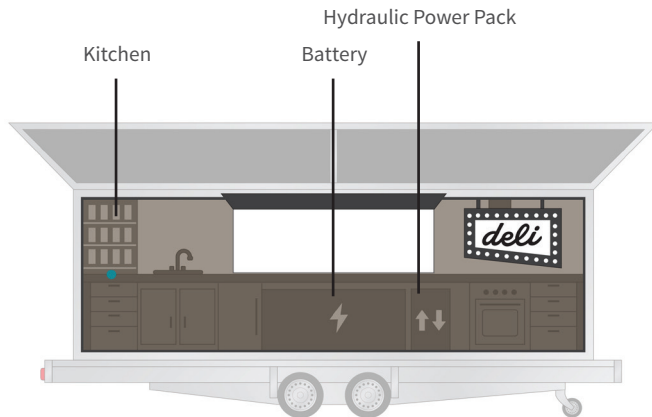
The water module collects, stores, and filters water with customizable water treatment systems for processing wastewater or producing drinking water. We work with water technology companies from around the world to offer reliable solutions for specific needs.



3. ENTERTAINMENT STAGE

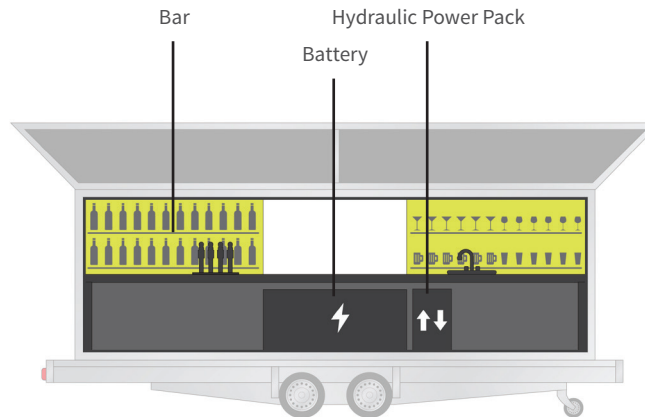
The entertainment stage comes fully equipped with a high performance sound system, interactive lighting, and a DJ setup. These features are further customizable to offer a truly unique stage. Equipment that uses energy is intelligently matched with the energy production to ensure the party doesn't end early.

CUSTOMIZATION



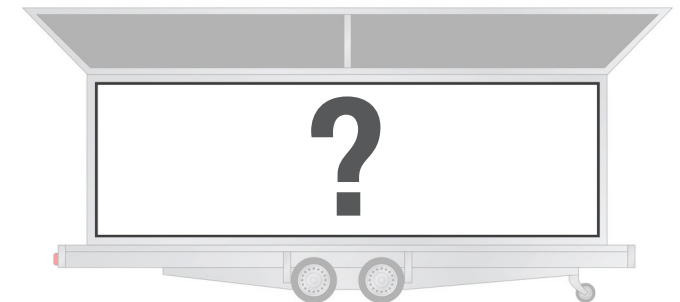
4. KITCHEN

The Solar Transformer can become outfitted as a solar kitchen, pairing electric appliances with smart storage. Our standard kitchen module includes a refrigerator and freezer, a standard size oven and 4 electric stovetops. Optional interior and exterior finishes give each kitchen its own unique feel.



5. BAR

The bar can be transported anywhere the party is located. It comes with its own energy and water supply and is designed so that glasses and bottles are safe during transport. Interior and exterior finishes are made custom, and customers can choose from a wide variety of appliances and glassware or use their own.



6. CUSTOM

Have a specific vision? We think along with our customers about how to make a Solar Transformer to suit their specific needs. Get in touch with us about how we can build something that brings your imagination to life.



SPECTRAL
UTILITIES

Mobile Resource Systems

A



METABOLIC

Company

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