

# FIVE STARS FOR SUSTAINABILITY

Self-sufficient destination gastronomy based on an energy storage system

TESVOLT  
Free to go green.



## PROFILE

**Client:**

Vargas family/Restaurant Estaminé

**Industry:**

Gastronomy, tourism

**Special characteristics:**

Wastewater-neutral restaurant

**Region, country:**

Ilha Deserta, Algarve, Portugal

## THE BACKGROUND

The Ria Formosa is a lagoon in the Algarve, southern Portugal. A nature reserve covering 170 km<sup>2</sup> is home to a large variety of flora and fauna with many exotic species, such as flamingos and chameleons. On one of the barrier islands of the lagoon, José Vargas and his family make the impossible possible – with no electricity or drinking water pipes in sight, he runs the top-class restaurant “Estaminé” amid the sand dunes of the Ilha Deserta, with the utmost standards of sustainability.



## THE CHALLENGE

When Estaminé serves up fresh oysters or its famous rice and lobster stew, there is sophisticated technology at work behind the scenes. The entire water supply of the restaurant, including the mussel tanks where seafood is cultivated, is fed from process and ground water that has been collected and purified by reverse osmosis.

José and his team also need electricity for lighting, dishwashers, hobs and refrigerating food and beverages. On an average operating day, the restaurant consumes around 430 kWh overall. Over-night, there is a steady power demand of 10 kW, mainly for water treatment and freezers.

The restaurant used to run on a diesel generator. But the fumes and noise did not suit the upscale atmosphere of the restaurant, and above all, this was not an economical solution. Because they need to warm up, diesel generators have to run longer than the actual periods when power is required. And then there are maintenance costs and transportation of fuel to the island.

The many hours of sunshine made a photovoltaic system an obvious alternative for Estaminé, but one that needed an additional storage system to cover consumption in the evening and night-time as well.

**Requirements for a storage solution:**

- High storage capacity with many guaranteed cycles for sustainable power delivery in the damp, salty setting
- Straightforward installation and compatibility with photovoltaic installation and diesel generator



OFF-GRID



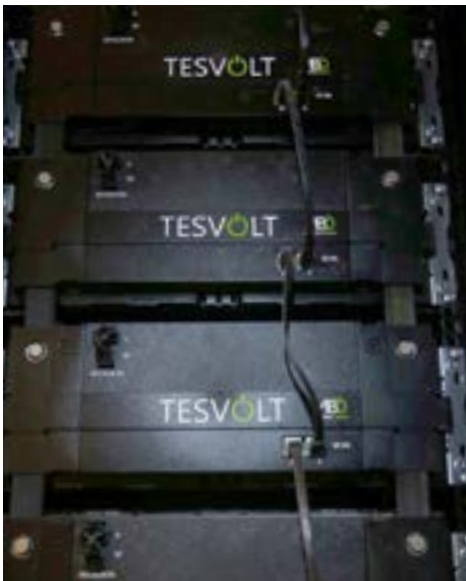
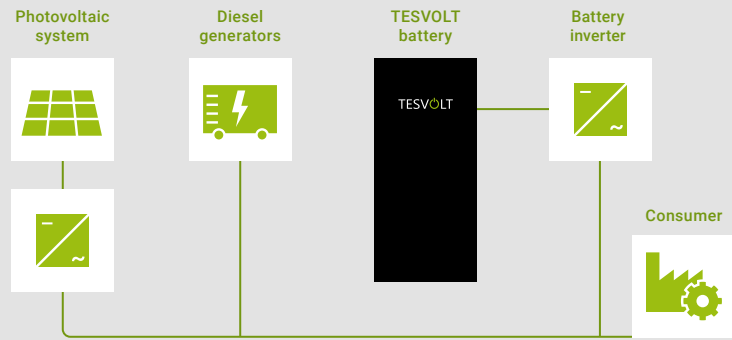
PV-DIESEL-HYBRID  
OPTIMISATION



SELF-CONSUMPTION  
OPTIMISATION

## THE SOLUTION

The specialists in renewable energies at FF Solar installed a photovoltaic system with nominal power of 60 kWp for Estaminé, supplementing the system with 384 kWh of energy from the TESVOLT TS 48 V battery storage system. The storage system can maintain full operations for one day without a generator. This mainly runs in times of extended cloud cover, kicking in when the battery charging level is at 20 % to provide a minimum reserve in case the generator fails.



»We focus on European products because we stand for high quality. We have tried Asian products, but we weren't really satisfied. They keep their cards close to their chest and they won't discuss problems. You might get a replacement, but you can't get anyone on the phone«

Sebastian Sennewald, Energy Consultant, Co-owner and Manager, FF Solar

»The system isn't free, of course – but it is reliable, and that is what we need. It's also really cool that we can control everything via the portal; that makes the logistics a lot easier.«

José Vargas, Restaurateur and Proprietor, Estaminé Restaurant

## THE BENEFITS

- **98% self-sufficient power supply**
- **Savings on diesel, maintenance and transport costs**
- **Safe and long-lasting**  
The system boasts an above-average lifespan of up to 30 years thanks to extremely robust Samsung SDI battery cells and the one-of-a-kind battery management system. This optimises cells not only within a single module, but also between modules within a cabinet.
- **Transparent**  
Our monitoring software TESVOLT BAAtMon enables a continuous overview of storage system health at the cell level.

- **Future-proof**  
Thanks to the revolutionary ABO battery management system, battery modules of the same type can be upgraded or replaced without causing any problems or efficiency losses even after years of service.
- **Powerful**  
Thanks to the battery management system, TESVOLT's storage systems make the energy they accumulate fully available. TESVOLT storage systems are 1C-capable, meaning they can be fully charged or discharged in one hour with the proper configuration. As a result, even high-performance consumers can be kept running when the sun isn't providing enough power.

## PROJECT FACTS AND FIGURES

Storage system	TS 48 V
Energy	384 kWh
Output	72 kW
Cell	Lithium NMC prismatic (Samsung SDI)
Efficiency (battery)	Up to 98%
Cycles	6,000 to 8,000 (0.5C to 1C at 23 °C +/-5 °C with a 100% depth of discharge)
Operating temperature	-10 °C to 50 °C
Battery inverter	SMA Sunny Island
Installation	FF Solar

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