



CASE STUDY: TROJANE RESTAURANT

The Challenge: Located more than 1,800 feet above sea level in the Slovenian Alps, the Trojane Restaurant is famed throughout the country for serving huge, delicious donuts as well as authentic Slovenia pub fare. But in addition to being leaders in the culinary arts, the owners of the Trojan Restaurant also aim to be sustainability leaders, particularly in the area of clean energy. As part of this effort, they have installed a 49 kilowatt (kW) photovoltaic solar power system, a 30 kW combined heat and power (CHP) system and an electric vehicle (EV) charging station at their restaurant.

While significantly reducing its environmental impact and encouraging the use of EVs by its customers, the installation of these clean energy systems still left the restaurant with unresolved problems. For example, the excess energy produced during the day by the solar power system couldn't be stored and then used locally by the restaurant, or its EV driving customers, at night. In addition, when the sun went down the restaurant use of grid-supplied electricity went up, resulting in utility peak-usage charges.

Location: Trojane, Slovenia

Product: ESP Energy Storage System

Install date: December 2014

Power: 10 kW

Energy Storage Capacity: 40 kWh

Applications:

- Time-shifting renewable energy generation
- Peak demand reduction
- Electric Vehicle (EV) charging
- Backup power

Key Benefits:

- Seamless solar integration
- Fast charging
- Performance at low temperatures
- Long life and unlimited cycles with deep discharge
- 4 cycles per day/900 cycles to date

The Solution: To address these problems, the Trojane Restaurant, in partnership Slovenian utility Elektro Ljubljana, contracted with Metronik Energija to install two of Imergy's ESP Series energy storage systems. Integrated with the restaurant's solar power system, the energy storage systems enabled the restaurant to "time-shift" its renewable energy, and use the excess energy generated by its solar system during the day for restaurant operations and EV charging at night. Because the energy storage systems use vanadium-based flow batteries, they can handle the stress of rapid charging (from the solar energy system) and discharging (from the customers EVs) without any degradation in performance or system life.

The new Imergy flow-batteries will help us demonstrate how renewable and other advanced energy technologies can provide the Alps with clean, affordable and reliable energy."

- Dr Jurij Curk,
[Metronik Energija](#)

The Imergy batteries are completing 4 full cycles of charge and 4 full cycles of discharge each day. Since installation, the batteries will have completed a total of 900 cycles. No other battery can cycle this frequently on a daily basis and deliver this performance. The vanadium-based flow batteries also perform well in difficult environmental conditions, including the frigid winter weather found in the Slovenian Alps, where temperatures can drop as low as -20° Celsius. In addition, in the event of the power outage, the restaurant now has another option for keeping the lights on and the donuts frying.

The Results: Since the new energy storage systems went online in December 2014, at frigid -10°C temperatures, the Trojane restaurant is reaping the benefits of adding Imergy



energy storage to its clean energy portfolio. Excess energy generated by the solar system is no longer wasted, and by storing electricity when rates are low and then using that electricity when rates are high, the restaurant has been able to reduce its utility peak-usage charges, decreasing its monthly electricity bills by 30%. More electricity from the

solar system is charging restaurant customers' EVs, further increasing the environmental benefits of EV use. By providing them with lower energy costs, backup power and enhanced environmental sustainability, the Trojane restaurant's Imergy energy storage system is proving to be a pretty sweet deal – a deal almost as sweet as the restaurant's powdered sugar, marmalade filled donuts.