

Optimized energy fuels sustained business growth.

Case study with
Wit Flower Bulbs



The case

Project:

Containerized storage system for grid enhancement, energy optimization and trading

Customer/Project:

Wit Flower Bulbs,
't Veld, NL

Project partner:

ENDUSO,
Wieringerwerf, NL

Installed system:

2 x Solition Mega One
(20ft High Cube container)

Connection:

On-grid

Installed battery capacity:

2.208 kWh/ 2 MWh

Location:

't Veld, The Netherlands

Installation date:

2022-2023

The background

The flower and bulbs growing business.

Tulips and bulbs can't to grow in the same field for years at a time. They need to rotate with other crops, such as grain, potatoes and corn, due to the threat of fungus that could cause disease in the tulip bulbs. To combat this, many tulip farmers swap fields with their counterparts every year, so the colourful fields that attract tourists rotate as well.

Modern techniques have been introduced, such as growing the bulb and its flower on substrates rather than in the ground, which results in a much cleaner production process, with the roots of the bulbs only fed with water and nutrition. As a result, the farmer does not have to dig-up the bulb from the heavy clay found in the prime tulip-growing areas of the Dutch coast of the North Sea.

In spring and early summer, the flowers are harvested and sold via the world's largest auction for flowers in Aalsmeer. From there they travel all over the world, and visitors to The Netherlands are encouraged to visit Aalsmeer and its flower auction – right next to Schiphol airport!

After the flowers are taken from their bulbs, the bulbs are stored and form siblings, which will grow into new bulbs in time for the next season. Wit Flower Bulbs is often able to sell its bulbs before they are grown due to this precise and high-tech process. What's more, it's able to predict yield and quality, even before the bulb has created its siblings.

The challenges

- 1** **Limitations in the available grid infrastructure, preventing business expansion:**
Due to Wit's expansion plans, it asked the grid operator about its upgrade options from its net connection. In response, the grid company quoted an estimated lead time of three years – this would put the brakes on any growth plans!
- 2** **High energy costs:**
Growing, cleaning, sorting and storing flower bulbs is an energy-intensive and costly process, with cooling, heating and large ventilators the main energy users.
- 3** **Imbalance between energy provided from PV versus 24/7 production:**
Wit Flower Bulbs has many PV panels on the roofs of its many large storage facilities and workplaces. These generate around 70 % of the company's required energy; however, that energy is generated during the day, while the energy consumption is 24/7.

The objectives

- Flexible energy enhancement** to allow for business expansion – rather than waiting for the grid operator and a larger grid connection.
- Energy cost optimization** by maximising self-consumption from PV and minimise outlay from the grid.
- Energy usage optimization** by utilising advanced energy management to reduce overall energy consumption and, therefore, reduce the CO₂ footprint.

The system and its implementation

To overcome energy challenges, Wit approached local PV and energy storage integrator, ENDUSO, about a potential collaboration. Consequently, ENDUSO contacted Customized Energy Systems – CES (formerly known as ATEPS Nederland BV) and, following excellent co-operation, a system was configured to meet Wit's specific needs. Calculations showed that two systems, each with 1.1 MWh and 1 MW, would not only solve Wit's energy shortage issues, but they would also generate income by trading energy at times of energy-surplus or energy shortages through the European Power Exchange (EPEX). ENDUSO and Wit formed a new separate business entity for those energy operations, with some of its proceeds going to the local community.

The first system was ordered in late 2021 and delivered in April 2022. Installation was straightforward, as these systems were linked with easy grid connections, while communication is facilitated with a 4G connection; therefore, no complex security precautions were required.

Alternative methods of energy consumption are done so under the ENDUSO umbrella, by switching loads on-and-off depending on availability and energy prices. This is achieved via a partnership with Grid Support Solutions, which created bespoke software for this installation.

Also located in the area, Grid Support Solutions understands the key factors of Wit and critical steps in its process.



System overview:

- Size: 2 x Solition Mega One (20ft High Cube container)
- Installed battery capacity: 2.208 kWh
- Converter power: 2 x 500 kW modular converters
- Communication: 4G mobile data network
- Grid connection: 1.7 MVA
- Site Energy Management: Grid Support Solutions BV
- Aggregator (energy trader): EdMij BV
- Project duration: November 2021-May 2023

The results and achievements

Grid upgrade unnecessary – making expansion possible

The main objective was to expand the business, rather than wait for the grid operator and its larger grid connection that could take several years. The planned expansions at Wit Flower Bulbs would not have been possible without Customized Energy Systems.

Energy trading

The additional benefits and possibilities of the system allow for energy trading at times where there is financial gain on the EPEX. Through a real-time connection to the imbalance prices at the EPEX, energy can be sold at times of high prices or bought at time when prices are low.

Expected return on investment in less than five years

Conservative RoI calculations show that this can be expected within five years; however, this is influenced by real-world energy prices. With the current, volatile energy prices, a much quicker profit can be expected.

Becoming grid independent – almost!

The combination of PV, Energy Storage and energy management enables Wit Flower Bulbs to be almost self-sufficient; therefore, the purchase of energy from the grid is minimal. This not only reduces its operational cost but also reduces the load on the grid. In this part of The Netherlands, grid capacity is already stressed to its limits, but due to energy storage and energy management, there is now space for other applications and users in the area.

Support of social projects

The co-operation with ENDUSO, which controls a number of loads to further optimize energy usage, has already expanded to other projects. This shows the importance of a wider view on energy storage, whereby the community is also served through the social component of ENDUSO's goals and objectives.

When strategy works: the key facts

70%

Own energy generation and consumption

48%

Reduction of energy costs

6

months

From order to finished installation

<5

years

Return on Investment

User benefits



Optimization of grid power usage



Self-consumption



Peak shaving



Energy trading



Cost optimization



Peak-power supply

The advantages of Customized Energy Systems (CES)

Customized Energy Systems (formerly known as ATEPS Nederland BV) has built-up an outstanding reputation and an impressive number of successfully installed energy storage systems across The Netherlands and worldwide. It is known for its expertise in this future-oriented market, as well as simple and efficient installation and project support.

Together, as part of global player Exide Technologies, with more than 135 years of energy storage knowledge, its dedicated global sales and service force allows Customized Energy Systems to serve markets quickly and professionally. The proprietary system design makes it possible to better utilize the properties of the batteries

for maximum life and functionality with various applications. In addition, the system is maintenance-free, and there are no voltage-carrying or data cables on the front on the lithium batteries.

Customized Energy Systems has developed the Storage Control System (SCS) itself, which can control both small and large systems. The SCS communicates with the batteries, converters, and peripherals, such as the HVAC, smoke, fire and burglar alarms. Due to the broad system knowledge of the aforementioned equipment, a complete and safe control system is available for aggregators that can communicate with the storage system in a simple way.

Who is already benefiting?

About Wit Flower Bulbs (www.wit-flowerbulbs.nl)

Wit Flower Bulbs is a large grower of tulips and tulip bulbs. Located in 't Veld, in the north-western part of The Netherlands, just south of the city 'Den Helder', Wit's flowers are sorted, packed, sold and shipped all over the world.



“As a major player in the flower bulb business, with a strong focus on our environmental footprint, growth, and optimization of our processes is essential. Our limitations in energy supply were tackled by the CES solution making us more energy efficient and thereby greener.”

Peter de Wit, Wit Flower Bulbs



About Enduso (www.enduso.nl)

ENDUSO – located in Wieringerwerf, The Netherlands – together with its partners, develops complete energy platforms at agricultural and industrial locations that produce electricity by means of solar panels. The unique ENDUSO concept guarantees both the highest price for partners' generation locations with flexible, long-term cooperation and the lowest price for the affiliated end-customer. ENDUSO means 'Energy – Duurzaam (Sustainable) – Social', and it focuses on projects whereby technical issues are solved, but also a social component is tackled, such as supporting local communities with a part of its profits, by reducing energy cost for the local sport club's canteen and similar projects.



“After speaking to several potential energy storage suppliers, we selected CES for its wide knowledge of industrial and agricultural processes and its personal approach. Since this technology is still new, working with experienced partners is very reassuring.”



J.J. Vijn, CEO of ENDUSO

A perfect match

About Customized Energy Systems

In 2021, global player Exide Technologies acquired ATEPS Nederland BV, an innovative and dynamic provider of lithium-ion based energy storage and its management in future key applications, such as time shift, frequency control, peak shaving, energy trading and more.

Combining innovation and global energy storage expertise, they become Customized Energy Systems, thereby making the use of sustainable energy through smart energy storage accessible to more regions and projects.

Customized Energy Systems develops, builds and delivers energy storage systems (ESS) to transition from fossil energy over to renewables. Its focus, for a successful and sustainable future, is on storage systems and solutions for greenhouse gas reduction and an optimization of TCO in energy-intensive industries.

We offer all the fields of operation that ensure that renewable energy is available at any time in any place and meet all the requirements that businesses demand.



Boosting



Balancing



Operating



Generating



Trading

About Exide Technologies

Exide Technologies (www.exidegroup.com) is a leading provider of innovative and sustainable battery storage solutions for automotive and industrial applications. With 135 years of experience, Exide has developed and globally marketed innovative batteries and systems, contributing to the energy transition, and driving a cleaner future. Exide's comprehensive range of lead-acid and lithium-ion solutions serves various applications, including 12V batteries for combustion and electric vehicles, traction batteries for material handling and robotics, stationary batteries for uninterruptible power supply, telecommunication, utility in-front-of and behind-the-meter energy storage and propulsion batteries for submarines and more. Exide Technologies' culture and strategy are centered around recycling, sustainability, and environmental responsibility, reflecting the commitment to being a responsible corporate citizen.

The company has 10 manufacturing and 3 recycling facilities across Europe, ensuring resilience and a low CO₂ footprint with a local supply chain. Exide Technologies is committed to superior engineering and manufacturing. With a team of 5,000 employees, the company provides 1.6bn Euro of energy storage solutions and services to customers worldwide, every year.

Creating the future – the Exide Technologies way:



Innovation



Reliability



Sustainability



High Performance