

In Oslo, sustainability has right of way.

Case study with Unibuss Nordics Public Transport



Source: unibuss.no



The case

Project:

Installation of battery storage system with fast peak-shaving measurement in order to not overload the grid while busses are charging.

Customer/Project:

Unibuss Nordics Public Transport, Norway

Project partner:

Freber AS, Norway

Installed system:

4 x Solition Mega One (20ft container system)

Connection:

On-grid

Installed battery capacity:

4 x 1 MW/ 1,1 MWh

Location:

Oslo and suburbs, Norway

Installation date:

March 2024

The background

Up in the north, one is up to date when it comes to energy storage solutions.

Unibuss, a local bus company based in Oslo, operates within a competitive market governed by municipal tenders. Historically, the tendering process has been focused on pricing, but there has been a notable shift towards prioritizing environmental considerations.

Unibuss has positioned itself as a frontrunner in this evolving landscape by offering fully electric buses and incorporating solar and storage solutions into its plans. With each bus consuming approximately 500 kWh of energy, Unibuss manages an existing fleet while anticipating the delivery of 259 electric buses in Oslo. To support its electric fleet, Unibuss has installed multiple chargers at each bus terminal, with ongoing upgrades to

accommodate faster charging capabilities. As the operator of Scandinavia's largest bus terminal, Unibuss wanted to install two new container systems to explore the potential benefits of stationary storage. Despite the modest impact on charging capacity across its locations, Unibuss viewed this initiative as a valuable opportunity to assess the impact of energy storage solutions and reinforce its competitive edge in securing tenders. Additionally, Unibuss aimed to complete the installation within eight months of order placement, highlighting its commitment to swift implementation and operational efficiency.

The challenges

1

Switching to electric buses in Oslo's demanding climate presented Unibuss with a number of challenges. While environmental aspects have come to the foreground, the practical aspects of managing an electric fleet in extreme weather conditions remain paramount.

2

The energy demands of electric busses via charging infrastructure, presented Unibuss with logistical tasks. Furthermore, the need to balance the expansion of charging facilities with operational efficiency made the situation even more complex.

3

Nevertheless, Unibuss remained committed to delivering reliable and sustainable public transportation services. With a targeted completion time of seven months of order, the installation of energy storage systems got under way.

The objectives

- Unibuss demonstrate leadership in sustainable transportation solutions. By embracing electric buses and integrating solar and storage technologies, the company sought to **reduce emissions, enhance operational efficiency, and maintain cost competitiveness.**
- The deployment of energy storage systems at key terminals reflected Unibuss' objective of exploring solutions that **optimize charging infrastructure and avoid grid congestion.**
- Unibuss' goal is to **generate and consume energy from renewable sources.** This is why the company has also taken up the challenge of **limited solar radiation in Norway,** to underline its commitment to **sustainable energy practices and an all-electric bus fleet.**

The outcome

The deployment of energy storage systems at Unibuss' bus terminals yielded promising results, signaling a step forward in its electrification journey. The project represented a significant milestone in exploring the potential of stationary storage in supporting electric bus operations. Real-time monitoring capabilities enable Unibuss to track system performance and make data-driven decisions to optimize energy management. With congestion challenges completely addressed, Unibuss can now ensure smooth and uninterrupted operations, further enhancing its reputation for reliability and service.

Unibuss also emphasizes its commitment to innovation and sustainability, positioning itself as a leader in clean public transportation solutions. With instant transfer to electric public transport, facilitated by the implementation of energy storage systems, Unibuss has reinforced itself as a pioneer in sustainable transportation solutions.



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The system and its implementation

In pursuit of its objectives, Unibuss partnered with Exide Technologies to deploy energy storage systems at select bus terminals. These systems, housed within containers, were strategically positioned to complement existing charging infrastructure, and explore the potential of stationary storage. Unibuss focused on factual details of the system, such as container specifications, battery capacity, and converter power, as well as implementation specifics such as timeline, implementation partners, and onsite support from the Exide Technologies team.

The system is integrated into Exide Technologies' Customized Energy Systems remote monitoring cloud and enables over-the-air updates.

System overview:

Size:	4 x Solition Mega One (20ft container system)
Installed battery capacity:	4 x 1 MW/ 1,1 MWh
Converter power:	1 MW/system
Communication:	4G mobile data network
Grid connection:	On-grid
Installation Date:	March 2024

User benefits

The integration of energy storage systems into Unibuss' electric bus infrastructure has improved passengers' experience and benefitted the community. By enhancing efficiency and reliability, Unibuss has improved the 'commuter experience'. Reduced emissions and environmental impact have contributed to cleaner air and a healthier urban environment. With congestion challenges fully resolved, Unibuss now delivers uninterrupted service and demonstrates its commitment to meeting the changing needs of passengers and communities.



Optimization of
grid power usage



Self-consumption



Peak shaving



Sustainable energy
ecosystem



Cost optimization



Peak-power
supply

When strategy works: the key facts

Up to **5%**
of self-generated solar
energy consumption

8 months
from first order
to realization



Instant transfer to
electric public transport

259

electric buses were
implemented

The advantages of Customized Energy Systems (CES)

The collaboration between Unibuss and Exide Technologies showcases the advantages of Customized Energy Systems (CES) in addressing the complexity of electrifying public transportation. Tailored to Unibuss' needs and requirements, the energy storage systems offer scalable and adaptable solutions to optimize charging infrastructure and grid interaction.

By using advanced technologies and remote monitoring capabilities, Unibuss has gained genuine insights into system performance and is maximizing operational efficiency. As Unibuss continues to lead the way in sustainable transportation solutions, the partnership with Exide Technologies demonstrates the power of collaboration in driving positive change. By meeting installation and own energy generation targets, Unibuss is laying the foundation for growth and sustainability.

Freber AS, our partner in Norway

Our long-term partner Freber has been paramount in securing this project with Unibuss AS. Freber has been working closely with CES since 2017 and have deep knowledge of the Norwegian Energy Storage market. CES and Freber have delivered several projects together, including larger container solutions and mobile solutions for both connected and off-grid networks. Freber is responsible for the project and aftermarket services, utilizing technology developed by CES.



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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