URBANIZED

MODULAR AND FLEXIBLE SOLUTIONS FOR URBAN-SIZED ZERO-EMISSIONS LAST-MILE DELIVERY & SERVICES VEHICLES

ISSUE 4
November 2023

IN THIS ISSUE

Welcome to the 4th URBANIZED newsletter!

The URBANIZED project has continued its steady progress throughout the start to 2023, with important targets met, landmarks passed, and partnerships enjoyed. The fourth issue of the project newsletter will ensure readers are up to date with recent developments while allowing partners to showcase the hard work undertaken across recent months.

We hope you enjoy the read. Don't forget to visit the URBANIZED website, **LinkedIn** and **X** to stay up to date with the project as it progresses into the final year!

Update from Project Partner

Victor Desmots and **Salvador Ruiz** of Applus IDIADA provide an update on the URBANIZED project

The URBANIZED project has continued its steady progression in recent months, albeit a little slower than expected due to supply chain complications of several suppliers. Having said this, partners are making their best efforts to catch up with these delays and have the prototypes running by the end of 2023. Despite the delays, the different prototypes are on the way to Brussels for real use demonstrations planned for February 2024.

In June, project partners will able to meet during our General Assembly, held at the **CERTH** facility in Thessaloniki, Greece. The GA was a special moment in the project, and allowed the consortium to re-schedule testing activities due to the delay of some prototypes.

Our work on dissemination, replication and exploitation continues to ensure the project is ready to make a significant positive impact upon completion. The project was presented in the 39th FISITA World Congress, the largest congress FISITA has ever delivered. Attendance at this event allowed significant networking opportunities within the international community of urban mobility engineers.

The latest innovations of the URBANIZED project will be presented in the RTR 2024 Conference in Brussels.

Inverter

URBANIZED EV prototype

URBANIZED publishes position paper

The URBANIZED vision for modular commercial vehicles for future urban logistics

To be considered truly sustainable, logistics should be zero-emission, safe for everyone, and with a low impact on urban space, while fulfilling the demands of citizens and businesses.

However, current urban logistics still require much development and innovation to reach a sustainable state.

The URBANIZED project recently published an in-depth position paper, focused on defining the current and future state of modular commercial vehicles and their use for urban logistics.

Authored by **Lukas Marthaler**, **Harry Dobbs** and **Ignacio Magallón** of **Bax & Company**, the paper presents modular e-LCVs, such as that being built within the project, as a key innovation in the transition to greener, more sustainable logistics.

Key takeaways from the paper include:

- To achieve true sustainability in urban logistics, we need solutions that benefit everyone. The paper underlines the challenges in the current logistics landscape and highlights the critical need for innovation.
- Modular vehicles are identified as a pivotal technology for the transformation towards sustainable urban logistics. These vehicles can unlock an array of innovative logistics models while enhancing efficiency and reducing redundancy for fleet owners.
- While the technology for modular vehicles and logistics models is ready to scale up, there are still significant gaps in the market, policy societal readiness and organisational alignment.

READ MORE

URBANIZED General Assembly 2023

The most recent general assembly of the URBANIZED project took place at the premises of **CERTH** (Centre for Research and Technology Hellas)

The Assembly brought together key stakeholders, including researchers, engineers, and industry experts, to discuss the progress and future directions of the project. One of the focal points of the meeting was the vehicle assembly process. Participants presented updates on the current status, highlighting the achievements and challenges encountered thus far.

Another important topic that garnered significant attention during the assembly was the exploration of exploitation strategies for **ALKE**'s vehicle. Participants delved into the multifaceted aspects of defining a compelling business case for the vehicle, encompassing market analysis, current challenges, and potential target customers. They shared insights and experiences through an interactive workshop led by **Bax & Company**, drawing from their diverse backgrounds and expertise. The aim was to devise an innovative and sustainable approach that would not only maximise the vehicle's market potential but also address economic considerations and societal needs.

Overall, the general assembly at **CERTH**'s premises in Thessaloniki served as a collaborative platform where experts exchanged ideas, evaluated progress, and strategised for the future. The atmosphere was one of enthusiasm and determination, reflecting the collective drive to advance the URBANIZED project and pave the way for a more sustainable and intelligent urban logistics systems.

URBANIZED at the RTR Conference 2023

Victor Desmots and **Salvador Ruiz** of **IDIADA** provide a review of their experience presenting the project at the RTR conference in Brussels earlier this year.

As the URBANIZED project benefits from EU funding, our project was invited by RTR conference to present our first results and progress earlier this year.

The main objectives of the project were explained, including:

- **Objective 1:** *Develop and implement a novel e-powertrain platform capable of achieving, at least, an overall 10% energy efficiency increase.*
- **Objective 2:** *Demonstrate a cost-effective solution to substantially reduce vehicle energy consumption and operational costs (with EMS integrating 4 ECO functionalities)*
- **Objective 3:** *Achieve a substantial reduction of vehicle purchasing costs for purpose-designed solutions compared to similar vehicles thanks to applying modular design.*
- **Objective 4:** *Develop a light commercial e-vehicle rated 4 stars by Euro NCAP.*
- **Objective 5:** *Demonstrate the technical, economic and operational benefits of the developments in relevant environment by performing a real-life demonstration in urban roads and upscaling operations at fleet level.*
- **Objective 6:** *Increase the acceptance of the solutions by performing dedicated dissemination actions (webinars)*

Technical details of the High-performance e-drivetrain were presented with the Energy Management System that integrates 4 ECO functionalities at different system levels and the design of a swappable modular cargo-body system. First results from crash tests of frontal crash box structure were explained with the positive correlation between real crash and simulations.

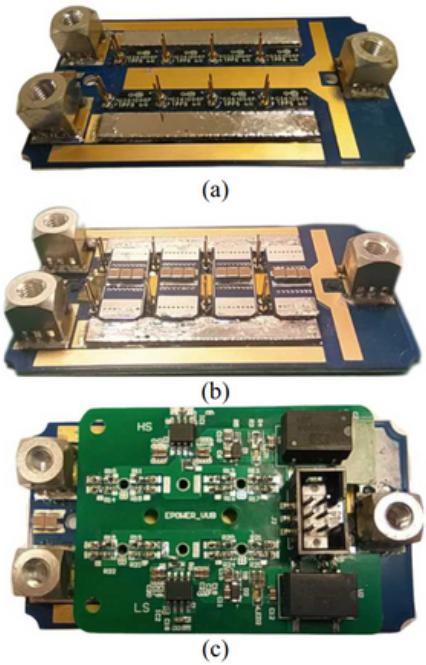
Watch Victor and Salvador in action on YouTube!

Recent technical URBANIZED innovations showcased at the IEEE Conference in Milan!

A 48V/360A Power Module-Based Paralleled-GaN Device for Low-Voltage and High-Current Traction Inverter Applications

The URBANIZED project was recently showcased at the 2023 IEEE Vehicle Power and Propulsion Conference in Milan, Italy by **Dai-Duong Tran** from project partner **VUB.** The conference brings together practicing engineers, researchers and other professionals for interactive and multidisciplinary discussions on electrified vehicle power, propulsion and related technologies.

In the paper presented by Duong, a high-power GANs-based 360A/100V half-bridge (HB) module has been designed and fabricated. The HB configuration consists of a single-layer insulated metal substrate board with parallelized multiple GaN chips, decoupling capacitor boards, and a gate driver FR4 PCB. This design approach demonstrates excellent performance such as a low and uniform power loop inductance among each pair of high-side and low-side GaN chips, good thermal conductivity, a reliable switching gate driver, low complexity, and cost reduction. The switching performance is successfully validated by the robust 48V-325A DPT experimental waveforms. Furthermore, this module can be packaged in the same terminal configuration as a standard commercial power module, making it suitable for a wide range of applications, particularly low-voltage and high-current traction inverters.



Structure of GaN-based half-bridge power module.

(a) paralled GaN chips mounted on IMS single-layer board

(b) attached decoupling capacitor boards

(c) integrated gate driver board.

Registration open for URBANIZED webinar!

Register now for the next URBBANIZED Urban Logistics Academy webinar!

We are pleased to invite you to the next instalment in the Urban Logistics Academy Series!

The URBANIZED project will host a webinar titled: *ElectriCities - The role of public authorities in supporting e-LCVs in logistics* on **Thursday 23rd November 2023** from **09:30-11:00 CET.**

The aim of this webinar is to provide a platform for discussing and understanding the critical role played by public authorities in supporting the adoption of e-LCVs as part of a broader sustainable transportation strategy.

We expect to be joined by a diverse range of stakeholders, particularly those interested in the promotion and adoption of electric light commercial vehicles (e-LCVs)

Attendees can expect an interactive 90-minute webinar with presentations from leading public authorities, research institutes, businesses and organisations before an open discussion hosted by URBANIZED partner Bax & Company.

REGISTER NOW

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