



EXPRESSION OF INTEREST

1. Contact details

Country	TURKEY
Name of the organisation	ASPİLSAN ENERJİ
Name of the contact	Rasiha Nefise MUTLU
Phone	05068029360
Email	rasihanefise.mutlu@aspilsan.com

2. Short description of the organisation

ASPİLSAN Enerji Industry and Trade Inc. was established on April 2, 1981, in the Kayseri Organized Industrial Zone.

The main areas of activity for ASPİLSAN Energy include:

Radios, thermal systems, robotics, medical devices, and UAV batteries, battery blocks, Aircraft and helicopter batteries, Electric vehicle batteries, Maritime vehicles, Rail system batteries, Energy storage systems, Charging devices, Battery protection and management (BMS) circuits, Electronic card production, Testing, laboratory, and engineering services.

With 42 years of experience, being the first and only company in Turkey producing aircraft/helicopter batteries in the Nickel-Cadmium chemistry, our company is also the largest battery manufacturer in the country. After Ni-Cd chemistry, ASPİLSAN Energy initiated the mass production of the ASPİLSAN INR18650A28 Lithium-Ion Rechargeable Cylindrical Cell, becoming the first company in Europe to mass-produce lithium-ion 18650 cells. The design, development, and production of the cell are made in factory. ASPİLSAN has many quality certificates and fits standards taken from Europe and International Organization for Standardization.

The Battery R&D Center established by Aspilsan Energy in the Mimar Sinan Organized Industrial Zone conducts electronic, software, and mechanical design studies. Battery management systems, battery packs in various chemicals, charging devices, and power electronics-based system designs are developed. The batteries designed by ASPİLSAN Energy are used in various fields such as communication systems, tracking, maritime vehicles, reconnaissance, satellite systems, launch, night, and thermal vision systems, and unmanned vehicles.

Cell R&D laboratory started with the goal of gaining the capability to develop cell prototypes ready for use in batteries using Chemistry, Materials, Metallurgy, and Electrochemistry technologies, the



Design, Product Development. Electrochemistry and material studies are at the core of energy technologies.

Our Istanbul R&D center work on the development of fuel cells and electrolyzers. The unit's goal is to develop products suitable for commercialization. Another important goal of the unit is to increase the localization rate in these products as much as possible. In this context, there are collaborations with various research institutions and universities. The unit has capabilities in the development of platinum and iridium-based catalysts used in fuel cells and electrolyzers, the production of membrane electrode assemblies (MEA), and the design and integration of fuel cell and electrolyzer stacks.

In Ankara R&D center, Electric vehicle batteries and aviation batteries development studies have been added to the work carried out. In this way, the knowledge of the center has been increased, and the ability to develop and produce lithium-ion batteries at the system level has been ensured. Battery management system and software development, test, and verification activities for electric vehicle and aviation systems are carried out by our teams.

3. Specific skills related to the project

Indicate the specific skills and competence in relation with

- 1. New designs, shapes, functionalities of Light Commercial Vehicles (2ZERO Partnership)
HORIZON-CL5-2024-D5-01-06**
- 2. Advanced battery system integration for next generation vehicles (2ZERO Partnership)
HORIZON-CL5-2024-D5-01-03**
- 3. Clean and competitive solutions for all transport modes (HORIZON-CL5-2024-D5-01)**

In the realm of Battery Pack Design, we excel in crafting efficient and innovative solutions tailored to specific requirements. Our proficiency extends to the intricate design and optimization of Battery Management Systems, ensuring the seamless coordination of individual battery cells. The electrical and electronic components of the battery pack receive meticulous attention, with a focus on precision and performance. Our capabilities also extend to the design of cooling systems, critical for maintaining optimal operating temperatures and enhancing the overall efficiency and safety of the battery pack. Mechanical design considerations cover the structural integrity and form factor, ensuring the robustness and seamless integration of the battery pack into various applications. The final stage involves rigorous integration and testing, where our skilled team ensures that the battery pack functions cohesively and meets stringent performance standards. In essence, our proficiency spans all facets of battery pack development, making us a comprehensive and reliable partner for diverse energy storage solutions.

4. Proposed activities for the project

Indicate which activities you would like to implement during the project

ASPILSAN are highly skilled in various aspects of electric vehicle technology, including battery pack design, battery management system design, electrical and electronic design, cooling system design, mechanical design, and integration/testing. Our expertise aligns perfectly with the project's activities.



Specifically, we excel in leading the design and integration of structural battery packs, considering in energy density, thermal management, safety, and production costs. ASPİLSAN can contribute to the development of smart thermal management systems, ensuring efficient heating and cooling with a focus on energy-efficient preconditioning. Our knowledge in cooling system design allows us to innovate concepts that take advantage of the unique characteristics of cells, minimizing impacts on mass and costs. Additionally, our proficiency in battery management system design enables us to establish a robust technical communication channel for essential data exchange, enhancing the efficiency and security of recharging processes. Finally, our expertise in integration and testing is crucial for developing behavior of electric vehicles and batteries, contributing to optimal chemistry/energy management and safety assessments. With a focus on these activities, we are well-equipped to play a central role in advancing the project's goals of modularity, scalability, improved efficiency, quality and reduced costs in electric vehicle technology.

Our proficiencies are :

- *Battery Pack Design*
- *Battery management system design*
- *Battery pack electrical electronic design*
- *Battery pack cooling system design*
- *Battery pack Mechanical design*
- *Battery pack integration and test*
- *All activities for battery packs*

5. References

Previous research projects:

ASPİLSANEnerji :

Project acronym / starting date	Main objectives	Main activities	Role in the project
<i>Eurogia 2030-Design of 18650 Sodium Energy Battery for Household Energy Storage (new)</i>	Design 18650 Sodium Ion Battery for Household Energy Storage	- Develop 18650 Sodium Ion Battery Cell - Acquire roll-to-roll coating machine (60%) - Enhance Aspilsan's sodium-ion battery design and electrolyte development capabilities	Lead the project, coordinate stakeholders, design and develop sodium-ion battery cell, acquire roll-to-roll coating machine, enhance capabilities in battery design.
<i>Eurogia 2030-Call20 Green Ammonia Production with 4D HYDROGEN (June 2023 - May 2026)</i>	Produce 10 kW PEM Electrolyzer with 4D HYDROGEN	Lead the project, design and produce 10 kW PEM electrolyzer, collaborate with SOCAR R&D, contribute to international recognition in the EUROGIA program.	Develop 10 kW PEM Type Electrolyzer



<p>Horizon Europe Project (HORIZON-CL5-2023-D5-01) (ZEV-UP Frugal Zero-Emission Vehicles for Urban Passenger Challenge) (June 2023 - May 2026)</p>	Produce L7 Class Light Electric Vehicle Batteries	<ul style="list-style-type: none"> - Develop and produce interchangeable vehicle battery's mechanical and electronic system - - Collaborate with international partners including Ford, Akka, Coskunoz, and others 	Lead the project, design and produce L7 class light electric vehicle batteries, collaborate with international partners.
<p>Battery Development R&D Center: TÜBİTAK 1004 Project (Project Code: 22AG016) (Neurotechnological Solutions Platform Against Challenges Threatening Human Function)(15.05.2023-15.5.2027)</p>	Develop Neurotechnological Solutions Platform	<ul style="list-style-type: none"> - Develop high-tech products in biomedical equipment technologies - Develop electrolytes for solid-state batteries with high energy storage capacity 	Lead the project, establish Neurotechnological Solutions Platform, develop high-tech products, enhance capabilities in biomedicine batteries and solid-state battery technologies.
<p>HORIZON EUROPE PROJECT (BASE: Battery Passport for Resilient Supply Chain and Implementation of Circular Economy)(new)</p>	Develop Digital Battery Passport Concept	<ul style="list-style-type: none"> - Develop and implement digital battery passport (DBP) concept 	Contribute to the project, focus on the development, production, testing, integration, and analysis of aging tests of the battery pack for the DBP concept.
<p>HORIZON EUROPE PROJECT Name: SAFELOOP(new)</p>	Enhance Safety and Performance of Lithium-ion Battery Cells	<ul style="list-style-type: none"> - Lead work package on cell integration, performance, and safety tests 	Lead the work package, conduct cell integration, performance, and safety tests, contribute to enhancing safety and performance of lithium-ion battery cells.
<p>TÜBİTAK Priority Area R&D (18.08.2017)</p>	Develop Battery and Energy Management Systems Sensitive to Vehicle Performance Parameters for Electric and Hybrid Vehicles	<ul style="list-style-type: none"> - Conduct research and development for vehicle performance-sensitive battery and energy management systems 	Lead the project, research and develop systems sensitive to vehicle performance parameters for electric and hybrid vehicles.
<p>TÜBİTAK INDUSTRIAL AR-GE (30.06.2017)</p>	Electrode Production for Ni-Cd Cells Used in Aircraft Batteries	<ul style="list-style-type: none"> - Produce electrodes for Ni-Cd cells used in aircraft batteries 	Lead the project, oversee electrode production for Ni-Cd cells, contribute to aircraft battery technology.
<p>University- Industry collaboration (14.03.2016)</p>	Design Smart Battery-Cabinet, Charge and Maintenance	<ul style="list-style-type: none"> - Design smart battery-cabinet - Develop charging and maintenance capabilities 	Lead the project, design smart battery-cabinet, collaborate with university for industry partnership.