

## REPRESENTATIVES OF THE WORLD'S IMPORTANT COMPANIES USING LITHIUM ION BATTERY CELLS MET AT ASPİLSAN ENERJİ



ASPİLSAN Enerji hosted lithium-ion battery cell users from various countries of the world in its factory located in Kayseri Mimarsinan Organized Industrial Zone.

ASPİLSAN Enerji's Chairman of the Board of Assoc. Prof. Ahmet Turan Özdemir said: "ASPİLSAN Enerji Kayseri Battery Production Facility is not just a factory, but a monument of freedom erected for the energy independence of our country. Our A28 lithium-ion cell, which is produced in the spirit of the National Technology Initiative and produced with the latest technology, has been preferred by many users, institutions and organizations in our country. Thus, it has figured its rightful place in critical national projects.

Our facility has EASA POA, EASA ADOA, ISO 9001/14001/45001/22163, AS9001, and AQAP 2120 quality certifications. In addition, our products have UN 38.3, MIL-STD-810, DO-160, MIL-PRF-32565, IEC 62660/62133/60623 and more standards. More than a hundred measurements and analyses at all stages, from the raw material acceptance, production process and quality control process to the final product, are carried out with our own devices and capabilities. The international certifications and standards, some of which I have just mentioned, are the competencies of a limited number of organizations in the world.

Within the scope of the Mobility Roadmap of the Ministry of Industry and Technology, we serve the purpose of Türkiye becoming a battery production center in its region. In this sense, our A28 cell, which we have crowned with international quality certifications, has become a product that arouses interest in global markets. Türkiye, which has been importing lithium-ion battery cells for years, has become an exporter for the first time with the A28 cell.

Our A28 cell, whose low temperature and operating performance are better than its competitors, offers significant advantages in e-mobility, energy storage systems, consumer electronics and outdoor applications. Both our product quality and the location advantages of our country offer important opportunities to take our company to a global scale. Today, we met with industry professionals from North America, Europe and Asia under our company roof. We had the opportunity to introduce our R&D capabilities, production capabilities and product performance to our guests in person.

In addition, we attend the global fairs to increase our awareness as ASPİLSAN Enerji in the international arena. Because it shows that there is a need to hold industry meetings where we can show our talents on-site, hosted by our company. I would like to thank our guests for their interest in our products and services. We will continue to be worthy of this interest and diversify our products and services."

Ferhat Özsoy, General Manager of ASPİLSAN Enerji, who focused on the European and US markets, said the following in his statement: "As ASPİLSAN Enerji, which established the first lithium-ion rechargeable battery cell production facility in our country and started mass production in June 2022, I would like to state that we are targeting the European and US markets as well as meeting Türkiye's needs in the field as of 2023.

In this context, ASPİLSAN Enerji hosted the representatives of crucial companies using lithium-ion battery cells in various countries of the world for a full day at ASPİLSAN Enerji's lithium-ion battery cell production facility. We organized a technical trip where information was given about our battery production processes. Hosting significant representatives of the sector at our facility in Kayseri is an important indicator in terms of showing our position in the ecosystem.

Considering both the battery cells used in ASPİLSAN Enerji's current battery cell production and the battery cell types used in the industry, the battery produced is aimed to be in NMC chemistry, 18650 cylindrical type, 2900 mAh capacity and 3.68V voltage. In this direction, the design of the battery has been completed and mass production has started. The annual production capacity of our plant is 220 MWh. This corresponds to approximately 21 million cells per year. Our battery cell production facility infrastructure and the mechanical systems in the production line have been designed and manufactured in such a way that production can be made in all lithium-ion battery cell chemistries together with NMC. One of the most important points is that all intellectual and industrial property rights of the ASPİLSAN INR18650A28 battery cell belong to ASPİLSAN Enerji. We are introducing these features of our battery cell to the whole world with this event organized. Another source of pride for us is the fact that participants from America and Europe have attended our workshop in Kayseri. Thus, we are showing the world that technology is now being produced in the Anatolia. The size, volume and importance of our work have become even more evident with this international workshop. The guests admired the fact that we have realized such an advanced technology investment in such a short time.

With the battery cells produced in our facility, we meet the needs of both the defense industry and the private sector with national technology and domestic production. In the following periods, we continue to develop battery cells of different types, sizes and technologies. The battery cells we produce can be used in radios, jammers, robotic systems, weapon systems, power tools, medical, hybrid vehicles (HEV), smart textile product batteries, e-bikes, e-scooters, forklifts and energy storage systems.

## ASPİLSAN INR18650A28 Successfully Completed Tests in European Laboratories

Our battery cell has been certified to meet international quality standards after tests carried out in independent and impartial accredited laboratories in Europe.

In addition, tests and analyses were conducted by Batemo GmbH, a German company that is the global technology leader in simulation software for lithium-ion battery cells. Subsequently, the results of ASPİLSAN INR18650A28 cells were added to the battery cell libraries (BATEMO Cell Library), which include independent cell performance evaluations. The results obtained show that the A28 battery cells exhibit high performance at a similar level to the equivalent battery cells of the leading cell manufacturers leading the industry.

As ASPİLSAN Enerji, I can say that we have taken very critical steps in a short time in the lithium-ion battery, which is produced for the first time in our country and is very important for the energy needs of the industry. In this context, we are carrying out our activities to become a battery cell exporter of our country for the coming period."

## ASPİLSAN ENERJİ GET STRONGER IN TÜRKİYE'S ENERGY SECTOR WITH EXPORTS

ASPİLSAN Enerji, which also sends the lithium-ion cell and batteries abroad, aims to export \$ 15 million by the end of the year.

Established in Kayseri in 1981 with the donations of philanthropists, ASPİLSAN Enerji has been fulfilling the long-lasting battery needs of the Turkish Armed Forces (TAF) and the private sector in the field of energy for 42 years.

While ASPİLSAN Enerji primarily fulfills the energy needs of the TAF with the cells and batteries produced in the lithium-ion battery facility established two years ago with an investment of approximately 1.5 billion Turkish Liras, it also exports its products to different countries.

The factory produces lithium-ion cylindrical batteries and Ni-Cd (nickel-cadmium) batteries, as well as approximately 400 types of battery systems in areas such as radios, night vision systems, jamming systems, anti-tank systems, robotic system batteries used in mine scanning and bomb disposal, missile and guidance kits and anti-torpedo systems.

ASPİLSAN Enerji General Manager Ferhat Özsoy said in his statement that they opened up to the world with exports after starting lithium-ion battery production in 2022.

Özsoy stated that after the first battery export was made in Germany and the Netherlands, they also received orders from Middle East countries.

Özsoy emphasized that they have started producing a global company. He also said that his marketing processes for our battery packs continues. We think that this will continue to increase in the coming days.

While Özsoy stated that the company had started exports to Eastern European countries, he emphasized that the specialty of the exports was the sale of shelf-type batteries referred to as battery packs. In addition, he claimed that it was understood from the tests that these products have the ability, quality and quality to compete with the world.

Özsoy remarks that the support given by Turkcell and Türk Telekom to the batteries used in the base stations is essential. He added that this situation strengthened ASPİLSAN Enerji's exports.

## "We aim to export 15 million dollars this year"

Noting that the factory is a strategic facility, Özsoy said: "We started to sell our battery, whose intellectual and industrial property rights belong to us, to technologically advanced countries such as Germany and the Netherlands. At this time, we are starting to sell our battery packs. It means that we have not only produced individual cells but we designed technologically advanced battery packs composed of these cells, and we are capable of manufacturing and selling them. In our next roadmap, we aim to reach an export volume of approximately 15 million dollars for this year. In particular, we aim to expand our product sales to various sectors in the export market, starting from our vehicle batteries and extending to mobile phones."

## ASPİLSAN INR18650A28 LITHIUM ION CYLINDRICAL BATTERY CELL SUCCESSFULLY COMPLETED EUROPEAN ACCREDITATIONS

The energy density of the SAMSUNG 30Q, LG CHEM HJ2, MURATA VTC6 and TERRAE 32P model cells and the A28 cell are at the same level.

The energy density and power value of ASPİLSAN INR18650A28 cell were higher than SAMSUNG 25R, LG CHEM HE4, MURATA VTC5 and TERRAE 25P model cells.

ASPİLSAN Enerji, which established Türkiye's first lithium-ion battery production facility and started mass production in June 2022, completed the European accreditations of ASPİLSAN INR18650A28 lithium-ion cylindrical battery cell..

ASPİLSAN Enerji has focused on the European market with the batteries it produces in its lithium-ion battery factory located in a closed area of 25 thousand square meters in Kayseri Mimarsinan Organized Industrial Zone.

ASPİLSAN Enerji has registered the quality of INR18650-A28 lithium-ion battery cells with many international quality certificates. Making a statement about the accreditation process, ASPİLSAN Enerji's General Manager Ferhat Özsoy said: "After the mass production of our lithium-ion battery, which we started in the second half of 2022, we fulfilled the international quality standards of the performance and safety capabilities of our battery cells. As a result of the tests carried out in independent and accredited laboratories in Europe, we have registered it with many certificates obtained in a short time.

We have completed the certification process within the scope of the IATA (International Air Transport Association) criteria and the UN38.3 standard, which includes United Nations special transport tests and requirements, in order to ensure the quality and transport safety of our batteries produced for the first time after mass production. A28 battery cells were tested under harsh conditions such as low pressure, thermal change, vibration, mechanical shock, external short-circuit, impact and over-discharge in a laboratory environment simulating the dangerous conditions that may be encountered during the transportation of batteries from one place to another. All tests carried out in independent certification and test laboratories successfully completed. Afterwards, ASPİLSAN A28 battery cells received UN38.3 transport safety certificate. On the other hand, A28 battery cells have been subjected to many safety and performance tests to ensure that they meet the requirements of IEC 62133, IEC 61960 and IEC 62619 published by the IEC (International Electrotechnical Commission), which was established to prepare international standards on electronics and related technologies. In this direction, the IEC 62133-2 standard, which defines the safety requirements for rechargeable lithium-ion batteries used in portable applications, also includes the Forced Internal Short-Circuit test only requested as an additional test by France, Japan, Switzerland and Korea. Thus, our battery has successfully passed all tests and has been certified.

Similarly, ASPİLSAN A28 battery cells have successfully completed various electrical performance and life tests within the scope of IEC 61960-3 standard including performance requirements for batteries used in portable applications. Thus, its quality has been certified by independent testing and certification organizations. In addition to portable applications, it has successfully completed the tests carried out within the scope of the IEC 62619 standard, which defines the requirements for the safe operation of lithium-ion batteries in many industrial applications such as telecomm, UPS, energy storage systems, emergency systems, golf carts, forklifts, AGV-style vehicles, railway and marine vehicles. Subsequently, ASPİLSAN A28 cells added a new one to its certificates in May 2023.

## Batemo Published Performance Report of ASPİLSAN INR18650A28 Cell

German Batemo GmbH, the global technology leader in simulation software for lithium-ion batteries, has added the results of ASPİLSAN INR18650A28 cells to its battery libraries (BATEMO Cell Library), which are independent cell performance evaluations, based on its tests and analyses. The results show that the A28 batteries perform at a similar level and high performance to the equivalent batteries of the leading cell manufacturers leading the industry.

As ASPİLSAN Enerji, we continue our activities to become a vital battery exporter in 2023 by continuing our efforts to fulfill the country, sector or product-specific testing and certification needs required in the coming period or requested by customers."

## HYDROGEN TECHNOLOGIES WORKSHOP HELD

The Hydrogen Technologies Workshop was held to determine the short and long-term hydrogen roadmap of ASPİLSAN Enerji.

With the Hydrogen Technologies Workshop, the present and future of hydrogen were evaluated together with the stakeholders of the ecosystem.

At the Hydrogen Technologies Workshop, which we held with stakeholders from the public and private sectors, important topics such as the usage areas of hydrogen, market potential, public importance, and hydrogen solutions in our defense industry were discussed.

With the Hydrogen Technologies Workshop organized, the roadmap of ASPİLSAN Enerji Hydrogen and Fuel Cell R&D Center is based on more concrete foundations.

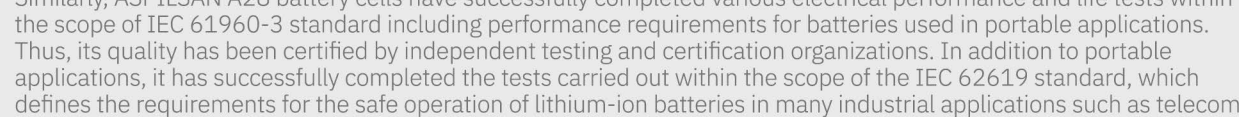
## THE NONSTOP POWER OF DEFENCE INDUSTRY ASPİLSAN ENERJİ PARTICIPATED AT IDEF'23

ASPİLSAN Enerji hosted its visitors at the IDEF'23 International Defense Industry Fair, which was held for the 16th time between 25 - 28 July 2023 at Istanbul TUYAP Fair and Congress Center, with the participation of many official delegations from approximately 25 countries, in the 12th hall, stand 14A.

ASPİLSAN Enerji exhibited the latest updated versions of many products, including portable energy storage systems of various types and power, aviation batteries, marine batteries, electric vehicle batteries, ASPİLSAN INR18650A28 lithium-ion rechargeable battery cells and battery cell components, scooter battery, energy storage solutions for the telecommunication sector, system, and radio batteries, which it has recently produced and developed.

Meeting with its stakeholders at IDEF'23, ASPİLSAN Enerji also signed contracts and cooperation protocols with the Ministry of National Defense and some companies.

## NONSTOP POWER OF DEFENCE AT IDEF



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