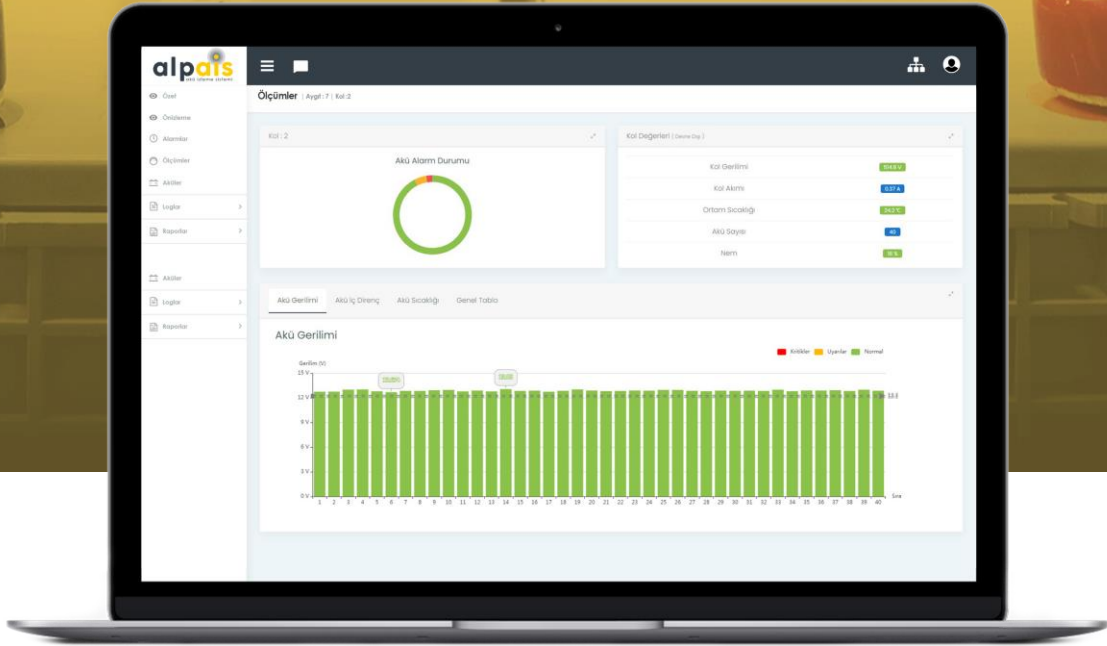# Protect your Business from Costly downtime!

"Alpais Battery Management System guarantees live and secure monitoring of your batteries 24/7 & 365 days a year."

Alpais:
Modular Battery Management System

Located at the center of the Alpais system, the control unit offers a complete solution for monitoring an unlimited number of batteries with its integrated hardware and software. Alpais offers maximum usage of the available backup power infrastructure generated by the batteries which ensures that businesses make the most of their investment in the batteries.
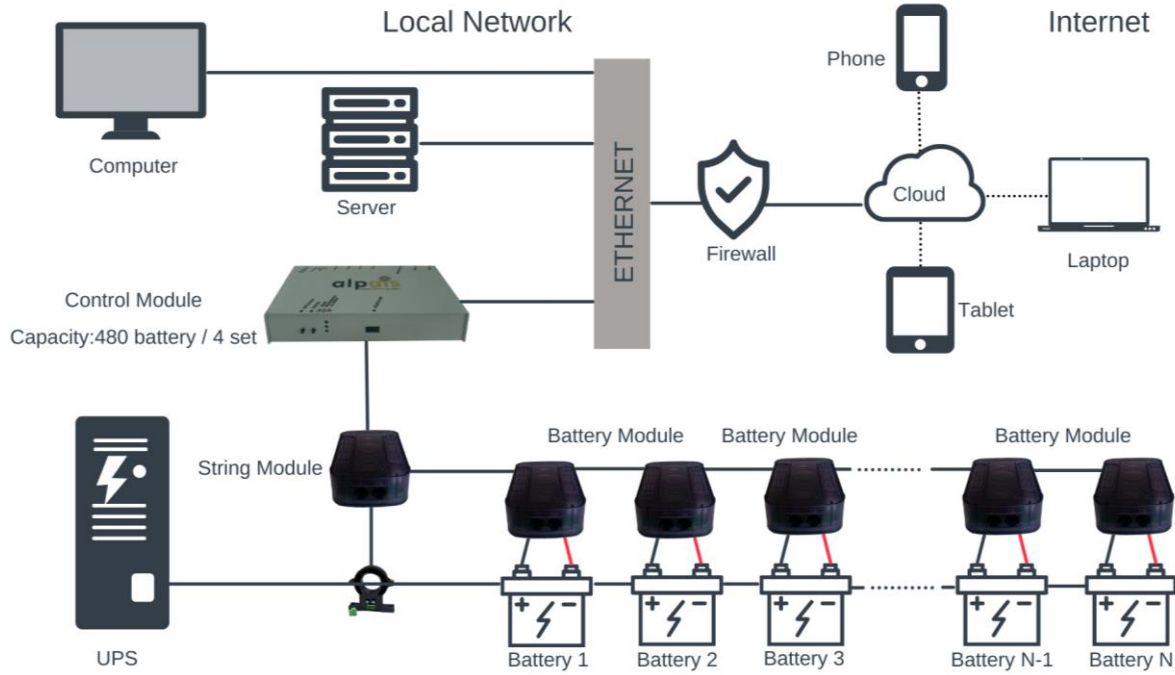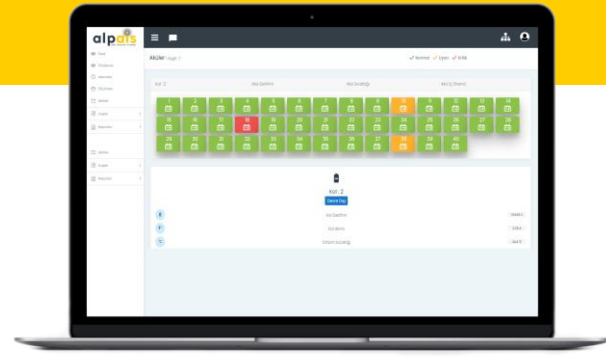
➤ System Components

➤ Measurement of Battery Parameters Using Battery Modules

The voltage, internal resistance, and temperature parameters of VRLA, VLA, or Ni-Cd type batteries are measured, and the measured parameters are transmitted to the control unit via Modbus protocol.

➤ Measurement of Current and Environment Parameters Using String Modules

The string current, ambient temperature, and humidity ratio are measured, and the measured parameters are transmitted to the control unit via Modbus protocol.

➤ Control Module

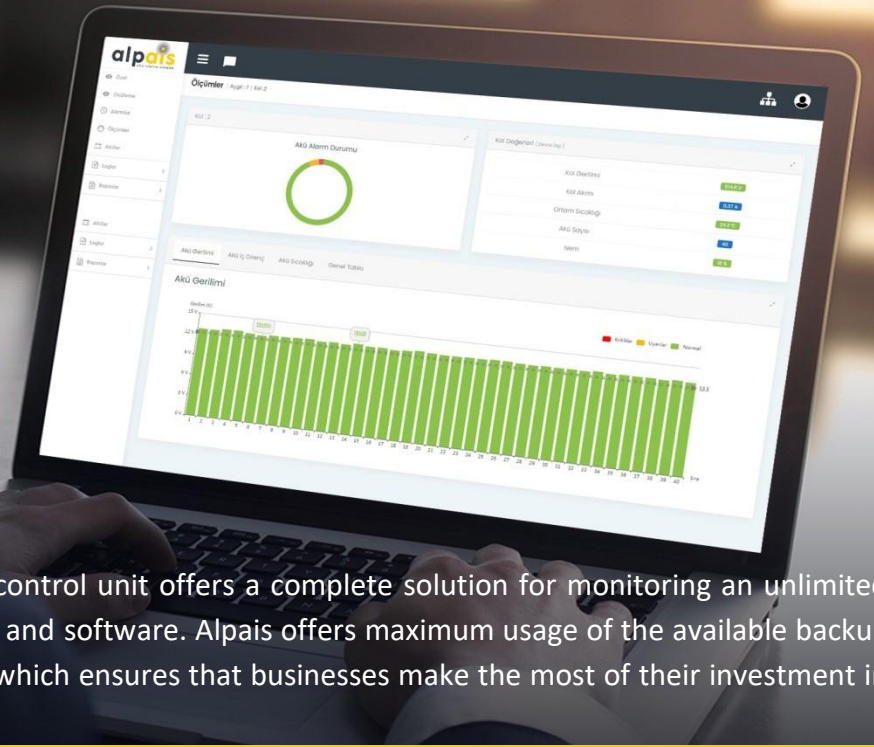The control unit is located at the center of the system and is responsible for saving and processing the parameters transmitted from the batteries and string units.
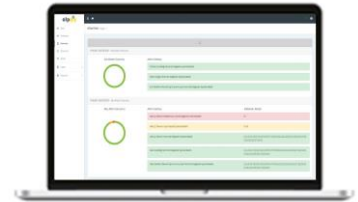
➤ Battery Management System Software

An unlimited number of batteries installed either in a single room or in different facilities/countries are monitored extensively through a single control center.

www.alpais.com.tr | info@alpais.com.tr

Alpais Battery Management Software

Located at the center of the Alpais system, the control unit offers a complete solution for monitoring an unlimited number of batteries with its integrated hardware and software. Alpais offers maximum usage of the available backup power infrastructure generated by the batteries which ensures that businesses make the most of their investment in the batteries.

➢ **Alpais offers proactive protection by allowing you to make the right decisions based on the data it provides.**

- Local Area Network or Cloud Monitoring
- Multiple Location Control from Single Control Center
- Supports Modbus- RTU, Modbus TCP/IP
- String Based Battery Positioning
- Real-Time Battery Status and Color Notification
- Detailed Charge/Discharge Record
- Optional Embedded Web Server

- E-mail Notifications
- Alarm and Event Activities
- Data Management
- PDF or Excel Reporting
- Graphics and Analysis Tools
- Facility and Project Customization
- Alarm History and Service Logs
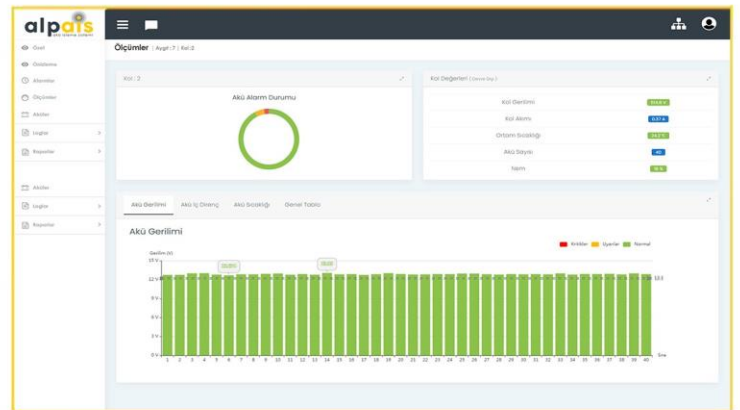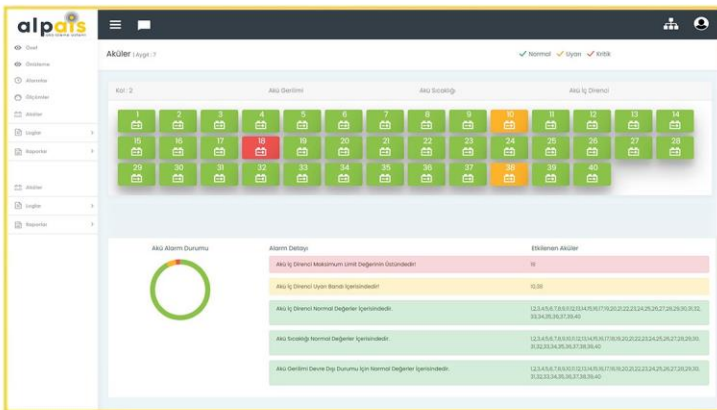
What does ALPAIS measure?

Battery Voltage

The float charge voltage carries an important significance for battery life. Charge voltages that are not applied correctly cause loss of capacity, accelerated corrosion in the network, excessive gas release, and eventually a reduction in battery life. Battery voltage monitoring allows for the detection of short circuits, discharge performance, and fatal failures in the UPS battery backup systems in advance.

Battery Internal Resistance

Internal resistance is a growing factor that increases as the battery ages. Due to the rise in internal resistance, the battery becomes unable to deliver the desired current. Thus, the service life of the batteries can be determined exactly by monitoring the internal resistance value. Internal resistance measurements also enable the system to detect weak connections and open circuit batteries before a fault occurs. In some cases, battery failures take place in as little as a week. For this reason, daily internal resistance measurements allow you to detect faulty batteries before a problem occurs without the need for a discharge test.

Battery Temperature

The most important advantage of measuring the temperature of each battery is identifying thermal runaway before it occurs, and then taking the necessary intervention methods. Moreover, data about environmental problems as a result of a weak HVAC system, weak connections, and excessive ripple voltages can also be indirectly collected.

Battery State of Health

Battery health can be defined as a function of the maximum charge capacity of the aging battery and the maximum charge capacity when the battery is new. Battery health is an important parameter for estimating the degree of performance degradation and remaining battery life of a battery.

String Voltage

The string voltage is monitored to verify that the charging system is active and charging as required.

String Current

By monitoring the string current, the amount of energy received or given for each string can be measured. Monitoring the string current also allows for the detection of incorrect charging methods and the ground fault that will adversely affect the system.

Ambient Temperature

The recommended usage temperature of batteries varies between 20-25 °C. Temperatures outside of this range can significantly affect the battery's corrosion rate and shorten battery life. Approximately a mere 8-10 °C increase in ambient temperature can cause the battery life to decrease by 40-50%.

alpais
battery management system

End of Costly Downtime

If we are talking about the backup battery infrastructure installed somewhere, it can be easily predicted if and when a critical task has been carried out there. If the battery infrastructure is required and this need cannot be met on demand, the increase in costs will be inevitable.

Power blackouts are a very common occurrence all around the world. If power blackouts are taken into account, the investment made into UPS and battery management systems becomes vital for your business.

You can be ready for any negative situation by monitoring the installed battery infrastructure in place for providing backup power.

The Alpais battery management system always refreshes your sense of trust by providing you with daily feedback and information about the battery infrastructure.

➢ Alpais: Adds Value to Your Business & Protects Your Investment!

- Extends the lifetime of the batteries in the infrastructure.
- Reduces maintenance and replacement costs through effective protective and preventative maintenance.
- Provides maximum benefit with minimum workforce.
- Provides remote access, giving you the opportunity to manage your business anytime, anywhere.
- Provides planned battery procurement by avoiding emergency situations.
- Enables the identification and verification of the warranty status with recorded data and reporting.
- Provides improvements in business insurance premiums as risks are reduced to a minimum.
- Keeps your staff away from battery racks/chambers and vulnerable areas which further ensures that their safety and activities continue without interruption. This allows you to focus on your core activities by simplifying your work safety.

➢ Order Information

SYSTEM STRUCTURE		EXPLANATION	PRODUCT CODE
CONTROL MODULE		Control Module* **Optionally Hydrogen Gas Sensor**	CONMOD
		Control Module with Embedded Software **Optionally Hydrogen Gas Sensor**	UP-CONMOD
STRING MODULE		String Module with Temperature and Humidity Sensors	STRMOD-ENV
BATTERY MODULE		1.2V Battery Module 2V Battery Module 6V Battery Module 12V Battery Module	BATMOD1.2 (BATMOD1.2-T) BATMOD02 (BATMOD02-T) BATMOD06 (BATMOD06-T) BATMOD12 (BATMOD12-T)
ACCESSORIES	**DATA CABLE**	Cable Terminal: RJ12 Input, L:30 cm Cable Terminal: RJ12 Input, L:40 cm Cable Terminal: RJ12 Input, L:50 cm Cable Terminal: RJ12 Input, L:100 cm Cable Terminal: RJ12 Input, L:150 cm Cable Terminal: RJ12 Input, L:3 m Cable Terminal: RJ12 Input, L:5 m Cable Terminal: RJ12 Input, L:10 m** Cable Terminal: RJ12 Input, L:20 m** ***Optionally Halogen free type *** ** Optionally 10m and 20m**	DATACAB030 DATACAB040 DATACAB050 DATACAB100 DATACAB150 DATACAB103 DATACAB105 DATACAB110 DATACAB120
	BATTERY MEASUREMENT CABLE	Cable Terminal: Faston Type, L:30 cm Cable Terminal: O Type, r:5 mm L:30 cm Cable Terminal: O Type, r:6 mm L:30 cm Cable Terminal: O Type, r:8 mm L:30 cm Cable Terminal: O Type, r:10 mm L:30 cm ***Optionally Halogen free type ***	MEACAB-F-30 MEACAB-O-M5-30 MEACAB-O-M6-30 MEACAB-O-M8-30 MEACAB-O-M10-30
	CURRENT SENSOR	Rated Input: 50A (Measure Range : 0 ± 100A) Rated Input: 100A (Measure Range : 0 ± 200A) Rated Input: 200A (Measure Range : 0 ± 400A) Rated Input: 500A (Measure Range : 0 ± 1000A)	CS050 CS100 CS200 CS500
	POWER SUPPLY	12V DC Power Supply	PA-12-2
CONTROL MODULE CABINET SOLUTION		Dimensions: 300x600x165mm (for 1 Control Module) Dimensions: 500x600x165mm (for 2 Control Module)	PTC-1 PTC-2

*The minimum specifications of your PC or server that you will use for the control module software should be 4 GB of RAM, a 1 gigahertz (GHz) processor and 25 GB of free hard disk space.
Note: Our solutions vary according to user demand. The standard dimensions and product dimensions can be changed according to the requirements of the Project if technically appropriate.

alpais
battery management system

How the Battery Management System works?

With the Alpais battery management system, a battery module is installed in each battery. The battery module measures the voltage, temperature, and internal resistance of each battery. Charge and discharge status, string current, and string voltage are measured by each string module placed on each string. Ambient humidity and temperature are also measured by the sensors in these string modules. The control unit collects and records the data received through the communication links between them. Afterwards, the data is transmitted to the user through the Alpais software to show the battery status as well as a time-axis and some column graphs. Notifications of critical and alert batteries are sent by e-mail and SMS and are displayed via the interface. In this way, critical batteries are detected and necessary actions or planned battery changes can be made according to the data received.

I have a periodic maintenance agreement with my UPS or battery service provider. Why do I need a battery management system?

Your periodic maintenance cannot keep you as safe and secure as you think. Batteries and the management of batteries are shown as the cause of nearly 85% of all interruptions connected to the uninterruptible power supply. Periodic maintenance has become a traditional method as a result of time. However, there are still interruptions in critical area applications, and these have considerable costs to business owners. Therefore, protecting your backup power system with only periodic maintenance will not reduce the 85% failure rate caused by the battery and will not reduce your risks sufficiently. Batteries, which are unpredictable by nature, can suddenly break down within 2 weeks and cause your system to crash.

I already have a monitoring system in the UPS or rectifier. Is the battery management system necessary for my operation?

All monitoring systems are the same. Monitoring systems in UPSes or rectifiers monitor batteries as a group and provide only string-based monitoring. It monitors the battery pack as whole, singular block. They usually monitor the group's voltage and charge/discharge states, which does not provide adequate protection. However, each battery in the battery group has its own importance, so if even one of the batteries in the group fails or is unhealthy, this will affect the whole group and the system may seize operating. In other words, since the monitoring systems in the UPS or Reducer are not able to inspect each battery individually, your system is still at great risk, even though everything might seem ok. Whenever you need to ensure that your system will work properly, it is essential to use a system that can monitor each battery separately, examine parameters that may affect its health, and allow you to perform scheduled battery replacement as soon as necessary.

Instead of installing a battery management system, I can reserve some more resources by replacing all my batteries. Should I still use a battery management system?

The backup power system responsible makes this mistake. Installing a new battery system does not eliminate the risk of battery failure. Risks cannot be reduced to zero in any unmonitorable component. The possibility of fabricated problems and the effect of this situation on the total life of the system, along with the fact that some batteries can be completed by the end of the warranty period (approximately 3%) are among the risk factors that cannot be ignored. Even if your batteries are newly purchased, unexpected situations may occur and even your new system that is being relied on can interrupt your business and cause significant financial losses. Thanks to the measurements and reports provided by the battery management system, it is possible to identify production-related problems and to submit reports for warranty evaluation.

Installing the Battery Management System is a cost for my business. Will it benefit financially?

Contrary to popular belief, the battery management system has many financial benefits. Installing this system reduces routine visits and maintenance to battery rooms and reduces the amount of work to be done, which saves you money. It may also lead to freducing the frequency of conducting discharge tests which wear batteries. This will result in saving you time, costs, and prolonging the lives of the batteries. Because you can monitor the status of your batteries instantly and be aware of the alarms and warning signs as soon as possible, you can prevent situations that reduce the life of each battery individually by detecting and replacing an unhealthy battery which could otherwise have reduced the life of the entire system. Thus, the life of your battery system is extended, its continuity is ensured, and replacement of the whole battery group is postponed. Even in this situation, the battery management system is a self-paying system.

➢ Technical Specifications

Control Module

Operating Condition	
Operating Temperature	0-50°C (32-122°F)
Storage Temperature	-10-70°C (14-158°F)
Relative Humidity Ratio	5% - 90% RH
Atmospheric Pressure	80 – 110 kPa
Power Input	12VDC @1.5A
Max. Power Consumption	20 Watt
Communication Interface	
RS-485	Modbus RTU
Ethernet	SNMP, Modbus TCP/IP (optional)
Features	
Number of String	4 Strings can be monitored
Number of String Unit	1 String Unit at each String
Number of Battery Monitoring Unit	120 Battery Monitoring Unit at each
Battery Support	1,2V – 12V Batteries
String Voltage	1,2V – 2500VDC
Input/ Output	
Relay Output	2 x Dry Contact Output, 400V (AC-DC) 120mA (optionally digital)
Digital Input	2 x 12-24VDC
Electrical Isolation	2000 V
Physical Characteristics	
Dimensions (H x W x D)	40,5 x 200 x 95,5 mm
Enclosure	Metal
Color	Grey

String Module

Current Monitoring	
Current Range	0-500A
Resolution	10 mA
Accuracy	1 %
Current Sensor	Hall Effect Sensor
Ambient Temperature Monitoring	
Temperature Range	0-50°C (32-122°F)
Resolution	0.1°C
Accuracy	±2 °C
String Voltage Monitoring	
Voltage Range	1-2500 V DC
Resolution	10 mV
Accuracy	0.1%
Humidity Monitoring	
Humidity Range	5% - 90% RH
Resolution	1% RH
Accuracy	5%
Protection	
Isolation	2000 V Opto Isolation
Short Circuit Protection	Max. 3.5A (Internal Fuse)
Operating Conditions	
Operating Temperature	0-50°C (32-122°F)
Storage Temperature	-10-70°C (14-158°F)
Relative Humidity Ratio	5%-90% RH
Atmospheric Pressure	80-110kPa
Power	
Power Consumption	1.2 Watt
Operating Current	
Nominal Operation	100 mA
Communication	
Data Transmission Interface	Serial Modbus Protocol
Physical Characteristics	
Dimensions (H x W x D)	(91 x 63 x 29 mm)
Enclosure	ABS
Color	Semi-Transparent Grey

Battery Module

Compatibility	
Battery Type	VRLA, Ni-Cd, VLA,
Battery Voltage Monitoring	
Voltage Range	1-16V
Resolution	1 mV
Accuracy	0.05 % ± 6 mV
Internal Resistance Monitoring	
Resistance Range	0.1 – 64m ohms
Resolution	1µOhm
Accuracy	±2 %
Temperature Monitoring	
Temperature Range	0-50°C (32-122°F)
Resolution	0.1°C
Accuracy	±2 °C
Protection	
Isolation	2000 V Opto Isolation
Short Circuit Protection	Max. 3.5A (Internal Fuse)
Reverse Polarity Protection	Provides protection at rated voltage against reverse connection
Operating Conditions	
Operating Temperature	0-50°C (32-122°F)
Storage Temperature	-10-70°C (14-158°F)
Relative Humidity Ratio	5%-90% RH
Atmospheric Pressure	80-110kPa
Power	
Power Consumption	50mA @2V Battery 10mA @12VBattery
Operating Current	
Nominal Operation	10mA – 50mA
Internal Resistance Measurement During Test	0.167 A/dk
Sleep mode	<2 mA
Communication	
Data Transmission Interface	Serial Modbus Protocol
Features	
Auto Addressing	Automatically obtain address during installation or replacement
Voltage Balancing	Voltage balancing feature on string
Physical Characteristics	
Dimensions (H x W x D)	(91 x 63 x 29 mm)
Enclosure	ABS
Color	Semi-Transparent Grey

Protect Your Investment

Alpais Battery Management System protect your business from costly downtime.

alpais
battery management system

alpais
battery management system

About Alpais;

ALPAIS's mission is to deliver the right product to the right customer, in the right way. It is the pioneer of the sector considering the quality and innovation criteria in Battery Management Systems. It always aims at 100% customer satisfaction with its products and after-product service. In line with customer demands, we always deal with our customers one-on-one and provide training and support if necessary.

ALPAIS offers comprehensive battery management systems to its valuable solution partners in a wide variety of industries and applications around the world such as power stations, wind turbines, data centers, defense industry, marine and many more. In addition to the existing battery management systems, ALPAIS continues to develop and innovate its products in its own R&D center in line with customer demands.

ALPAIS BATTERY MANAGEMENT SYSTEM

Orta Mah . D 100 Kuzey Yanyol Cad. Safi Espadon Kule
No:26/1 Kat:6 D:62
Post Code: 34880 KARTAL / ISTANBUL
Tel.   +90 216 561 90 73
Fax.   +90 216 561 90 74 (pbx)

Linked in

www.alpais.com.tr | info@alpais.com.tr