

POWER ELEKTRONİK & POWER SOLUTIONS WEBINAR

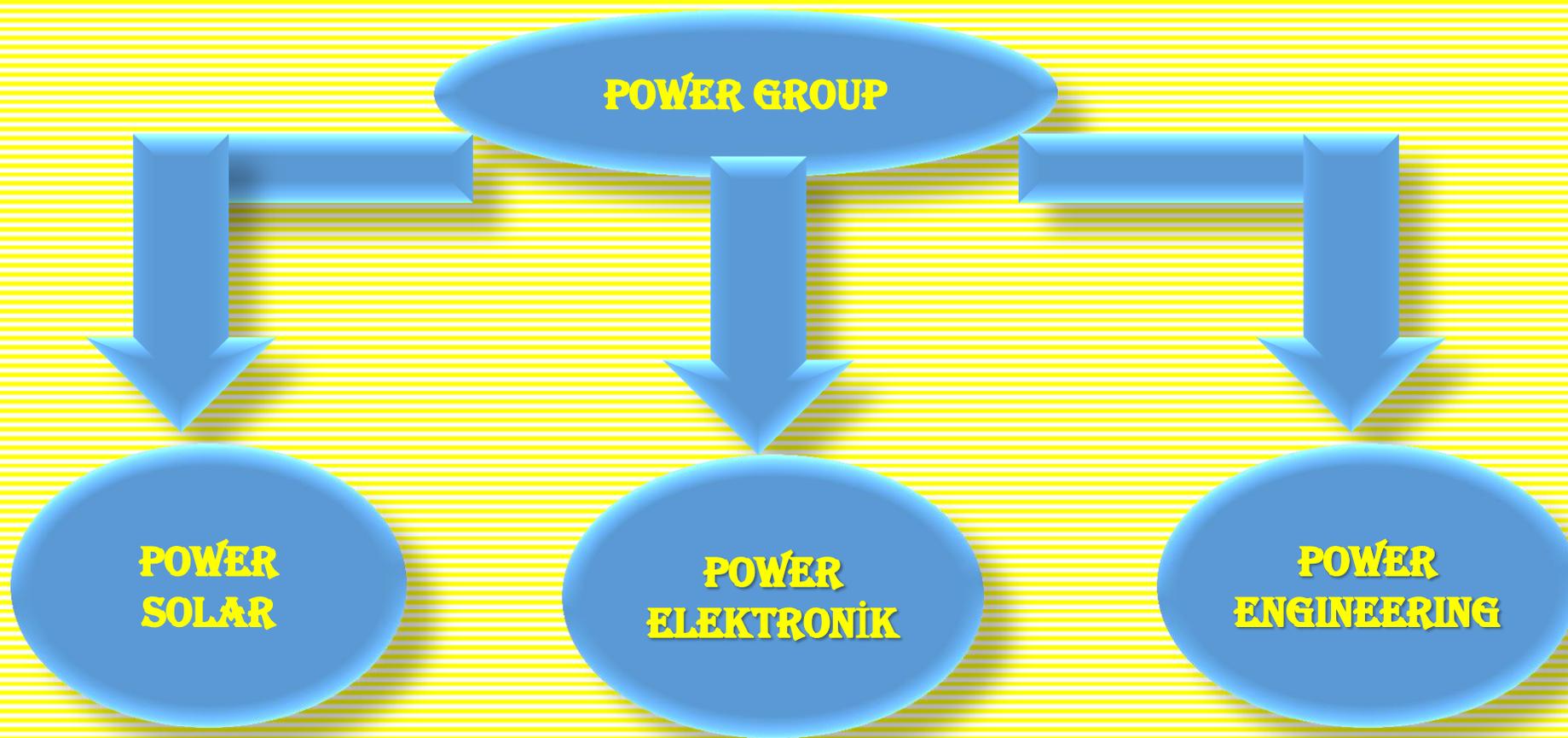
Emirhan BULUT / 02.06.2021
Project Sales Engineer



Main topics of webinar

- Industrial UPS
- Industrial Rectifier
- Industrial Inverter
- Converters
- Static Transfer Switches
- Battery Management Systems







WHO WE ARE

Power Elektronik Sanayi ve Ticaret A.Ş. was founded in 1999, afterwards succeeded to be one of the strongest companies in Turkey . Day by day due to the R&D department, Power elektronik has designed new original products and increased the product range.

- ▶ **Export to 42 countries**
- ▶ **Wide product range**
 - ▶ **UPS**
 - ▶ **Rectifier**
 - ▶ **Voltage regulator**
 - ▶ **Inverter - converter**
 - ▶ **EV car charger**
 - ▶ **Special applications**



22

Years

10000+

Customers

500+

Project

70

Employees

45

Resellers

10

Membership

6

Brand
agency

13

Certificates of
quality

We are moving forward to reach our goal by completing our missions very confidently.

Achievements

WHO WE ARE

POWER ELEKTRONIK

- 15 Engineers
- 26 Technical personnel
- 14 Project team



- 4 Engineers
- 9 Technical personnel



We are doing completely new designs due to our qualified R&D department.



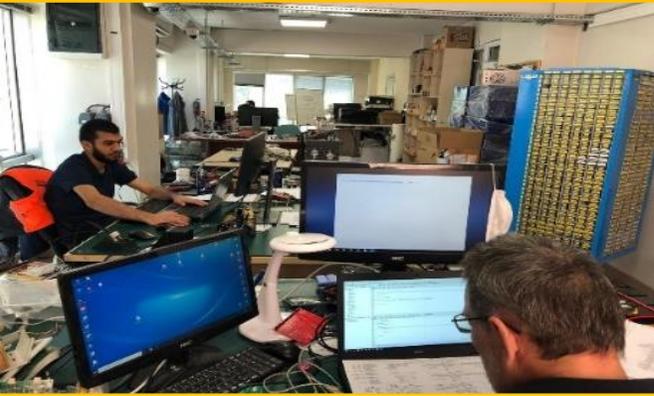
Power Elektronik continues activities by taking care of customer contentment.

- ISO 9001, ISO 18001, ISO 14001
- TSE and EN certificates
- Qualification certificates
- Product quality test
- Factory acceptance tests

- 7/24 Technical Support
- Maintenance support
- Following contentment of customers

WHO WE ARE

POWER ELEKTRONIK



We are doing completely new designs due to our qualified R&D department.

Power Ele
taking car

- 15 Engineers
- 26 Technical personnel
- 14 Project team

01
HUMAN
RESOURCES

- 9 Engineers
- 6 Technical personnel

02
R&D

03
R&D
CERTIFICATES

04
CERTIFICATES OF
QUALITY

05
AFTER SALES
TECHNICAL
SUPPORT

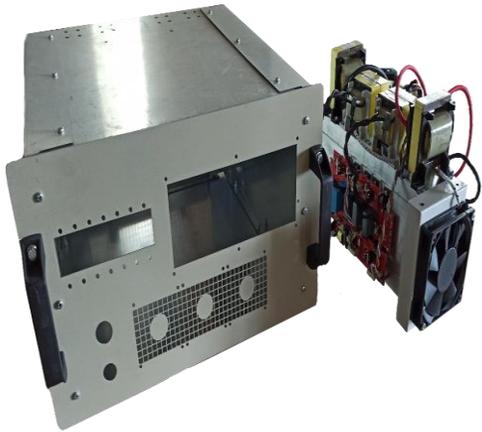
- 7/24 Technical Support
- Maintenance support
- Following contentment of customers

- ISO 9001, ISO 18001, ISO14001
- TSE and EN certificates
- Qualification certificates
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- Factory acceptance tests

ONGOING R&D STUDIES

SWITCH MODE RECTIFIER

- Input range 340-520 Vac
- PF > 0.9
- 24VDC, 30-80A



INVERTER

- Input range 54-96Vdc
- THDv < 1%
- Up to 10 kVA in one unit
- Parallellable 10 units



STATIC REGULATOR

- Regulation range 65-300Vac
- Output 220Vac (%10)
- Response time (40ms)



ELECTRICITY CAR CHARGER

- AC monophase and 3 phase
- DC modular
- Up to 43 Kwatt





T.C. SANAYİ VE
TEKNOLOJİ BAKANLIĞI

AR-GE MERKEZİ BELGESİ

Sanayi ve Teknoloji Bakanlığı tarafından,

Power Elektronik San. ve Tic. A.Ş.

5746 Sayılı Araştırma ve Geliştirme Faaliyetlerinin Desteklenmesi Hakkında Kanun kapsamında sağlanan teşvik ve muafiyetlerden yararlanmak üzere bu belge verilmiştir.

Mustafa VARANK
Bakan



POWER ELEKTRO

Ar-Ge
Merkezi

TEKNOLOJİYE YATIRIM GELECEĞE YATIRIM

Tasarım
Merkezi

INDUSTRIAL
DESIGN
CENTER

We are doing completely new designs due to our qualified R&D department.

- 15 Engineers
- 26 Technical personnel
- 14 Project team

01

HUMAN
RESOURCES

- 4 Engineers
- 9 Technical personnel

02

R&D

03

R&D
CERTIFICATES

04

CERTIFICATES OF
QUALITY

- ISO 9001, ISO 18001, ISO14001
- TSE and EN certificates
- Qualification certificates
- Product quality test
- Factory acceptance tests

05

AFTER SALES
TECHNICAL
SUPPORT

- 7/24 Technical Support
- Maintenance support
- Following contentment of customers



are doing completely new designs due to our qualified R&D department.

Power Elektronik continues activities by taking care of customer contentment.

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- 26 Technical personnel
- 14 Project team

01
HUMAN RESOURCES

03
R&D CERTIFICATES

05
AFTER SALES TECHNICAL SUPPORT

- 7/24 Technical Support
- Maintenance support
- Following contentment of customers

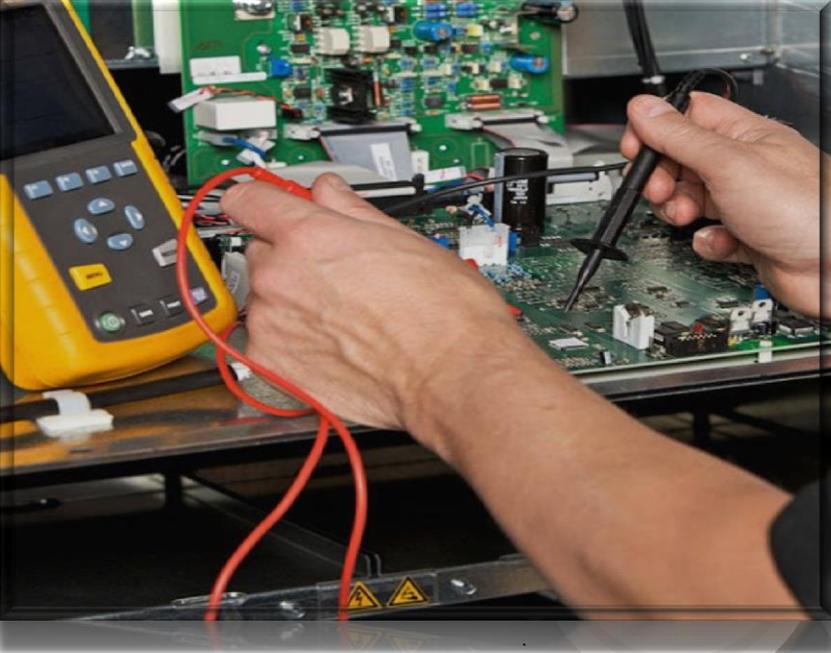
- 4 Engineers
- 9 Technical peronnel

02
R&D

04
CERTIFICATES OF QUALITY

- ISO 9001, ISO 18001, ISO14001
- TSE and EN certificates
- Qualification certificates
- Product quality test
- Factory acceptance tests

POWER ELEKTRONİK



AR-GE Merkezimizin deneyimli kadrosuyla sektörde ilklere imza atıyoruz.

Power Elektronik continues activities by taking care of customer contentment.

- 4 Mühendis
- 5 Tekniker
- 4 Teknisyen

02

R&D

03

R&D
CERTIFICATES

04

CERTIFICATES OF
QUALITY

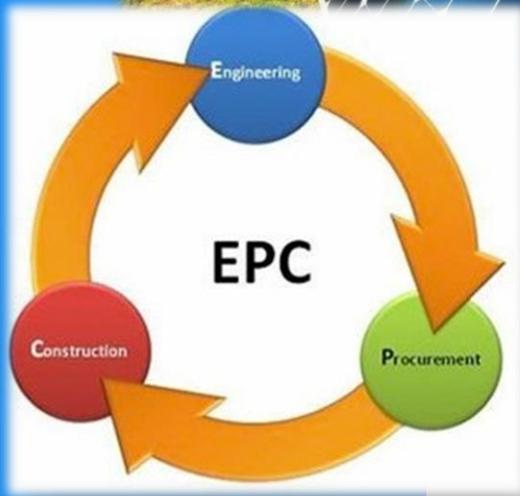
05

AFTER SALES
TECHNICAL
SUPPORT

- ISO 9001, ISO 18001, ISO14001
- Ürün TSE ve EN belgeleri
- Hizmet Yeterlilik Belgeleri
- Ürün Final kalite ve rutin testleri
- Fabrika ve Saha kabul testleri

- 7/24 Technical Support
- Maintenance support
- Following contentment of customers

Power Solar and Power Engineering Company



We are designing and completing turnkey solar projects. Consulting, planning, engineering and maintenance services are provided by us during the project time.

Our target is increasing the energy efficiency in the renewable energy projects and do it useful for future of humanity.

POWER SOLAR ENERGY COMPLETED PROJECTS

Project Name	Adiyaman DSI 2.2 MWp Solar Energy Project
Installed Power	2.200 kWp
Solar Panels	8.800 Pcs 250Wp Polycrystalline PV
Inverters	100Pcs 20kWe SMA String inverter
Location	Turkey/ Adiyaman City



POWER SOLAR ENERGY COMPLETED PROJECTS

Project Name	Alanya Solar Project
Installed Power	3.200 kWp
Solar Panels	11540 Pcs 265Wp Polycrystalline PV
Inverters	174 Pcs 25kWe SCHNEIDER String inverter
Location	Turkey/ Antalya city /Alanya



POWER SOLAR ENERGY COMPLETED PROJECTS

Project Name

Kahramanmaraş 2 MWp Roof top Solar Project



POWER SOLAR ENERGY COMPLETED PROJECTS

Project Name

Fina Enerji 10,7 MWp Solar Project

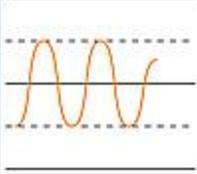


UPS SYSTEMS

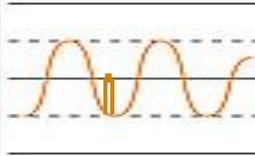
- 1- Uninterrupted Energy**
- 2- Clean Energy**
- 3- Load Protection**

WHY UPS ? QUALITY PROBLEMS ON MAINS

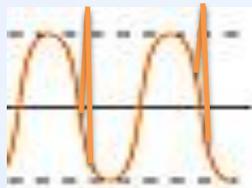
1- Blackout



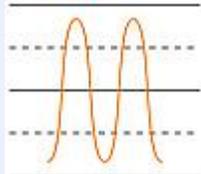
2- Micro Disconnections



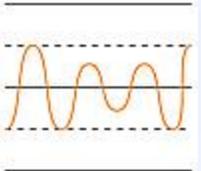
3- Spikes



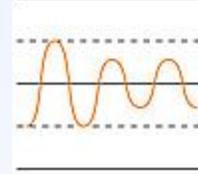
4- Surge



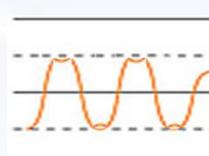
5- Sag



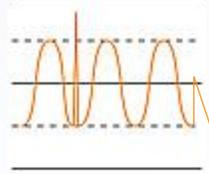
6- Brownout



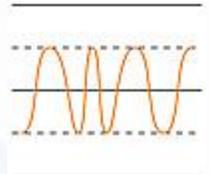
7- Harmonics



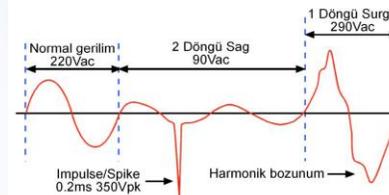
8- Electrical noisy



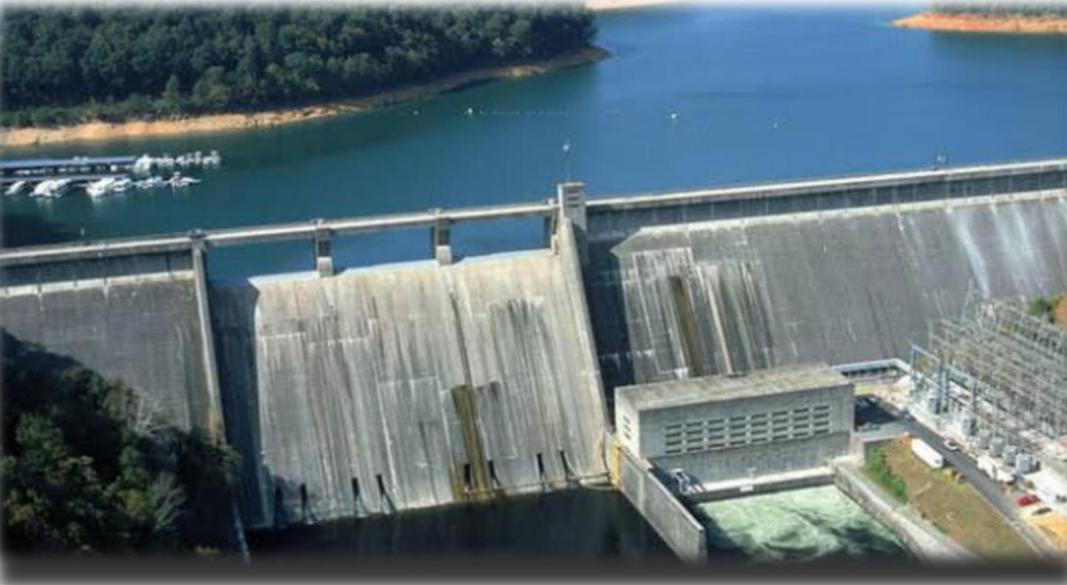
9- Frequency deviations



10- Instant switching & Rush currents



INDUSTRIAL UPS



Question-1: How critical is your application?

- IT applications / **process control**?
- Computers / **medical equipments**?

Question-2: What is your priority?

- Price / **robustness**?
- Efficiency / **reliability**?

Question-3: How are the environmental conditions?

- Climate / **very hot and humid**?
- Clean / **dirty and salty**?

POWER

INDUSTRIAL UPS

PWR INDUSTRIAL 1 - PH, 3 - PH UPS

- More reliable rectifier with IGBT – thyristor bridge
- Input isolation transformer
- Inverter IGBT bridge
- Customizable
- Easy maintenance and service
- From IP20 up to IP54 optional
- Power range 5 – 200 KVA
- Online double conversion
- Isolation transformer
- VRLA, NI-CD, LI-ION



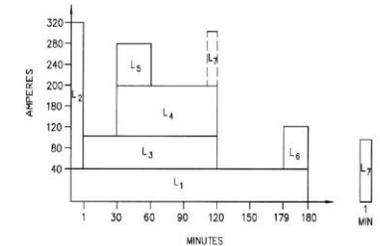
INDUSTRIAL UPS

COMPARISON	INDUSTRIAL UPS SYSTEM	COMMERCIAL UPS SYSTEM
DESIGN LIFE	20+ YEARS	8-10 YEARS
AMBIEN TEMPERATURE RANGE	-10 / +40	0 / +40
AIR HUMIDITY	95%	%80
AIR CONTAMINANTS	VERT DUSTY AND CORROSIVE	LOW LEVELS OF CONTAMINANTS
PROTECTION DEGREE	UP TO IP54	IP20

INDUSTRIAL RECTIFIER

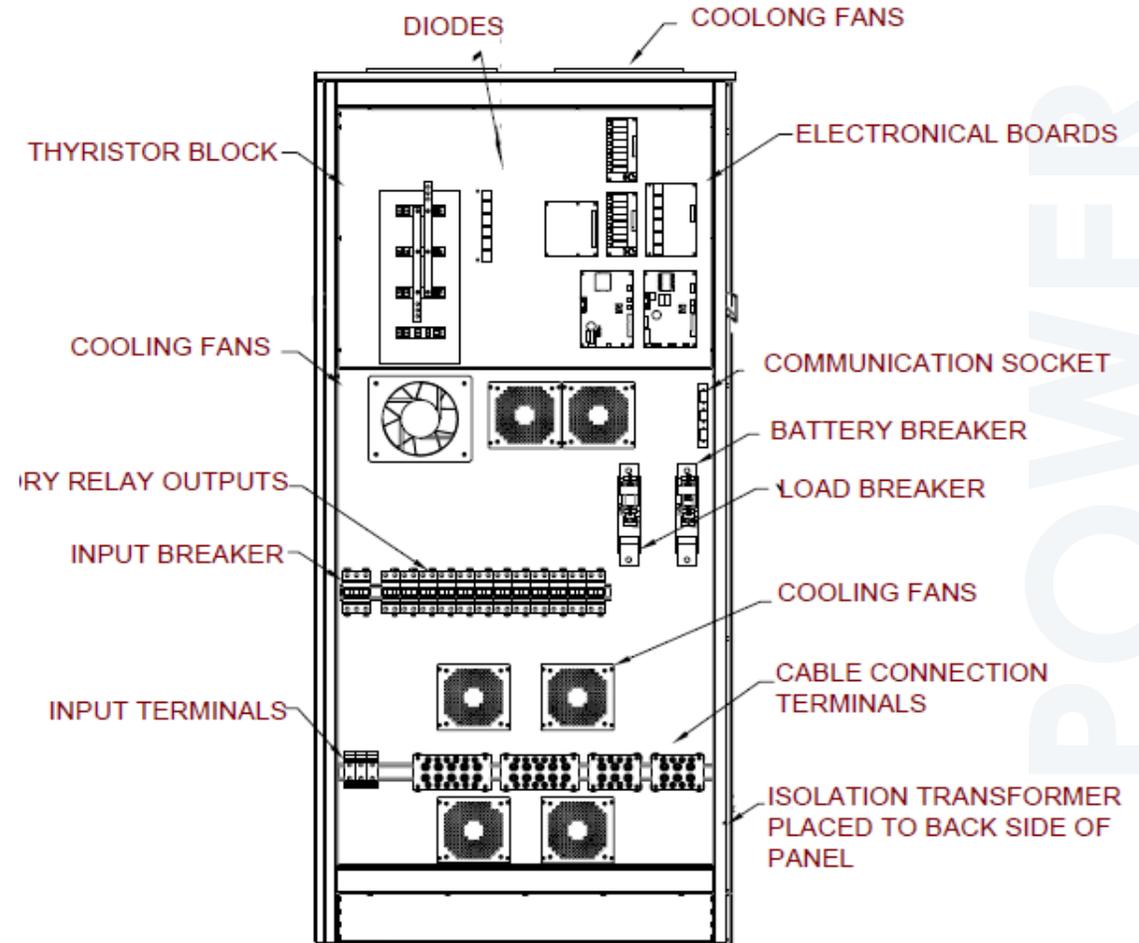
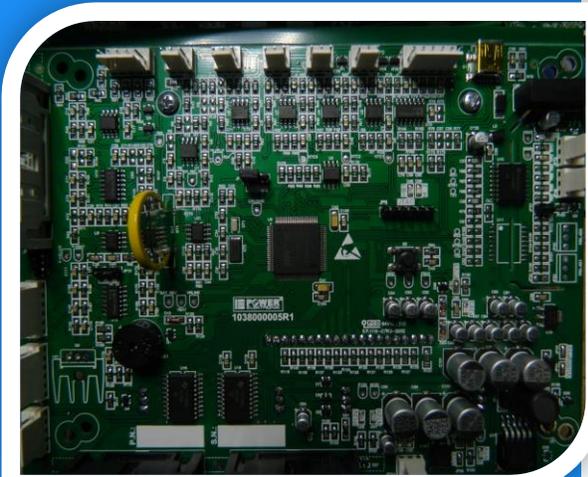
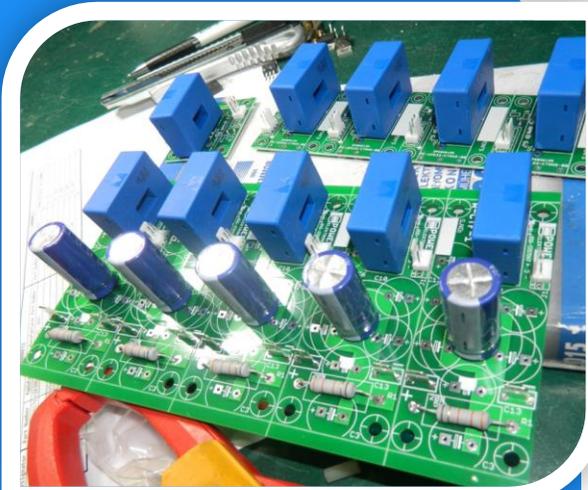
PWR INDUSTRIAL 3-PH BATTERY CHARGERS

- Operates with Ni-Cd and Lead acid batteries
- Advanced battery management system
- Flexible in-built features
- Wide selection of alarms and measurements
- Different battery charging levels
- Communication ports
- Up to IP54 (optional)
- Working without derating up to 1000m altitude (derating according EN standards)



INDUSTRIAL RECTIFIER

220VDC - 222A BATTERY CHARGER PLACEMENT LAYOUT



SOME APPLICATIONS

Kosova KEDS Electric

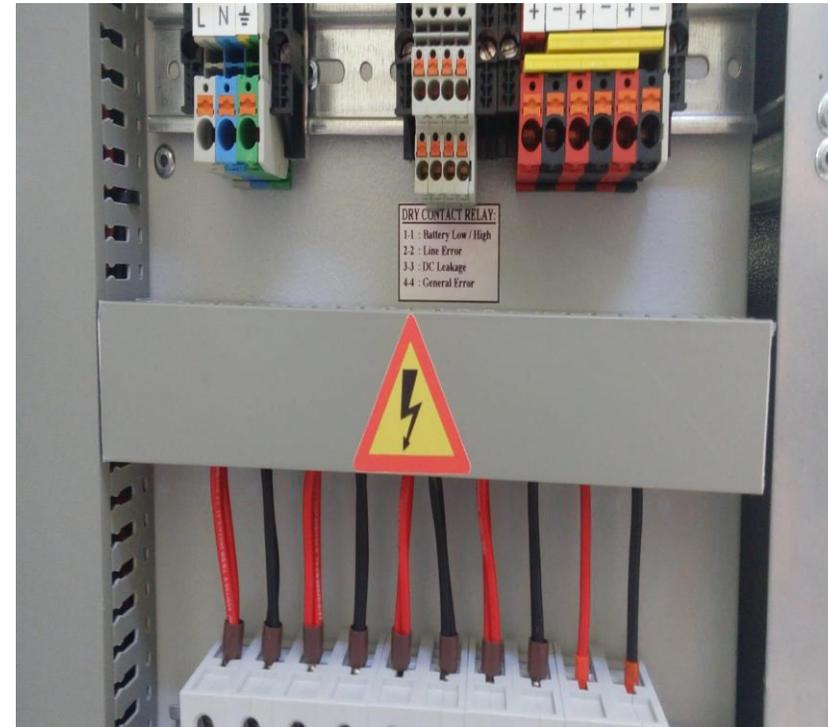
Dual Charger 110Vdc & 24Vdc in same cabinet

110Vdc and 24Vdc DC distribution



SOME APPLICATIONS

SIEMENS AKFEN WPP Project- 82 pcs
24Vdc 50A Charger +AC and DC distribution



SOME APPLICATIONS

PERU Modular Charger

125Vdc 40A Charger with internal Battery-DC distribution



SOME APPLICATIONS

Kipaş Kahramanmaraş 6MW TPP
110Vdc 60A Charger + DC Distribution
24Vdc 150A Charger + DC Distribution



POWER

INDUSTRIAL INVERTER



PWR INDUSTRIAL 1-PH, 3-PH INVERTER 50/60Hz

- IGBT inverter bridge
- Inverter transformer
- Easy maintenance
- Up to IP54 (optional)
- Working without derating up to 1000m altitude
- Customizable
- Power range (5 – 200 kva)

INDUSTRIAL INVERTER

WHY IMPORTANT AND WHERE DO WE USE

- Boosted instant power capacity
- Able to handle inrush currents
- Reliable solutions for nonlinear loads
- At the last points of HVDC power transmission
- Oil and gas plants
- Renewables including wind and solar energy



•Output voltage AC: up to 12 kV

CONVERTERS



ROTARY CONVERTER

- Marine applications
- Test bay applications
- Motor generator sets
- 100-3000 KVA
- 50/60/400 Hz output frequency
- Wide input and frequency range
- Output PF = 1
- Static voltage regulation <math><0,5\%</math>
- Standard IP55 design



STATIC FREQUENCY CONVERTER

ROTARY CONVERTER

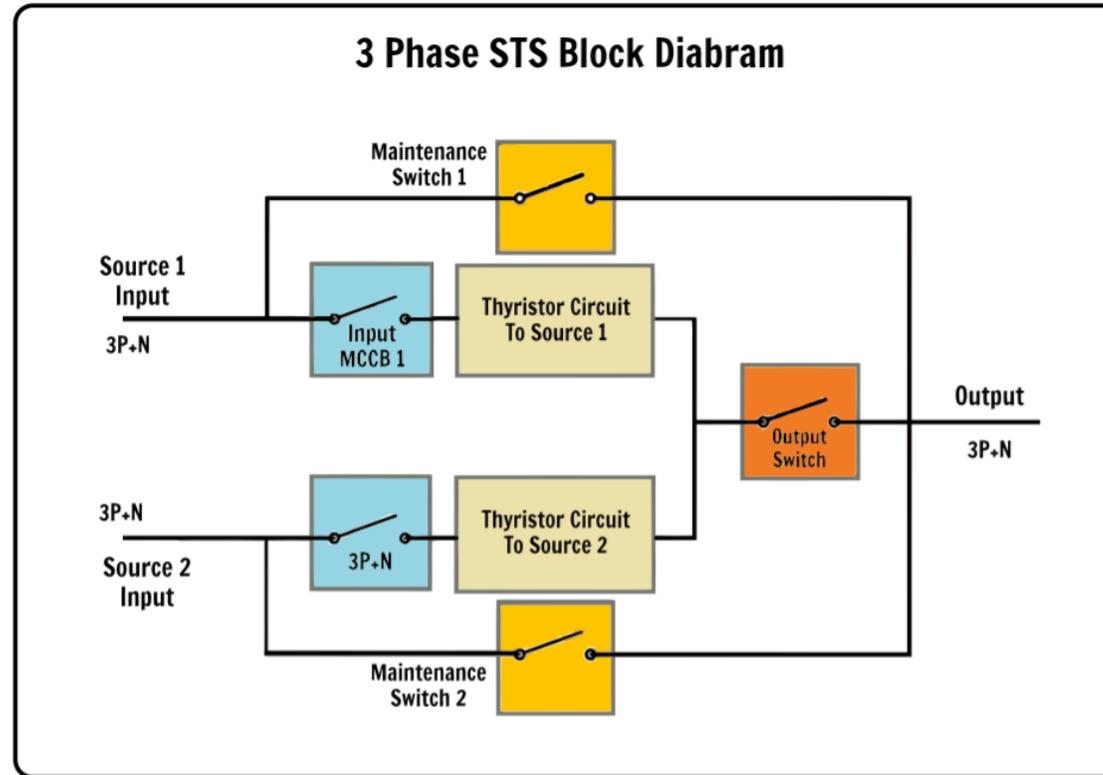
- Galvanic isolation
- Longer lifetime
- Overload capability and protection
- Lower distortion factor
- High input power factor
- Input voltage: up to 12kV
- Output voltage: up to 12kV



STATIC TRANSFER SWITCH

PWR STS

- Mono phase or three phase
- Overload protection
- High efficiency
- Power supply priority
- DSP controlled
- Alarms and warnings



BATTERY MONITORING SYSTEM



POWER
ELEKTRONIK
Endüstriyel Güç Sistemleri
Industrial Power Solutions

ALL TYPE OF DRY, LEAD ACID, NI-CD, GEL

- Exide
- Yuasa
- BB
- Energys
- Alcad
- Saft
- Gaz
- Hoppecke

A rack of Exide batteries and several individual Exide battery units of various sizes and configurations.

XHP Range

Vantex Range

Delivering Quality

ALCAD

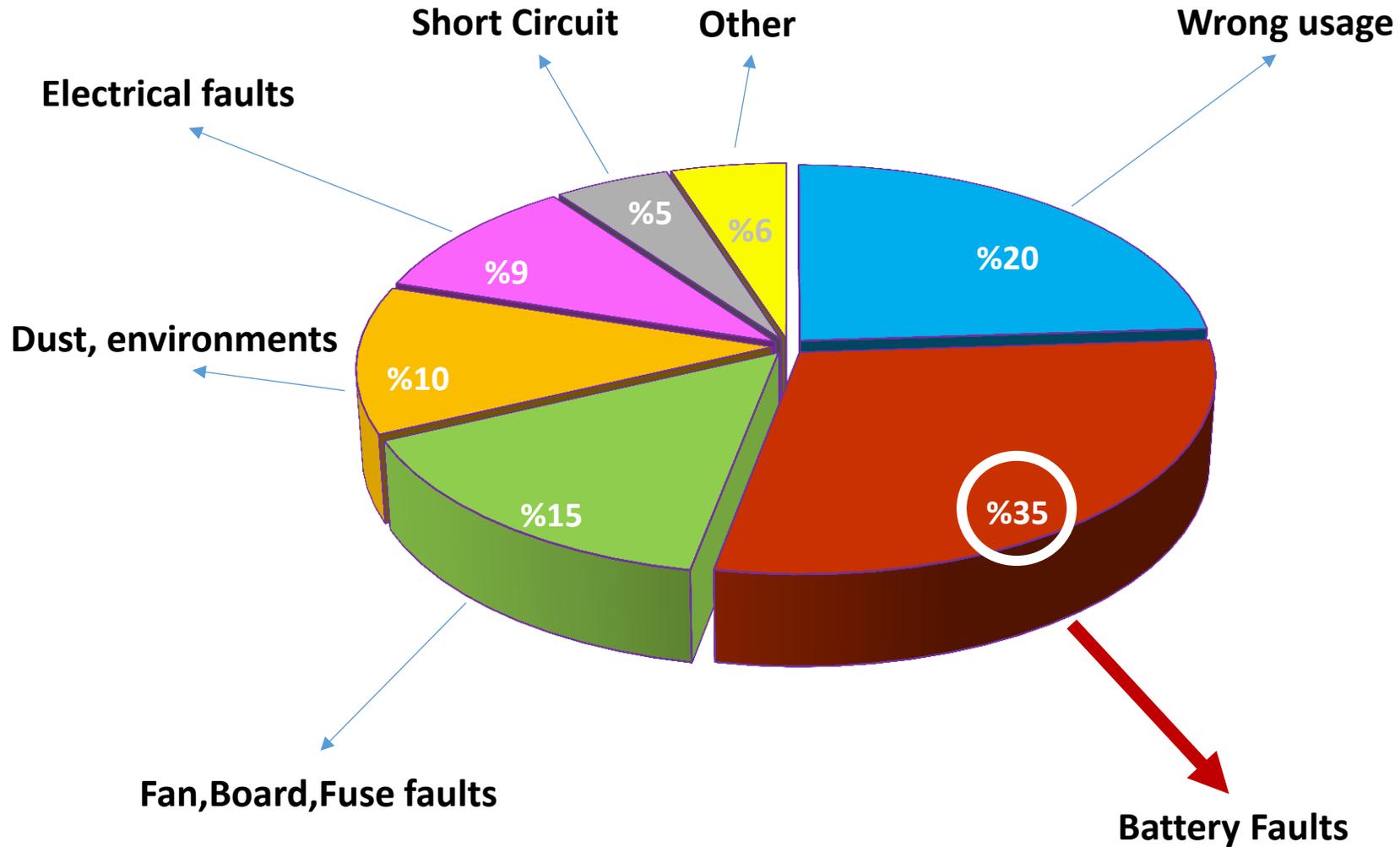
Vantage Range

Solar Range

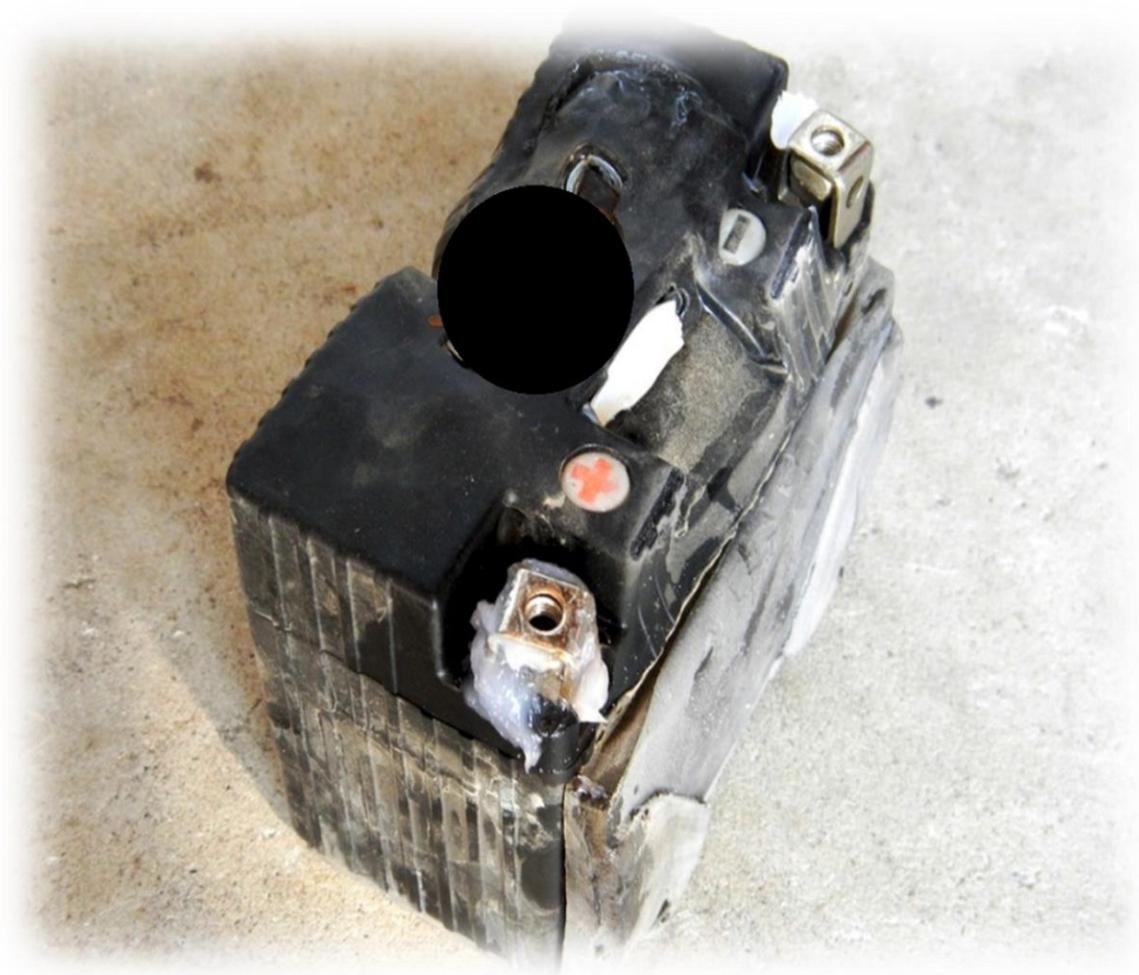
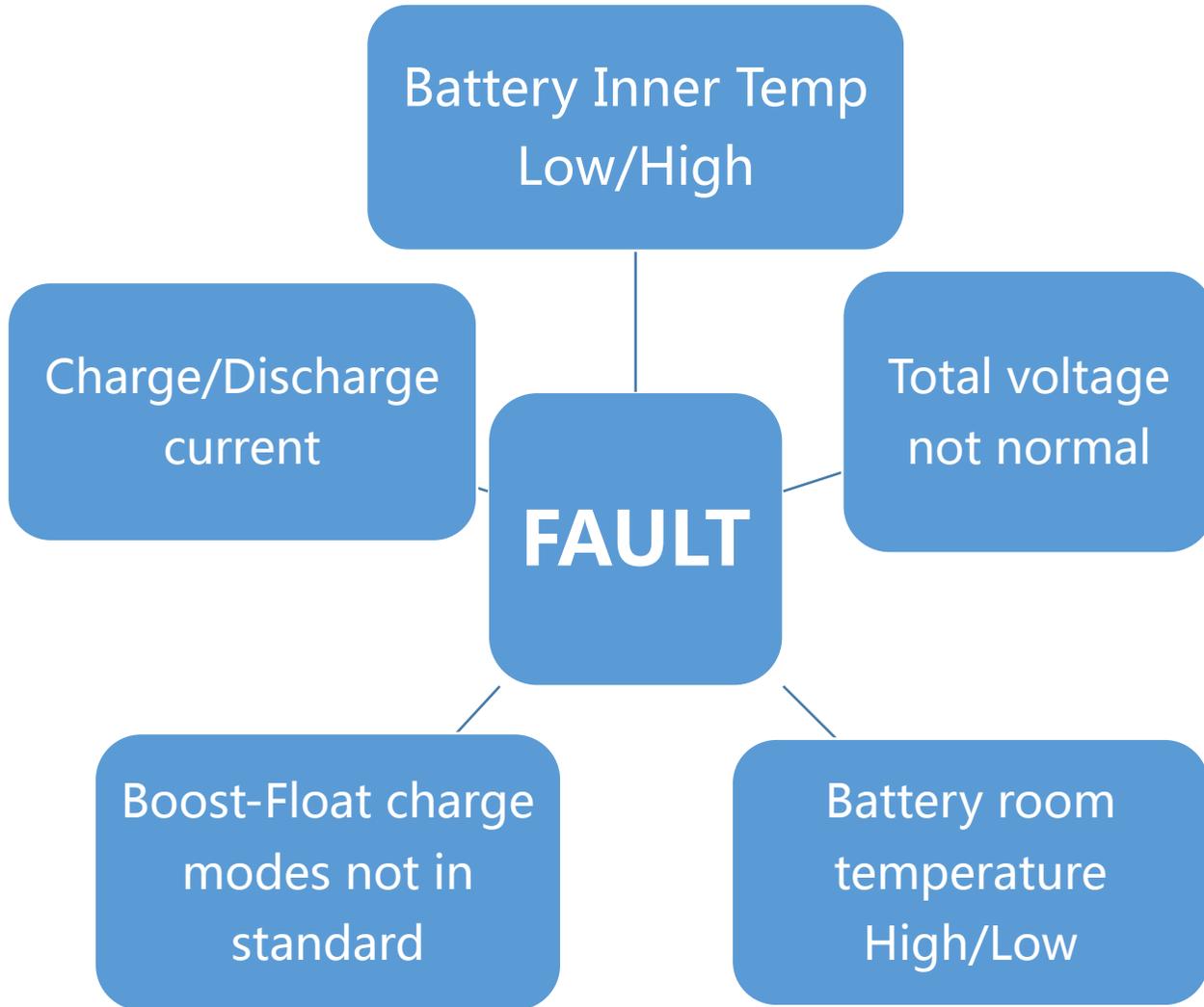
Single Cell Range

A collection of Alcad batteries, including various sizes and configurations, arranged around a central globe graphic with the Alcad logo and tagline.

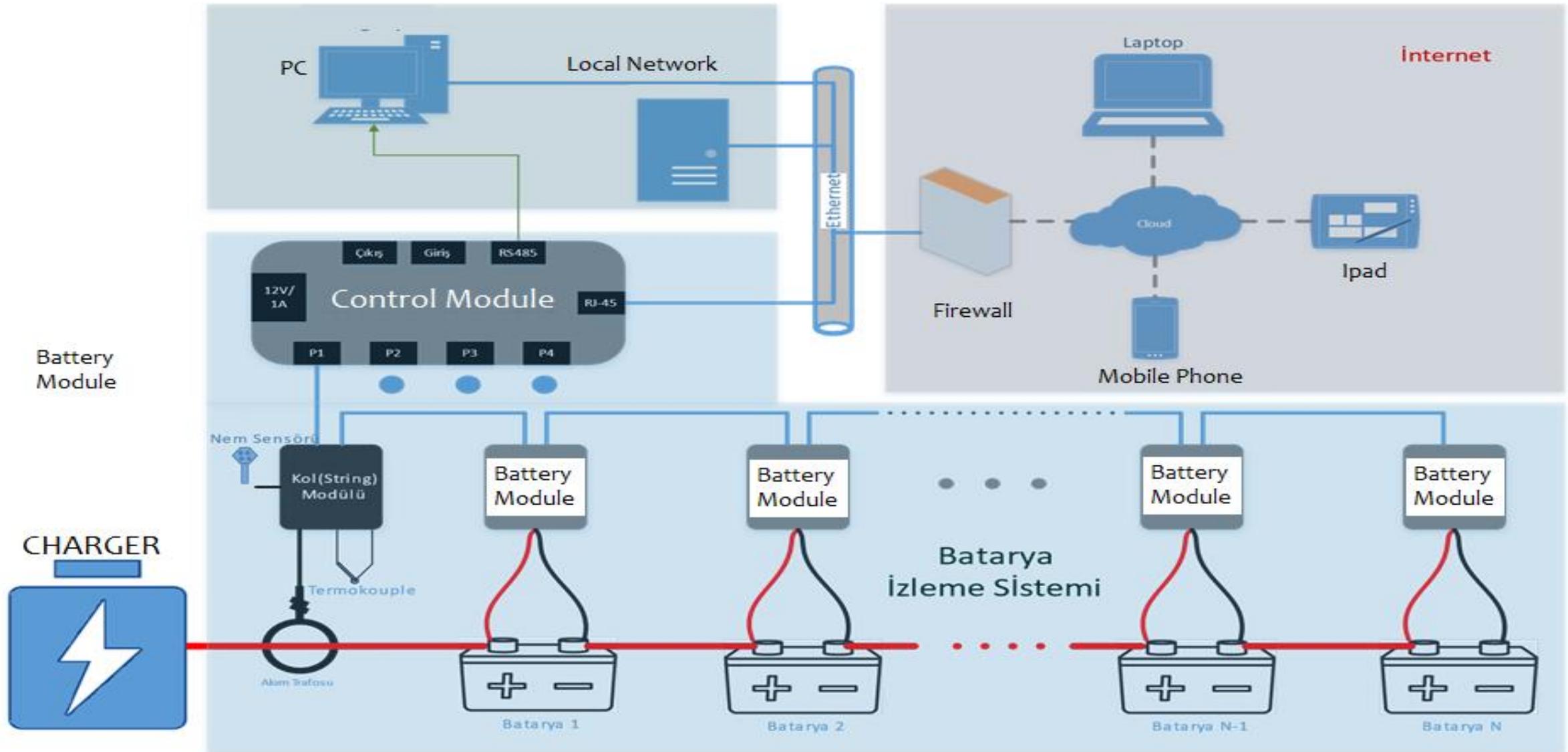
FAULT REASONS ON ELECTRONICS SYSTEMS (UPS, RECTIFIER ETC.)



BATTERY FAULT REASONS



BATTERY MONITORING SYSTEM STRUCTURE



BATTERY MODULE PLACEMENT



WHAT WE MEASURE WITH BMS?

EACH
BATTERY
VOLTAGE

STRING
VOLTAGE

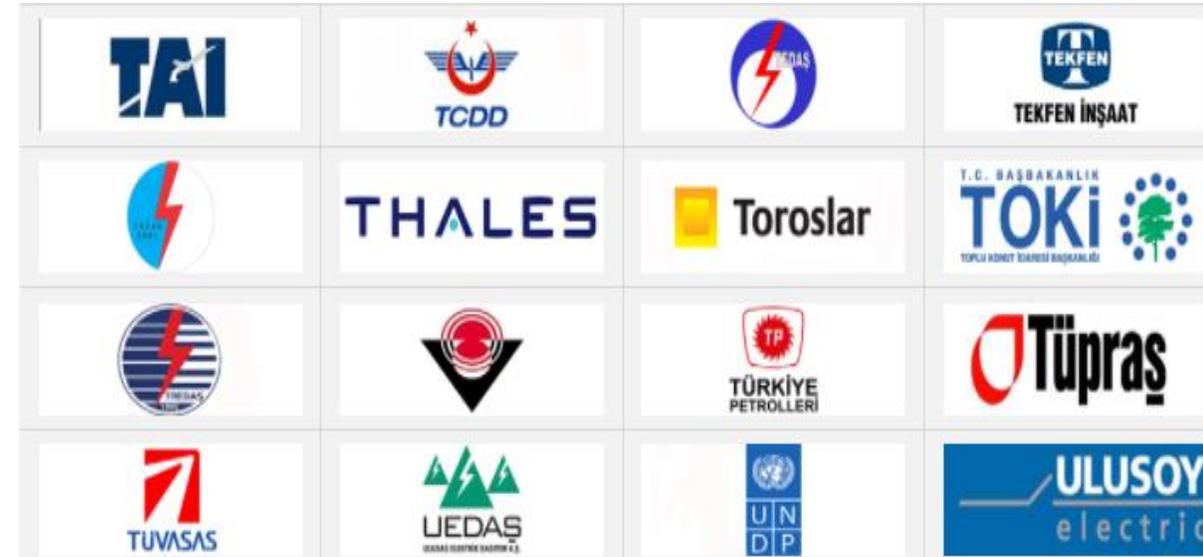
BATTERY
INTERNAL
RESISTANCE

STRING
CURRENT

BATTERY
TEMPERATURE

AMBIENT
TEMPERATURE

REFERENCES



Many thanks

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