

# POWER GROUP COMPANY INTRODUCTION

- Power Elektronik
- Power Engineering
- Power Solar



# INTRODUCTION INDEX

## POWER ELEKTRONIK COMPANY INTRODUCTION

- Company introduction
- Technical and commercial capabilities
- Products

## BATTERY CHARGER PRODUCTS INTRODUCTION

- Battery charger introduction
- Video introductions
- Electrical strength tests

## BATTERY MONITORING SYSTEM INTRODUCTION

- BMS Battery monitoring system informations

# POWER GROUP COMPANIES

Power group of companies are established in order to provide complete solution to industrial power equipments and energy projects .

Main company is Power Elektronik found in 1999. Deals about Power equipment manufacturing.

Power Solar company is subsidiary of Power Elektronik and established in 2012 in order to provide solution for solar energy systems.

Power Engineering company is also subsidiary of Power Elektronik and established in 2015 in order to provide engineering solutions for both of company.

# POWER GROUP COMPANIES

Power Elektronik team consists of 50 employees as below

- 9 Engineer
- 15 manufacturing technician
- 10 service technician
- 12 sales and marketing
- 2 quality expert
- 2 financial expert



# R & D CENTER

## R & D HR

6 Engineer

9 Technician

R & D center certified and supported by  
Turkish Government



Ar-Ge  
Merkezi



TEKNOLOJİYE YATIRIM GELECEĞE YATIRIM

Tasarım  
Merkezi



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 ELEKTRONİK PRODUCT RANGE

Online HF Double Conversion



3 PHASE UPS PRODUCTS

Online HF Double Conversion



1-PH UPS SERIES

Industrial



BATTERY CHARGERS

Industrial



SERVO-STATIC AVR

HF High Efficiency



TRACTION BATTERY CHARGERS

Eurobat Certified



BATTERIES

OnGrid/OffGrid



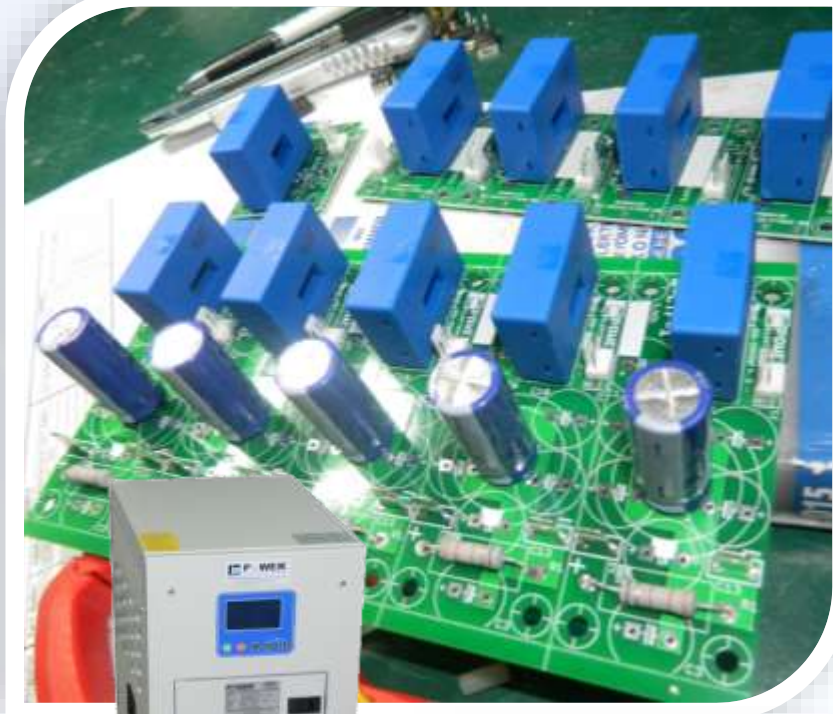
[www.powerelektronik.com.tr](http://www.powerelektronik.com.tr)

SOLAR INVERTERS,PV

# INDUSTRIAL BATTERY CHARGER



# MANUFACTURING SINCE 2007





# 1-PH/3-PH DC BATTERY CHARGERS-5-100A

## Battery Charger

1/3 Ph AC Input / 24- 48 -110-220 VDC Output

IEC 60335  
Certified

**POWER**  
ELEKTRONIK®  
Endüstriyel Güç Sistemleri  
Industrial Power Solutions

5- 500 A

The Best DC solution for;

- \*HV Transformer Substations
- \*MV Transformer Substations
- \*Power Plants
- \*Petroleum & Oil Pipelines
- \*Refineries
- \*Railway-Metro



Industrial design



# 3-PH INDUSTRIAL BATTERY CHARGERS (5-200 Amp)

## Battery Charger

1/3 Ph AC Input / 24- 48 -110-220 VDC Output

IEC 60335  
Certified

**POWER**  
ELEKTRONİK  
Endüstriyel Güç Sistemleri  
Industrial Power Solutions

100- 1000 A



The Best DC solution for;

- \*HV Transformer Substations
- \*MV Transformer Substations
- \*Power Plants
- \*Petroleum & Oil Pipelines
- \*Refineries
- \*Railways



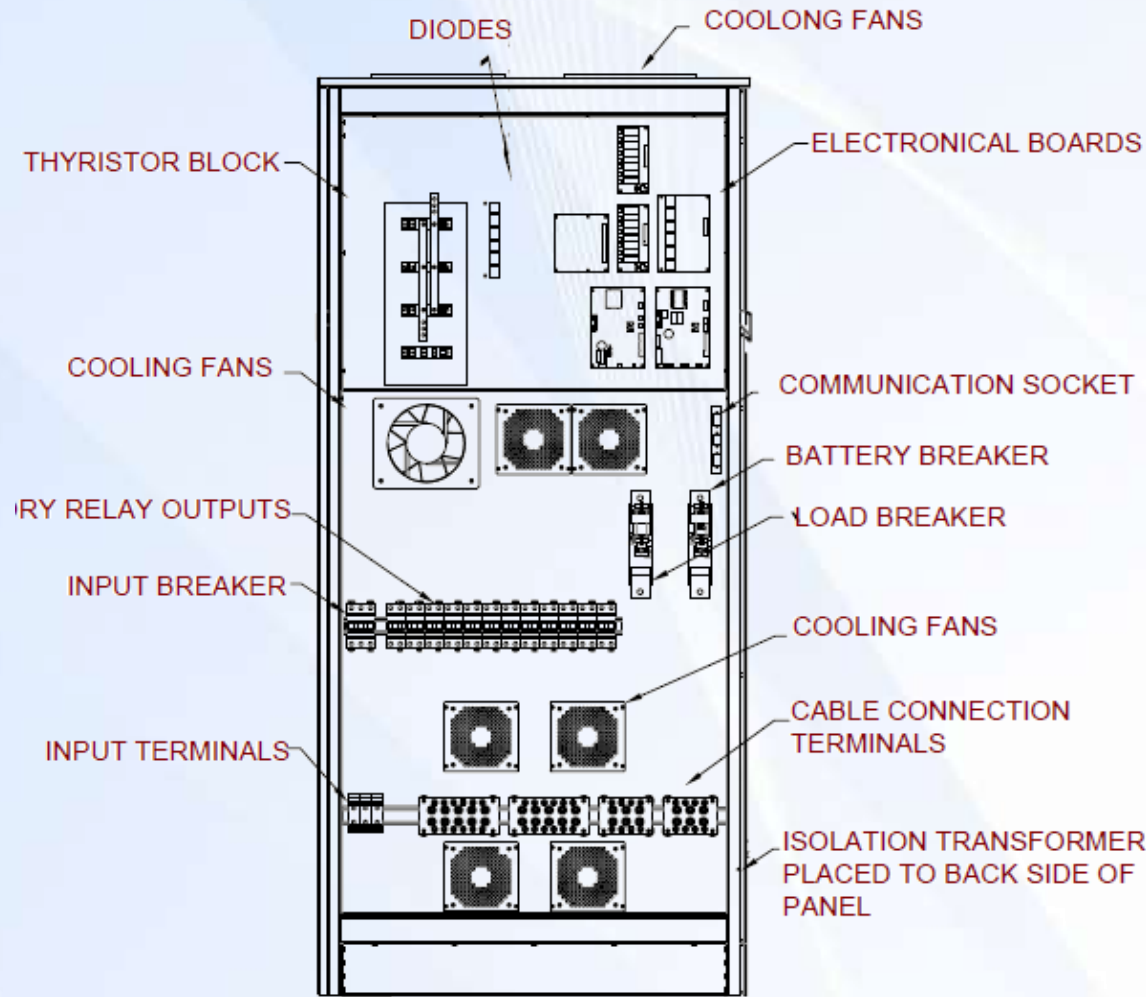
Industrial

1or 3 -phase AC input / DC output  
DSP microprocessor controlled thyristors -transformer or available with  
mode type IGBT rectifiers. Batteries inside / outside options available .  
Safely uses for HV, MV substations, Oil pipelines, power plants, Refineries,  
Railways to feed, emergency communication, relays and switch coils  
with high performance.



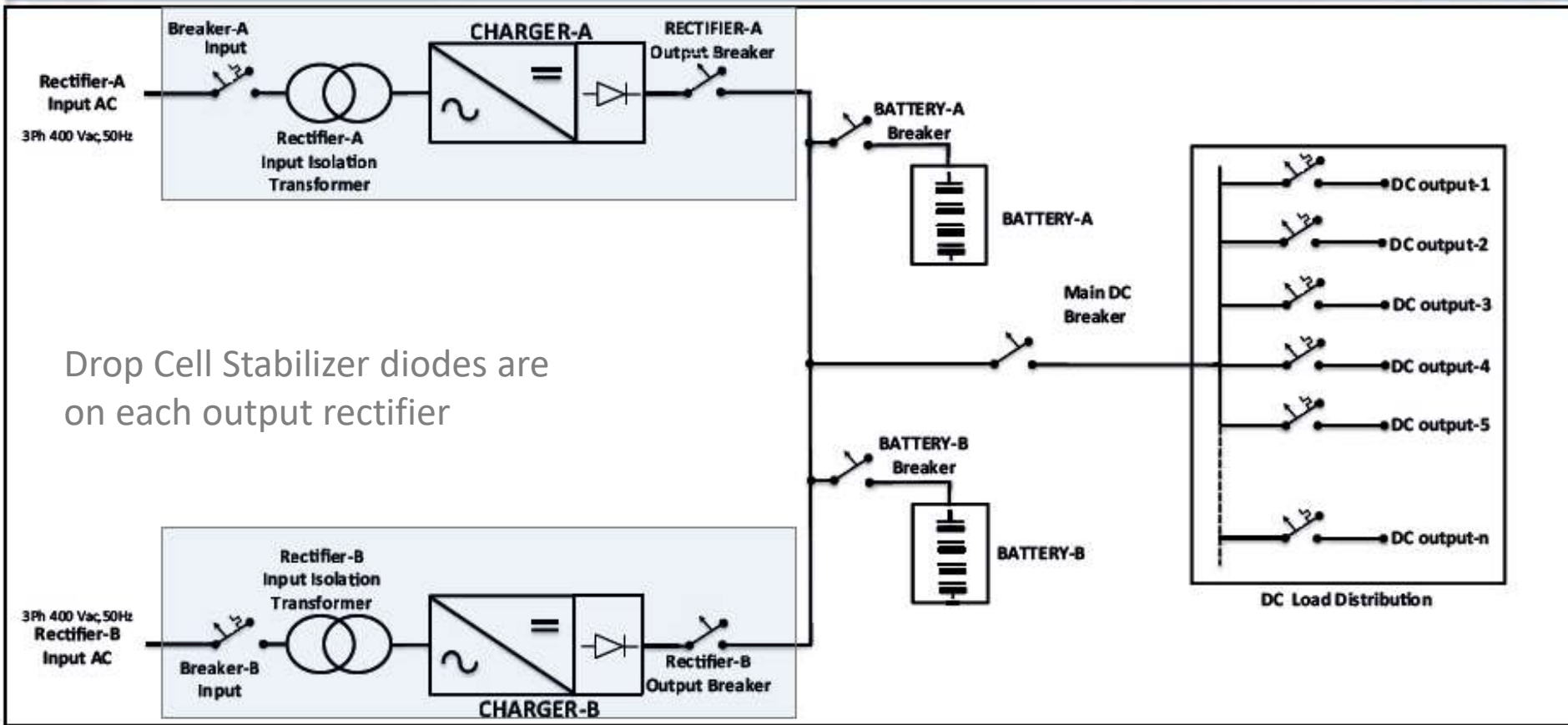
# 3-PH INDUSTRIAL BATTERY CHARGERS (200-3000 Amp)

220VDC - 222A BATTERY CHARGER PLACEMENT LAYOUT



# 3-PH INDUSTRIAL BATTERY CHARGERS-Redundancy

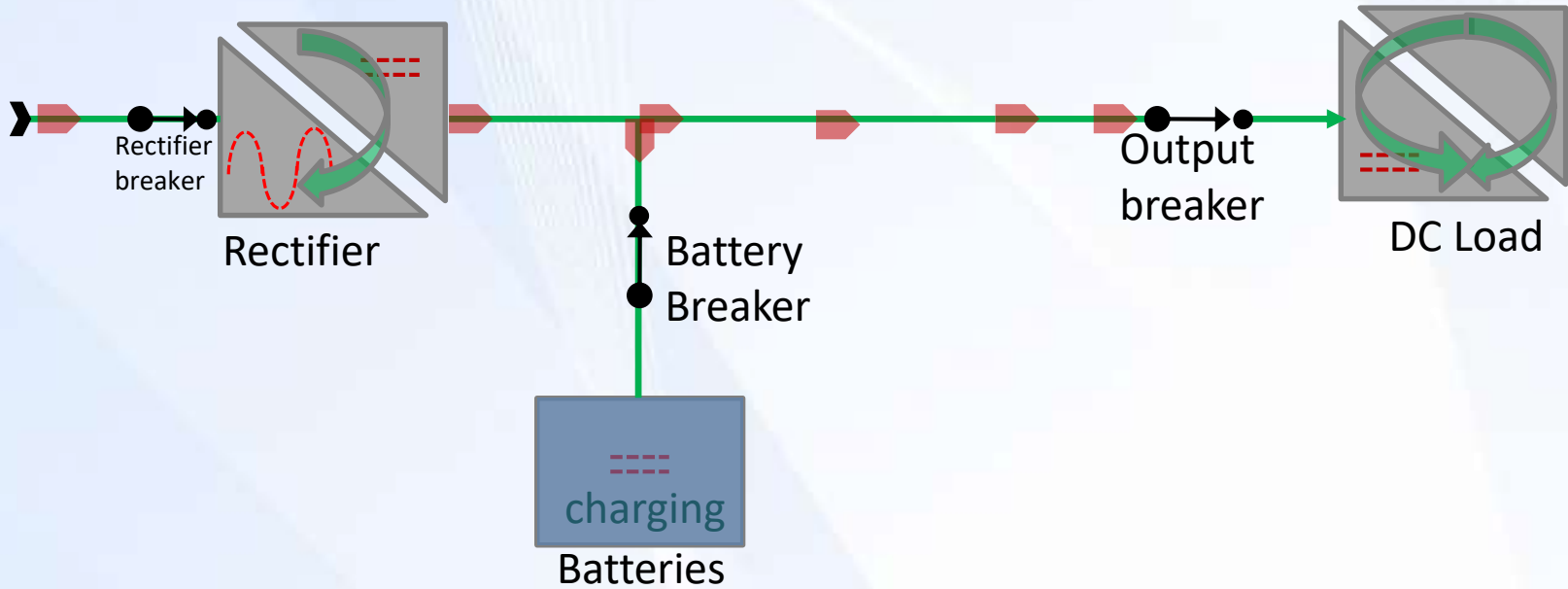
## INDUSTRIAL BATTERY CHARGER REDUNDANT SINGLE LINE DIAGRAM



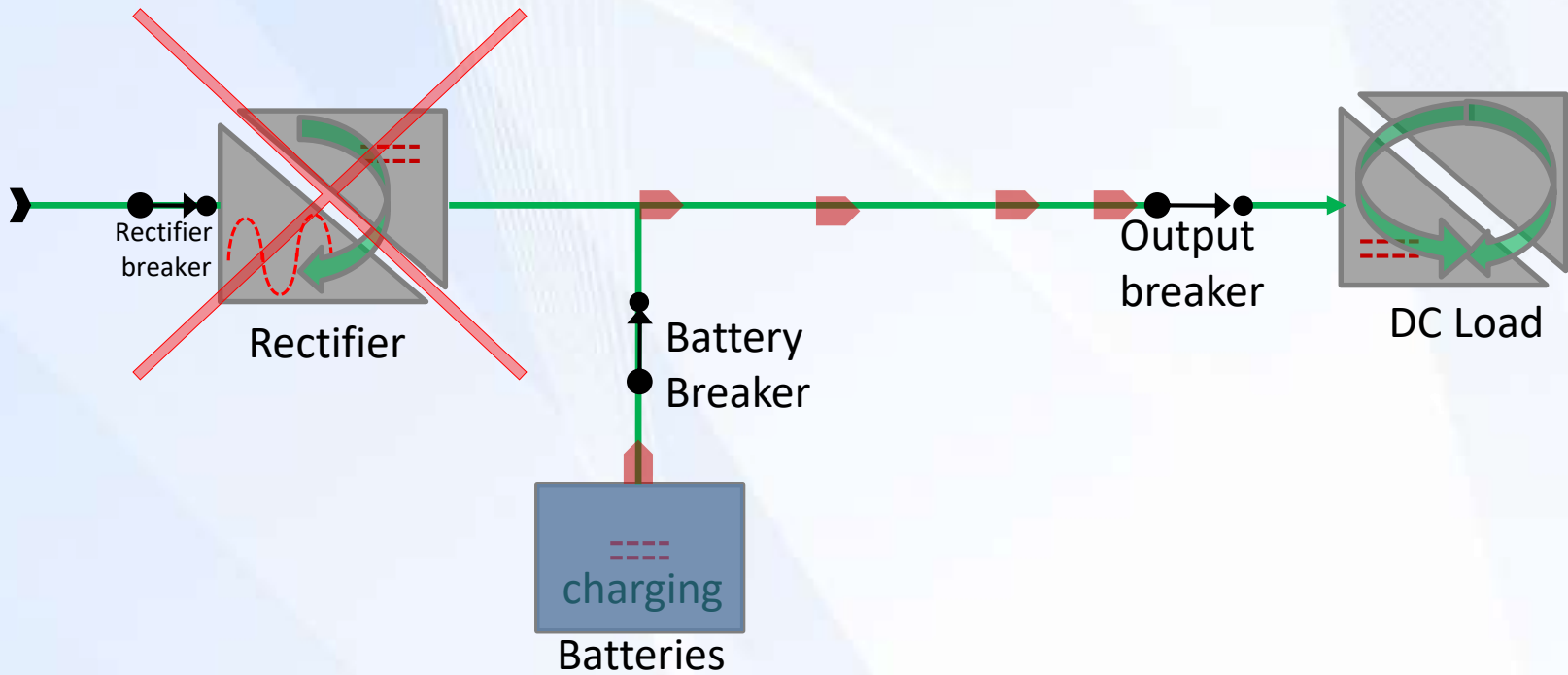
# 3-PH INDUSTRIAL BATTERY CHARGERS-panel view



# BATTERY CHARGER MAINS MODE

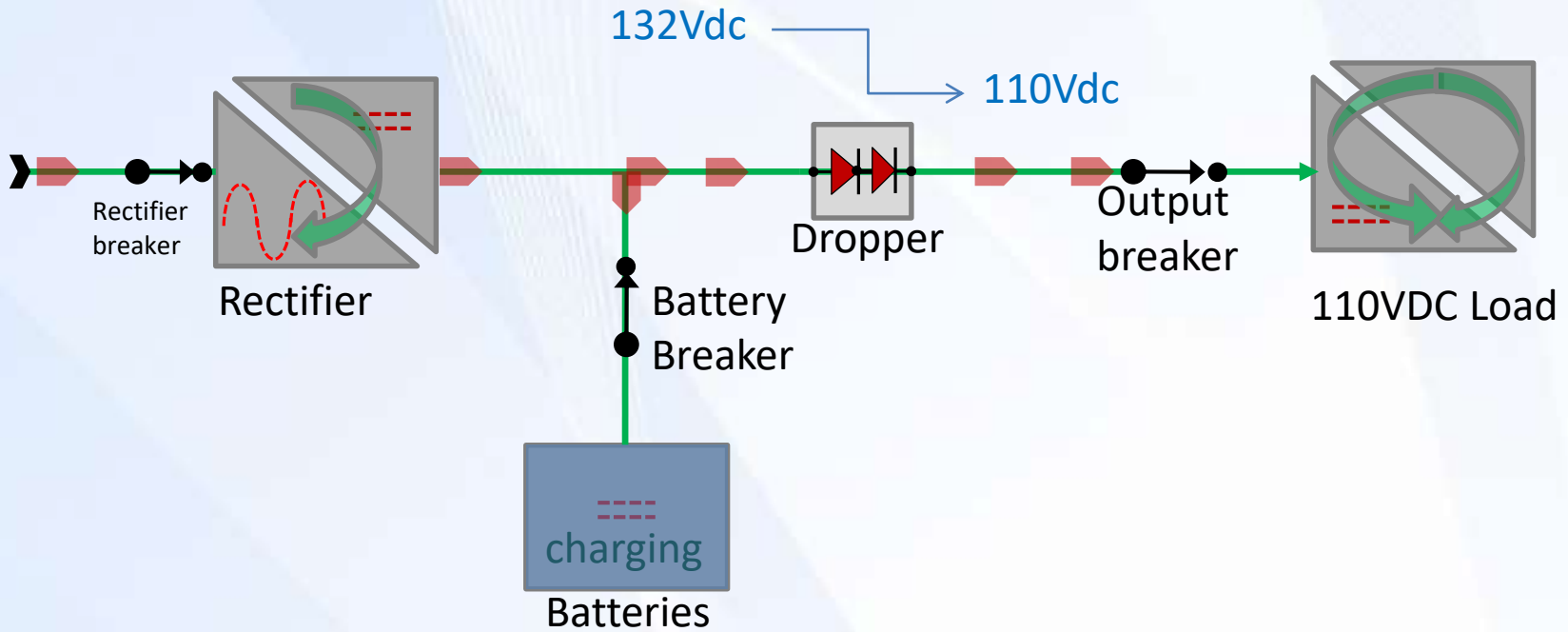


# BATTERY CHARGER BATTERY MODE



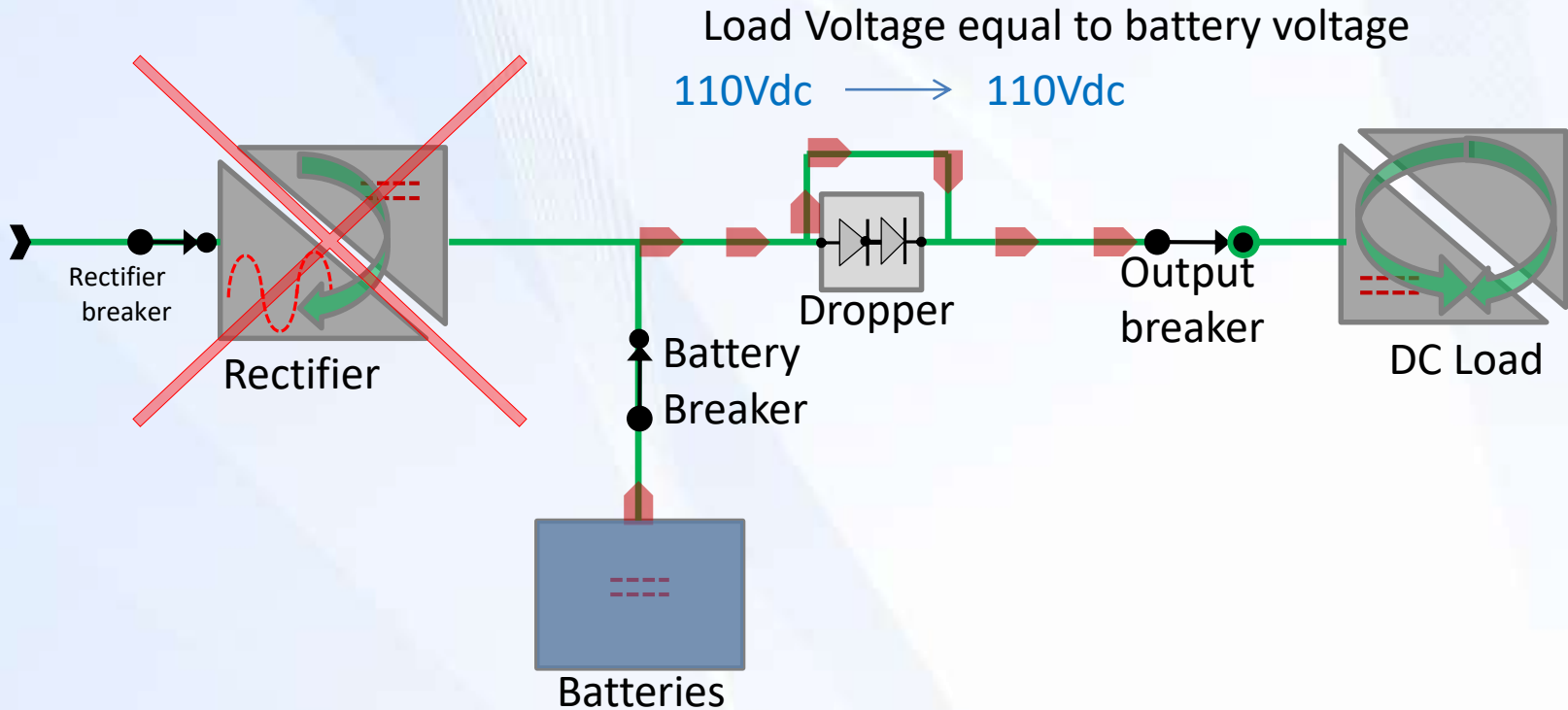
# DROPPER DIODE FUNCTION ON MAINS MODE

Load voltage drops to less than 126.5 Vdc for 110 Vdc charger

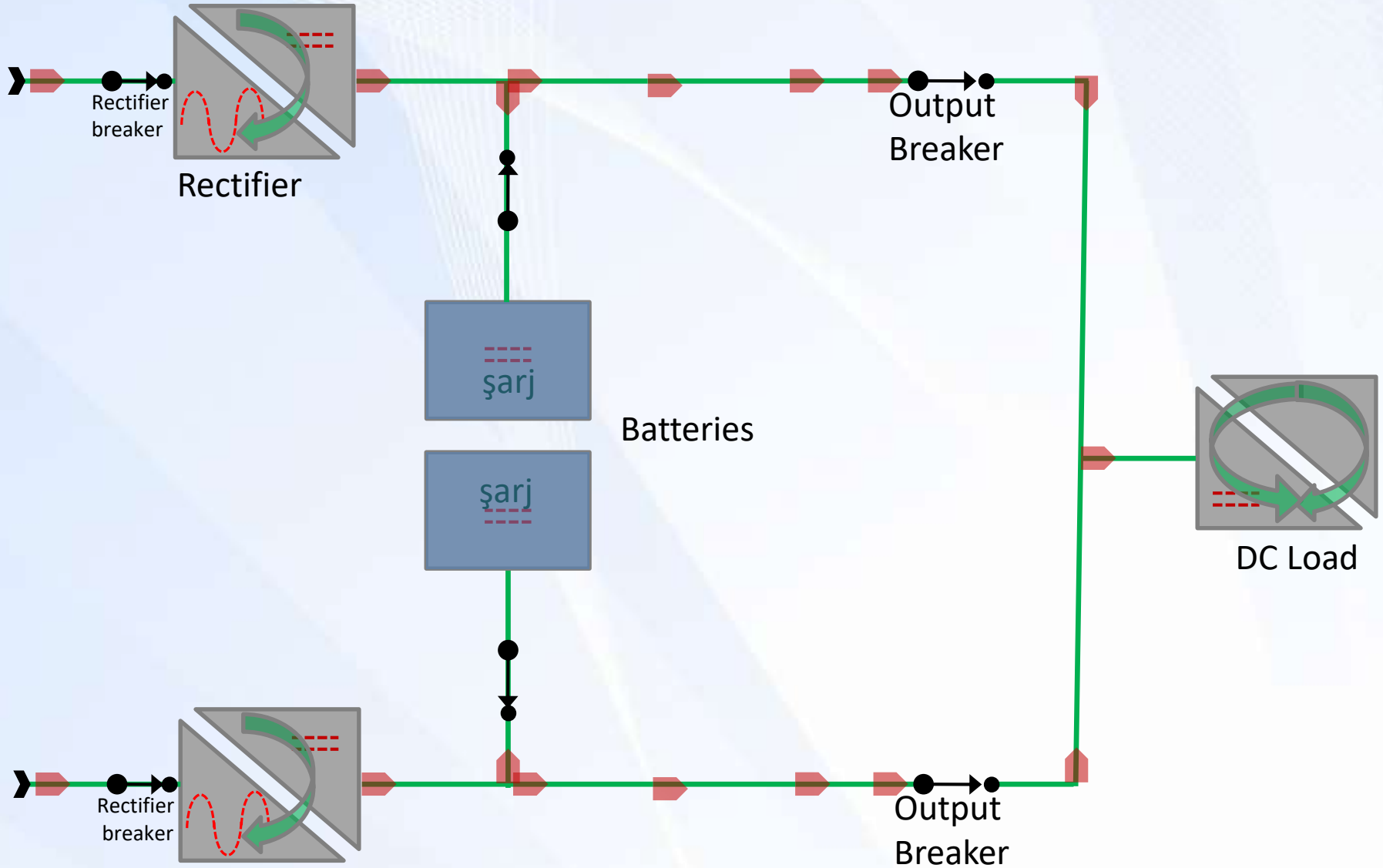




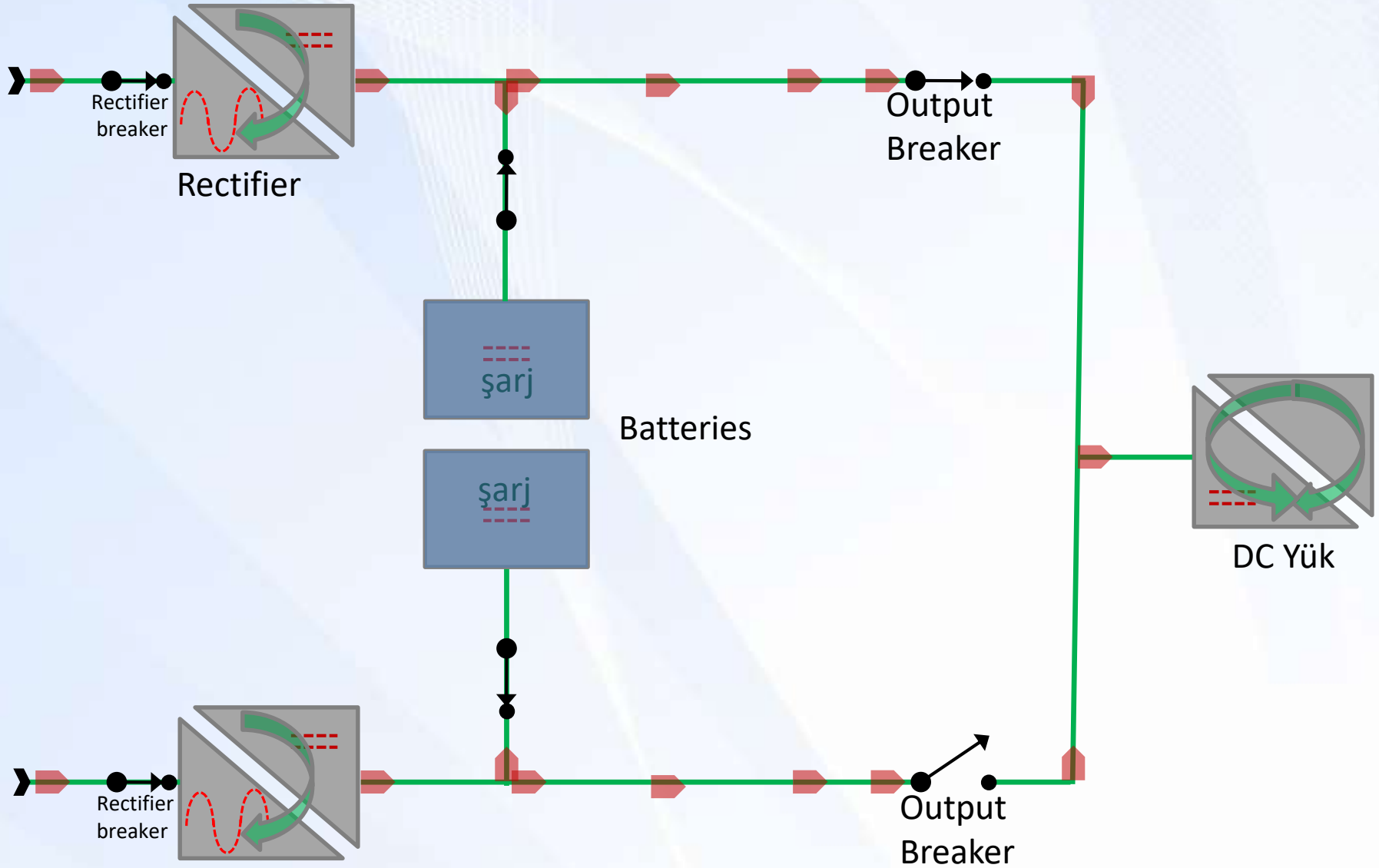
# DROPPER DIODE FUNCTION ON BATTERY MODE



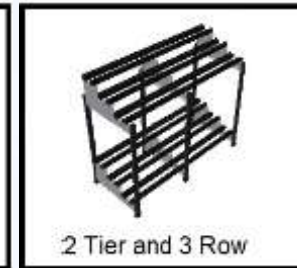
# BATTERY CHARGER REDUNDANT MODE



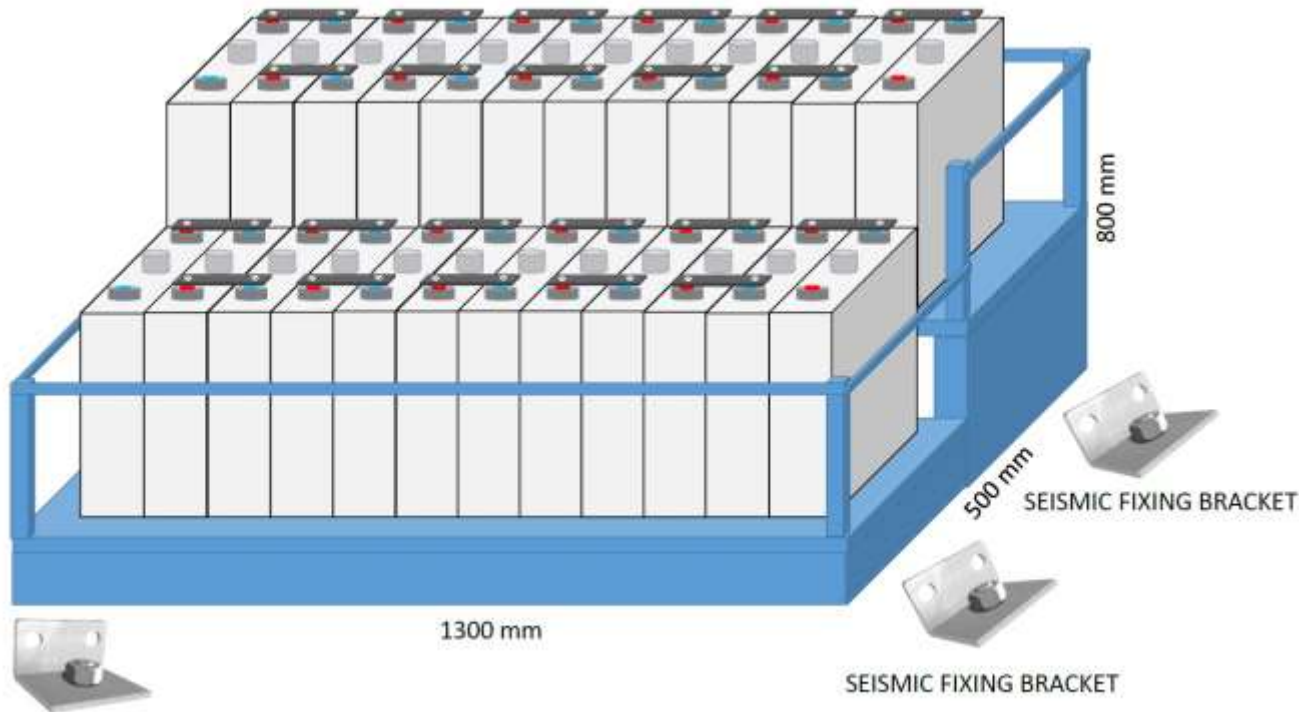
# BATTERY CHARGER REDUNDANT MODE



# BATTERY RACK DESIGN EXAMPLES

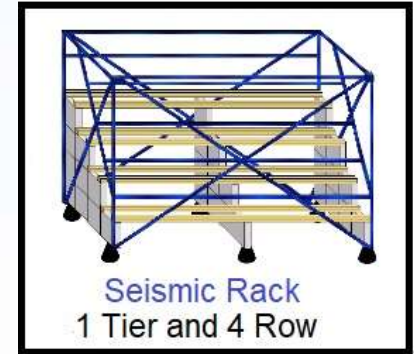


## SEISMIC BATTERY RACK DESIGN- METAL SHEET



SEISMIC FIXING BRACKET

48VDC BATTERIES 24 CELL 2V OPZS 200



# BATTERY CHARGER CUBICLE DESIGN AND FUNCTIONS



# HOW WORKS DROPPER DIODE FUNCTION



# TEMPERATURE CHARGING COMPENSATION KIT

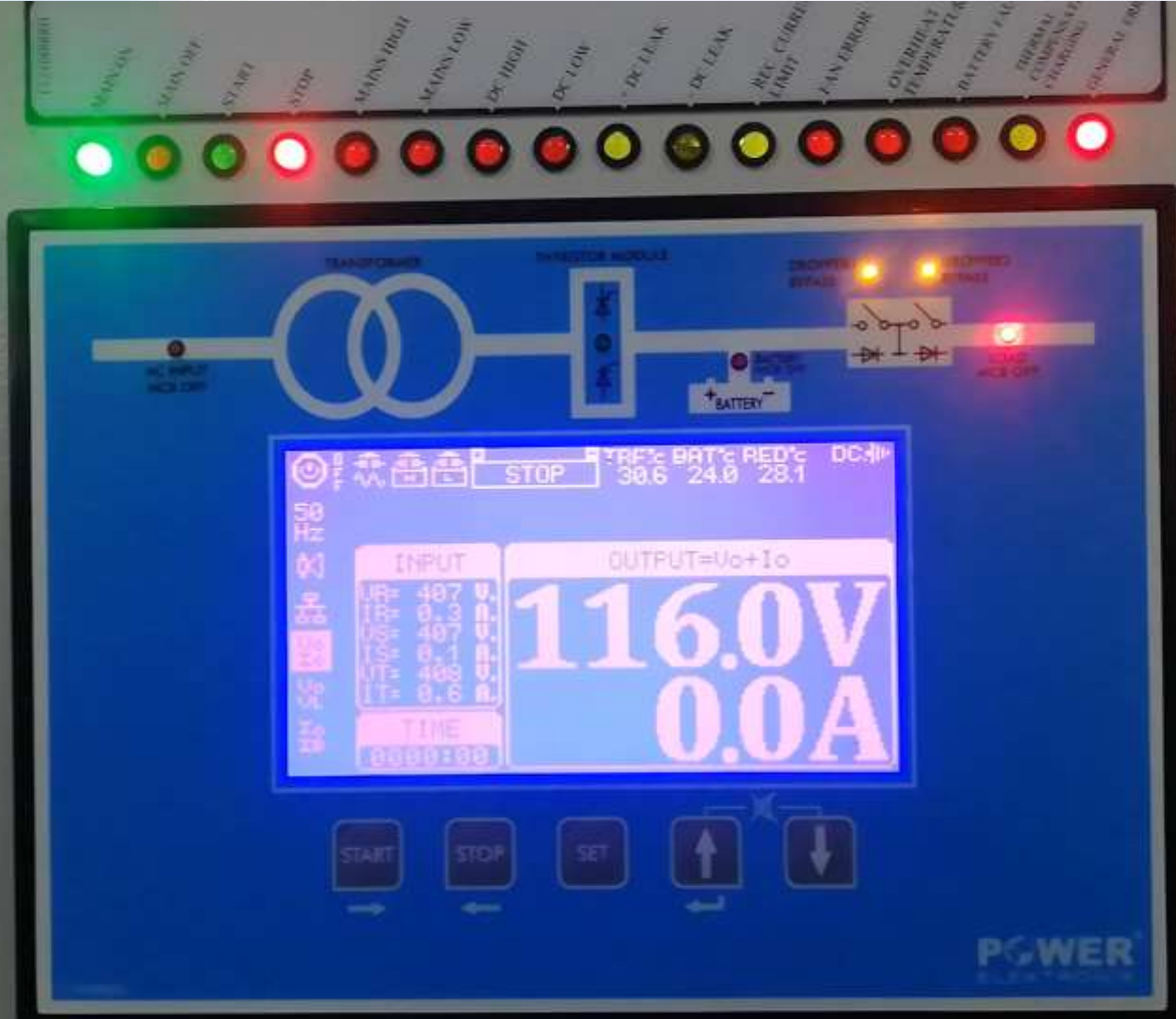


# BATTERY CHARGER OVERCURRENT LIMITATION





# BATTERY CHARGER MENU NAVIGATION



# BATTERY CHARGER «GROUND CONTINUITY TEST»



# BATTERY CHARGER «ELECTRICAL ISOLATION TEST»



# BATTERY CHARGER MAINTENANCE

## -> Maintenance

- **Charger maintenance**
  - Fan control & Dust cleaning
  - Fault Led control and fixing
  - Output voltage control
  - Charge voltage control
  - Connection &Socket controls
- **Battery Control**
  - Battery deformation control
  - Battery connection control
  - Breaker control
  - Battery cell voltage control
  - Discharge control



# SOME OF APPLICATIONS

Çan Thermic PP

2\*300kVA Paralel Industrial UPS +STS / Ni-Cd Batteries

2\*220Vdc 400A Paralel Industrial Charger / Ni-Cd Batteries

2\*10 kW 220Vdc/24Vdc Converter

2\*30kVA Industrial Inverter + STS



# SOME OF APPLICATIONS

Kosova KEDS Electric

Dual Charger 110Vdc & 24Vdc in same cabinet

110Vdc and 24Vdc DC distribution



# SOME OF APPLICATIONS

SIEMENS AKFEN WPP Project- 82 pcs

24Vdc 50A Charger +AC and DC distribution



# SOME OF APPLICATIONS

## PERU Modular Charger

### 125Vdc 40A Charger with internal Battery-DC distribution





# SOME OF APPLICATIONS

Kipaş Kahramanmaraş 6MW TPP

110Vdc 60A Charger + DC Distribution

24Vdc 150A Charger + DC Distribution



# SOME OF APPLICATIONS

Most of our regular international clients

**ABB**

**SIEMENS**

**GE**

**SCHNEIDER**

**ANDRITZ**

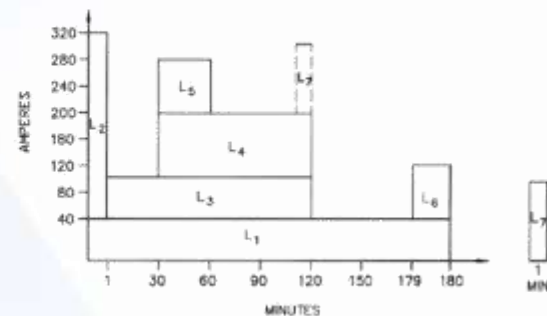
# PROVIDED BATTERIES

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

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



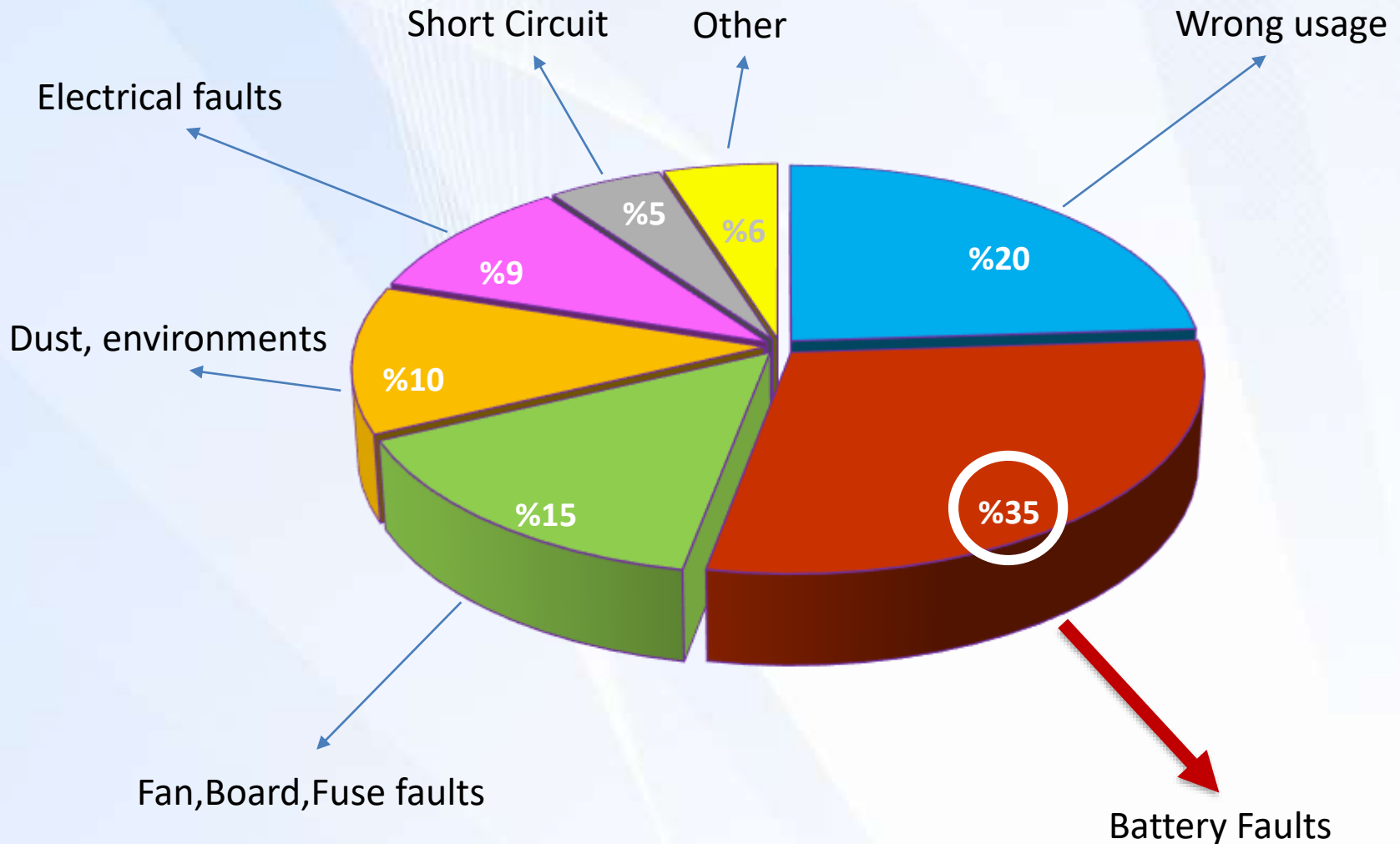
# BMS- BATTERY MONITORING SYSTEM



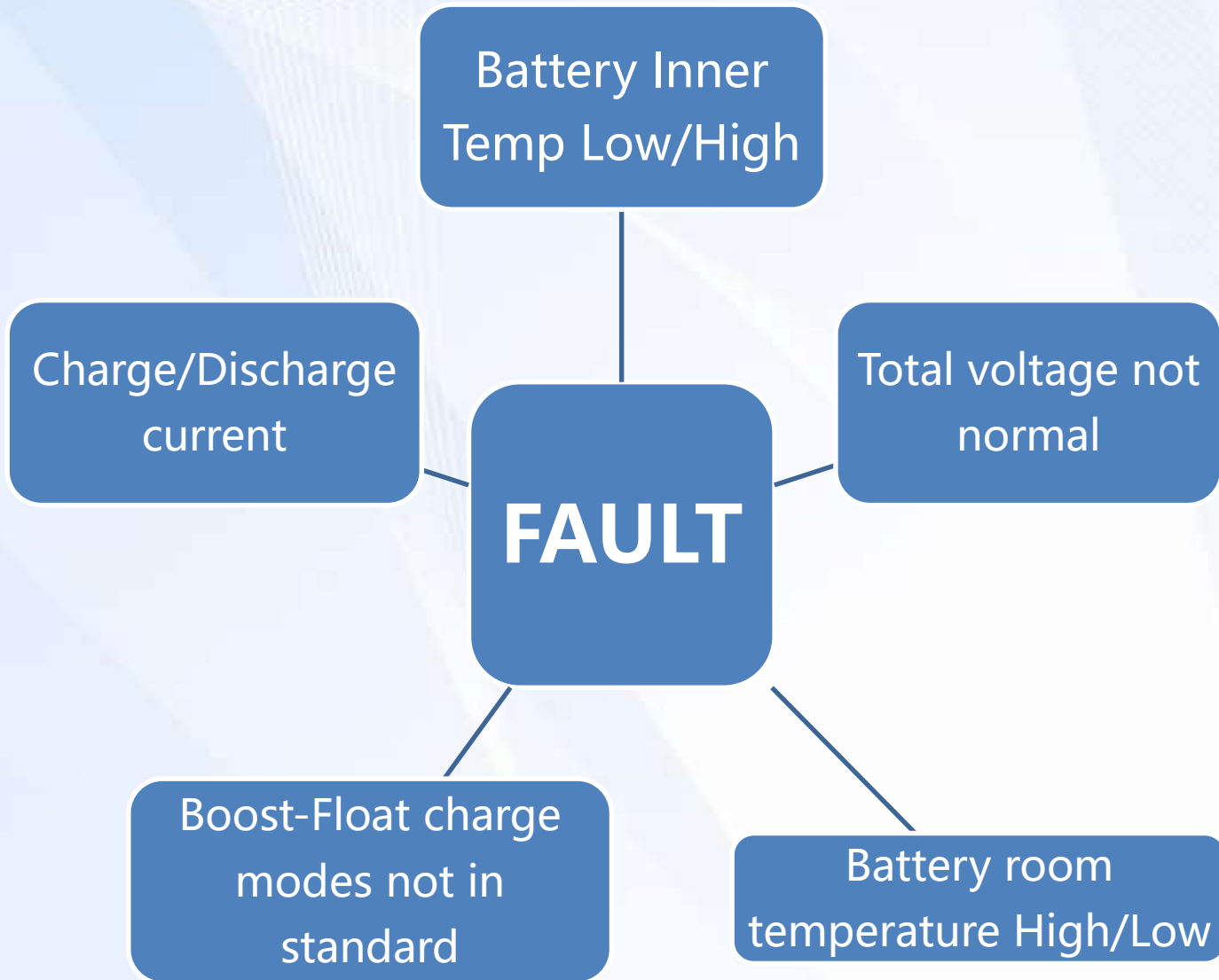
- Exide
- Yuasa
- BB
- Energys
- Alcad
- Saft
- Gaz
- Hoppecke



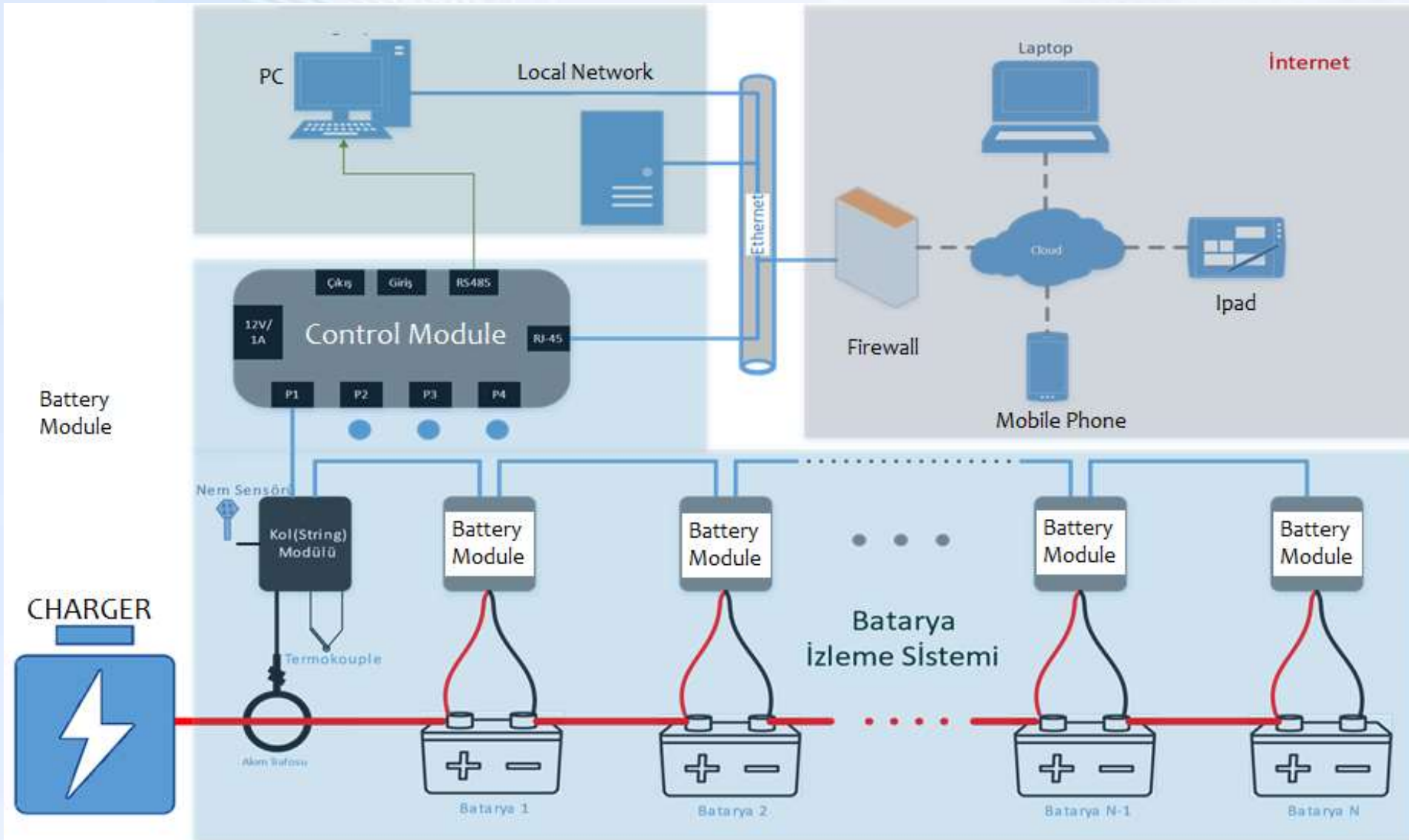
# FAULT REASONS ON BATTERY SYSTEMS



# BATTERY FAULT REASONS



# BATTERY MONITORING SYSTEM STRUCTURE





# BATTERY MODULE PLACEMENT



# WHAT MEASURING



BATTERY VOLTAGES



BATTERY INTERNAL RESISTANCE



BATTERY TEMPERATURE

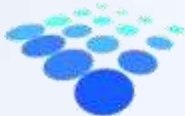
KOL ( STRING ) GERİLİMİ

STRING VOLTAGE

ROOM TEMPERATURE AND HUMID

# ADVANTAGES OF BMS

- Work interruptions stops
- Can control each battery health
- Planned revisions , replacements can be done
- Remote monitoring
- Logs and reports
- Avoiding from asidic ,chemical environments thanks to remote monitoring



# BMS SOFTWARE

- LAN monitoring
- WLAN monitoring
- Colorised easy monitoring

- Event and Alarm monitoring
- E-Mail and SMS Notifications



- Modbus-TCP / RTU support
- Analysis

- PDF or a Excel Reporting

# BMS SCREEN

Aküler | Aygıt:

✓ Normal ✓ Uyarı ✓ Kritik

Kol : 2

Akü Gerilimi

Akü Sıcaklığı

Akü İç Direnci

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	12.807 V 23.5 °C 11.119 mΩ	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

# BMS BATTERY VOLTAGES-RESISTANCE GRAPHIC

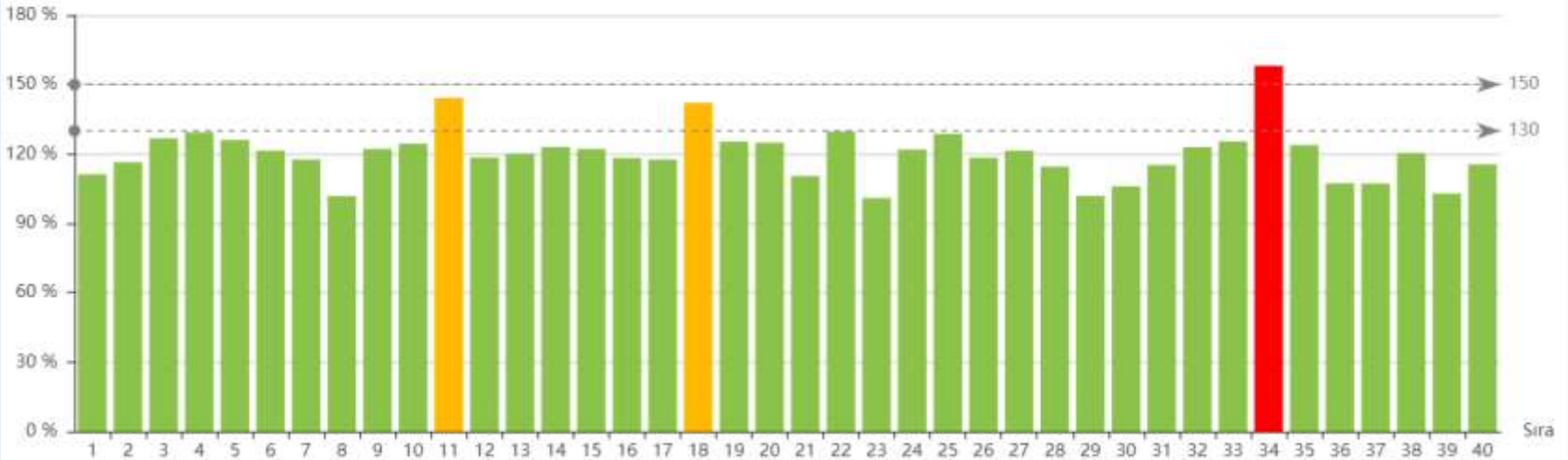
## Akü Gerilimi

Gerilim (V)



## Akü İç Direnç

Direnç (%)



# REFERENCE- AK ENERJI- THERMAL POWER PLANT

## 52 X 2V OPZV 490



# END OF INTRODUCTION

Thank you for your attention.

We would like to cooperate and support your project.

**POWER ELEKTRONİK SAN. VE TİC. A.Ş.**

**POWER SOLAR ENERJİ ELEKTRONİK ÜRETİM A.Ş.**

**POWER MÜHENDİSLİK PROJE ELEKTRİK ELEKTRONİK İNŞ. SAN. VE TİC. A.Ş.**

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