

ETO Industrial UPS

Tamilnadu Engineers Forum in Kuwait

Alex Mayr

Head of Services

Gutor
technology

Gutor
experts



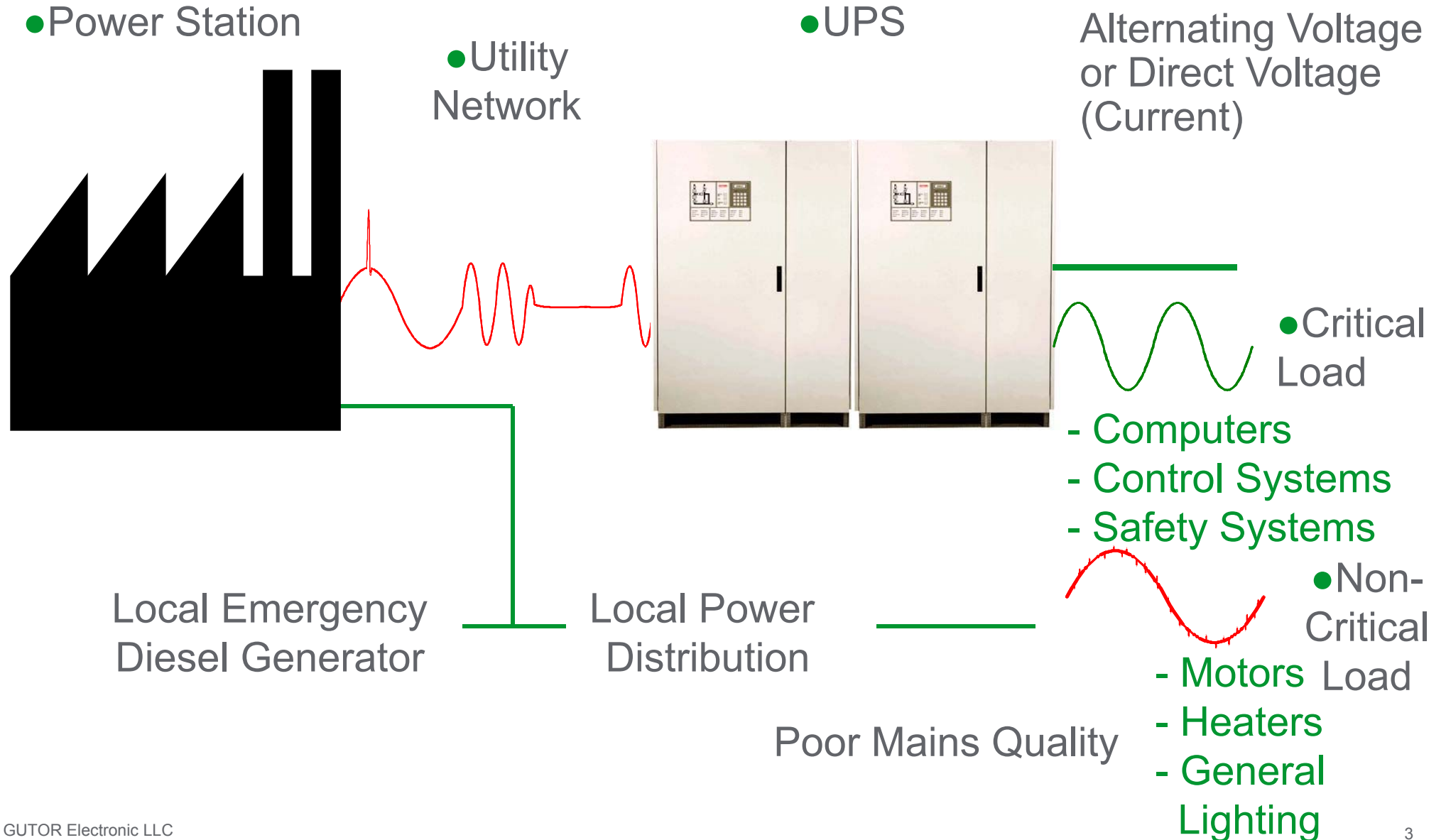
GUTOR
by Schneider Electric

ETO Industrial UPS Seminar

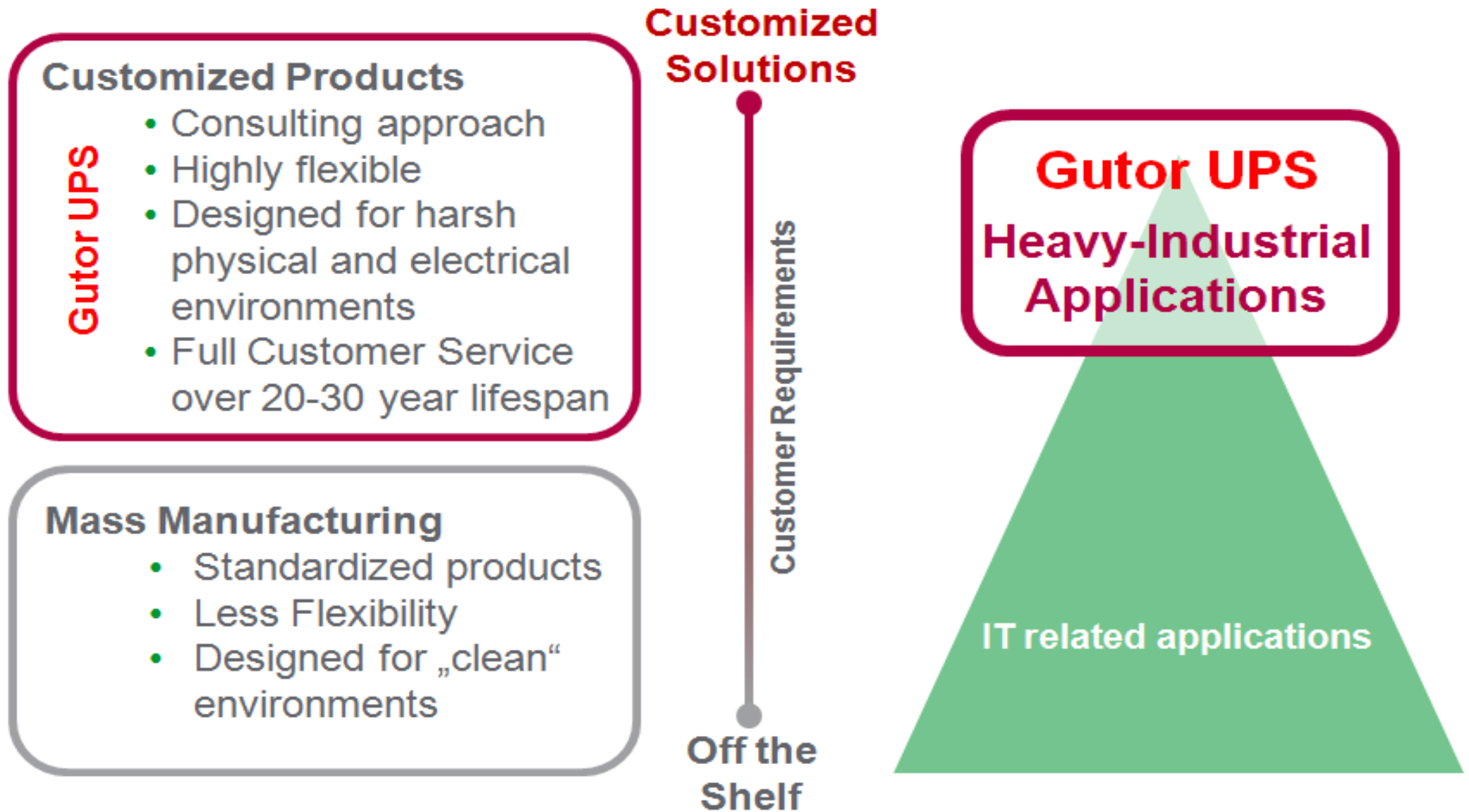
Agenda:

- √— UPS Positioning
- √— Our Company
- √— AC UPS configurations
- √— Battery Monitoring System

UPS in the Mid-Point between Utility and Critical Load



Our Business Positioning



Our Company

GUTOR

by Schneider Electric

Worldwide Business Presence



For more information visit: www.schneider-electric.com/gutor

Our History

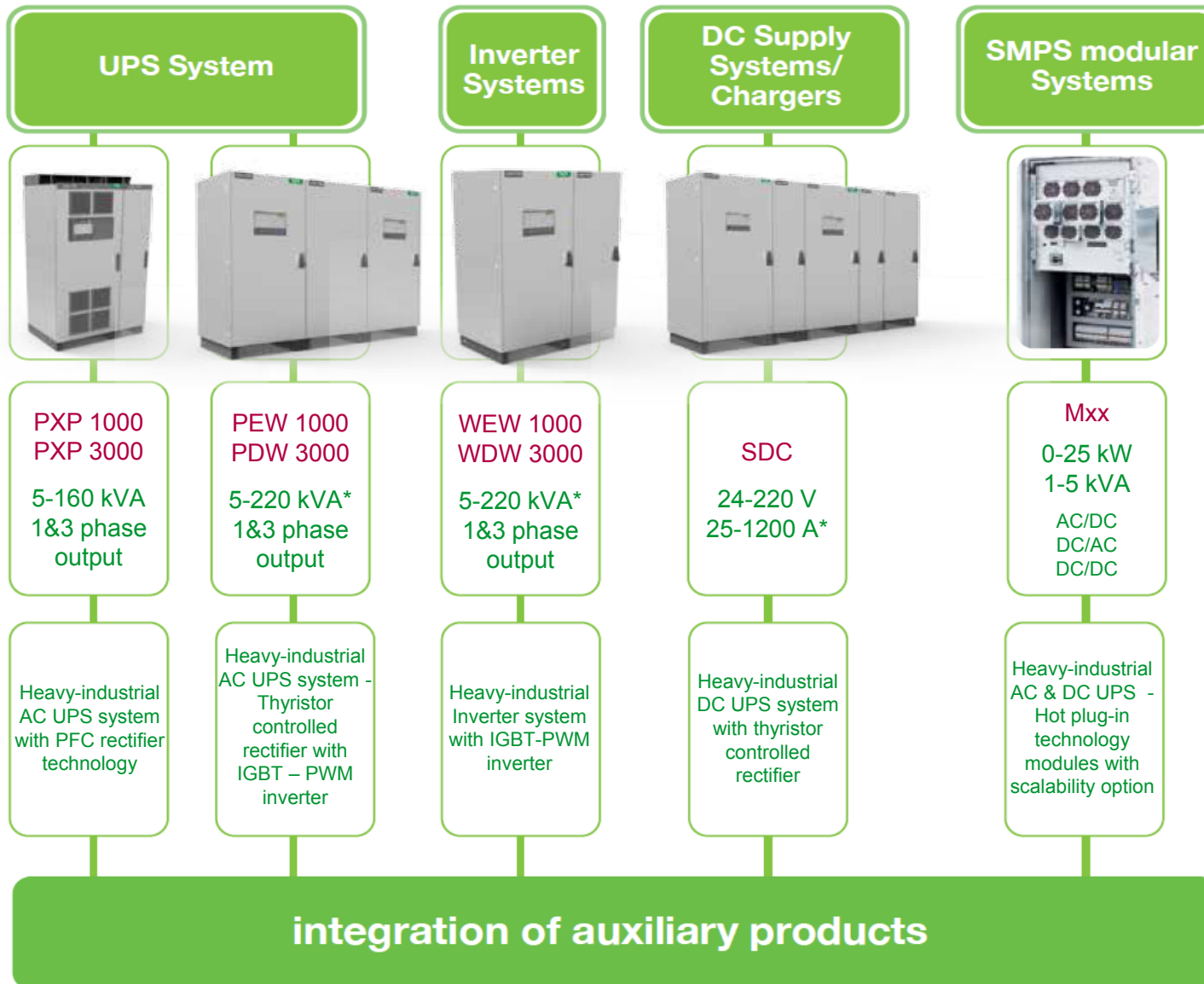
Nearly 50 Years of Experience in Heavy-Industrial UPS Engineering

- 1946 Gutor Electronic founded in Wettingen/ Switzerland
- **1966 Construction of the first UPS system**
- 1968 Development of the first UPS system with static bypass
- **1972 Commissioning of the first triple redundant UPS system**
- 1986 Joined Silcon Group Denmark
- 1994 ISO 9001 certification
- 1998 Joined the American Power Conversion (APC)
- **2006 Merger agreement with Schneider Electric SA**
- 2008 Start of Gutor Asia Pacific in Malaysia
- **2011 Launch of Gutor PXP - first industrial UPS with PFC rectifier**
- **2011 Launch of Gutor MXX - industrial AC and DC SMPS modular platform**

Gutor Technology Production Facilities

| Gutor Solutions | Switzerland | Malaysia | China |
|---------------------------|-------------|----------|-------|
| R&D | ★ | ★ | |
| Sales | ★ | ★ | ★ |
| Design & Engineering | ★ | ★ | ★ |
| Project Management | ★ | ★ | ★ |
| Manufacturing | ★ | ★ | ★ |
| Testing | ★ | ★ | ★ |
| Training Center | ★ | ★ | |
| Nuclear Competence Center | ★ | | |
| Service Competence Center | ★ | ★ | |
| ISO 9001 certified | ★ | ★ | ★ |

Heavy-Industrial AC & DC UPS Systems



- Heavy-industrial AC & DC UPS systems
- Designed to meet the harshest environmental conditions
- Engineered to order to meet any customer specification
- Fully compatible with Schneider Electric e-Houses

* Higher ratings for UPS & DC charger available on request

Our Quality Standards, Certification & Ratings



- Schneider Electric is an **ISO 9001** certified company. Our business approach is based on clearly defined and reliable project processes.
- Our Gutor product quality comply with numerous standards, such as
 - **CSA, EN, IEC, IEEE, CE, ANSI, NEMA, FCC, UL,**
 - **GOST Nuclear power plant standard**
- ISO 9001:2008, OHSAS 18001:2007 and ISO 14001:2004
- Various worldwide recognised technical and safety standard certifications

Our Services



CUSTOMER TRAINING

on site, meeting room or training facility in CH, UAE or MY



INSTALLATION SUPERVISION & COMMISSIONING

performed by trained & certified GUTOR technicians



SPARE PARTS

start-up, critical, and consumables certified spare parts



MAINTENANCE

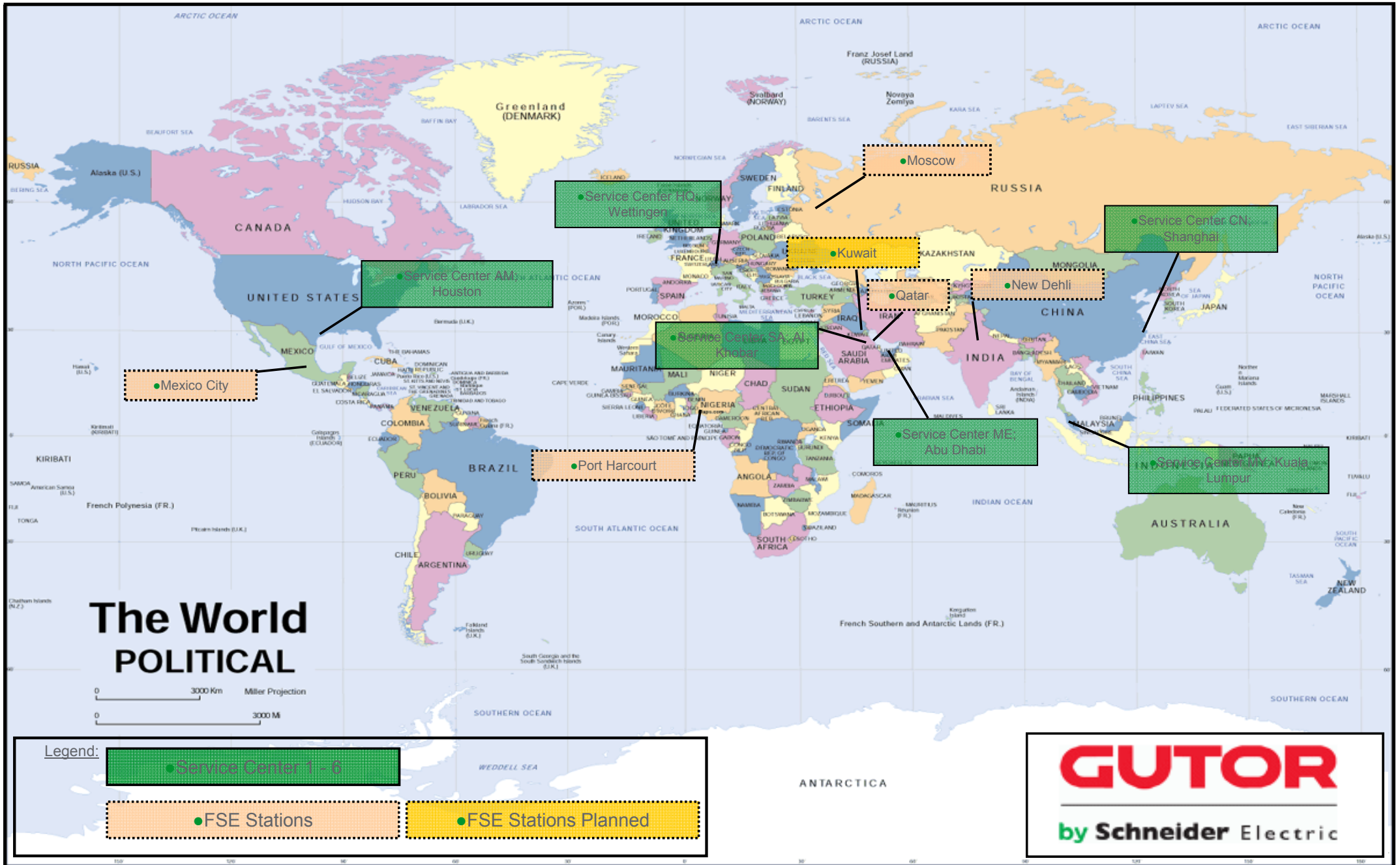
preventive and corrective maintenance



SERVICE CONTRACTS

scalable service contracts, may incl. all material

Service Centers

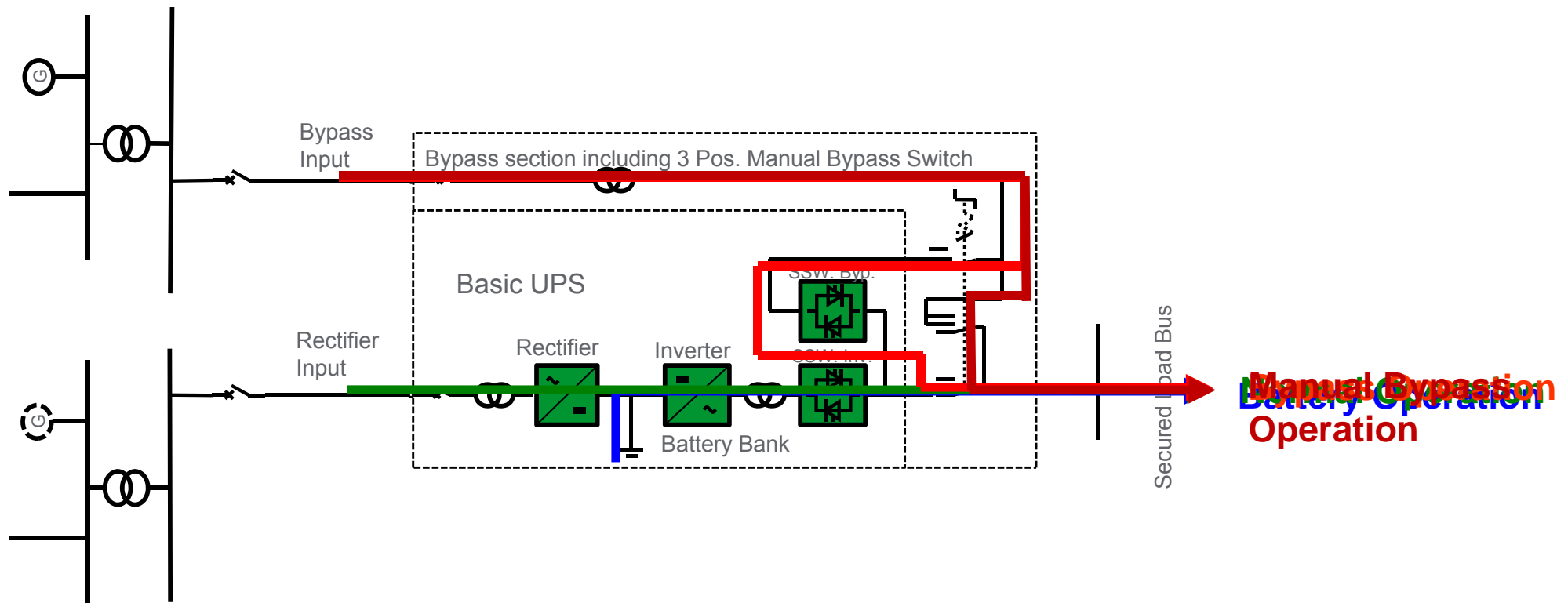


ETO Industrial UPS Seminar

AC UPS configurations

- Single UPS
- Redundant UPS
- Dual UPS

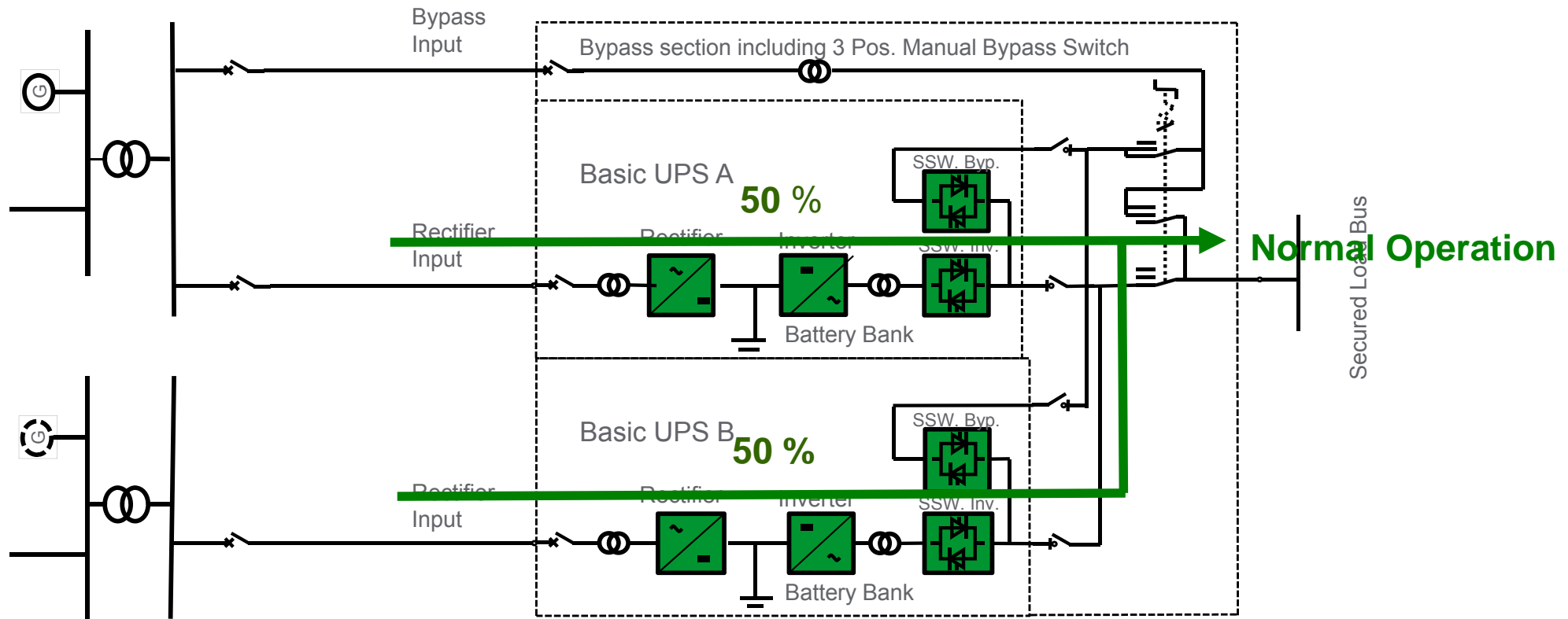
Single UPS configuration



- Two upstream independent supplies, together with UPS with separate inputs for Rectifier and Bypass results in overall higher reliability.
- UPS power is not available during maintenance.
- Alternative choice would be redundant or dual UPS configuration.

Redundant UPS configuration

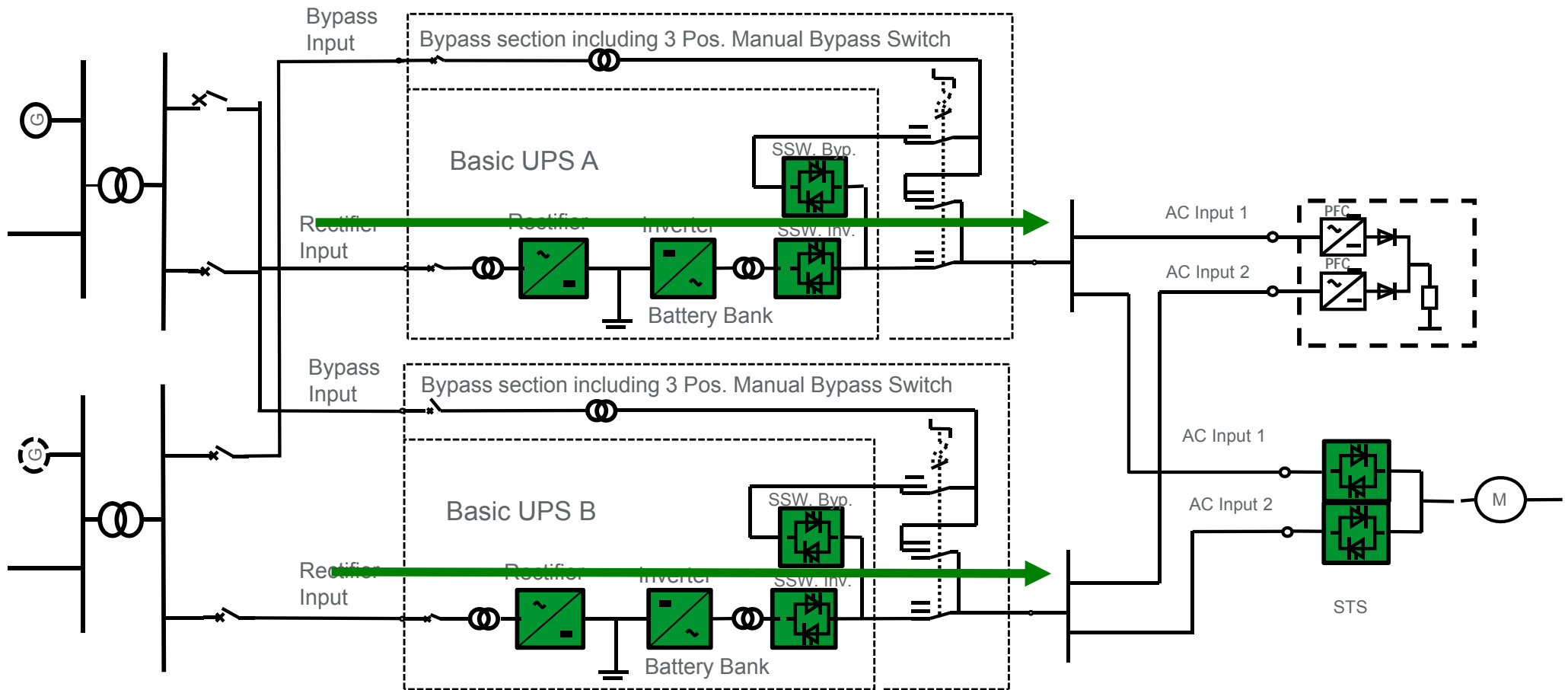
(Parallel redundant (N+1) UPS configuration)



- Preferred for critical single input loads.
- UPS power is available during maintenance.

Dual UPS configuration

(Distributed redundant UPS configuration)



- Preferred for dual input loads.
- UPS power is available during maintenance.

Introduction PXP



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Market trends

PXP...

- Energy efficient > operates at 94% overall efficiency
- Reduced footprint > one of the smallest footprints on the market
- Low input harmonics (THDi) > less than 5% THDi, due to PFC rectifier
- Modular architecture > based on modular topology
- Transformerless > transformerless configuration available as option

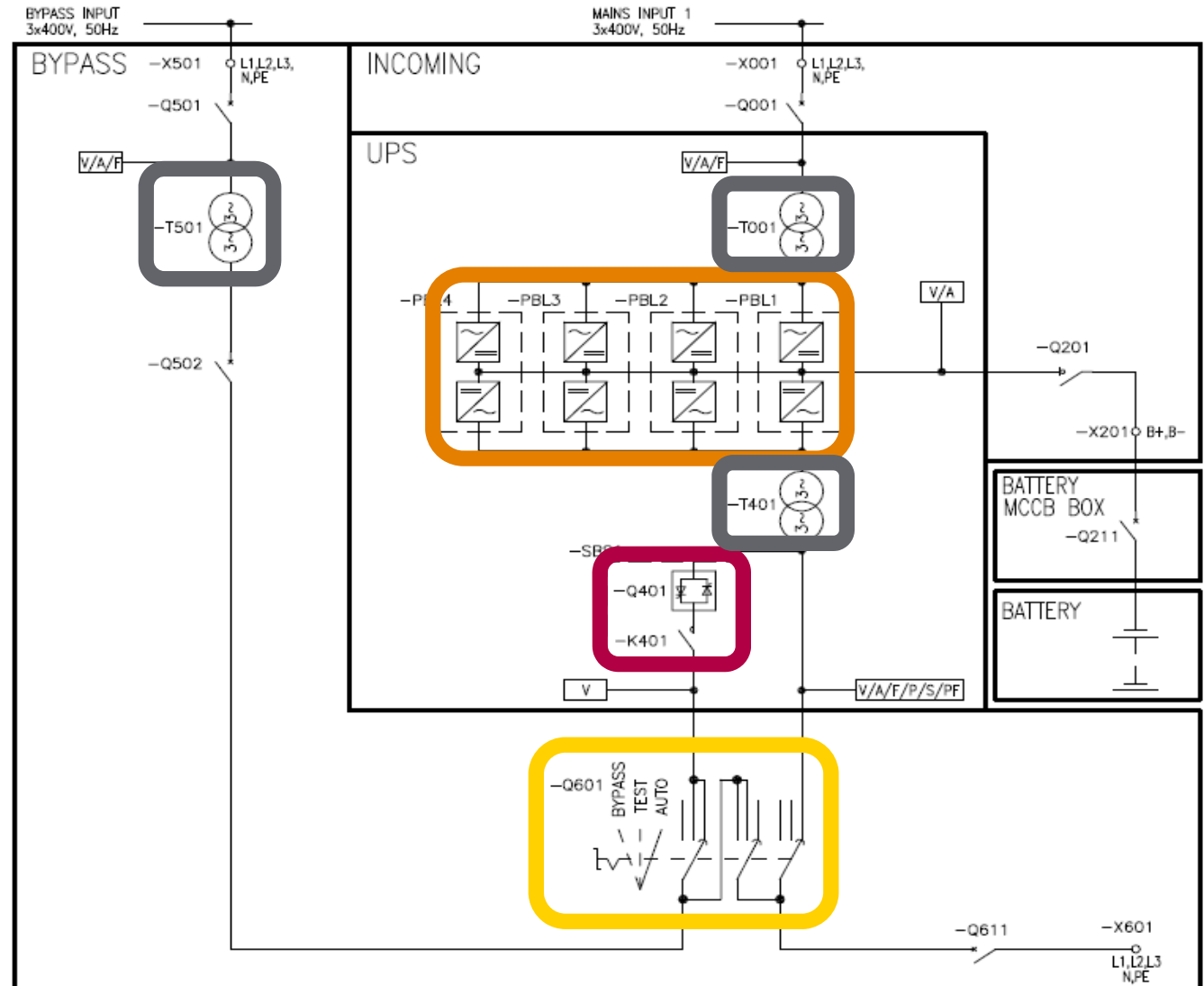
Single line diagram

Power modules

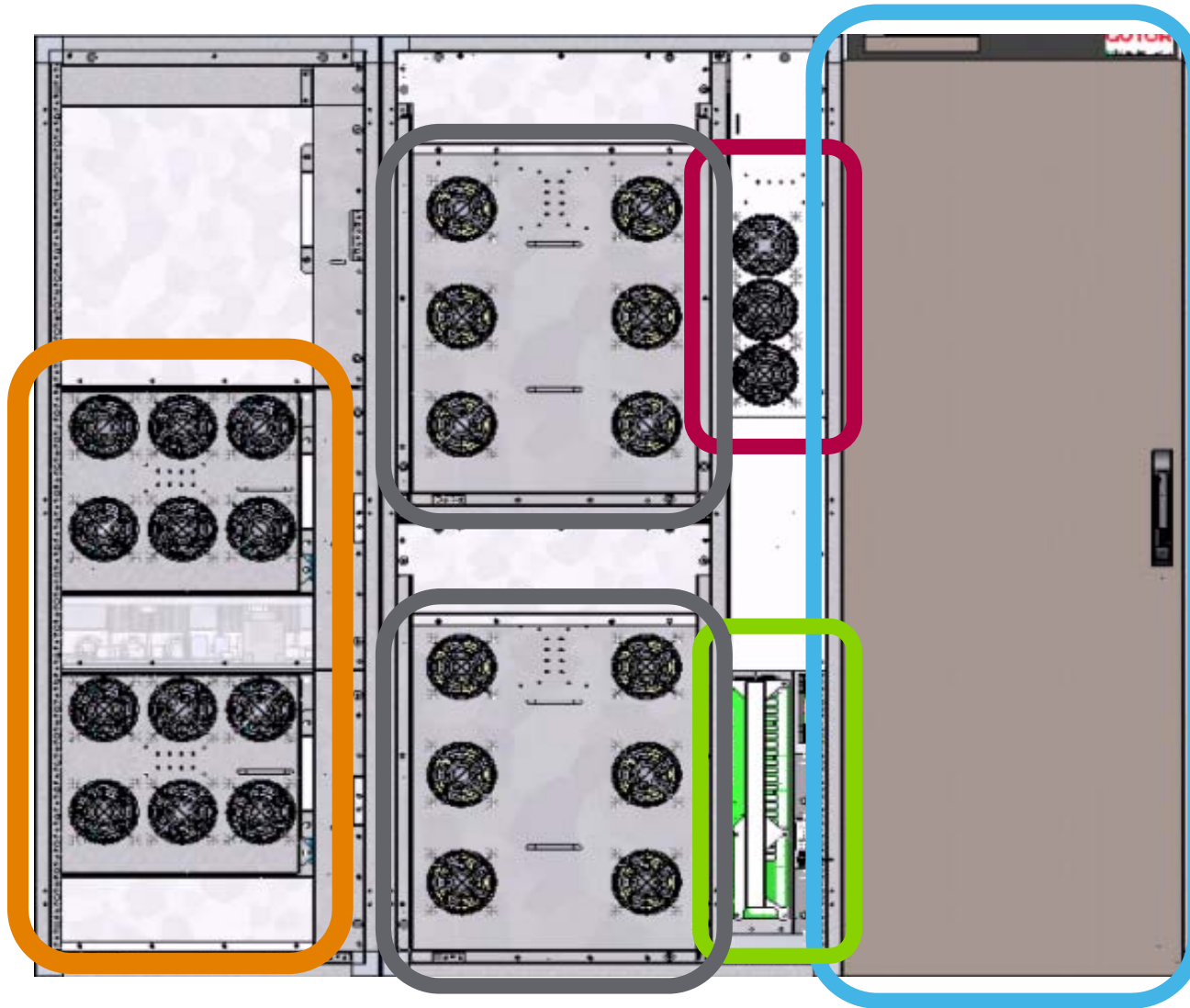
Static switch & backfeed protection

Transformer (optional)

Manual bypass switch



Layout



Power modules

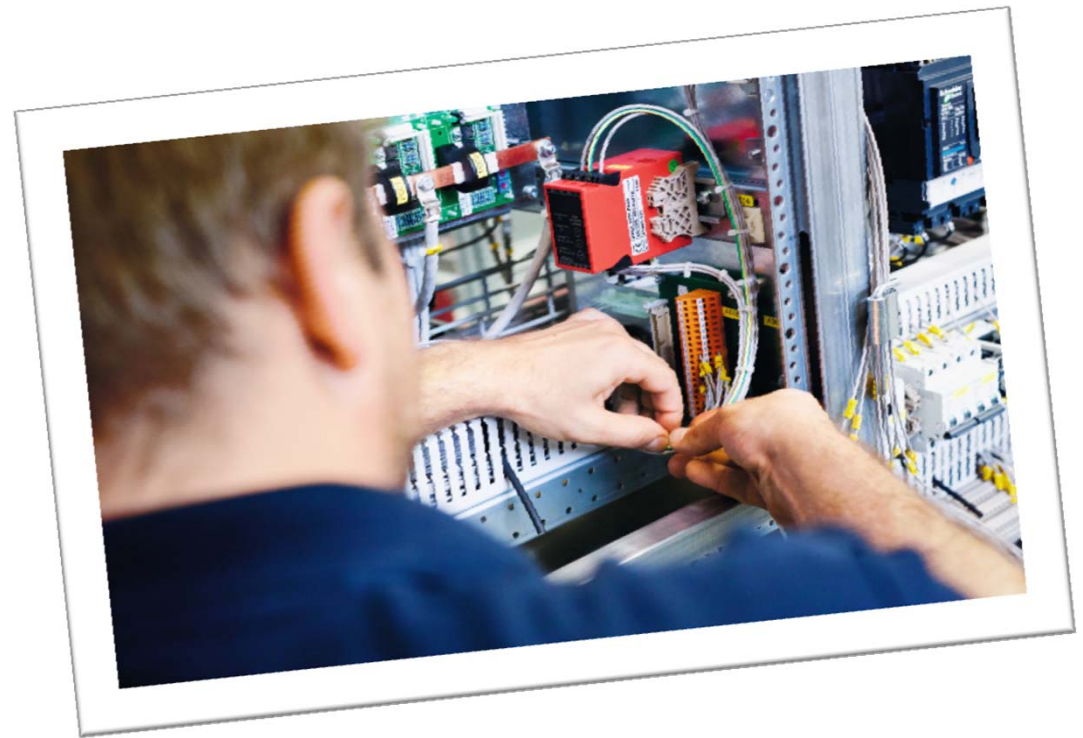
Static switch & backfeed protection

Incoming/Bypass

Low voltage section

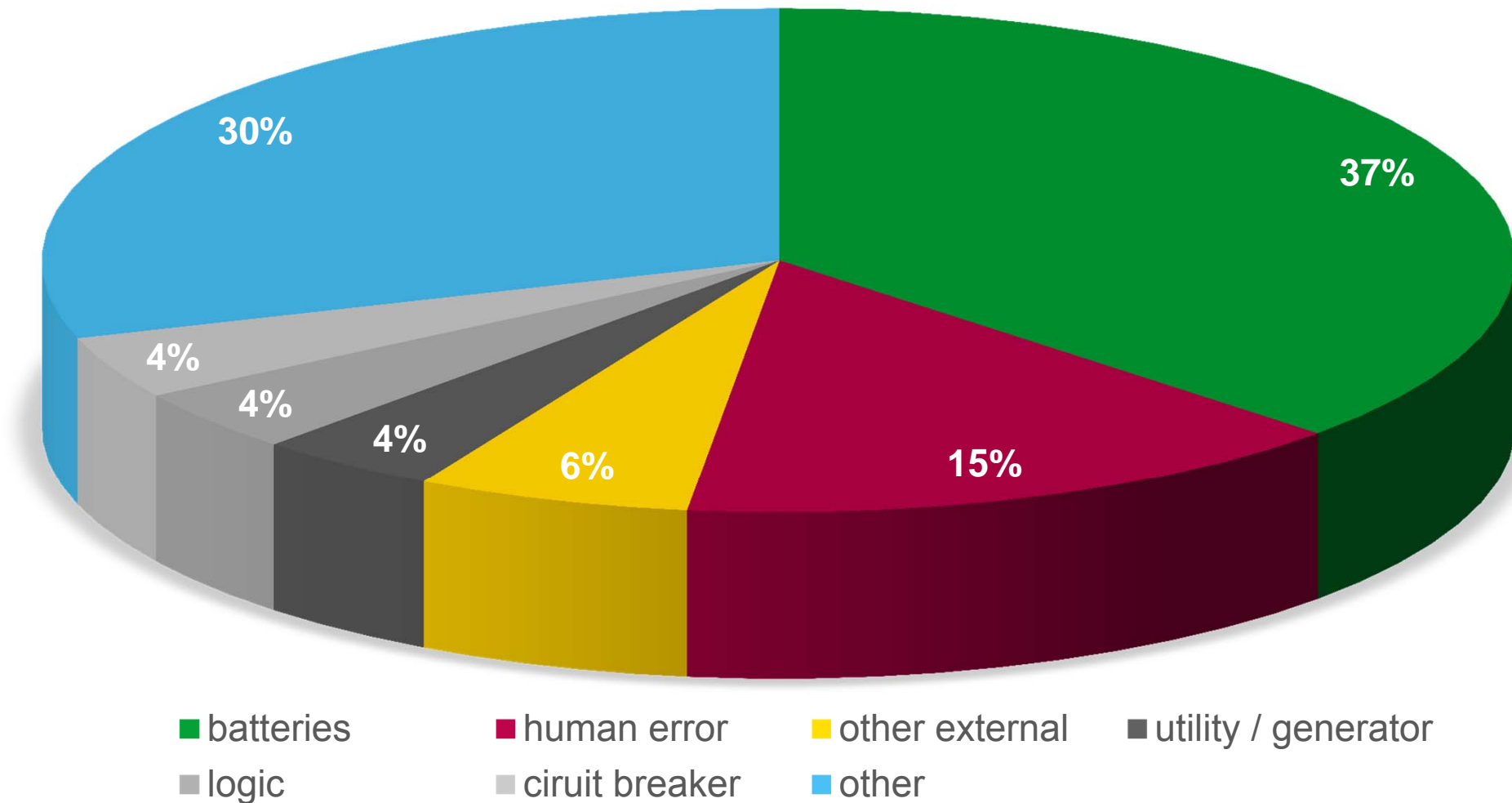
Transformer (optional)

Battery Monitoring System



Science of Battery Management

Common power failure sources:



Science of Battery Management

Major issues occurring with rising battery age



GUTOR's Battery Management Systems

Traditional maintenance service

- Simple visual check
- Off-line discharge testing using dummy load
- Electrolyte testing
- Checking terminal voltage
- Charge / discharge trending and analysis
- Cell resistance testing



GUTOR's Battery Management Systems

Reasons for an automated monitoring system

- Non-intrusive, non-disruptive
- 24h/7 days a week monitoring
- Provides continuous performance information on:
 - Battery, string and cell voltage
 - Cell temperature & impedance
 - Float and discharge currents
 - Cell discharge & recharge performance
- Performance and data trending analysis
- Programmable “alarm” management
- Cost effective remote monitoring due to less required man hours

Questions



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