ETO Industrial UPS
Tamilnadu Engineers Forum in Kuwait

Alex Mayr
Head of Services
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

- Power Station
- Utility Network
- UPS
- Alternating Voltage or Direct Voltage (Current)
  - Critical Load
    - Computers
    - Control Systems
    - Safety Systems
  - Non-Critical Load
    - Motors
    - Heaters
    - General Lighting

Local Emergency Diesel Generator

Local Power Distribution

Poor Mains Quality
Our Business Positioning

**Customized Products**
- Consulting approach
- Highly flexible
- Designed for harsh physical and electrical environments
- Full Customer Service over 20-30 year lifespan

**Mass Manufacturing**
- Standardized products
- Less Flexibility
- Designed for “clean” environments

**Gutor UPS**
- Heavy-Industrial Applications

**Customer Requirements**
- Off the Shelf

**Gutor UPS**
- IT related applications
Our Company
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

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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
- 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

Legend:
- FSE Stations
- FSE Stations Planned
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
Market trends

- 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
Common power failure sources:

- Batteries: 37%
- Human error: 30%
- Other external: 15%
- Logic: 6%
- Circuit breaker: 4%
- Other: 4%
- Utility / generator: 4%
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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