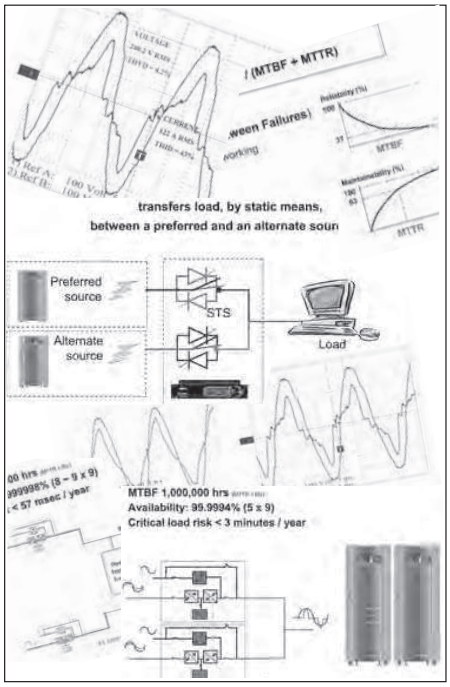
CRITICAL POWER SUPPLY OPTIONS AND PLANNING OF HIGH AVAILABILITY SUPPLIES



YOU WILL GAIN STATE OF THE ART KNOW-HOW ON HOW TO:

- Critically assess the different uninterruptible power supply options
- System design for high reliability power
- Deal with harmonics generated by loads
- Perform best practice design on critical power distribution systems
- Identify the level of failure-proofing for specific equipment

WHO SHOULD ATTEND:

- Distribution planning engineers
- Electrical and instrumentation engineers
- Plant engineers
- Automation engineers
- Control engineers
- Facilities managers
- Engineering managers
- Operators and technicians

Anyone actively involved with implementing or optimising a critical power supply system

The Workshop

Our dependence on electricity is growing and even a few seconds or minutes of power disruption has become unthinkable. An unscheduled interruption can cause immense damage and loss of life. While it is impossible to guarantee 100% availability of power at all points in any system, vulnerable sections can be provided with alternative critical power supply equipment to ensure reliable power availability, thereby avoiding the problems of power interruption.

This workshop shows you how to ensure reliable power supply to critical systems using various available options. The solutions can vary from the simple diesel generating set as standby sources to superconducting sag support systems. Nascent technologies like fuel cells have matured and are fast becoming mainstream solutions. Of course, all this comes at a price, which means that the solution must match the actual needs without excessive insurance and thereby optimise investments. This workshop will discuss how to save dollars by finding the right solution to your needs so that you invest just what is needed and where it is needed.

Another major aspect is to ensure that the critical power supply is itself very reliable. This will need suitable redundancies and a well-engineered distribution system so that when the need arises they cut-in and take over the load without any hitches. This workshop will also briefly look at the design issues involved in planning the distribution of critical power by deploying state-of-the art control devices such as static transfer equipment.

If you are responsible for maintaining power availability in your facility, this workshop is something, which you simply cannot afford to miss. And all you need is to just invest half-a-day of your time to gain state of the art know-how from our expert instructor.

Pre-requisites

Working knowledge of electrical engineering and hands-on work with power distribution systems in a plant environment with critical processes is desirable. Real-life experience with critical power supply sources such as Uninterrupted Power Supply (UPS) systems will further enable the workshop to be placed in context.

The Program

CRITICAL POWER NEEDS AND SOLUTIONS

- Problems arising from power failure in industries
- Tolerance for interruptions and voltage/ frequency excursions
  - CBEMA, ITIC and ANSI voltage sensitivity curves
- Distinguishing between standby power, emergency power and critical power
- Different solutions for critical power needs
  - Sag support systems for transient disturbances-Electrical and electro-mechanical
  - Critical power supply systems to cater to outages
- Reliability assessment
  - What is MTBF?
  - What is MTTR?
  - Arriving at overall reliability expectation from a critical power supply system

CRITICAL POWER SUPPLY EQUIPMENT

- Critical power supply
  - Stored energy systems using flywheel/ compressed air
  - Rotary power supply systems
  - Battery-backed static UPS
  - Fuel cells as source of power
- Stored energy system
- Rotary UP system for critical supply
- Battery-backed UPS system
- Fuel cells basics
- Fuel cell applications for critical power
- Choosing the right option
  - What is the quantum of load that is considered critical?
  - What are the characteristics of this load (technical criteria)?
  - Power system reliability and cost of outage
  - Comparing the costs (upfront, operating both in short term and long term)

CONFIGURING A POWER DISTRIBUTION SYSTEM FOR CRITICAL LOADS

- Integrating normal and critical power needs in the distribution network
- Multiple units nearer the consumer vs. larger centralised units
- Capacity and voltage planning for critical power in large industries
- Sizing of critical power supply
- Paying attention to motor starting requirements and accompanying voltage sag
- Beware of harmonic producing loads and their effect on rated capacity of power supply
- Tackling harmonics produced by static UPS
- Typical distribution scenarios in large industrial systems for integration of critical power
  - Ensuring that process does not abnormally terminate due to non-critical load interruption
  - Safe shutdown requirements
  - Control room power and escape route lighting
- High reliability systems- 4-tier model
- Use of redundant modules and impact on availability

STATIC TRANSFER SYSTEMS FOR CRITICAL POWER SUPPLIES

- UPS as a separately derived source
- Need for neutral isolation between input and output
- Multiple sources with independent neutral connections
- Basics of static transfer
- Static transfer applications in practical critical power systems
- Neutral management
- Comparing 3-pole and 4-pole static transfer equipment
- Standards governing static transfer systems
- EMC and performance compliance aspects

SUMMARY, OPEN FORUM AND CLOSING