

in this ISSUE :

- ◆ **Mission Critical Product Certification**
- ◆ **Documentation - Eliminate the Guesswork**
- ◆ **Dual Bus Power Distribution and Dual Cord Equipment**

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The publishing of the Summer 2003 designPLUS Newsletter completes two years of **FEA's** endeavor to provide timely articles on mission critical design issues. The response has been very encouraging and in some ways surprising. We recently received an email from England regarding one of the articles. We have no idea how he got a copy of designPLUS but we addressed his inquiry and added him to our mailing list. At the 7x24 Exchange Spring conference we received many comments regarding the newsletter with the overall response very positive. Many subscribers indicated that they have forwarded the newsletter to interested colleagues, so if you know of someone who would benefit from the newsletter, please forward their email address to Linda

Continued on Page 3

Mission Critical Product Certification

by Leo P. Soucy, Jr., P.E.

There has been a persistent problem in the mission critical field with regard to developing and implementing new technology. While we are all interested and, in many instances, need product improvements, we are not at all comfortable with the implementation of an unproven product. This has become a major problem as there are now several new innovative products that cannot get market acceptance even though they offer substantial improvements to the present status quo.

The Uptime Institute has developed a program to try to address this issue.

FEA and other mission critical design engineers and owners met in January to discuss this problem and to develop a plan to assist in the qualification of existing and new equipment. The result has been the establishment of the Mission Critical Product Certification Program. It is presently in the formative stages where the organizational and

legal aspects are being addressed

A meeting was held in June with interested engineers, owners and manufacturers to discuss the overall certification concept. The feedback was very helpful in assisting in developing the program and the comments are being incorporated into the proposed program.

The organization presently consists of the Master Advisory Council, which is charged with developing the overall program organization. The next major activity is to appoint Product Technical Panels to develop the actual product certification criteria. The present plan is to develop product certification programs for Static Transfer Switches and Computer Room Air Conditioning equipment with subsequent certification of other products.

The program is in the formative stage, but if you are interested in learning more you should contact Paul Jorgensen (paj@uptime.com) at The Uptime Institute - Tel 410/990-0066. As a member of the Master Advisory Council, **FEA** is very active and interested in this program and will keep you informed of future developments. ■

Documentation

Eliminate the Guesswork

by Marc Soucy

In the world of 7x24 operation, the main focus of all facilities managers should be on the anticipation of problems rather than the reaction to problems. There are times when unforeseen situations arise where a quick decision must be made to prevent an untimely shutdown. It is these times where good documentation plays a crucial role. Having up-to-date documentation is very important because it can serve as a "road map" to the facility to show how it operates. If kept up to date, it can help you instantly locate virtually any piece of equipment anywhere in the facility, and by seeing the 'whole picture' one can develop a better plan of action. Knowing exactly where to go in a facility when there is a problem can be the difference between keeping the facility up and running or taking a shutdown.

Documentation does not stop with just having up-to-date drawings. It is a facility-wide practice, which includes identifying all equipment in a logical manner. This includes durable, legible labeling of all electrical cabinets, mechanical equipment, piping, valves, individual breakers, and anything else related to the mechanical and electrical infrastructure of the facility.

Not only does good documentation aid in a crisis situation, it also helps out in the day-to-day maintenance and facility upgrades. Knowing such things as which panels feed particular equipment and which pipes are chilled water supply and chilled water return, can save a lot of time, money, and eliminate any of the guesswork as to how the facility is operating.

Another benefit to having accurate documentation and identification is that they can be used as a training tool for new employees and outside service technicians. Being able to study the drawings and locate equipment in the field will increase the understanding of the facility and instill a sense of confidence in the facility staff. With this information available to everyone in the facilities group, you eliminate the scenario which a lot of companies unknowingly face. Relying on one person, and that one person's memory, to keep the facility up and running and problem free. What if that one person were to leave the company, as it is very common in today's society. How do you recover all those mental notes they have made over the years?

Some good practices to help improve your documentation are:

- ◆ Attach electrical one-line diagrams and piping schematics to the wall of the mechanical or electrical rooms. This serves as a quick reference to any equipment located in the room. These diagrams should be easily readable. A detailed design drawing of a system may not be appropriate

as it may be confusing and have a lot of extraneous information that is not required for quickly locating a problem.

- ◆ Create panel schedules in spreadsheet form identifying each breaker, its panel location and what it feeds.

- ◆ Create valve schedules in spreadsheet form identifying each valve and its location in the facility.

- ◆ Keep all drawings, specifications, spreadsheets, and any other related documentation together for easy access in a crisis situation.

- ◆ Avoid part plan drawings or sketches, and maintain a Master drawing set that completely documents the facility without referring to numerous other documents or part plans.

- ◆ Label all mechanical and electrical equipment. Labels should be large with large lettering, permanent and easily distinguishable. Labels for equipment located overhead (pipes, conduits, valves, etc) should be positioned so they are legible from the floor.

- ◆ Establish a color code system to differentiate between various systems.

- ◆ Whenever possible, keep duplicate copies of all documentation material.

- ◆ Lastly and most importantly, keep all information up-to-date and accurate. Request the consulting engineer to provide "record" drawings and updated valve and panel schedules when new projects are completed. ■

Dual Bus Power Distribution and Dual Cord Equipment

by Rafiq Bulsara, P.E.

The advent of static transfer switches (STSs) has facilitated effectively employing dual bus systems by providing dual paths for power feeds as close to the user's critical equipment as possible thereby maximizing the availability of power to the equipment.

Figure 1 shows one dual bus power distribution configuration. STSs extend the dual power feeds up to the power distribution unit (PDU), but the PDU branch circuits still remain a single point of failure for single power cord equipment. Rack mounted electromechanical relay based high-speed transfer switches (RTSs) extend these dual feeds a step closer for single power cord equipment. Dual power cord (DPC) equipment has two power cords either of which can power the equipment which extends the dual power design to the critical equipment.

Dual power cord equipment and RTS systems depend on plugging the two power cords into the two separate sources. It is not uncommon to find dual power cord equipment plugged into receptacles fed by the same PDU, STS or UPS which defeats the dual power cord feature.

In an ideal scenario where dual power cord equipment or RTSs are connected correctly to two separate

sources, there is no need for STSs as the dual power cord equipment or RTSs should properly transfer if there is a failure on one of the dual sources. Building Facilities Managers have tended to insist on continuing to use STSs for transferring power between the two sources. The main reason is that if there were no up-stream STS, then whenever a UPS were shutdown for maintenance and a critical piece of dual power cord equipment or RTS failed to transfer properly, there will be serious discussions as to who was responsible, IT or the Facilities group. The use of upstream STSs insures that all loads are properly transferred to the remaining source without relying on the internal transfer system in multiple pieces of equipment.

Figure 1 shows one system configuration but there are many other system configurations that meet different design requirements and system reliability needs. ■

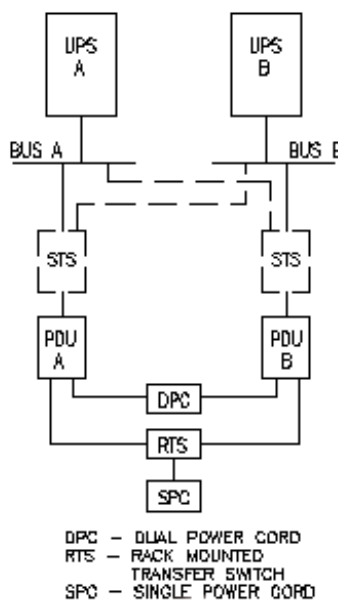


FIGURE 1

Continued from Page 1

Sand at lsand@feace.com and we will gladly add them to our mailing list.

The initial concept of the designPLUS newsletter was to write about a wide range of mission critical topics providing our clients and their management insight into issues that are not always apparent. As we continue to provide specialized design services for mission critical facilities, we continuously encounter design and operational situations that require innovative solutions and we are more than happy to share these experiences with our clients through these articles.

Another benefit of the newsletter is that on numerous occasions we have referred to specific articles when explaining a design concept or for clarifying or reinforcing a point in a report, proposal or presentation. We hope that you have found the designPLUS newsletter informative. Please feel free to forward any comments to Leo Soucy at lsoucy@feace.com regarding the newsletter or suggestions for future articles. ■

Contact Leo Soucy at **FEA** with any comments or questions.
Facilities Engineering Associates
128 Garden Street
Farmington, CT 06032
Tel 860/677-2285
Email lsoucy@feace.com