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## Mission Critical Product Certification Program

### **Introduction to the Mission Critical Product Certification Program**

Unlike many other industries, the mission critical industry does not currently have uniform standards or certification methods to determine which products will best serve the unique reliability and performance needs of high availability data centers. The Uptime Institute (*Institute*) has embarked on a process to develop industry-accepted product performance evaluation standards and to conduct comprehensive product testing and evaluation for mission critical facilities products. New technology adoption is a current and continuing problem in the mission critical facilities industry. Consulting engineers and end users are hesitant to purchase or deploy new products or redesigned existing products due to the risk of being on the “bleeding edge” and creating unintended site failures.

Consistent with these needs, requests made by site infrastructure manufacturers, computer hardware manufacturers, end users, consulting engineers, and with the advice and counsel of ten leading industry representatives, the *Institute* has developed a program for managing and conducting a Mission Critical Product Certification (MCPC) Program (the Program). The intent of this Program is to comply with the American National Standards Institute (ANSI) guidelines for testing and certifying bodies.

### **Master Advisory Council**

To guide this Program, the *Institute* has established a Master Advisory Council (MAC) consisting of prominent leaders of the mission critical facilities industry.

#### **Consulting Engineer Representatives**

- Peter Gross, PE, CEO/CTO—EYP Mission Critical Facilities® Inc.
- William P. “Bill” Mazzetti, Jr., PE, Principal—Mazzetti & Associates
- Richard Schlosser, PE, Electrical Engineer—TiePoint Engineering, PC
- Leo Soucy, Jr., PE—Facilities Engineering Associates
- Robert J. “Bob” Yester, PE, Design Principal—Swanson Rink Consulting Engineers
- Pitt Turner, PE, Principal—ComputerSite Engineering

#### **Data Center Critical Infrastructure Manager and Owner Representatives**

- Robert A. “Bob” Cashner, Senior Vice President (Corporate Real Estate)—Wachovia
- John Diamond, Director, Facilities Management (National Asset Services)—Cushman & Wakefield
- Paul Marcoux, Vice President (Corporate Real Estate Services)—State Street Corporation
- Robert L. “Bob” Talbot, Retired, formerly Senior Vice President (Corporate Real Estate, National Engineering)—Fidelity Investments

#### **The Uptime Institute professional staff**

- Kenneth G. “Ken” Brill, Executive Director—The Uptime Institute
- Paul A. Jorgensen, Certification Program Director—The Uptime Institute
- Michelle Aucoin, Certification Project Manager—The Uptime Institute

### **Mission Statement**

Accelerate the adoption of new technology and encourage the enhancement of existing technology of mission critical facility products by reducing performance and unintended consequent risks that early adopters face when making purchase and deployment decisions.

## Program Goals

Accelerate the adoption of new technology and encourage the enhancement of existing technology of mission critical facility products by:

- Developing and maintaining intent and outcome-based, industry-accepted, product performance evaluation standards applicable to products used in mission critical facilities, utilizing the collective experience and wisdom of recognized industry leaders (end users, consulting engineers, and subject matter experts)
- Conducting a rigorous product evaluation process utilizing independent testing
- Granting uptime certification to products meeting or exceeding industry standards

## Program Principles

The Mission Critical Product Certification (MCPC) Program encompasses the following principles that major end users and leading engineering consultants have identified as being necessary to assure that a new or re-engineered product meet the highest standards of performance and product field support thereby reducing their risk in deploying the product.

1. Create intent and outcome-based product performance evaluation standards for different classes of mission critical facilities products.
2. Quantitatively evaluate the performance of products submitted for certification using independent testing and other means to identify engineering, maintenance, or operational shortcomings that may not be initially obvious. This testing is far in excess of what any single user or consulting engineer could hope to perform individually.
3. Evaluate the manufacturer's "whole product" characteristics including the full range of customer-related purchasing evaluation concerns such as product support, reliability, manufacturing quality, cost of ownership, etc.
4. Validate actual product performance utilizing manufacturer's published product information supplemented by Program performance guidelines.
5. Provide a means to recognize and encourage innovation and enhanced product characteristics that may go beyond minimum mission critical facility requirements in a way that does not limit new product features, characteristics, or performance arising from the use of new materials, concepts, or processes.

The organizational guidelines and processes under which the *Institute* operates the Mission Critical Product Certification Program are vendor neutral, independent, non-discriminatory, and administered in a transparent manner as described in this overview.

## Funding

Funding for the initial Mission Critical Facilities Council (the Council) and the subsequent development of the Mission Critical Product Certification (MCPC) Program has come from both the *Institute* and American Power Conversion (APC). The *Institute* has agreed to repay APC's seed investment over the first 15 product certifications as the Program becomes financially viable. Other manufacturer sponsors are being solicited for start-up support. While APC's financial support has been essential for bringing the Program to reality, APC's role in MCPC organization and decision-making has been limited. APC representatives attended only the portions of the Council meeting when the viewpoint of a manufacturer was appropriate. APC has been very attentive and respectful of the MCPC Program's need to be an independent body driven by end users and consulting engineers. Other financial sponsors are being solicited and will need to accept the same conditions of support.

## Product Performance Evaluation Categories

The MCPC Program has developed ten Program level categories for performance evaluation that must be considered when granting product certification. These generic categories are the starting point for developing industry Product Performance Evaluation Standards (Standards). Each category includes additional detailed subcriteria for what constitutes category compliance. Compliance includes the minimum mission critical requirements that every product must meet. Bonus points may be earned for innovation or enhanced product characteristics, features, or

performance that go beyond basic mission critical requirements and standard functional type tests.

The generic evaluation categories used to develop new Standards are divided into two groups.

- “Whole Product” characteristics. These categories are related to how the product interfaces with its surrounding environment (installation, codes, remote interfaces, etc.), to the life cycle cost of ownership, reliability, and issues related to after-the-sale service and support. The subcriteria within these categories tend to be common to many product classifications with minimal changes. The description for each evaluation category will be intent and outcome based such any third party could apply them and get yes or no answers to reduce subjectivity. These detailed descriptions are under development and are not ready for public release.
- Quantitative characteristics that can be subjected to functional and performance quantitative testing. These tend to be significantly different and unique for each product classification.

#### **“Whole Product” Evaluation Categories Addressed by Intent and Outcomes**

- 1.0 Installation
- 2.0 Codes, Standards, and Specifications
- 3.0 Reliability and Analytical Evaluation of Single Points of Failure
- 4.0 Human Factors
- 5.0 Operation and Maintenance
- 6.0 Whole Product Experience
- 7.0 Local and Remote Management Software
- 8.0 Life Cycle Cost of Ownership

#### **Evaluation Categories Addressed by Quantitative Performance Testing**

Validate that the product meets or exceeds the manufacturer’s published documentation as well as the unique functional or performance requirements of mission critical facility service. The Product Technical Panel (the Panel) composed of industry experts will use their intimate knowledge of the product type being evaluated to identify the detailed testing program. Actual testing will be independently performed at a recognized laboratory or at the manufacturer’s facility using recently calibrated instruments.

The objective of quantitative testing is to take as much risk as possible out of adopting new technology by identifying engineering, maintenance, or operational shortcomings that may not be initially obvious. The testing will be far in excess of what any single user or consulting engineer could hope to perform.

Quantitative product testing categories are divided into two sections.

- 9.0 Testing to Validate Manufacturer Claims, Electrical Rating, and Published Specifications. Independently validate the accuracy and completeness of all published product specifications and claims. Testing shall be performed at a recognized laboratory or the manufacturer’s facility by independent, competent evaluators using recently calibrated instrumentation.
- 10.0 Testing to Validate Mission Critical Facility Requirements. Important characteristics such as electrical efficiency, realized capacity, operation with typical mission critical facility loads will be verified under controlled test conditions. Testing will also include simulation of typically expected product failure modes as defined by the Panel or the single point of failure analysis, as well as expected maintenance functions and changes in operating configuration that can be reasonably expected to occur during five years of use. Functional and performance testing will take into account previous failures recorded in the *Institute’s* Abnormal Incident database. The results from these simulated tests must demonstrate that the product responds in the manner expected or promised by the manufacturer’s specifications or literature.

## Performance Evaluation Scoring and Levels of Product Certification

To achieve the Program goal of providing a means for recognizing manufacturer innovation and enhanced product features, characteristics, or performance that go beyond basic mission critical requirements, and the associated standard functional type tests, a bonus point scoring method has been developed.

Three levels of product certification have been established. Gold and Silver certification require an accumulation of performance credits demonstrating advanced features, characteristics, or performance benefits significantly beyond minimally acceptable mission critical requirements.

**Gold Standard.** Meets the minimum acceptable level of performance for each evaluation category and demonstrates advanced features or benefits that exceed industry norms resulting in performance credits equal to or greater than [number of points to be determined].

**Silver Standard.** Meets the minimum acceptable level of performance for each evaluation category and demonstrates advanced features or benefits that exceed industry norms resulting in performance credits equal to or greater than [number of points to be determined].

**Acceptable.** Meets the minimum acceptable level of performance for each evaluation category.

**Not Certified.** Does not meet all minimum acceptable level of performance or has serious drawbacks in one or more evaluation categories.

## Product Classifications Eligible For Certification

The following product classifications are slated for the development of Standards as funding is available.

- Uninterruptible Power Systems (UPS) three phase, 10-100 kW, and large multimodule systems
- Static and Relay Transfer Switches
- Power Distribution Units (PDU)
- Power Strips
- Computer Room Air Conditioners (CRAC) and Computer Room Air Handlers (CRAH)
- Racks and Cabinets

The *Institute* currently grants Fault Tolerant Power Compliance Certification for computer hardware. Site and personnel certification are areas of future interest.

## June 4th Public Forum

The Uptime Institute will be hosting an open public forum following the 7x24 Exchange meeting in Boca Raton, Florida on June 4th between 1 pm and 4 pm. This forum will outline Program goals and processes with the intent of answering questions and receiving feedback from manufacturers, end users, consulting engineers, and other interested parties. The public forum will take place at the Boca Raton Resort & Club, 501 East Camino Real, Boca Raton, Florida, 33431. To contact the hotel, please call 1-800-503-BOCA (2622).

## Program Website

Please refer to the Program website at [www.uptimeinstitute.org](http://www.uptimeinstitute.org) for more details, information, and access to documents relating to this Program. One document likely to be of particular interest is the 20-page Program Overview and Organizational Guidelines. This document outlines Program organization; Institute, Master Advisory Council, and Product Technical Panel roles and responsibilities; quality system; processes for setting industry standards; evaluating products, and granting certification; confidentiality; commercial and financial considerations; conflict of interest; conflict resolution; and other topics.

## Contact The *Institute*

Individuals wishing to provide comments on the Program or to get answers to specific questions may contact the *Institute* by sending an email to [MissionCritical@upsite.com](mailto:MissionCritical@upsite.com).