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January 30, 2007

**Jim Stark returns to EEC as Design Build Manager**

EEC is pleased to announce the return of Jim Stark, to our organization, as EEC's new Design Build Manager. In his new role, Jim will be responsible for all of EEC's engineering and construction projects; ranging in size from a small UPS installation, all the way up to a complex turnkey data center, design build project.

We are very happy that Jim has decided to return to EEC. During his six-month hiatus, Jim worked at an engineering firm in Boston, Syska Hennessy Group, Inc. Although the position was interesting, Jim found he enjoyed the diversity of working in the design build field much more than engineering alone.

Jim spent a short time with EEC as a college intern 20 years ago when the company was just a small start up. He came on full time in 1993, and spent the last 13 years progressively working his way up to the top of the Design Build Group. Jim has extensive experience in delivering mission-critical data center projects, and performing site assessments and evaluations with regard to industry standards and power quality. Jim brings with him a wealth of information about the industry and many of our clients' centers. We are excited about Jim's return, and we are sure many of our clients share our sentiments. Feel free to contact Jim and welcome him back to EEC, 508-229-1414 or [jstark@eecnet.com](mailto:jstark@eecnet.com).

January 30, 2007

**To expand or rebuild?**

Many IT and Facility Managers are faced with the realization that the environmental needs (power and cooling) of their computing equipment have exceeded the capacity of their data center infrastructure. Although the footprint of new rack-mounted, high-density blade servers is smaller than that of their predecessors, the power and cooling requirements are much higher. As equipment is added to today's data centers, Facility Managers are discovering that their current electrical and cooling needs are not cutting it; and in some cases are obsolete. What are they to do?

If the original data center design did not anticipate expansion or scalability for higher load densities, companies are often faced with either a data center retrofit or relocation. It is important for the owner and the design team to establish and agree upon the design criteria early in the planning stages of a data center project. An understanding of the business needs, growth plans, and IT equipment to be deployed (blade servers, etc) is essential for a successful design. The level of redundancy and fault tolerance for each system supporting the data center should match the criticality of the business operation. Flexibility and expandability should also be incorporated into the design to help prepare for unforeseen business requirements down the road.

Higher density computer equipment is placing increased stress on existing data center infrastructures. Some facility managers are struggling with limited available power and cooling capacity to accommodate these systems; while others are finding that the infrastructure capacity is adequate, but is unable to deliver the required supply air volume and velocity to properly cool the servers. In some cases, the application of dedicated high-density cooling equipment is the best approach.

When determining whether to renovate or build a new facility, the first step in the decision-making process is a complete audit and assessment of the existing data center (including power, cooling, floor space, etc.). Once the assessment is complete, recommendations can be made with consideration for the owner's budget and time line. The assessment should include participation from both the IT and Facilities Groups. Each group has its own objectives and considerations, and often times they are not the same. These differences can cause a gap in communication. If the groups are on different playing fields, it is often beneficial to bring in a third-party consultant who has the expertise in designing and building 24x7 facilities. This third-party can help to offer a concise assessment of what is needed, and help with the budgeting and timeline for project planning – very valuable when presenting to purchasing and

management for project approval.

If your 2007 plans include expanding your data center, the below chart, produced by the Uptime Institute, may be helpful in determining facility infrastructure needs and costs. If you would like to speak with one of EEC's design-build experts about your plans, feel free to give us a call at 1-800-342-5332 and select 2.

|   | TIER 1                | TIER II               | TIER III                 | TIER IV               |
|---|-----------------------|-----------------------|--------------------------|-----------------------|
| <b>Building Type</b>  | Tenant                | Tenant                | Stand-alone              | Stand-alone           |
| <b>Staffing</b>   | None                  | 1 Shift               | 1+ Shifts                | "24 by Forever"       |
| <b>Useable for Critical Load</b>  | 100% N                | 100% N                | 90% N                    | 90% N                 |
| <b>Initial Build-out Gross Watts per Square Foot (W/ft<sup>2</sup>) (typical)</b> | 20-30                 | 40-50                 | 40-60                    | 50-80                 |
| <b>Ultimate Gross W/ft<sup>2</sup> (typical)</b>                                  | 20-30                 | 40-50                 | 100-150 <sup>1,2,3</sup> | 150+ <sup>1,2</sup>   |
| <b>Class A Uninterruptible Cooling</b>  | No                    | No                    | Maybe                    | Yes                   |
| <b>Support Space to Raised Floor Ratio</b>  | 20%                   | 30%                   | 80-90+% <sup>2</sup>     | 100+%                 |
| <b>Raised Floor Height</b>  | 12"                   | 18"                   | 30-36" <sup>2</sup>      | 30-36" <sup>2</sup>   |
| <b>Floor Loading lbs/ft<sup>2</sup> (typical)</b>                                 | 85                    | 100                   | 150                      | 150+                  |
| <b>Utility Voltage (typical)</b>  | 208, 480              | 208, 480              | 12-15 kV <sup>2</sup>    | 12-15 kV <sup>2</sup> |
| <b>Single Points-of-Failure</b>   | Many + human error    | Many + human error    | Some + human error       | None + fire and EPO   |
| <b>Annual Site Caused IT Downtime (actual field data)</b>                         | 28.8 hours            | 22 hours              | 1.6 hours                | .8 hours              |
| <b>Representative Site Availability</b>   | 99.67%                | 99.75%                | 99.98%                   | 99.99%                |
| <b>Typical Months to Implement</b>  | 3                     | 3-6                   | 15-20                    | 15-20                 |
| <b>Year first deployed</b>  | 1965                  | 1970                  | 1985                     | 1995                  |
| <b>Construction Cost (+30%)<sup>1,2,3,4,5</sup></b>                               | \$220/ft <sup>2</sup> | \$220/ft <sup>2</sup> | \$220/ft <sup>2</sup>    | \$220/ft <sup>2</sup> |
| <b>Raised Floor Useable UPS Output</b>  | \$10,000/kW           | \$11,000/kW           | \$20,000/kW              | \$22,000/kW           |

<sup>1</sup> 100 W/ft<sup>2</sup> maximum for air-cooling over large areas, water or alternate cooling methods greater than 100W/ft<sup>2</sup> (added cost excluded).

<sup>2</sup> Greater W/ft<sup>2</sup> densities require greater support space (100% at 100 W/ft<sup>2</sup> and up to 2 or more times at greater densities), higher raised floor, and, if required over large areas, medium voltage service entrance.

<sup>3</sup> Excludes land; unique architectural requirements, permits and other fees; interest; and abnormal civil costs. These can be several million dollars. Assumes minimum of 15,000 ft<sup>2</sup> of raised floor, architecturally plain, one-story building, with power backbone sized to achieve ultimate capacity with installation of additional components or systems. Make adjustments for NYC, Chicago, and other high cost areas.

<sup>4</sup> Costs are based on 2005 data. Future year costs should be adjusted using ENR indexes.

<sup>5</sup> See *Institute White Paper* entitled *Dollars per kW plus Dollars per Square Foot Is a Better Data Center Cost Model than Dollars per Square Foot Alone* for additional information on this cost model.

Source: The Uptime Institute

January 30, 2007

## EEC to exhibit at the Boston Construction Expo

EEC will be exhibiting in Booth #4 at the Boston Construction Expo – "*The premier construction industry trade show.*" The expo will take place on March 21 and 22, 2007, at the Boston Convention & Exhibition Center. The expo is expected to draw hundreds of general contractors, property management firms, commercial developers, architects, home builders, excavators, demolition companies, electrical subcontractors, etc. Aside from the exhibition, accredited workshops will be held over the two-day period. The expo is a private event and is not open to the general public. EEC will be sharing VIP tickets with interested parties when they become available. [[FIRSTNAME]], If you would like to receive a VIP ticket, please contact Sharyn Dunn, [sdunn@eecnet.com](mailto:sdunn@eecnet.com) or 508-229-1473.

The expo has a 26-year history, and is expected to draw between 2000 - 4000 attendees; show organizers expect over 250 companies to exhibit at the event. As show information becomes available we will be posting it on EEC's website, [www.eecnet.com](http://www.eecnet.com); to locate a show in your area, visit the construction expo's website at [www.constructionexpo.com](http://www.constructionexpo.com).

January 30, 2007

## **Save the date... for GOLF!**

It is never too early to think about golf!!

Mark your calendars today for EEC's 11th Annual New England Customer Appreciation Golf Outing, which is scheduled to take place on Thursday, August 23, 2007. Additional information will be forthcoming as the event approaches. To view pictures from last year's event [click here](#).



Published by Sharyn Dunn

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