

of Pompeii over 2,000 years ago to lower the temperature of a hot room by spraying water on the floor. This then has a cooling effect on the air as the water evaporates. One interesting use of this technology is the enhancement of a freecooling chiller's efficiency by adding adiabatic cooling, which is obtained by humidifying ambient air going into the heat rejection coils (both the condensing and freecooling ones). By combining adiabatic, freecooling and mechanical cooling technology in one single unit, data centre managers can rely on full redundancy and new levels of efficiency as well as reduced overheads.

A second application of this age-old technology is the combination of indirect, evaporative freecooling with an air-to-air heat exchanger within a single unit. Through the water evaporation process, this technology is capable of achieving enhanced partial Power Usage Effectiveness (pPUE) levels and reducing CO2 emissions, thus minimizing operating costs.

There are many companies in the cooling market who have created solutions and products to address this technology; however Emerson Network Power has created products such as Liebert® EFC, the indirect evaporative freecooling unit and Liebert® AFC, the adiabatic freecooling

chiller, which are the most advanced thermal management solutions in the evaporative and adiabatic cooling market. As a result of these latest applications; new generation data centres will have the ability to provide their customers with unmatched benefits in terms of cost savings, reliability, and cooling availability.

The industry is also moving towards data centres that will be able to autonomously adjust to specific requirements and to external conditions in order to run the optimal, most efficient cooling system – calculating the perfect balance between the local water and electricity costs, while always guaranteeing the optimal condition at which servers operate.

As a result, the evaporative and adiabatic cooling approaches will be a significant cost saver, but may not be suitable to all kinds of data centre installations. These methods of cooling, therefore, are unlikely to make traditional systems obsolete any time soon. The probable approach is that existing systems will be able to run traditional cooling in tandem with new solutions.

What seems clear above all else, is that over the next decade, the data centre will become increasingly "smart". While reducing cooling costs will continue to be the primary focus



for data centre managers, so will the desire for investment in smart thermal management technologies. We are therefore likely to see further innovations in this field as the industry fights to reduce high energy costs and more effectively manage environmental impact.

Considerations for hardware maintenance & resilience

By Mat Jordan, Head Of IT Asset Recovery at Procurri.



I SUSPECT, as I write this that the majority of readers would be focussed around hosting, and datacenter services, redundant power, guarantees of power etc.; Procurri offers many services surrounding the physical hardware held within the datacenter environment. It is a critical piece, and who maintains and manages the front line is key.

Hardware maintenance solutions for servers and comms within the datacenter are key. Who monitors the machines, and how do they instigate a call should maintenance on a machine be required. Do they operate a fix first policy, rather than rejecting a call because a serial number is not recognised in the early hours? Important considerations to help you have a restful night's sleep knowing that action will happen without your intervention. Are multiple manufacturer platforms operating within your datacenter environment? Do you hive off different hardware to multiple maintenance providers, or is a single point of contact preferred to manage your estate? Perhaps to manage your global estate? One point of contact, one number to call in the event of a failure within the estate?

We encourage our customers to consider the resilience of their hardware service partners, breaking the solution down into three key areas often aids this process when reviewing maintenance providers -

- **Parts** - availability of parts, location and proximity of those parts in relation to the site. Variety of hardware supported. Parts sparing methodology, are the right parts provided for? How are end of service life machines catered for?
- **Process** - is there a clearly defined process to instigate / log a call, how is it managed and delivered; what is the ticketing and escalation process. Is it 24 x 7?
- **People** - the last mile, are the skill sets held within the organisation to install the parts, who is likely to attend site, are they qualified to work on the type and model of machine you are running. What and where the Level 2 or 3 support is should it be required.

You need to feel confident that your chosen partner: Understands your business and the importance that ICT plays in enabling your business to operate effectively. Possesses the experience your business requires to help you design and build a

resilient platform which meets your immediate business needs and works with you to agree a road map and strategy which will enable you to cope and respond to what may lay ahead. Sleeps with one eye open so you don't have too and can work with you to proactively manage and monitor your systems and perform regular health checks and physical system checks within the data centre.

Is responsive and "on the ball" when it comes to fault resolution - after all nothing is ever 100% so when (not if) a problem does occur your provider needs to possess the experience to quickly understand and interpret the issue and the data they see and can respond with the right people and parts needed to fix the problem which meets the SLA's in place with you and between you and your customers. Is reactive to any issues that arise and can work with you to improve and or modify processes and systems to prevent a reoccurrence of the issue again.

Thank you for taking the time to read this article and I hope you found it informative, you can be confident that Procurri tick all these boxes and would welcome the opportunity to discuss your specific business needs to see if we can help you too.



The importance of UPS maintenance



All UPSs and associated system components need periodic maintenance and, on occasion, parts replaced to ensure optimal reliability. They also need the security of an emergency call-out facility, as failures can occur in any electrical equipment, no matter how well-maintained it is. In this article, Alan Luscombe, Marketing Director at Uninterruptible Power Supplies Ltd, a Kohler company, talks to PBSI about these elements of effective maintenance and how they contribute to an overall plan that assures the UPS system's uninterrupted availability over periods of many years.

MOST ELECTRONIC and electrical equipment, no matter how well-designed and built it is, will fail eventually unless it is maintained according to its manufacturer's instructions. On rare occasions, maybe after suffering adverse environmental conditions, even well-maintained equipment can fail.

Failure-induced downtime is unacceptable for any commercially-used equipment, but it's particularly serious for UPS systems; if they go offline, they compromise all the equipment they have been installed to protect. Fortunately, there are a number of steps, at several levels, that UPS operators can take to minimize this exposure.

The highest-level steps to ensure availability include keeping the UPS in optimum condition within a clean, dry, tidy and

well-lit area, and checking that all alarms and indications are recorded, logged and reported correctly. Responsibility for the UPS and its associated equipment should be assigned to a named member of staff, and a suitable maintenance contract negotiated with a reputable UPS specialist.

This maintenance contract should cover three key components: A regular testing and preventative maintenance schedule; emergency call-out facilities with a guaranteed response time; and a policy for end-of-life component replacement.

The maintenance schedule should be designed to include all the UPS installation's major parts, which are the UPS itself, the battery and the generator if present. The schedule will be based on

a planned programme of visits in which service technicians perform inspection and maintenance as required.

Regular UPS maintenance

For the UPS, meters and instrumentation should be checked for correct operation, and any meter readings checked, recorded and verified for accuracy. Local and remote monitoring panels and communications channels, as well as indicator lamps, should be checked for correct status indication. Switchgear and circuit breaker operation should also be proved.

Environmental conditions should then be reviewed, starting with actions as simple as removing any material and obstructions from around the equipment, and checking for any abnormal conditions. Ensure that airflow in