PDU manufacturing

What other PDU manufacturers **do not want you to know**

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Building a Data Centre is easy. You get yourself a building or shell then add the power/cooling/ lighting and security infrastructure. Next you need the cabinets, PDUs (e.g. rack power-strips to be clear on terms for all you facilities guys) and finally you are ready for the servers.

The PDU (power-strip) is the final part in the power chain, allowing the facility power to connect to the business end of the DC, namely the servers, storage and switches. It does that final hand off from the 16A, 32A, 63A whip or bus bar, in single phase or 3-phase form. Quite Simple.

The Marketing Departments have been telling that a complex layer of close monitoring is essential.

The majority of intelligent powerstrips rarely get used once installed.

Well, not exactly. The marketing departments have been busy over the last 15 years telling us that we need a layer of monitoring and control at the PDU. Convincing us we must add complex power monitoring, whether overall or at each outlet, to add temperature or humidity monitoring, or even the ability to switch each outlet on or off. In addition, the story continues to tell us that we need to add DCIM or Power Monitoring Software, to track any changes down to the Nth degree, producing a baseline for real-time analysis.

We all know that monitoring power in a DC is essential and setting a baseline for the PUE is useful to show how efficiently we are delivering to the servers. However, where the best place to do this monitoring and how much detail is needed has changed, as the DC has evolved. People are now questioning the added cost, work involved against the value from all of this monitoring?

Here's the truth hurts part; most intelligent rack PDUs rarely, or perhaps never get used as intended! If they do get used, it is often not much beyond the initial project hand over and soon gets little use as the DC becomes established! We manufacture a full range of fully intelligent PDUs and have invested hundreds of thousands of pounds in their development, so it is uncomfortable for us to say this and we would love everyone to order them. However, we always strive to offer our customers' the exact solution that matches their needs, not one that suits ours. Global investment has been large in intelligent rack PDUs technology and software, so you can see why the marketing machines are busy pushing the need.

I recall walking around a major global company's European DC, listening to the DC Manger tell me, '…how the top of the range intelligent power-strips feed data into their energy software system, allowing real time usage data to be displayed'. As I walked and talked, I noticed that none of the network ports had cables and naively asked, 'How do collect the Data into the system?', he replied ' Oh, the facility Manager, collects if from the Local Display, produces a Excel sheet monthly and uploads it to the system!" It was far too complex to connect up a 1000 PDUs and no one really looked at the data anyway!

Another factor that is now becoming part of the consideration, is the introduction of 'risk' by adding monitoring technology (i.e. complexity and electronics naturally adds risk). Do you really want this risk added at the point where you simply want to hand off to the server? I know that some manufacturers offer hot-swop modules to get around the risk of the electronics, which I always think is like saying 'my hardware will fail at some point!' Why add the risk if it is not being used?

The above examples are a good way of demonstrating the trends that we are seeing in with our manufacturing of PDUs. Having manufactured half a million units in Europe last year, ranging from the simplest, Basic 8 way Schuko, up to fully intelligent 63A switched and monitored units, we have seen a change in the requirements from our customers, and a shift in the focus for their demands.

Introducing Intelligence in a PDU adds risk at the final power connection to the server

We are seeing the following features as becoming paramount in their requests in recent years:

1. **Quality and Reliability:** The design quality and reliability is key. We build and certify to the relevant European and US Standards, using completely independent labs provided by TUV in Germany, to verify our build compliance. In addition we look to obtain the local country standards where applicable, such as GS, VDE and SEV. We are confident with the designs and now offer product lifetime warranty. We are already looking at the new safety focused standard of EN 62368-1, which will replace the EN 60950 for ICT equipment and are building into our designs.

2. **Physical Design, Dimensions and Fixing:** The physical design is becoming increasingly important. Building to your exact needs is important. PDUs use standard components, but the power they provide and outlets numbers should be unique to you, simply built to order, but available on time. The PDU should fit perfectly in your cabinet, mounting neatly but not inhibiting access to the rear of the servers nor impacting airflow. Space at the rear of racks is becoming scarce, especially in Colocation. Servers are longer but 60cm x 100mm cabinets are still common to increase cabinet density. They should be tested to function at high temperatures to work within the exhaust air. We test to 60°C and over-rate the electrical components to allow for this. Mounting brackets for different cabinets are essential, as there are no universal standards.

3. **Colour Coding:** We have supplied every imaginable colour, for colour coded power-strips to allow easy identification of the A and B power chain. On each unit we can colour coded the outlets, the phases and breakers for easy identification. We are seeing the colour coding being followed through onto the IEC leads connecting to the servers, or following the colour coding across the whole power chain.

4. **Local Metering:** Having a local Meter allows engineers to have instant feedback on what is happening within a cabinet. This quick visual check gives the confidence to deploy, knowing that no breaker limits will be exceeded and the power interrupted.

5. **Locking Leads and Sockets:** Securing the connection between the server and the PDU is becoming important. It is the final link in the power chain. Therefore, providing a PDU that has locking IEC sockets or leads that can lock both ends of the cable are becoming common. A small investment in a locking system is often seen a small price for security.

The Physical build of a PDU is becoming more important that the monitoring technology

There is definitely a place for IP Monitored intelligent PDUs offering a detailed cabinet view, and the switching outlet function can be useful in some cases. However, a modern DC is not the dynamic, varied environment that it once was. With the advancement in servers, VM and SDN it is clear, that once built and deployed a DC becomes a stable monolith, housed in a stable environment. Therefore, does it make sense to deploy intelligence into a PDU, with all the extra cost and risk that involves? The current European trends indicate a direction where the choice is increasingly for lower deployment costs, reduced complexity and reduced risk at cabinet.

The EU is voluntary pushing businesses to adopt best carbon practices, with the ISO 50001:2011 energy management system. This sets out guidelines for developing policies for more efficient energy use, targets and reduction objectives. Clearly, this is something that as a planet we need to embrace. Having looked at this with some organizations over recent years, the load of the Data Centre is seen as compulsory/fixed and it was low on the list of carbon contributing factors in a business compared to heating/lighting and transport costs. In fact, with one business, we did the cost-benefit analysis for adding intelligent PDU monitoring over using the existing switchboard monitoring.

The answer was, Simple!

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