

Nominee: Sudlows

Nomination title: Advanced Load Integrated System Testing (A:LIST)

The A:LIST is the latest innovative addition to the Sudlows Data Centre Testing Toolkit. Developed entirely in-house, the system addresses shortfalls within the industry's existing product sets while also adding new features not before seen within the data centre testing field.

The load banks have been developed specifically for testing critical data centre environments and aim to deliver an accurate representation of the loads which will be installed.

The system is able to accurately match the flow rate, temperature and power consumption of the proposed IT Systems and uniquely allows this to be remotely controlled from a single point via an integrated control network.

This remote control allows the testing process to also be planned and programmed for modelling dynamic operation including changes in fan speeds and load steps which might be seen where cloud based systems experience peaks in demand.

This programmatic approach to testing also allows the configuration required for the various test stages within the SATs and ISTs to be preprogrammed and loaded as required. This not only saves time but improves accuracy and safety by minimising the requirement for switching and modifying temporary cabling on site.

One of the most advanced features of the system is the dual power architecture which allows each load bank to be provided with 2 supplies in line with N+N architecture arrangement, and allows the system to be set to operate in either a manual selection of A or B power only or an automatic fail over configuration. Multiple units can be configured to operate in a 50% A and 50% B configuration to demonstrate a close representation of the actual IT load which will be installed.

This combination of an accurate replication of the thermodynamic characteristics of modern IT systems, together with a similarly representative power architecture, results in a system which is the closest available match for testing critical environments other than the IT itself. Remote monitoring and control simply adds to this to make this the most useable testing solution available.

The A:LIST system was developed following feedback from Sudlows in-house testing teams that there was a significant opportunity for us to improve our critical testing services and has been the culmination of an exciting 18 months of development. Due to the variance in the size and style of facilities we design, build and ultimately test, our product development team ensured that through its design it is flexible for use in a wide range of facilities. The system can accept various power inputs from 16A Single Phase to 63A Single Phase to 32A Three Phase. Individual load banks can even be demounted and installed directly onto final rack level distribution utilising C13 or C19 connections as available, although the more advanced features are reduced.

In terms of cooling architecture, the system is not constrained to any one type of cooling topology. As a standard, each cabinet is designed with a removable chimney and removable solid back doors allowing for Contained Hot Aisles, Contained Cold Aisles, or Chimney types to be represented. All elements of the system are demountable from the standard cabinet allowing on site installation within any standard 19" rack should the final cabinets or containment be installed.

The testing of a facility is the best opportunity to identify areas for improvement and the first opportunity to demonstrate and record proper operation at peak loads. Because of this, we have included local supply air temperature monitoring and remote temperature monitoring within each load bank which, together with the power consumption of each load bank, is monitored, recorded, and trended by the separate control software.

Previously much testing has been undertaken with simple resistive load banks and although there is still a use and demand for these systems, they do not accurately represent the modern IT loads which will be installed. As the cooling systems are designed based more heavily on the exact characteristics of the IT – such as flow rates and temperatures – there has been a growing discrepancy between the design conditions and the testing conditions. This discrepancy results in tests which should fail being caused to pass, and for tests which should pass being caused to fail. This load bank design, which addresses the discrepancy between the testing load banks and the IT, results in an overall testing process which more accurately represents the design and operating conditions and therefore provides more overall confidence to the testing which has been carried out. A good example of this is if an Indirect Air Economiser system has been designed based on an IT temperature increase of 10°C but tested with a load bank which has a 15°C increase; in this instance the system could be over 25% down on duty while still passing the onsite test. This is clearly not an acceptable way to test a critical facility and even higher temperature load banks would obviously be even more inaccurate.

Accurate data centre testing is a critical part of any major project and is commonly undervalued and under specified. We believe that this innovation will drive the industry towards a more

progressive attitude to testing. Ultimately, full load IST testing is something which most owner operators will only get one opportunity to do and this product not only allows the client and their technical teams to participate in a thorough, in depth and accurate testing of the facility but positively encourages it.

Why nominee should win

- o There is no current offering which provides the same level of intelligence and accuracy as this system achieves.**

- o The development and use of the advanced features within this product leads the industry towards testing methodologies with an acute consideration of the IT proposed.**

- o It's designed exclusively for use within Data Centres, with flexibility to be deployed in all feasible configurations.**

- o The system is designed to encourage best practices in design and lead best practices for testing.**

- o This system is available to everyone within the industry and not solely developed for the in-house benefit of Sudlows.**