Nominee: Anuraag Saxena, Data Centre Optimisation (DCOP) Manager, EkkoSense

Nomination title: Taking Data Centre Thermal Optimisation to the next level

Anuraag Saxena came to the UK in 2014 to complete a Masters in Sustainable Building technology at Nottingham University. He previously worked across India as a project engineer and project manager focused on the HVAC aspects of major IT projects.

As part of his Masters programme, Anuraag gained an internship placement at Nottingham-based EkkoSense, the UK's leading data centre thermal risk specialist. This was particularly relevant to Anuraag's studies, as his research was particularly focused on the renewables and cooling aspects of IT performance in critical facilities. With its focus on optimising thermal performance in data centres, EkkoSense draws on over 20 years' proven operational experience in data centre thermal optimisation, making it a great practical opportunity for Anuraag to develop new thinking around Data Centre Thermal Optimisation and start putting it into practice.

With cooling now representing around 30% of a data centre's operating cost, it's clearly critical for organisations to be focused on thermal optimisation - particularly as cooling issues still account for almost a third of unplanned data outages.

For true cooling optimisation, however, it's necessary for data centres to start getting much more granular - and that means monitoring and reporting temperature and cooling loads more actively. ASHRAE suggests a minimum of three temperature sensors per rack. This probably requires around 10x more sensors than are currently deployed in today's typical data centre. Unfortunately, it's still rare for data centres to sense to this level, but as Anuraag and EkkoSense's DCOP team say: "if you don't how can you be certain that your critical servers are actually ASHRAE compliant? Are you prepared to take that risk?"

Unlike traditional consultative critical cooling optimisation approaches, EkkoSense actually underpins its structured Data Centre Optimisation (DCOP) engagements with real-time thermal data from the company's family of Critical Things sensors as well as the 3D visualisation and monitoring capabilities of the company's EkkoSoft Critical software.

Since joining EkkoSense in June 2015, Anuraag has been fully engaged on the evolution of EkkoSense's DCOP proposition. As DCOP Manager, Anuraag and his team now monitor 100% of all the thermally sensitive equipment in a data centre. That way they can support their assessment of the dynamic behaviour of data centre cooling with the kind of solid real-time data that's critical when it comes to taking decisions that are central to risk free energy savings.

Translating the EkkoSense thermal optimisation model into clear business benefits

Having now conducted over 150 in-depth data centre thermal surveys, Anuraag has helped to develop a proven, safe thermal optimisation process that' draws on potentially thousands of real-time wireless sensors, as well as expert spatial models. Combining data and smart models is now helping data centres across the UK and internationally to remove the uncertainty from their critical facilities cooling.

Every single EkkoSense DCOP Data Centre Optimisation project that Anuraag has worked on to date - ranging across 100s of data centre rooms - has not only delivered 100% rack-level ASHRAE thermal compliance for EkkoSense customers, but also secured an average 23% data centre cooling energy saving, with typical project payback in under a year. EkkoSense DCOP customers also benefit from improvements in data centre capacity, enabling the installation of further IT equipment without additional cooling costs.

Anuraag's practical experience as DCOP Manager at EkkoSense - and the clear evidence that the optimisation service that he provides delivers tangible benefits for customers in terms of risk reduction, cooling power reduction and increased capacity - has convinced him that when it comes to the thermal optimisation of data centres, intelligent software plus real-time sensors is always going to prove more effective than passive measurements and human experts, no matter how smart.

For Anuraag, the DCOP proposition is an important step on the journey towards truly AI-managed precision data centres. According to Anuraag, this has already started with the creation of intelligent feedback loops that analyse airflow data into 'Zone of Influence' modules that can now combine with standard BMS systems to enable automated zone-by-zone data centre cooling. Next will come the addition of true 'What If?' scenario analysis, using real-time monitoring data to actually learn and predict data centre performance.

From starting as an intern at EkkoSense to his current role as DCOP Manager responsible for delivering DC optimisation programmes for some of the country's most critical facilities, Anuraag has seen how software-oriented optimisation is the key to ongoing thermal performance

improvement. "When we carry out one of our free site surveys and identify specific cooling energy savings, it's not just a hopeful guess. Those are the figures that we are confident about guaranteeing, and we can do that because we're using real-time data from our sensors, we're applying high quality algorithms to those findings, and we've got a proven DCOP team that's 100% focused on heat and airflow issues."

Anuraag is now a key part of the EkkoSense drive to take data centre thermal optimisation to the next level. By collecting thermal data from potentially thousands of wireless sensors across the data centre, EkkoSense can now create rack-level detailed maps of their customers' critical facilities. These not only display real-time cooling and thermal performance, but also provide the core machine learning data needed to power next generation real-time decision-making based on the company's proven space, cooling and power algorithms.

Available at a cost equivalent to less than 20% that of a traditional cooling units, this software-driven thermal optimisation approach delivered by the DCOP team also provides a platform for the kind of real-time decision-making and scenario planning capabilities that organisations will inevitably require to transition towards true AI-managed data centres.

Why nominee should win

" Anuraag has taken his practical experience in HVAC project delivery, along with the theoretical work developed during his Masters in Sustainable Building Technology and realised its practical application for the benefit of EkkoSense data centre customers.

" Since joining EkkoSense in 2015 as a Technical Analyst and now DCOP Manager, Anuraag has been instrumental in the development of the company's proven Data Centre thermal optimisation service.

" Anuraag has been involved in conducting thermal surveys for some 130 data centre halls - of all sizes - and has contributed to EkkoSense industry research that around 11% of racks weren't actually ASHRAE compliant, and that organisations aren't conducting controlled cooling resilience tests.

" **Anuraag has built a strong rapport with EkkoSense's DCOP customers, and has been a key factor in the company's ability to transition customers from initial, single site optimisation projects to ongoing estate-wide thermal managed service engagements.**

" **Anuraag is also a key part of the EkkoSense team that has not only secured 100% rack-level ASHRAE thermal compliance for all its DCOP customers, but has also delivered average data centre cooling savings of 23% for all projects, along with payback in under 12 months.**