

Case Study



Three secures cooling energy savings across four sites of 200 kW against an initial 196 kW projection, representing a 12.5% data center cooling energy saving in just ten weeks

EkkoSense helps Three's data center operations team to deliver against its corporate energy reduction target for legacy facilities



The EkkoSense® Effect

100%
Thermal Compliance

<12 month
Return on Investment

200kW
Cooling Energy Saved



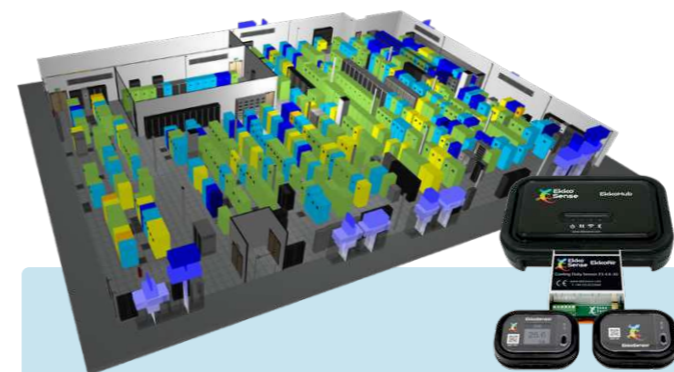
Three was confident that the distinctive mix of monitoring hardware, 3D real-time visualization software, and artificial intelligence could give the insight needed to secure improvements across key project objectives.

Three UK – the connectivity company that has 9.9 million customers, a network that covers 99% of the UK population, and handles some 28% of the UK's mobile data traffic – is part of the CK Hutchison Holdings Ltd group of companies which has mobile operations in 11 countries. The company employs more than 4,800 people across its offices in Glasgow and Reading, as well as its 297 retail stores.

Setting a carbon reduction strategy to reduce emissions

Three is committed to building a better-connected world to enable a more sustainable and inclusive future. This includes taking action on climate change and involves measuring carbon emissions and setting a carbon reduction strategy to reduce them. The company also operates its own sustainability group – the Green Team – operating as an employee forum with champions across all its business areas and locations. Green Team members help to shape green initiatives and establish best practices.

Three recognises that its critical data center facilities are an important part of this initiative, and is consistently working to optimise energy performance and reduce footprint. Three already operates a renewable energy policy across Great Britain, and is now focused on unlocking further ways of optimising its data center performance to help achieve additional energy and efficiency improvements.



Three's data center operations team established a number of key objectives for the project. These included working to secure a 5% reduction in energy consumption across the four legacy data centers.

Working to mitigate data center energy costs

The last year has seen energy and efficiency improvements come under increased focus for Three, particularly with electricity costs rising dramatically. In order to help mitigate data center energy costs, Three required its data centre operations teams to secure a 5% energy consumption reduction across its legacy data center facilities.

These facilities were all over 20 years' old, and were already part of a programme of business transformation. However, the Three team also needed to make sure that the sites were able to run as cost-efficiently as possible. Before identifying the best way to achieve this target, Three's data center operations team established a number of key objectives for the project. These included working to secure a 5% reduction in energy consumption across the four legacy data centers; helping to mitigate energy prices increases, improving operational insights at a much more granular level in order to help identify and reduce potential operational deficiencies and risks; and also applying any insights gained to help accelerate the sun-setting of its legacy data centers.

Optimizing data center performance with EkkoSense



Following discussions with its master partner CBRE, Three identified that improving cooling efficiency was one of the most effective ways to help optimize its data center energy performance and secure environmental improvements. CBRE recommended that Three engage with data center performance optimization specialist EkkoSense, and worked closely with the Three team to enable the deployment of EkkoSense's AI-powered EkkoSoft Critical 3D monitoring, visualization and analytics platform.

According to Three's Data Centre Operations and Service Readiness Manager, Shamim Mohamed: "operating temperature is clearly a key consideration for our data centers to make sure that our IT equipment isn't overheating – but it's also an area where there's the potential for energy wastage if it isn't optimized effectively. Having discussed the issue with the EkkoSense team, we were confident that the company's distinctive mix of monitoring hardware, 3D real-time visualization software, and artificial intelligence could give us the insight we needed to secure improvements across our key project objectives."

"Before beginning the optimization phase, the EkkoSense team conducted a comprehensive physical survey across our four legacy sites," added Shamim. "EkkoSense's Internet of Things-enabled sensors were easy to deploy, and quickly gave us the granular insights we needed to take the project forward. This initial survey suggested that we could initially unlock a combined 196-kW cooling energy saving – equating to an annual energy saving of 1,716,960 kWh."

Moving quickly to secure cooling energy savings

The deployment of EkkoSense's Internet of Things-enabled sensors enables Three's team to see how its legacy data center sites are performing in real-time. Attaching thermal sensors on all racks and cooling systems allows the capture of accurate and continuous thermal data to feed into the EkkoSense software. Unique EkkoAir Wireless cooling duty sensors also provide real-time tracking of cooling duty loads in kWc for any CRAC/AHU unit.

With the EkkoSense real-time optimization software now collecting thousands of data points every five minutes, the depth of temperature and humidity information collected contributes directly to the effectiveness of EkkoSoft Critical's machine learning algorithms. This allows Three's operations team not just to see how their four legacy data centers are performing, but also to identify energy optimization opportunities in terms of cooling energy usage and overall energy savings.

"After EkkoSense's thorough physical survey of our four sites we were confident that our 196-kW cooling energy saving was achievable," said Shamim Mohamed. "We were also looking forward to seeing how EkkoSense's ability to present all its complex machine learning data in a comprehensive 3D view could make it much easier for our operations team to visualize our thermal performance across the legacy data centers."

Securing quantifiable cooling efficiency improvements for Three

Three's data center operations team wanted the EkkoSense project to move forward at pace so that potential cooling energy savings could be secured before its electricity costs rose. "We set a 10-week timeframe for the project, and were pleased that EkkoSense was able to deliver the initial optimization phase within six weeks. However, we were also keen to see how we could take advantage of EkkoSoft Critical's optimisation capabilities going forward, with our sites continuing to be monitored and analyzed by the EkkoSense system to identify further energy savings," explained Shamim.



Key EkkoSense innovations that distinguish the company's software-based optimization approach from more traditional legacy DCIM approaches include:

- **The application of machine learning analytics built right into the heart of EkkoSoft Critical** – based on PhD-level thermal expertise, data from 50m+ data points in critical facilities around the world, as well as real-time inputs from sensors deployed across an organization's entire estate – from Edge facilities through to the largest enterprise sites
- **Unique Cooling Advisor functionality that provides continuous tangible optimization recommendations to deliver cooling energy savings up to 30%** – your own virtual PhD expert continually optimizing your facility, and always on hand to help in-house data center teams to deliver the next best optimization outcome
- **The application of EkkoSense's distinctive Cooling Zones capability that shows the real-time correlation between cooling units and IT racks to support optimization and provide very effective redundancy and resilience testing** – providing organizations with a much higher degree of confidence in the ongoing resiliency of their cooling plant
- **A Lightweight and easy-to-manage M&E Capacity management capability** – meaning that you no longer need an army of people or huge costs to deliver an effective centralized capacity management process
- **Use of the latest Web technologies** – including gaming interfaces to provide data center teams with the most intuitive, easy-to-use and simplest to manage monitoring and management capabilities. By creating immersive Digital Twin representations of your data center, operations teams get to see all their current cooling, power and thermal conditions via a single, accessible 3D visualization
- **Truly granular levels of sensing** – taking advantage of EkkoSense's latest low-cost IoT wireless sensor technology to allow sensors to be deployed in higher numbers across the data center right down to rack-level – making true machine learning-based analytics and real-time thermal management of critical facilities a reality. This is typically complemented by our EkkoAir vendor-agnostic cooling unit smart meter that provides real-time cooling duty information, highlights unperforming units and helps predict potential failure points before they happen

The result is EkkoSoft Critical - an immersive, intuitive and effective M&E software platform that helps customers such as Three to:

- Become fully ASHRAE-compliant and remove thermal risk
- Identify unused cooling capacity and unlock potential capacity increases
- Directly support their green agenda & reduce carbon footprint in the quest for net zero
- Gain real-time monitoring insights from anywhere with full remote visibility
- Optimize cooling and gain energy savings
- Plan, predict and model M&E capital spending with confidence

With EkkoSoft Critical software fully deployed, the optimization project has performed above and beyond the Three data center team's initial goals, resulting in the following performance improvements:

- Cooling energy savings across four sites of 200 kW achieved against 196 kW projection, representing a 12.5% data center cooling energy saving in under ten weeks
- The EkkoSense cooling optimization project alone has resulted in Three's data centre operations teams already being able to deliver against its corporate energy reduction target across its legacy data centers. Over 4% savings have already been achieved through the EkkoSense project alone, with additional optimization expected to deliver the full 5% target shortly
- OPEX cost reductions achieved, with target annual energy savings of c.£233,000 achieved based on contracted power rates at the time of initial proposal. This is expected to double as the contracted power rate is more than doubling for the coming year
- Thanks to the speed and light-touch nature of the EkkoSense solution and its rapid deployment within just eight weeks, Three has been able to unlock these benefits while securing an overall project ROI of under 12 months
- Operational risk reduced as all data center racks now performing within ASHRAE's TC9.9 compliance bands

In addition to these benefits, EkkoSoft Critical has proved itself a valuable tool in supporting the Three operations team as it works to accelerate the sun-setting of its legacy data center sites. According to Shamim: "having a much more granular insight into our cooling and thermal performance will give us much greater control over how we manage our four legacy sites over the next few years. The increased visibility that EkkoSoft Critical's 3D visualization and analytics platform provides means we can be much smarter about where any adjustments or investments need to be made."

Moving towards continuous energy efficiency optimization with Cooling Advisor

For Shamim Mohamed it was essential that the EkkoSense optimization project wasn't just a one-off exercise. "The EkkoSense software also features Cooling Advisor - a powerful AI-driven embedded cooling advisory tool that can provide our operations team with clear recommendations into the next best actions we need to undertake to ensure we keep our optimization on track," he explained. "As part of our project with EkkoSense we have committed to training so we can onboard users, and we expect the software also to be valuable for our CBRE partners. We could also train our Finance and ESG colleagues, so they all have full visibility of our energy-saving progress."

Next steps

The Three data center operations team's success in delivering against its 5% corporate energy savings target with this project has also gained significant interest from the broader Three business. The EkkoSense software-based approach to optimization has already been demonstrated to the company's Technology Services team, with the focus on showing how it's possible to secure significant improvements in the energy consumption of legacy environments.

Like their data center colleagues across the industry, operations teams are under continuous pressure to deliver energy savings to help meet corporate efficiency targets. By pursuing a software-enabled, AI-powered approach to performance optimization, data center teams can gather the real-time performance insights they need to ensure optimum performance - while also securing quantifiable energy savings from their operations.

That's what Three, EkkoSense and CBRE have achieved at Three's four UK legacy facilities, helping to not only optimize cooling and thermal performance but also to provide the real-time operational visibility needed to secure further energy savings going forward.



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EkkoSense Deliverables

- EkkoSoft Critical AI-enabled SaaS visualization and analytics software
- Cooling Advisor embedded advisory tool
- Performance Optimization Managed Service
- EkkoSensor wireless sensors
- EkkoAir wireless cooling duty sensors

Benefits Achieved

- Rapid thermal optimization of Three's legacy data center sites
- Identified exactly where specific cooling optimization actions were needed
- Helping Three's data center team to uncover areas of thermal risk that weren't being picked up by BMS systems
- Cooling Advisor platform in place to help unlock further cooling capacity

ROI

- Initial cooling energy savings of 200 kW against 196 kW projection
- 12.5% data center cooling energy reduction in under ten weeks
- Helped Three's data center team to meet corporate demand for 5% total energy savings across its legacy sites

Bring the power of EkkoSense AI to your critical facilities



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Request your free demonstration and experience the future of data center optimization, today.

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