# Maximising Energy Efficiency and Validating Decisions with Romonet's Analytics Platform
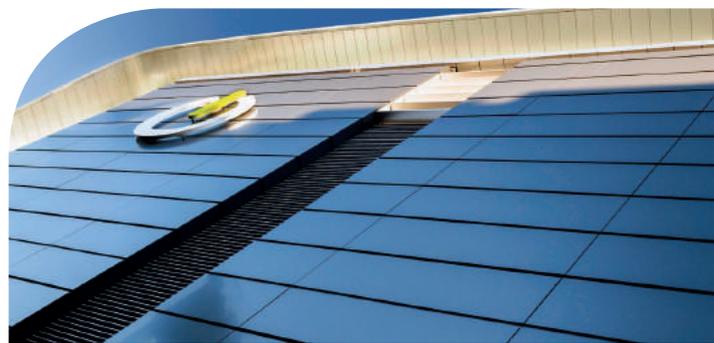
**Case Study - Global Switch Sydney East**

## About Global Switch

Global Switch is a leading owner, operator and developer of large-scale, multi-tenant, carrier and cloud neutral data centres across Europe and Asia-Pacific. Established in 1998, the company has held an unrivalled track record in delivering best-in-class solutions. Its data centres provide rich ecosystems and offer the reliability, security and flexibility that customers require to house their IT infrastructure.

Global Switch is the highest credit rated data centre company in the world with credit ratings from Fitch Ratings, Moody's and Standard & Poor's.

## GLOBAL SWITCH

## Global Switch Sydney East

The increasing trend for companies to outsource IT activities as their data centre needs expand and the huge growth in cloud computing are driving significant growth in data centre services across the globe. Sydney continues to see strong demand from both international and national organisations who are attracted by the location with easy access to submarine cables that enable direct connections to international markets across Asia, the US and Europe.

With a presence in Sydney for over a decade, Global Switch's data centre (Sydney West) has become one of the largest technology hubs in the Southern hemisphere for customers who need highly resilient and secure space to house mission critical IT equipment. International and national telecommunications companies, cloud providers, corporates and government agencies have all taken advantage of Global Switch Sydney West's unique location next to the business centre district and its network dense environment. With the data centre nearing full occupancy and on-going growth in data centre demand in Sydney, Global Switch developed a second data centre on the same campus. On completion, the new **A$300 million Sydney East data centre** (Stage 1 of the development launched in 2014 with Stages 2 and 3 coming on line later this year (2017)), Global Switch's Sydney campus will span **73,000 sq m of space with 83MVA of utility power capacity** – it will be **Australia's first hyper scale data centre campus.**

## The Requirement

From a design perspective, a key requirement for Global Switch was to deliver **one of the most energy efficient and sustainable data centres in the region.** It meant building at a significant scale, so customers could benefit from reduced Total Cost of Occupancy through energy savings. As a by-product of this work, the new data centre achieved a **Leadership in Energy and Environmental Design Gold Rating.**

Sydney's climate patterns are challenging for low cost data centre operations. Global Switch needed to ensure that it had selected an optimum infrastructure solution for a data centre operating efficiently at the scale of Sydney East; and that it could also accurately plan and provide best in class operations for its customers. **The company wanted to verify its target Power Usage Effectiveness (PUE) with an independent body to hold suppliers and designers to task and provide customers with a reliable and accurate analysis of the metric in its data centre.**

*"With the next Stages (2 and 3) of Sydney East, Global Switch wanted to ensure the site was planned and operated accurately to provide customers with an extremely energy efficient facility. Global Switch has a strong commitment to environmental sustainability and social responsibility at all of its data centre sites. The design challenge for Sydney East was to identify the most cost effective solutions available to deliver verifiable PUE over the lifecycle of the building,"* **Matthew Winter, Global Switch's Regional Project Director for Europe.**

## The Solution

**With Romonet's patented predictive analytics platform, Global Switch was able to model the facility over the life of the development.** This included detailed modelling of the design options for Sydney East to establish how the design could be enhanced to provide efficiency improvements for both Stage One (initial occupation) and the subsequent stages.

The aim of the analysis: to **identify designs that would achieve an annualised PUE of 1.33 for the building,** an ambitious target. The analysis provided Global Switch with the confidence that the design options were suitably tested before expensive detailed design and construction work was initiated. The modelling captured the cooling system design; a water-based thermal transport system using water cooled chillers and cooling towers. This was rigorously tested against annual weather data to establish the annualised PUE.

**Global Switch was able to explore multiple permutations of the cooling system design within the model to determine an operationally efficient solution that represented good Total Cost of Ownership (TCO).** This involved examining what improvement could be made, for example by providing heat exchangers to bypass the chillers and deliver cooling without refrigeration for as much of the year as possible.

"Romonet's predictive analytics has given what we believe is reliable and accurate insight into the future of the facility. **With this model, the Operations team are able to forecast and better understand the next steps of occupation for the remaining stages of Sydney East.** We have analysed many of our sites across the globe with this tool and we value the information it provides as it assists the decision making when considering the manner of data centre investments" says Matthew Winter, Global Switch's Regional Project Director for Europe.

*"Using Romonet, Global Switch can demonstrate the commitment to energy efficient data centres and Global Switch's customers can be confident that the declared PUE values are both accurate and validated by an independent party,"* **Matthew Winter, Global Switch's Regional Project Director for Europe.**

## Data Centre Infrastructure Efficiency

The chart below, Data Centre Infrastructure Efficiency (DCIE) for Sydney East, shows the temperature versus load relationship along with the corresponding efficiency and represents a particular static point efficiency. The annualised PUE is determined using this data but applied against a typical simulated weather file over 8,760 hours of the year.



DCIE Chart - Sydney Design Fully Utilised
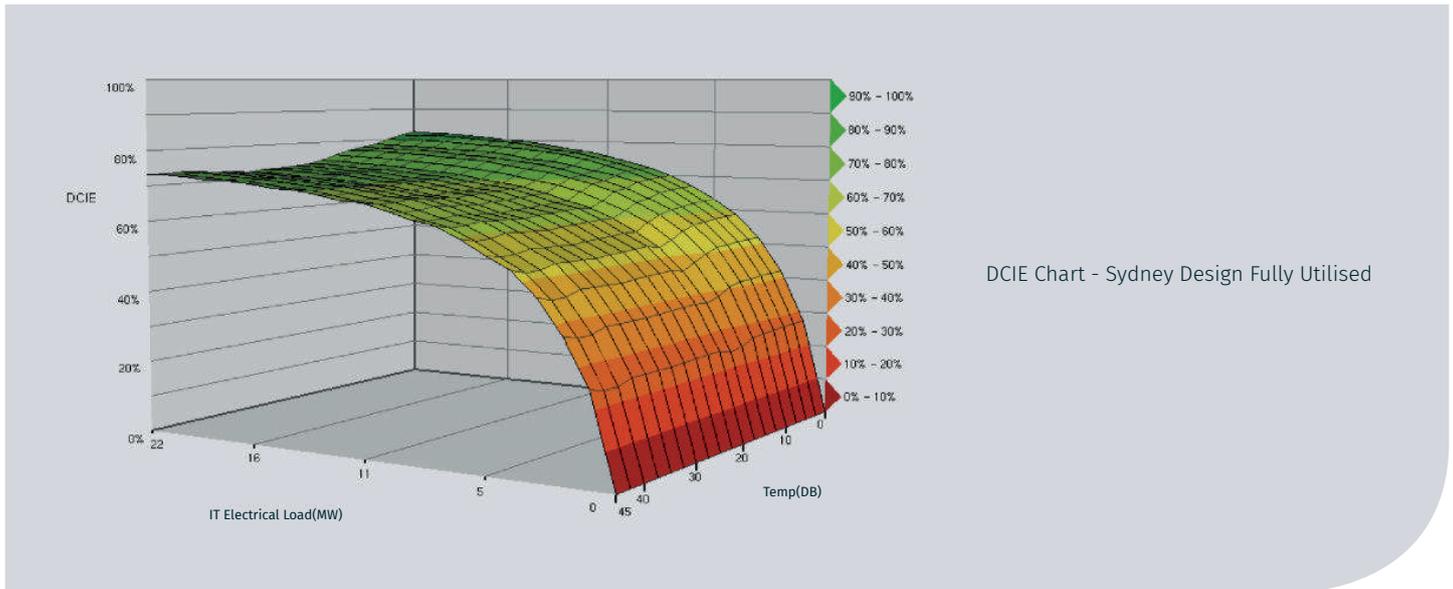
## The Results

As a result of these studies, **Global Switch is actively incorporating modifications to the existing cooling system to further improve PUE.** This is best illustrated in the improvement of the DCIE for Stage 1 as can be seen in the plots below (improvement shown on the right hand side). The visible step in the DCIE curve shows the free-cooling providing greater energy saving for the facility with the introduction of the by-pass heat exchanger.

DCIE Chart - Sydney Design Changed
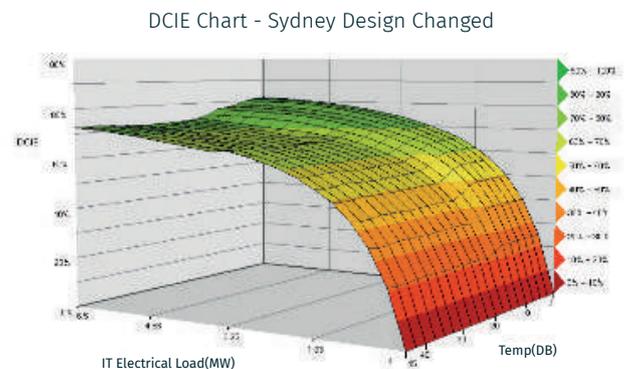


These energy efficiency solutions are being applied into the design of Sydney East and with these improvements Global Switch's customers who occupy this space will receive a more cost effective solution for housing their equipment at Global Switch Sydney, one of the most network dense data centre campuses in Australia.

DCIE Chart - Sydney East Benchmark
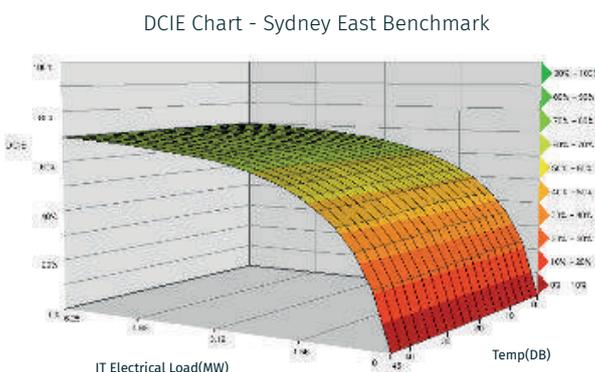
## About Global Switch

Global Switch is present in eight Tier 1 markets: Amsterdam, Frankfurt, London, Madrid, Paris, Hong Kong, Singapore and Sydney. The data centres, which are all located close to the Central Business Districts, currently provide more than 300,000 sq m (3,200,000 sq ft) of floor space. The company is committed to a significant global expansion plan with the scope to double the aggregate power capacity available across the portfolio.

Global Switch is a strategic partner for customers that require highly connected, low latency, carrier and cloud neutral data centres with scalable capacity. Its city central data centres offering connectivity rich ecosystems have attracted the world's leading technology, telecommunications, and cloud companies as well as financial services, government and managed services providers to house their IT infrastructure.

The company's rigorous approach to applying and maintaining best practices throughout its data centres through a comprehensive Critical Environments Programme delivers the highest quality service and state-of-the-art facilities to its customers. All Global Switch data centres hold the key ISO certifications and operate to a Tier III plus standard.

For more information: www.globalswitch.com

## About Romonet

Romonet is the only software and services solution that provides true data centre lifecycle analytics. Its patented technology, unique processes, and machine learning algorithms assess, validate and clean metered data prior to analysis.

Through a process of modelling, simulation and consulting services, customers can then benchmark actual financial and operational performance against their designed specifications.

For Multi-Tenant Service Providers, Romonet optimises the use of capacity, maximises margins and reduces both operating and capital expenditure, thus increasing profitability.

Enterprise data centre owners can accurately analyse and predict the bottom-line impact of their data centre estate, report on Corporate Social Responsibility (CSR) metrics and reduce their exposure to financial and environmental risks.

For more information: www.romonet.com