

# Oceans ahead

Singapore's Ocean Building has grown with the city, and its fourth incarnation is setting new standards in sustainable building. **Caroline Moss** clocks in

**THE STRIKINGLY CONTEMPORARY**

building on Collyer Quay could be a metaphor for the city it towers above. The original two-storey Ocean Building, erected in 1864, curved along the seafront in a series of colonnades, verandahs and balustrades, its colonial tenants managing the Blue Funnel steamship line. Ocean 2 was designed by the company behind Raffles Hotel and acted as a military nerve centre during the Japanese occupation, and this was replaced in 1974 by a 28-storey tower, a taste of what was to come as the island state developed.

The new Ocean Financial Centre is a S\$500 million, 43-floor bastion of international finance, its maritime past hinted at by a vaguely ship-like outline facing the water. Built with a new level of sustainability in mind, this is the first office building in South East Asia to receive the Platinum Level LEED-CS pre-certification by the Leadership in Energy and Environmental Design (LEED) green building rating system, and the first office development in Singapore's central business district to achieve the Platinum Green Mark Award conferred by the Building and Construction Authority of Singapore.

From the ground up, the Ocean Financial Centre has been designed with innovative green and environmentally friendly features, and the paging system supplied by Media Technology Systems scored it points in the process. Working with local systems integrator Tec Revox,

MTS put two networked paging solutions forward to Hitachi, the ELV (extra low voltage) contractor. One was a conventional paging system, the other an innovative web browser-based solution.



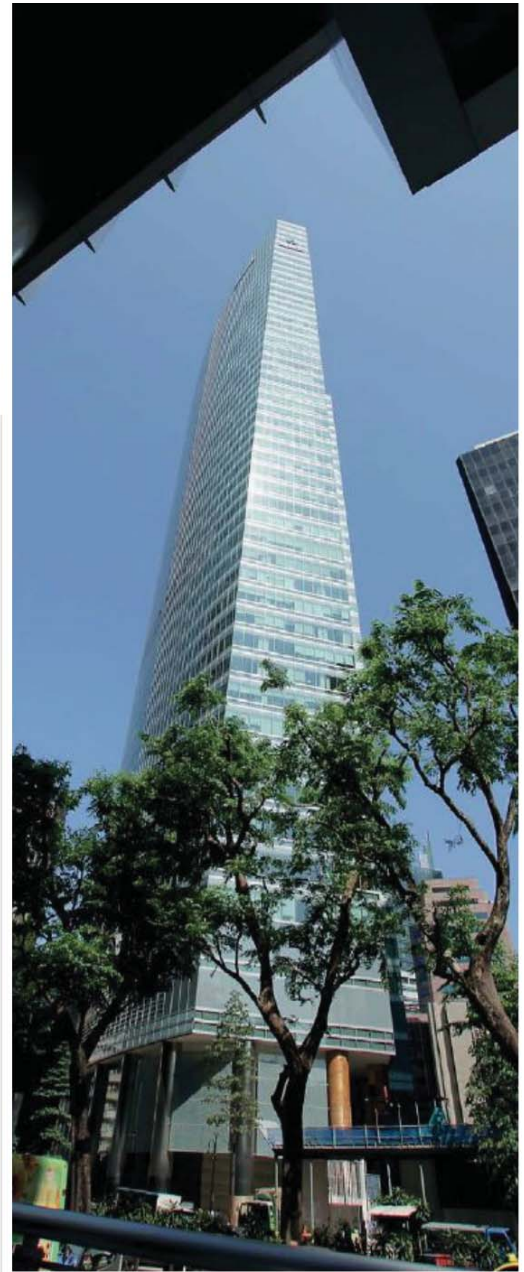
**Chito Apil of Tec Revox demonstrates remote paging with a tablet**

'The building owners chose the alternative web-based system so they could leverage as much value out of their IT infrastructure as possible,' explains MTS VP marketing, Ian Stott. 'They didn't have to revert to the usual proprietary paging stations with conventional analogue or digital cabling because computers, iPads or indeed anything with a web browser

can be used to make a page. A network approach allowed them to maximise value and minimise the environmental impact as they didn't have to have a costly routing matrix or cable infrastructure. We can coexist happily with the data network – in fact we use conventional network addressing to route the paging audio.'

The efficiency of MTS's power amps also helped with the green credentials. 'Not only are they Class-D amplifiers, they also use a switched mode power supply with power factor correction,' says Mr Stott. 'The amplifiers present a resistive load and avoid polluting the building power supply system with triplen harmonics. Life safety systems need a lead acid battery backup supply and our amplifiers offered a significant reduction in the battery capacity needed for the building. This added to the environmental reduction of plastics, copper and lead, and met the client's desire to analyse every part of the building management systems and look for greener ways to achieve a solution.'

Aside from the energy-efficient aspect, the system also provides benefits such as LDAP (lightweight directory access protocol) integration. 'We can register a password and user name and pass it back to the security computer,' says Mr Stott. 'This will then authenticate the user



**The striking new Ocean Financial Centre**

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## FEATURES: INSTALLATION

and their access level, and give them the appropriate access. All of these advantages kick in with an IT solution. Once the client realised that the web browser option provided lots of flexibility in tailoring the system to their needs, we got an avalanche of requests to change the user interface, add flashing colours, etc!

One request that proved challenging was to display all 200 zones as individual zone page buttons on one screen. Technically this was simple, but the buttons were very small and little information could be displayed for each zone. The solution was to add mouseover capability to the GUI, so that when the operator moves the mouse pointer over a button, a complete description of the zone pops up. 'Because the paging software is based on open source code such as Linux and MySQL, the mouseover concept was relatively simple to implement,' explains Mr Stott. 'I would not have attempted it with a conventional closed and proprietary GUI, where we would have to write all the code from scratch.'

The main equipment housed in the fire command centre on the ground floor comprises an MTS ZON-PCR main paging server, an MTS ION2.0 CobraNet pagestation interface, an MTS ION8.8/USB eight channel CobraNet message/chime interface and MTS ZON-APP256 zone paging

server software, allowing a maximum of 256 zones. A curious artefact also coexists in the rack alongside the state of the art technology: a cassette deck for recording messages and pages during an emergency, still a legal requirement in 'high-tech' Singapore.

'In terms of system control, a standard PC running software written by local company Immodicus acts as the paging station,' explains Mr Stott. 'The PC server hosts the web pages that are the paging system, there are no apps or dedicated solutions. A remote tablet connected by Wi-Fi can pull up exactly the same web page and trigger messages.'



Inside the control room

At the nearby reception desk is another MTS ION2.0 CobraNet pagestation, and one of two Apple iPads acting as remote paging stations is located here, the other being a walkabout system.

The electric room on the 17th floor houses the amplifiers driving the



Chito Apil of Tec Revox and Ian Stott of MTS

entire paging system, which connects over the network back to the fire command centre. This consists of six COM758 and eight COM3008 70/100v amplifiers, with one back up amp each. It also houses the UPSs (uninterruptible power supplies) that provide battery backup for the entire system. 'An advantage of our solution is we are 83 per cent efficient from the wall power to the loudspeakers,' says Mr Stott. 'A conventional amplifier is less than 50 per cent efficient and that is where we can offer a significant reduction in the amount of lead acid batteries used as backup.'

The system is currently divided into around 140 zones, which will increase to around 200 once a

second phase of construction is completed later this year. 'Another great thing about the IT solution is we don't have a practical limit on the amount of zones,' says Mr Stott. 'The primary limitation is how much bandwidth is allocated to the Paging VLAN. As a full bandwidth audio stream needs roughly 1Mbps of raw data, we usually ask for 50-100 Mbps. This allows for up to 32 simultaneous messages or live pages, which is way more than they would ever need.'

Tec Revox A/V engineer Chito Apil worked closely with MTS throughout the paging system's tender and integration, and is now based in the building to oversee the system. Also operating under his careful watch

are almost 4,000 ceiling speakers from local manufacturer Tkoko, plus 63 RCF PL6X ceiling speakers used in high-ceilinged locations such as the lobby, 17 RCF DM-41/5 surface mounted enclosures used in the roof garden, and further surface mounted speakers from Malaysia's Digivox.

Mr Stott is justifiably proud of his company's groundbreaking work at the Ocean Financial Centre. 'We're not seeing this type of solution being implemented very much yet,' he explains. 'It's starting to happen, but the adoption of the IT side of things is relatively slow in our industry, I think because the product cycle development is quite lengthy compared to the IT sector.'

Fortunately there has been no cause to deploy the system in anger since its installation, though tests are carried out monthly on a Sunday, when the building is empty. Since its opening in September 2011 there has also been one full fire drill, taking four hours to achieve. Day to day, the server is kept busy providing background music for the bustling lobbies, corridors and lifts, and distributing announcements throughout the building. And when the next phase of construction is complete, it will be an easy task to integrate into the existing system.

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