



Matrix Controls project references:



Singapore Management University



Matrix Controls was chosen once again for the new campus of Singapore Management University after their first Bukit Campus. With the ACMV and lighting controls integrated using our LonWorks® devices, the new City Campus started operations in the last quarter of 2005. Key to their selection of our brand again is the efficient controls of chiller operation that Matrix systems are able to provide. And with eight chillers in two chiller plants generating a total capacity 5550 tons, they made a carefully considered choice – Matrix Controls. After fine tuning, an energy savings of approximately 20% was achieved in first quarter of 2006 even with the increasing student population at the popular university.

- More than 1500 VAV & 110 AHU monitored and controlled by L-Series
- Chiller plants optimized by ASDDC
- Electronic Facility Management System (EFMS) interfaces with lighting and ACMV control by Matrix Lon DDCs



Police Headquarters Cantonment Complex Singapore Police

One of the first truly intelligent buildings in Singapore with 13 subsystems integrated into the IBMS. Integration of the various subsystems resulted in seamless automated ease for occupants. Users are able to book facilities such as sports facilities, discussion rooms, and conference rooms from their desktops. The system will then proceed to link occupancy status for HVAC and lights, access control, information display and even food and refreshments orders to the booking of that facility so that all arrangements are automatically fulfilled.

- 18,000 monitored and controlled hardware points
- Intelligent Facility Booking System
- Energy optimized chiller plant automation



Singapore Changi Airport - CAAS

Our LonWorks® devices are used for air conditioning controls in the airport's control tower as well as Terminal 1 & 2 to provide the soothing comfort that is expected of by all travelers arriving the world's best airport. The networked VAV controls ensure the right temperature and humidity levels and maintain this environment for 24 hours of every single day.

- More than 1500 VAV DDCs
 - LCD wall modules
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Ministry of Environment Building - Singapore

The Ministry of Environment Building was integrated using our programmable P-Series controllers which help to automate the air-conditioning and mechanical ventilation as well as pumps. Though this project may have been carried out some years ago, in recent additions to their system, our P-Series continues to be chosen for their expansion work.

- 8,500 monitored and controlled hardware points
- More points were added in 2004



Ministry of Home Affairs Towers - Singapore

The Ministry of Home Affairs Towers is an exceptional example of Matrix Controls' LonWorks® devices - a demonstration of true openness. The first project tender was awarded to a contractor who used Invensys to integrate the project, but the owners were unhappy and called for re-tender. A system integrator using our products won the second tender because they retained the installed Lon® devices and matched it with Matrix LonWorks® DDC reducing the overall cost. The twin towers are linked to a single iStation HMI server.

- 15,000 monitored and controlled hardware points
 - Centralized control of both towers
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99 Underpasses and Tunnels – Land Transport Authority

The integrated system provides the Land Transport Authority of Singapore with timely warnings and alarms, at one central location, in the event of flooding or fires at any of the underpasses installed with our system. All ventilation, lighting and electronic message displays are also provided through this system integrated with Matrix's P-Series.

- Centralized monitoring of multiple dispersed locations for fires and flooding
- Time schedule control for lighting



Harbourfront & Cable Car Towers - PSA

Matrix's LonWorks® L-Series controllers were used for networked centralized control of all three towers' air-conditioning and mechanical ventilation. Data flow is seamlessly integrated into the central servers for all towers with human machine interface software iStation. Server redundancy feature in iStation was enabled in this installation, with a second server coming online providing a backup should one of the servers fail.

- 14,000 monitored and controlled hardware points
- Centralized control of both towers
- Hot redundancy of servers



Home Team Academy -Singapore Police

The police training center of Singapore, Home Team Academy, was integrated in collaboration with Johnson Controls, this is another example of open systems where the VAV DDCs used were from Johnson Controls while other DDCs for monitoring and control of ventilation fans, AHU and chiller plant were from Matrix's L-Series.

- More than 250 L-Series DDC installed
- Uses and shares network cabling with Johnson brand VAV DDC



ITE College East - Ministry of Education

Open for operations in January 2005, ITE College East caters to a student population in excess of 10,000 whom attend a range of more than 20 courses run by four schools. The students and staff work and learn in an environment comfortably managed by our L-Series controllers VAV DDCs, with the cooling capacity handled by our chiller plant control system which optimizes the supplied BTU capacity to suit the ever changing requirements of a school with high population flows.

- More than 30,000 software points handled by iSView HMI software
 - Over 1,000 Matrix VAV DDCs installed
 - 90 AHUs controlled by L-Series
 - Chiller plant optimize with our ASDDCs
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One Raffles Quay - Cheung Kong, HK Land & Keppel Land



Centrally located in the heart of the city, One Raffles Quay was developed for the leading businesses of the world – currently housing leading financial institutions such as Barclay Bank, UBS, Deutsch Bank and ABN AMRO. Comprising of two towers, the plaza bridging these towers and a retail link to the MRT station, it took 4000 Matrix L-Series to complete the main part of the IBMS integration with work is still ongoing in 2007 for the installation of tenant units.

Over 3000 units of Matrix's UAV0560L VAV DDC were installed, many of which also intelligently pass network messages to activate the lighting of restrooms when occupants are detected. BTU counting is recorded for the chilled water supplied from its neighbour NTUC Centre as well as tenant AHU and is carried out using our UGP type controllers. ORQ is the latest prestige address in Singapore's business district.

- 4000 DDC used, including more than 3000 VAV DDC, for networked control of HVAC & lighting
- Contingency chillers cut-in only if district-cooling supply fails
- UGP type controllers collect BTU information of billing

Other projects:

Stamford House
Oriental Plaza
Institute of South East Asian Studies
Jurong Entertainment Centre
Police J Division
Gleneagles Hospital
ISTT
Ministry of Foreign Affairs
CPS
Harbour Front Towers (inc. Cable Car Towers)
Tycom
Sengkang
Tekka Mall
Alexandra Data Centre (Comtech Building)
DBS Tower (now Price Waterhouse Cooper)
Exxon Mobil
Keppel Marine Admin Building, Tuas
Alexandra Distripark
C2B (Water Treatment)
C4B (Water Treatment)
Mindef Science Park III
Police Coast Guard, P. Brani
Pok Oi Hospital, Hong Kong
Hansapoint Credit Suisse, Changi Business Park
DBS, Changi Business Park
UBS Bank, Singapore
UBS Bank, Hong Kong HQ
UBS Bank, Seoul
Intel Micron Flash Singapore (building will be renamed)

DBS Bank, Changi Business Park
Al Rammoush Villa, Jeddah, Saudi Arabia
Khalidia Palace, Jeddah, Saudi Arabia
ABM Development, Jeddah, Saudi Arabia
KBS Palace, Riyadh, Saudi Arabia
Wadi Laban Palace, Riyadh, Saudi Arabia
Maazar Palace, Riyadh, Saudi Arabia
Bukit Batok Fire Station (and 5 other stations)
Temasek Polytechnic
National Parks Board Cluny Road HQ
National Parks Board, Fort Canning Hill
Budget Terminal, Changi
Tampines Mall
Great World City
Wisma Atria
Plaza Singapura
Singapore Technologies Ang Mo Kio (HQ)
Singapore Technologies Jurong East Building
NTU One North
Raffles Junior College
Singapore General Hospital Ward 43 (Phases 1~3)
Changi General Hospital Ward 14 (Phase 1)
NUS Labs, Kent Ridge
Taiwan Ke Jiao Guan (Science Education Centre)
Taipei Bing Jiang Market
Chung De Serviced Apartments, TaiChung
Jieyun Neihu Ji Fang (subway repair/machinery depot)
HDB Hub Toa Payoh