Honeywell’s integrated technology solutions contribute to make Delhi Airport Metro Express into a world-class metro express link. As one of the busiest metro services in India, the Delhi Airport Metro Express Link required a solution that would ensure a reliable, secure and comfortable experience for all passengers. Honeywell’s Station Management and Access Control System not only enhanced passenger experience but also streamlined process and operations.
The Customer

Delhi Airport Metro Express Pvt. Limited (DAMEL) has installed and are operating the Delhi Airport Metro Express link which runs from New Delhi Railway Station to Dwarka Sector-21, through the IGI Airport. This metro line is one of the busiest in India with over 20,000 travelers daily. The 23 kilometers metro line consists of total 6 stations of which 5 stations are underground and 1 station is elevated.

With an innovative check-in system, Delhi Metro Airport Express is now capable of offering a full-fledged airport link metro service.

The Challenge

Honeywell was responsible for implementation of the Station Management System (SMS) and Access Control System (ACS).

The challenge in the project was to ensure successful integration of SMS at all stations including electrical systems, electronic and electro-mechanical systems, signaling, baggage handling and fire systems.

Further, the express link required a common platform in Operation Control Center (OCC), capable of controlling and monitoring the airport metro line station services. OCC acts as a Master Supervisory Monitoring System for all available station facilities and networked buildings. Integration of all these services, existing across six stations and one depot building over a central OCC, was an additional challenge.

The Solution

Honeywell secured the contract to implement SMS against tough competition due to a demonstrable track record in Automation & Control Solutions (ACS) combined with trusted integration technology. The extensive abilities of Honeywell’s Enterprise Building Integrator™ (EBI) in integrating almost every industry standard protocol—OPC-OLE Process Control, BACnet, Modbus—over a single SCADA-supervisory control and data acquisition system proved to be an added advantage.

Honeywell was successful in providing the right supervisory control through OCC—Operation Control Centre for Station Management and Access Control System. The OCC solution enabled a direct interface with the clients SAP system and provides energy consumption data for all 6 stations of Airport express line- New Delhi Station (NDRU), Shivaji Stadium Station (SJSU), Daula kuan Station (DKV), Delhi Aerocity Station (DACY), Airport Station (APOT)and Dwarka Sec-21 Station (DSTO).

Honeywell effectively interfaced SMS with client’s SAP through OCC providing data for reports on Reliance Infra Portal to view the overall Reliance establishments and maintenance using CMMS-Computerised Maintenance Management System. CMMS enabled the client to feed all equipment data in preventive maintenance or shutdown scheduling, based on run hours or time slot.

Station Management System and Operation Control Centre

The SMS and OCC systems are responsible for various operations at DAMEL including:

- Provision of data through the clients SAP and for maintenance purpose using Computerised Maintenance Management System (CMMS)
- Implementation of customised reports and ACS graphics required by client at site
- Development of extensive graphics to assist smooth operations
• Tunnel Ventilation System (TVS) supervisory control which controls all operation of tunnel supply fans, ventilation fans and other devices which is directly related to train smooth operation and tunnel ventilation
• SMS also interfaces with signaling, takes complete information of train and further provides to baggage handling system for operations
• Development of Enterprise Building Integrator™ (EBI) for centralised control through OCC
• Presentation of historical data in graphical and text formats for all Environment Control System and Auxiliary Sub-Station data
  - Trends for chiller various temperatures and flow meters
  - Trends for various AHU supply, return temperatures and space temperatures
  - Trends of ASS Breaker data-Power-KW and Energy-Kwh
• Calculation of total energy consumption for various stations and their trends
• Reduction of operational manpower deployed through monitoring of services from one location
• Provision of SMS on EBI & ACS with negligible data loss and maximum reliability and availability
• Integration of various third party systems using various protocols
  - TVS-Integration OPC protocol
  - Signaling Data Integration TCP-IP protocol
  - Baggage Handling Data Integration TCP-IP protocol
  - Platform Screen Door Integration Modbus RS485 protocol
  - Escalators Integration—Modbus RS485 protocol
  - Power Supply Traction—OPC protocol
  - Lift Integration—Hardwired
  - COM-Communication integration—Hardwired and OFC network

The Installation
Solution comprised of the following equipments/sub-systems:

<table>
<thead>
<tr>
<th>Installation</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>SCADA</td>
<td>Supervisory Control and Data Acquisition (SCADA) computer systems are used for:</td>
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<tr>
<td></td>
<td>• Gathering and analysing real time data.</td>
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<td>• Trends of energy consumption at stations, temperature trend analysis for effective HVAC system.</td>
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<td>• Ability to monitor and control both a plant or equipment in metro stations.</td>
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<td>Monitoring and controlling of various HVAC devices like Air handling units, fresh air fans, smoke extraction fans etc. in Metro Stations, Airports and Office buildings.</td>
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<tr>
<td>BS RIO and SiL-2 PLCs</td>
<td>• BS RIO and SiL-2 PLCs were installed for life safety and other field system integration and control.</td>
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<td></td>
<td>• SiL-2 PLC’s systems control and monitor the smoke extraction fans, fire alarm system, staircase pressurisation fans and emergency backup systems at various stations.</td>
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<td></td>
<td>• Building Services RIO control and monitor plumbing, sump, lifts, escalators, platform screen doors, fire fighting systems, ASS etc.</td>
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<tr>
<td>Access Control System</td>
<td>• All access control systems were installed by Honeywell through the Tema server for safety purpose and to ensure system security.</td>
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<tr>
<td>Servers</td>
<td>• Two servers were installed that acted as SMS for monitoring of services installed in the respective buildings and stations.</td>
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<tr>
<td>Distributed System</td>
<td>• DSA licenses were issued for effective communication between all SMS Servers.</td>
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<tr>
<td>Architecture (DSA) licenses</td>
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<tr>
<td>EBI machines</td>
<td>• EBI machines provided on Windows platform with Redundant Array of Independent Disk (RAID) with 5 configurations for maximum reliability and availability.</td>
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<tr>
<td>HVAC Controls</td>
<td>• HVAC controls were provided for field devices to control the energy consumption.</td>
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<tr>
<td>EBI Scripting</td>
<td>• EBI scripting and database were customised in a client-defined format.</td>
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<td>• Customised scripts provided enhanced animation features for various equipments in EBI to meet client’s requirements for operation.</td>
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</table>
Key Benefits

Honeywell team completed the Delhi Airport Metro Express Link project in record time through effective resource deployment and competent implementation. The key benefits delivered were:

- Smoother operation and enhancement of passenger safety, security and comfort by centralising the monitoring and control system deployed at the site.
- Reduction of operational costs by allowing monitoring of all services from a single location.
- Reporting and analysis achieved through interfacing the client’s SAP with OCC system, which also serves as an employee attendance tracking system. The recorded data is forwarded to Human Resources for salary and record management purposes.
- Improved workflow and resource scheduling enabled through the CMMS which produces a pre-maintenance and shutdown schedule.

Honeywell’s successful deployment of Station Management System and Access Control System at Delhi Airport Metro Express Link has set the benchmark for other metro jobs across India.

Honeywell Building Solutions
Honeywell Automation India Limited
56 & 57, Hadapsar Industrial Estate,
Pune 411013
Tel: +91 20 6603 9400
Fax: +91 20 6603 9800
HBS-India@honeywell.com
www.honeywell.com/buildingsolutions