case study

Indira Gandhi International Airport, New Delhi
Honeywell Building Solutions delivered one of the largest integrated BMS (Building Management System) and HVAC Central Management System for the new Terminal 3 building of Indira Gandhi International Airport in New Delhi. The integrated systems span the entire airport including the Airport Operation Control Centre (AOCC) at Airport Service Building (ASB) to control and monitor the critical facilities and services across airports that increase reliability and the local control center at Passenger Terminal Building (PTB) and productivity of the airport operations.
One of the largest integrated BMS and HVAC central management system platforms

THE CUSTOMER
The Indira Gandhi International Airport, New Delhi, is the primary international airport for the National Capital Region, India. Previously operated by the Indian Air Force, management was transferred to the Airport Authority of India and later to Delhi International Airport Limited (DIAL) in May 2006. DIAL is a joint venture led by the GMR Group, which also has the responsibility for the airport’s ongoing expansion and modernization.

In 2010-11, the airport handled almost 30 million passengers and the planned expansion will support a capacity to handle of around 100 million passengers by 2030. The development of Terminal 3 was the first phase of this expansion which, in itself, allows the airport to handle an additional 34 million passengers annually.

Terminal 3 was officially inaugurated on July 3, 2010 and occupies 502,000 m² (5.4 million sq ft). Currently ranked as the eighth largest passenger terminal in the world, the building is an extensive display of contemporary technology and an impressive showcase on the power of great planning.

THE CHALLENGE
DIAL needed a showcase landmark to befit the role of being the host of the 2010 Commonwealth Games in Delhi. The project had an extremely challenging deadline to complete within three years – a process that normally would take five years.

The development plans included the best combination of leading technologies in the market but, to ensure the interconnectedness and effectiveness of the systems, DIAL needed a BMS platform which would operate on Open Protocol and would accept the plethora of industry standards.

In the Terminal
The platform was required to act as a master management system for all major facilities across the airport, and to operate from central location (AOCC). In addition to above, DIAL also required a central management system for HVAC controls and monitoring from the Passenger Terminal Building. Data integrity was also an important criteria, in order to manage the disparate buildings and various facilities of the site. To address this, it was imperative that the central management system had sufficient power to collect precise and accurate data simultaneously on the preferred industry standard protocols, with maximum reliability and availability.

To monitor and control all systems and services more efficiently, integrating data captured through the BMS was critical with data captured from field devices transformed into usable information, both in graphical and text formats.

Productivity gains were a key motivator for this large project. To ensure maximum output for services rendered, automated accurate billing for aircraft and energy savings through the integrated BMS and HVAC central management systems were required.

Improved monitoring and deployment of resources were highlighted as a need to reduce operational manpower.

THE SOLUTION
Honeywell leveraged the power of Enterprise Buildings Integrator™ (EBI) – a worldwide-proven platform that integrates almost every industry standard protocol including OPC, BACnet®, Modbus, over a single SCADA.

The solution included:
- EBI that supported an integrated SCADA.
- Digital direct controllers for precise recording of the flight docking-undocking times for billing purpose.
- Digital direct controllers provided for HVAC CMS for control and monitoring.
- Multiple servers acting as BMS for monitoring of services installed in the respective buildings.
- Distributed Systems Architecture licences for effective communication between all BMS servers.
Multiple workstations for monitoring and operations.

Several equipment like 750 Air Handling Units, 800 Variable Frequency Drives, chillers, valves, actuators, pumps and multifunction energy meters etc. are being controlled and monitored with the help of 1,200 direct digital controllers and 14,000 different sensors.

Printers installed with all servers and workstations for report generation, archiving and future analysis.

Utilizing EBI installation on a standalone server as Network Area Controller to meet customer expectation.

Integration of BACnet® devices provided by various third party vendors using complex BACnet® Broadcast Message Device concepts. This was achieved by joint collaboration and efforts between Project Team, Technical Support Group and Technical Assistance Centre.

Integration of many services with EBI using OPC protocol.

Customized solution for the terminal building included:

- In-house development of an Ext-IP3 adaptor which made EBI compatible with VDGS Gate Operating System server.
- EBI scripting and database customization in client-defined formats for accurate Ground Power Unit, Pre-Conditioned Air billing
- Development of extensive and exhaustive Graphical User Interfaces at site.
- Development of necessary scripts to give enhanced features to EBI to meet the customer's requirements.
- Generation of printed receipts for Ground Power Unit and Pre-Conditioned Air by Aircraft for respective ground handling staff for records and references.

KEY BENEFITS

Customized Solution to address customer's needs

To ensure the solution maximised benefit, the Honeywell project team integrated the Ground Power Unit and Pre Conditioned Air systems with the BMS. This streamlined administration, with automated billing functionality. Integration of flight parking information and stand availability enabled this information to be monitored and managed through the EBI.

The implementation of this system led to marked improvements in speedy issue identification, maintenance of non-IT services and reductions in manpower cost. The customized solution provided a rich portfolio of technical and managerial documentation for the customer.

Reliable Delivery

Playing an active role right from the design stage, Honeywell’s discipline and processes provided a robust project execution strategy that ensured successful project completion meeting stringent time lines.

More Green

Honeywell’s centralized monitoring and control system helped the customer achieve the Green Building Certification. Energy usage is an indicator of effective planning and resource usage - for example the precise docking and undocking times of an aircraft provides managers with more transparent data enabling more accurate calculation of energy usage. DIAL has been able to save energy for its buildings and facilities using multifunction energy meters.

The One-stop Solution

Honeywell's EBI effectively integrates different technologies and protocols. The delivery team also provided technical assistance to other third party vendors in the process.

Reduced Costs

The centralized system allowed for better allocation of resources thereby reducing the overall wastage of unused labour.

More Productive

The integrated system allowed for data from various touch points to be collated through the automated processes and backed with historical data. Issues could then be easier and quicker to address.

Honeywell's discipline and processes provided a unique project execution strategy that ensured successful project completion meeting stringent time lines.

Coupled with technology, Honeywell's strong technical delivery capabilities and domain expertise made the perfect combination to offer a competitive financial and technical solution to the customer.