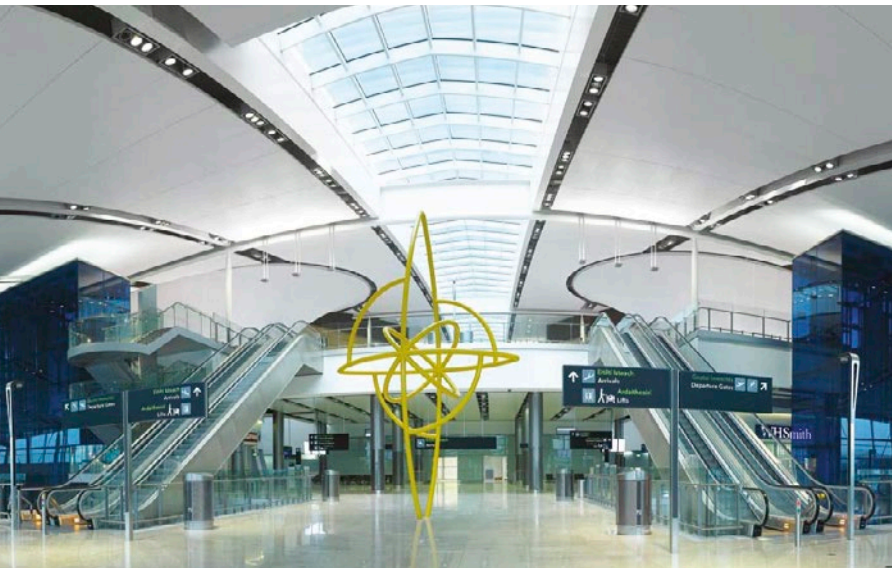


CASESTUDY

# T2 @ Dublin Airport Authority

## Driving Energy Efficiency & Improving Energy Awareness



Headquartered at Dublin Airport, Dublin Airport Authority's (DAA) principal activities include airport management and development, domestic and international airport retail management, and airport investment.

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01 Dublin Airport

Terminal 2, opened in November 2010, is a 100,000 m<sup>2</sup> (1,077,000 sq. ft.) terminal and pier (pier E) which provides 19 air bridges for aircraft and is capable of handling 15 million passengers annually and is now home to airlines such as Aer Lingus, Etihad Airways, Emirates Airlines and all of the transatlantic carriers operating from the airport.

### ABB Cylon® Active Energy Solution

A total of 420 utility meters in T2 are currently connected to the ABB Cylon® Active Energy Manager and monitor areas such as:

- Heating, Ventilation and Air Conditioning
- Lighting
- Aircraft Ground Power Units
- Airline Lounges
- Retail Units
- IT Rooms
- Lifts & Escalators
- Water Consumption
- Gas Consumption
- Combined Heat & Power Plant reduction of 38% was achieved by end of 2014/15.

Green Screens, customised via an Application Program Interface (API) were installed in the departure lounge areas of T2 providing information on what measures the DAA is taking to reduce energy consumption, details on the energy saving achieved at T2, and offering tips to passengers on what steps they can take to save energy.

### Project Summary

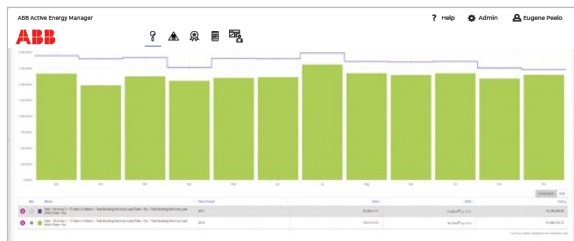
The Asset Care Team at Dublin Airport Authority experienced significant reduction in energy usage since the base year 2011:

- Electrical Savings: 13%
- Meters: 420 Meters Connected
- Applications: Active Energy Manager & Green Screen
- Type of Building: Terminal 2 Building at Dublin Airport
- Size of Building: 100,000 m<sup>2</sup>
- Use: Energy Management and Public Awareness

Among the energy saving measures implemented by the Asset Care Team on site and validated by them using the Active Energy Manager were:

- Operating Escalators and Travelators in energy saving mode
- Free Cooling – Maximising use of fresh air by enthalpy control
- Demand Ventilation Control for areas with extreme occupancy variations
- Utilising passive and smoke vents for night cooling
- Implementing demand led control on fan coil units
- Reviewing and optimising building temperature setpoints
- Maximising natural light harvesting through lux level control
- Upgrading of high energy lamps to energy efficient alternatives such as LED & Induction type
- Maximising the use of occupancy controlled lighting sensors
- Optimising the run on time of baggage conveyor systems
- Integrating lighting control with baggage carousel runtimes

**Time Period Comparison | Bar versus Line Graph 2014 v 2011 | Virtual Meter of main Electricity Meters**



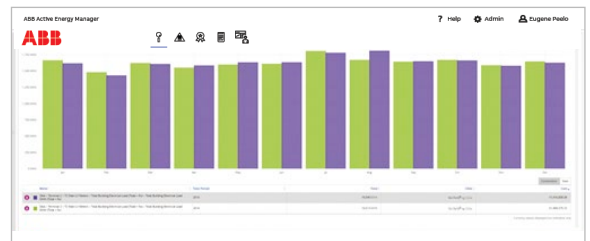
Energy consumption in 2014 (bar) versus 2011 base year (line) shows a fall in energy consumption of 13%.

Using the spectral analysis tool, the energy engineers are able to investigate patterns in energy consumption for each individual meter. When an area is occupied/in operation the profile should be significantly higher than when it is not.

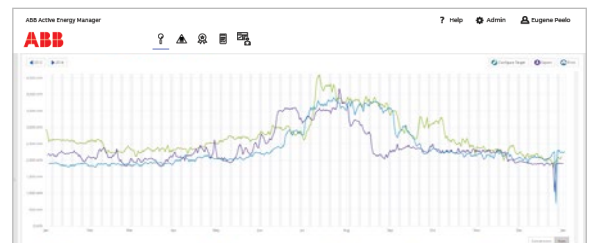
The objective is to reduce the base line energy consumption as low as possible. When investigating the energy profile of the retail units airside, the team discovered that the base line remained quite high. On investigation it transpired it was due to the lights being left on at night. The team implemented an energy saving measure to automatically turn off the lights at night via the BEMS.

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“ABB Cylon® Active Energy Manager assisted the Asset Care Team in T2 target and validate energy saving initiatives resulting in 11% reduction in electricity consumption in 2012.”  
Neil Moran | Dublin Airport Authority

**Time Period Comparison | Bar Graph 2014 v 2015 | Virtual Meter of Main Electrical Meters**

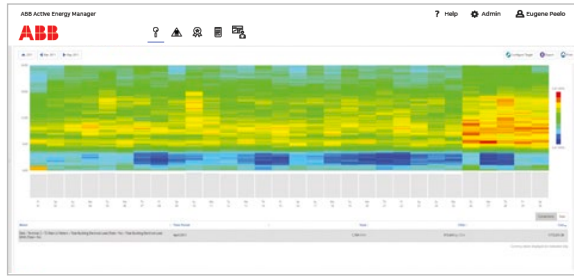


Terminal 2 continued to maintain the same energy profile in 2015 (represented by purple bars) compared to 2014 (represented by green bars) despite the increase in passenger numbers across Dublin Airport.



Using the time period comparison tool, the team were able to compare the before and after, and calculate the actual savings. This provided the ROI calculation to bring to the finance team to roll out the project. Using the reports tool, the team were able to automatically monitor the performance of this and many other projects.

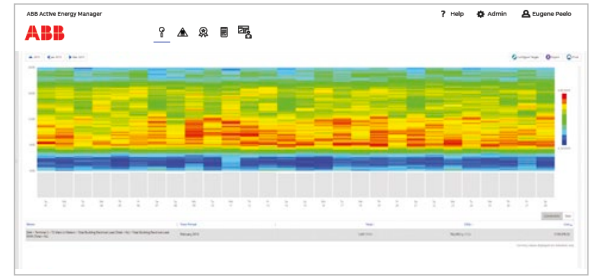
## Spectral Analysis | April 2011 Virtual Meter of Main Electrical Meter



Definition: Spectral Analysis feature automatically applies colour for every 15/30 minute interval over the period shown in the graph.

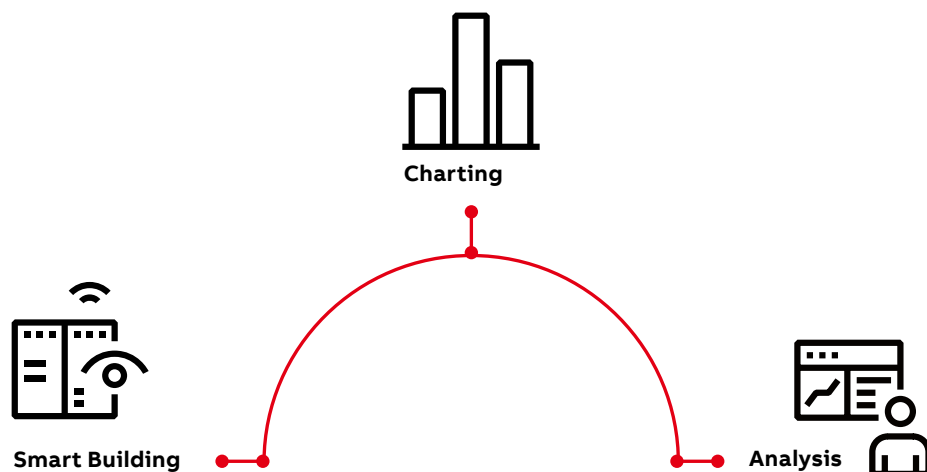
Red is the highest and dark blue is the lowest. Each bar is a day ranging from 00:00 to 24:00. An office block should show a pattern of colour during the day with dark blue outside of core operating hours.

## Spectral Analysis | April 2015 Virtual Meter of Main Electrical Meters



Definition: A Virtual Meter is a calculated meter in Active Energy and is used to provide more meaningful information to the user e.g. total electricity consumption; total gas consumption; total lighting consumption; residual electricity consumption.

A Virtual meter can be calculated by addition, subtraction, multiplication, division or a combination of the above. A virtual meter is prepared by the bureau.



## Solution Benefits

**Energy Awareness:** The ABB Cylon® Active Energy Green Screen displayed within the terminal building to encourage positive behavioural change to energy management amongst occupants and travellers through the building that can produce additional savings in energy consumption of up to 10%.

**Project Tracking:** The ABB Cylon® Active Energy Manager can also be used to track the performance of energy saving measures across the terminal building, ensuring the return on investment can be accurately determined for the various energy reduction technologies deployed.

**Tenant Cost Validation:** The ABB Cylon® Active Energy Manager allows the onsite Asset Care Team to centrally monitor the energy consumed throughout the building via the user friendly and intuitive interface, and validate and substantiate energy costs for each tenant.

