



CASE STUDY

How CoolPlanet reduced energy consumption at Dubai Festival City Mall by 26%

THE NUMBERS

CLIENT

Al Futtaim Engineering

TOTAL ENERGY SAVINGS

US\$2.7 Million

COOLING REDUCTION

30%

ELECTRICAL SAVINGS

35%

Savings of almost 10 million AED (\$2.7 million) were achieved at Festival City Mall as a result of the optimisation measures.

CHALLENGE

Dubai Festival City is 5.2 million sq. ft residential, business and entertainment development in the city of Dubai, United Arab Emirates. It is home to the Dubai Festival City Mall which consists of over 400 retailers, 75 restaurants, cafés, and bistros, and parking for 6,500 cars. On average the mall is open for 16 hours a day year-round. Dubai Festival City also hosts one of Dubai's largest District Cooling Plants, that produces and circulates chilled water to the city's energy transfer stations, located at a number of retail outlets, a large shopping mall, a school, apartment blocks and a number of hotels.

As part of a cluster of project works at Dubai Festival City, CoolPlanet was approached to identify opportunities to improve the Mall, significantly reducing the energy consumption of the site.

This included taking into consideration tenant occupancy of outlets, footfall, and seasonal variations. There were a lot of issues with airflow and balancing as well as old and uncalibrated sensors, all of which need to be replaced in order to achieve the project outcomes. Al-Futtaim Engineering entered an agreement with CoolPlanet to reduce the energy consumption of the Festival City Mall by 26%.

CoolPlanet was also tasked with reducing the energy consumption of the Festival City Tower and District Cooling Plant.

Savings of 980,945 AED were achieved following AHU and FCU operational optimisation, while optimisation of the secondary CHW pumps led to savings of 985,230 AED.

THE SOLUTION

Despite being a modern facility, the centre was not operating at peak efficiency year-round. At the Festival City Mall, the existing secondary pumps were running in manual at a constant speed. Lighting included fluorescent lights and metal halide luminaires, both of which are less efficient than LEDs.

The project was commenced with CoolPlanet installing its energy management platform – Clarity. This helped to optimise the HVAC plant based on dynamic variables rather than static set points. The centre's Air Handling Units, Fan Coil Units, and secondary chilled water pumps were all optimised and are now being dynamically controlled and continually optimised using Clarity feedback.

CoolPlanet also executed a lighting retrofit programme, replacing all remaining fluorescent and metal halide luminaires with energy-efficient LED lighting. Combined, these improvements reduced the energy consumption of the mall by more than 25%.

As a secondary project, CoolPlanet optimised the Festival City district cooling plant, which provided cooling to the mall as well as surrounding developments. The plant services over 22 buildings and has a 15km chilled water network. The system is operational 24/7.

As with the mall HVAC systems, CoolPlanet installed Clarity, dynamically optimising the district cooling plant based on external influencers such as load and ambient temperature.

Works included operational control modifications, VSD controls works, field device data management and replacement works. The operation of the plant was optimised to match demand and ambient conditions with full automation.

CONCLUSION

Savings of almost 10 million AED (\$2.7 million) were achieved at Festival City Mall as a result of the optimisation measures. Savings of 980,945 AED were achieved following AHU and FCU operational optimisation, while optimisation of the secondary CHW pumps led to savings of 985,230 AED. The LED lighting retrofit saved 2,055,481 AED and a reduction in district cooling consumption saved 5,238,303 AED.

Next Steps

If you think your plants are candidates for this approach, we are in a position to deliver those savings via our Clarity software product.

We have deployed the model many times and is obviously very topical and appropriate under the current circumstances i.e. we can likely deliver this solution remotely and provide finance for upgrades identified as part of the analysis.

In order to deliver these savings and get started in general, we need to connect to your plant SCADA systems in addition to install some metering and sensors (unless already existing).

We give you

24/7 coverage from Digital and Human experts (we have the full suite – refrigeration, boilers, compressed air etc.) who will look at every part of the site all the time to identify waste and optimisation opportunities.

Digital twins built and running in Clarity so we can constantly compare equipment performance with the ideal – and alert on deviations.

Input via regular calls (and site visits when Covid lifts) from our experts working with your site teams to optimise further Demand Side management services which we may be able to extract value from the local power market.

Detailed report and dashboard building that will deliver energy, maintenance and production benefits.

Let's talk

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