CASE STUDY

EndoCool®

54 Storey Tower Building, Comfort Cooling

Dubai, United Arab Emirates

13.76 %

ENERGY SAVING

FINANCIAL SAVING

$98,293 USD

CARBON SAVING

1,366,479Kg CO_2e

INSTALLED SEP 2018 - 10 MONTH PILOT

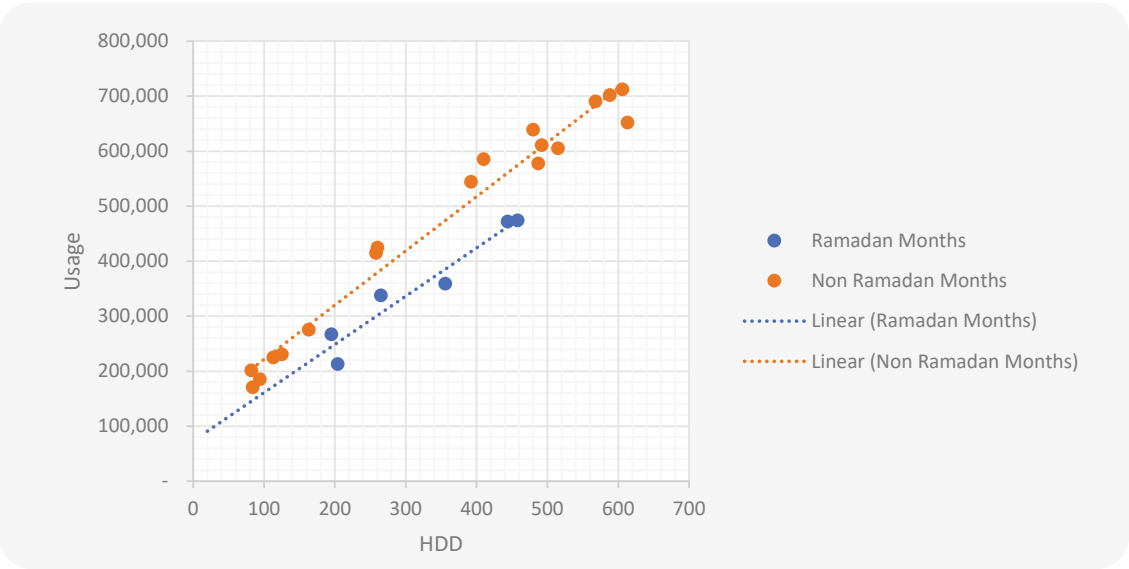
The performance of EndoCool was piloted by Blue/Integrated in a 54-storey mixed-use tower on Sheikh Zayed Road in Dubai's Central Business District. The building comprises of offices, hotel apartments and residential units.

The project is connected to Tabreed District Energy. The primary load of the building is comfort cooling which requires constant air conditioning is cooled by three chilled loops totalling 55,000 litres.

The system was treated with EndoCool in September 2018.

ESTABLISHING A BASELINE

A regression analysis was conducted on historical data normalized with cooling degree days (CDD) to confirm suitability of the site for a pilot. The regression showed a reduction in consumption during the months of March – May which falls in line with Ramadan. These three months will be considered separately once EndoCool is installed.

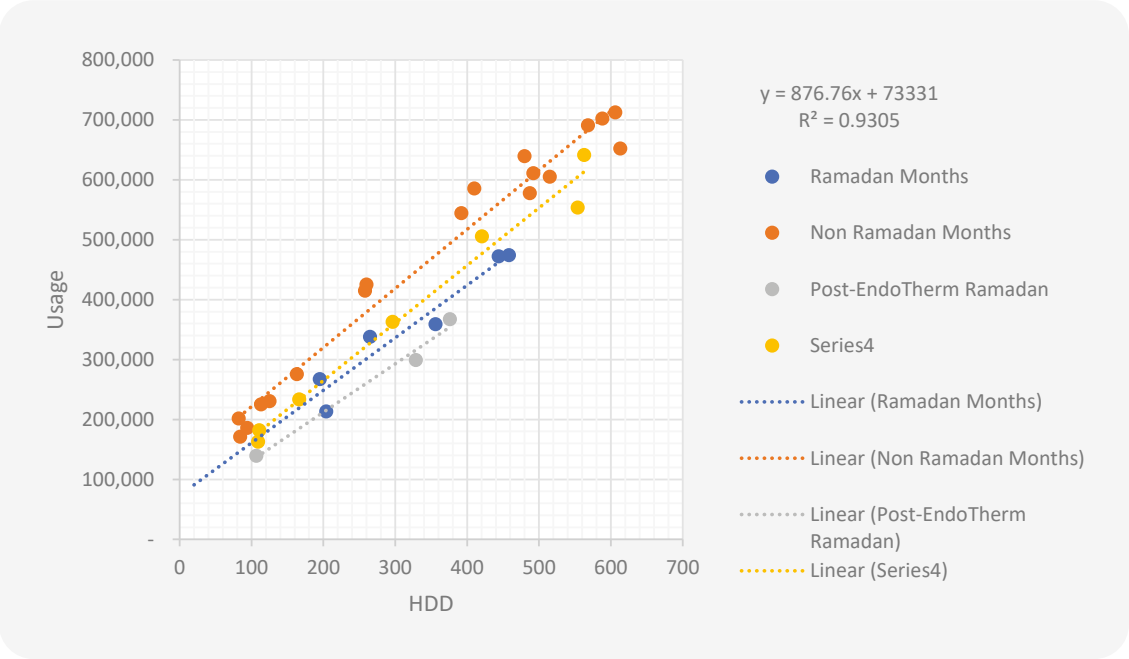


METHODOLOGY - Regression Analysis Normalised using Cooling Degree Day Data

The methodology takes guidance from the International Performance Measurement and Verification Protocol (IPMVP) using the historical baseline to predict consumption based on existing usage patterns. The difference between this predicted consumption and that recorded can be seen to be the change in efficiency of the system.

The EndoCool pilot was run between the 25th August 2018 and 25th May 2019.

RESULTS



Data excluding March – May is compared against the non-Ramadan trend-line (y=986.23x+122,839) whilst data for March – May was compared against the Ramadan trend-line (y=876.76+73,331)

MONTH	PREDICTED USAGE (RTH)	ACTUAL USAGE (RTH)	DIFFERENCE (RTH)
AUG/SEP	677,507.23	641,692.00	35,815.23
SEP/OCT	538,870.08	505,695.00	33,175.08
OCT/NOV	418,121.60	362,993.00	55,128.60
NOV/DEC	291,831.52	233,647.00	58,184.52
DEC/JAN	237,679.43	181,987.00	55,692.43
JAN/FEB	236,123.89	162,883.00	73,240.89
FEB/MAR	166,793.62	139,684.00	27,109.62
MAR/APR	361,258.98	299,333.00	61,925.98
APR/MAY	402,992.76	367,756.00	35,236.76
MAY/JUNE	668,757.34	553,748.00	115,009.34
TOTAL	3,999,936.46	3,449,418.00	550,518.56

CONCLUSION

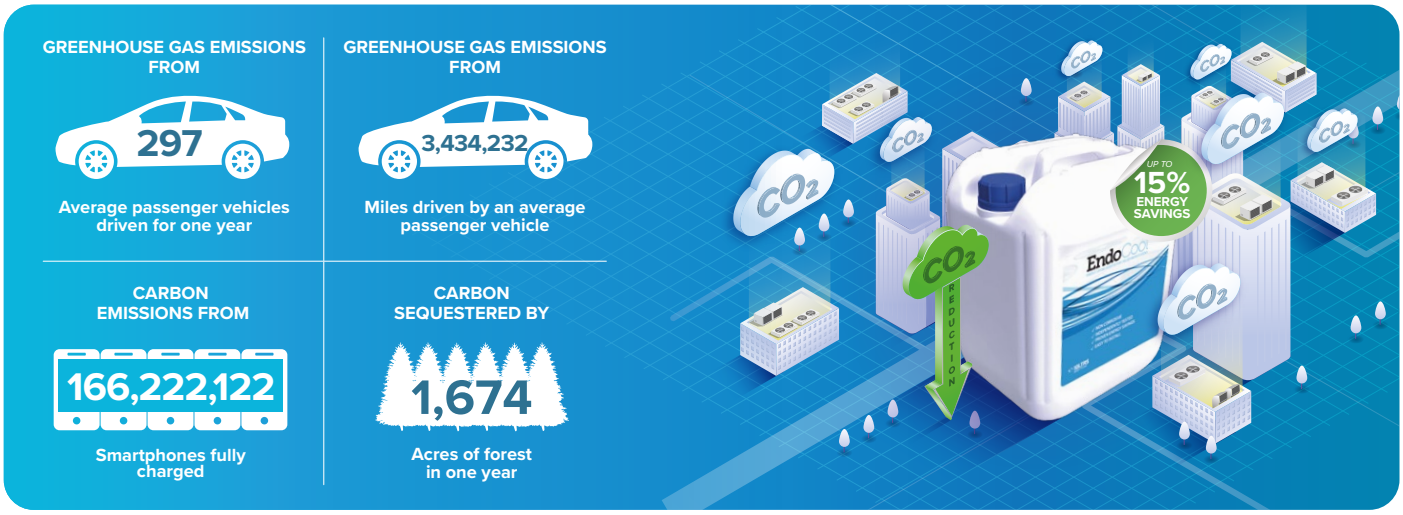
There is a clear change in performance since EndoCool was installed. This change can be identified using regression analysis and comparing the historical data with data points collected after the installation.
The cumulative saving after ten months is 13.76%.

After six months the pilot has saved 360,974 AED or $98,293 USD.

The pilot is therefore expected to pay back its original investment within the first 12 months.

A direct reduction in electrical consumption can also be seen to reduce CO2e emissions.
A saving of 550,518 RTH is equivalent to 1,366,479kg (1,366 metric tonnes) of CO2e.

ILLUSTRATIVE 10-MONTH PILOT CARBON SAVINGS



(https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator).