

EndoTherm™

CASE STUDY: Prestwick Centre, Ayrshire
NATS



KEY INFORMATION

Installed: APRIL 2015
Trial period: 10 Months

Boiler spec
5 x Ferroli 247.5kW

Volume EndoTherm installed
140 Litres

EndoTherm was installed into a NATS air traffic control centre in Ayrshire, Scotland.

The Prestwick Centre in Ayrshire is NATS northern office. It is a 14,000 square meter mixed use commercial building. The site is heated by air conditioned systems and fan coils that are powered by five Ferroli 247.5kW boilers (combined rating of 1,237.5kW). The system was dosed with the closed system inhibitor (Chem Aqua 999).

Existing records of the system noted the combined system volume as being 14,000L requiring 140L of EndoTherm (EndoTherm is dosed at 1% of system volume). The system was also dosed with 30% Glycol which is commonly used as an anti-freeze.

RESULTS

A methodology adopting CUSUM and regression analysis was agreed by Endo Enterprises (UK) Ltd and NATS for determining the success of the trial.

The monthly values of usage (kWh) divided by heating degree days (HDD) for the previous 15 months was plotted to establish a relationship between the building and external temperature before any change occurred. The on-site kitchen usage is sub-metered and was removed from the gas usage values for accuracy.

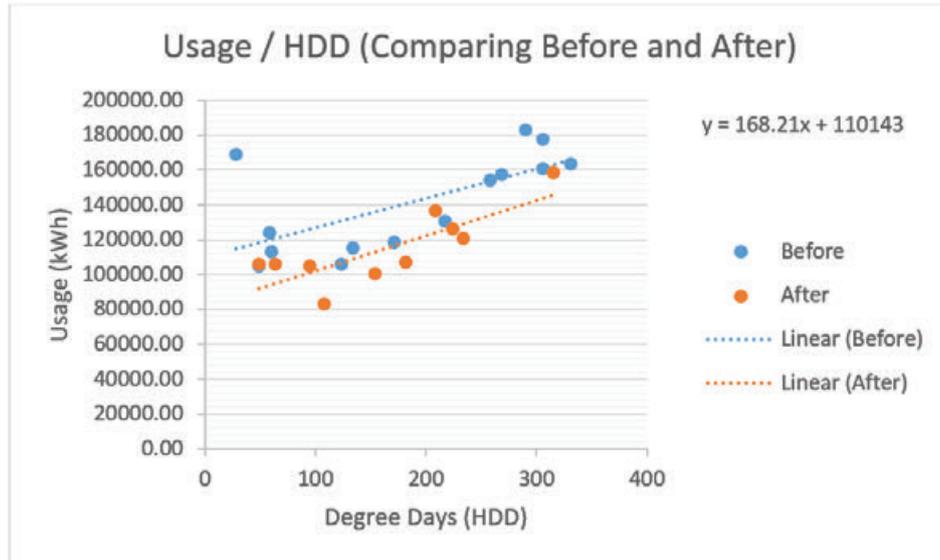
The trend-line equation was confirmed as: $y = 168.31x + 110143$. See graph on next page.
Note: Degree Days were taken from the on-site EGPK: Prestwick Airport

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RESULTS continued



Using the trend-line equation the predicted usage was taken for each month and compared with the actual usage on site.

Month	HDD	Predicted Usage	Actual Usage	Difference	CUSUM
APRIL 2015	234	149,504	121,137	-28,366	-28,366
MAY 2015	182	140,757	107,933	-32,823	-61,189
JUNE 2015	95	126,122	105,456	-20,666	-81,855
JULY 2015	64	120,908	105,945	-14,962	-96,817
AUG 2015	49	118,385	105,809	-12,576	-109,393
SEP 2015	108	128,309	82,663	-45,646	-155,039
OCT 2015	154	136,047	100,139	-35,908	-190,947
NOV 2015	208	145,130	136,920	-8,210	-199,157
DEC 2015	224	147,822	126,511	-21,310	-220,467
JAN 2016	314	162,960	158,316	-4,644	-225,111

Over the 10 months, the cumulative saving was 225,111kWh. At 3p/kWh this is a total of £6,753 and a total carbon saving of 46,370KG of CO₂.

Consideration is now being given to the other NATS sites around the UK.

// In April 2015 NATS Facility Management introduced EndoTherm and Glycol into its Prestwick Centre heating system. The results have been impressive, 16% reduction in energy and a CO₂ reduction of 46 Tonnes.
Facilities Team - NATS

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