

BetterEnergy

Energion™

Magnetic Fuel Treatment Systems

Technical Publication BEL 0011

Case Study Objective.

To demonstrate the savings achievable by installing *ENERGION*™ magnetic fuel conditioning units to promote energy efficiency and reduce emissions.

Potential Users.

All sites that use Gas and / or Oil for heating and processing.

Host.

Ministry of Defence, HMS Excellent Portsmouth. Pheonix NBDC.

Savings Achieved.

11.3% in gas consumption over the year.

Payback Period.

Less than 12 months.

Case Summary.

Gas readings were provided by Mr Derek Candy, Energy Manager. Establishment Works Office, HMS Excellent Portsmouth.

Degree day information was provided by the Dept. of Environment.

CASE STUDY : GAS FIRED BOILER MOD HMS EXCELLENT (Portsmouth)

Monitoring.

The monitoring was carried out by the client and was taken on a monthly basis during the installation of the units, this was carried out over a 12 month period.

The historical data was provided for the 12 months immediately prior to the unit being fitted.

Projected Usage.

From the figures for consumption against Degree days for the year before the unit was fitted a scatter graph was constructed to formulate a straight line graph. (Fig 1)

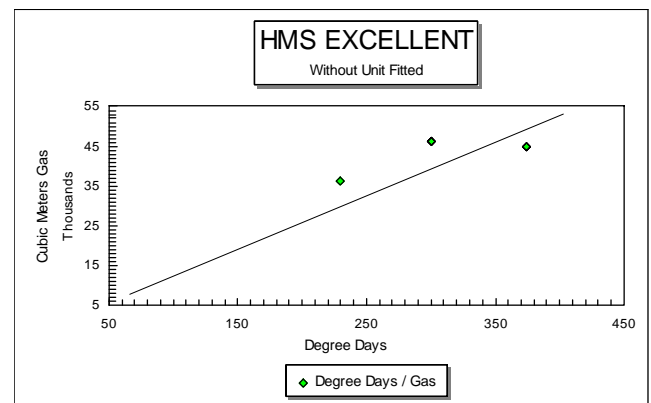
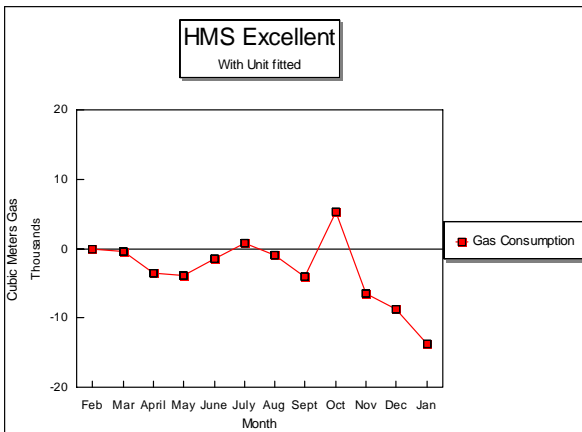


Fig 1.

From this graph the formula for the straight line has been calculated at $x = 50$, $y = + 6,000$ where x = degree days and y = cubic meters of gas. From this formula and using the degree days for the period of the test, the expected Gas consumption has been calculated and compared with the actual, from this the **FIG 2** figures have been plotted against time on Figure 2.

P.T.O



It would be expected that the CUSUM line would hover around the zero mark, making consumption similar for the 12 month period of the test and the previous 12 months. In the case of the graph, we can see the CUSUM line drops into negative, indicating some action has been taken which has shown an increase in efficiency.

Although a increase is shown in July and October an overall increase in efficiency of 11.3% has been shown.

Savings in Energy.

The savings can be calculated by comparing the expected fuel consumption from the CUSUM against the actual consumption for the period with the units fitted.

Expected consumption was calculated from the Formula as 332250 Cubic Meters, against actual consumption of 294694 Cubic Meters.

Percentage savings.

$$\frac{332250 \text{ Cm} - 294694 \text{ Cm}}{332250 \text{ Cm}} = 11.3\%$$

This equates to a total saving of 37556 Cubic Meters of gas over the twelve month period.

Reduction in Emissions.

With the increase in efficiency which in turn reduces the consumption, we can calculate a reduction in CO² produced through burning fossil fuel.

From the Energy Efficiency Office Bristol:-