

Day+1 degree day data – free service

The use of degree day data in analysing weather-related energy consumption is an essential part of any energy management programme. However, there are a number of problems with much of the degree day data currently available writes Howard Stark, managing director of Stark Software International

The main issue is that the data is based on only one base temperature: 15.5°C. The base temperature is defined as the outside air temperature at which an individual building starts to need heating in the winter or cooling in the summer. The problem with this is that different buildings are heated to different temperatures. Heat gain also varies greatly from building to building. So a one-temperature-fits-all approach won't work if you want to be accurate in your degree day data calculations.

The whole of the UK is divided

into just 18 degree day areas. Since these regions are large, there is significant temperature variation within each area. Secondly many of the sensors used to calculate the published monthly degree day data are situated in rural locations, so they don't reflect the temperatures in urban and suburban areas. And lastly Monthly degree day data is published far too late after the event

In his seminal paper 'Degree-days: theory and application', (available from CIBSE Publications Ref: TM41) Professor Tony Day says: "The most rigorous (and most mathematically precise) method of calculating degree days is to sum hourly temperature differences and divide by 24."

Through its new website, www.degree-days-for-free.co.uk, Stark gives free access to this new generation of accurate degree day temperature data, as described by Professor Day. Based on half hourly temperature readings, the daily degree day information is calculated from yesterday's data.

Stark has divided the UK into 90 localised zones, instead of the current 18 regional areas and collects data from 300 temperature sensors spread throughout the UK. The majority of the sensors are located in urban and suburban areas. And, rather than one base temperature of 15.5°C, Stark makes available three sets of base temperatures for cooling degree days and three sets for heating degree days. All this data is available free online.

Managing director, Howard Stark, says: "With the pressing need for

energy efficiency improvements, every building manager needs to get a much better handle on day-to-day building energy performance and to be able to forecast energy usage with confidence. The degree day data that's now available from us is far more timely and accurate than anything that's been available previously. And it's free. Once you've downloaded our daily degree day information, based on the previous day's temperature in your town or city, you can use it with your own M&T software."

To access Stark's degree day information, simply log onto www.degree-days-for-free.co.uk and choose your location.

Howard Stark adds: "Customers of our web-based energy reporting service, SavenergyOnline, already have daily access to our half hourly degree day data which they can integrate with the half hourly data available from their gas and electricity smart meters. SavenergyOnline also enables them to enter and store building specific base temperatures for both heating and cooling. This feature delivers custom degree day data, together with advanced analytical capabilities, especially when it comes to energy forecasting.

With the recent introduction of the CRC Energy Efficiency Scheme there is a greater need for better forecasting models for energy consumption. Such daily degree day data based on local and timely half hourly temperature readings will be an essential component in any building manager or energy manager's analytical toolkit. www.degree-days-for-free.co.uk

DEGREE DAYS FOR FREE Profile - Day by Interval - External Temperature

Site: Midlands - Birmingham Area Report For: Sat 31/07/10 Report From Date: 06:00:00 @ 15:00:00

Temperature: Minimum 14.8, Maximum 19.9, Average 17.4

Degree Days: Heating Base Temperature 15.5°C, Cooling Base Temperature 18.5°C, Heating Degree Days 0.0, Cooling Degree Days 0.2

Legend: Above cooling base temperature (red), Neutral zone (blue), Below heating base temperature (green)

DEGREE DAYS FOR FREE Profile - Year by Month - Degree Days

Site: Midlands - Birmingham Area Report For: Jul 2010 Report From Date: 06:00:00 @ 14:00:00

Annual Summary: Maximum Yearly Temperature (0600/010 @ 17:00) 28.9°C, Minimum Yearly Temperature (0700/10 @ 05:30) -7.1°C, Average Yearly Temperature 9.9°C

Month	HDD @ 15.5°C	HDD @ 15.0°C	HDD @ 14.5°C	CDD @ 18.5°C	CDD @ 18.0°C	CDD @ 17.5°C
Aug	5.0	25.9	75.3	189.2	57.2	1.5
Sep	4.8	25.7	75.0	187.0	29.9	3.1
Oct	22.5	120.8	211.0	99.9	3.1	0.2
Nov	73.6	229.7	319.7	9.9	0.0	0.0
Dec	230.0	384.5	477.4	0.4	0.0	0.0
Jan	389.0	434.9	537.3	0.0	0.0	0.0
Feb	214.1	352.8	437.6	0.0	0.0	0.0
Mar	142.5	281.9	384.7	6.3	0.0	0.0
Apr	74.8	196.2	276.5	39.5	4.9	0.1
May	44.9	145.2	225.6	78.4	23.9	11.3
Jun	4.0	47.5	103.2	170.7	64.1	29.8
Jul	0.1	18.7	61.7	212.0	73.0	25.8
Year	1,095.3	3,295.0	5,213.6	893.2	248.0	64.8