

INFORMATION BULLETIN

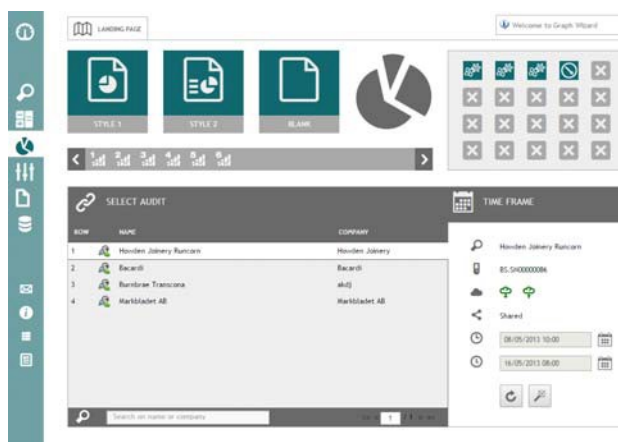
AIRINSITE – GRAPHWIZARD

This information bulletin explains the features of Graph Wizard, recently updated on WWW.AIR-INSITE.COM V12 (13th July 2015), Graph Wizard is one of a collection of ‘feature’ Wizards within the WWW.AIR-INSITE.COM cloud computing platform.

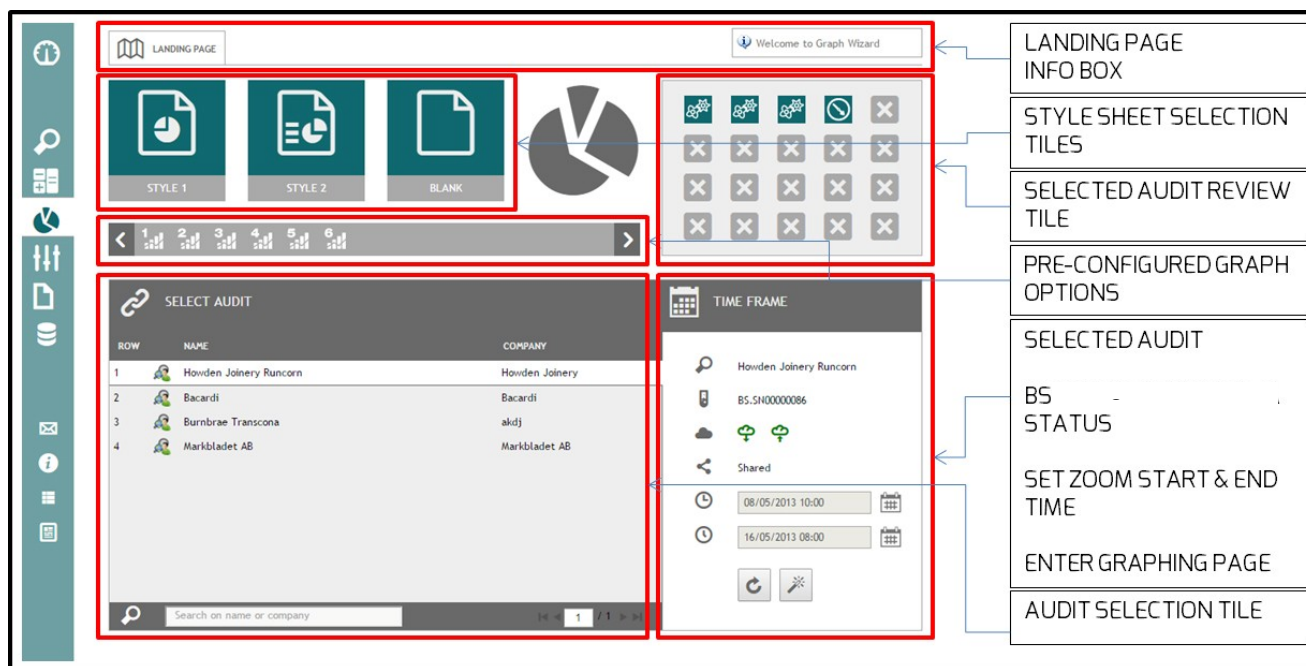
Before proceeding, USER’s are advised to:

- Understand that WWW.AIR-INSITE.COM performs best in Google Chrome
- If USER’s are unable to use Google Chrome, we recommend Mozilla Firefox
- Internet Explorer is our least favored browser (Sorry Microsoft☹).
- Whichever browser you choose, we recommend the latest version (This is of particular importance when using Internet Explorer!). USER’s must understand that some WWW.AIR-INSITE.COM features and functions will become slower or may not be compatible with older browser versions, there is no easy solution to this, if you want what modern browsers can offer then you need a modern browser version ☺
- Prior to using WWW.AIR-INSITE.COM V12 ensure the cached content of your chosen browser has been cleared!
- Also, prior to using new Graph Wizard, a re-sync of audit data is required! This is because new Graph Wizard features some completely new graph types which require the creation of new data streams from the original audit data. To create these new data streams, an audit re-sync is necessary.
- Understand how your browser uses memory and its memory limitations!
- New Graph Wizard is a powerful graphing product. However, its features can place a significant burden on memory! ‘How much memory’ depends both on your chosen browser (our tests reveal that Firefox uses memory most efficiently) as well as the size and duration of the audit being used. For example a one week audit using 3 loggers will have a significantly lower resource burden than a 2 week audit involving 6 loggers. You can observe memory usage using Windows Task Manager, tab ‘Processes’ and observe the ‘Memory’ column for your chosen browser. As your browser uses memory to plot graphs you will see this value change. Browsers have memory limits typically at or around 1GB. Thereafter a page crash can occur. 1GB is not an insignificant amount of memory and most users will never observe a page crash. However, with new Graph Wizard’s increased variety of graphs as well as the ‘Style sheet’ feature which enables a user to instantly load a large number of graphs automatically, it’s important to be aware of the potential for a page crash to occur.

Users can reach 'Graph Wizard' by choosing it from the left hand Wizard selection. The new Graph Wizard landing page looks like this...



The style of the landing page is similar to Audit Wizard & Publish Wizard, a 'style' theme that will continue as we further develop WWW.AIR-INSITE.COM. The following is an explanation of the Landing page environment...



When you select an Audit, you can review information about the audit selected on the right side of the Landing page. There's a Logger review tile which identifies the loggers used in the selected audit. If you hover over a logger tile the logger specific serial number will be displayed. Further down, the Base station serial number is indicated alongside 'cloud status' and whether or not the audit is a shared audit.

Style sheets work similar to the way 'Templates' do in Publish Wizard. A Style sheet allows a User to choose a selection of graphs to be saved as a 'Style sheet'. After saving a selection of graphs to a Style sheet, a User can simply navigate to Graph Wizard, choose a Style sheet, select an Audit and press the 'Wand' button. WWW.AIR-INSITE.COM will load the graphing page and continue to load the graphs assigned to that Stylesheet.

There are 2 Style sheet tiles available as well as a 'BLANK' tile making 3 tiles in total. Both Style sheets can be configured to load different graph choices. The third 'BLANK' tile simply opens the Graphing page without pre-loading any graphs, allowing the USER to make his or her own graph selections. Beneath the three tiles there is a number of 'Pre-configured' graphs, each identified by a graph number as well as an individual tool tip.

Use the three tiles in the following ways...

- Select Style 1, Style 2 or Blank
- If its not possible to select a Style sheet its likely that you have not saved anything to that Style sheet yet!
- Once selected the tile will change from 'grey' to a color format
- You can use the 'grey 'INFO' portion of the tile to review Style sheet info

Pre-configured graphs work in a similar way to Style sheets. Users can select one or a number of Pre-configured graphs from the Landing Page, select an Audit and press the 'Wand' button. You can access Pre-configured graphs from the Graphing Page as well

Pre-configured graphs either combine data that a User cannot combine (User configured graphs) or combines data that a User might often want to review in a specific graph format or combination. The list of System graphs will grow as we add more and more features

The following is an explanation of the Graphing page environment using a BLANK Style sheet...



The toolbar consists of 5 buttons. You can add one or as many graph containers as required. A single graph container is provided below the Zoom container (pictured above). You can add more graph containers by either using the button on the Graphing page toolbar or the identical button placed at the top right of a graph container.

All containers are collapsible including the Zoom container. You collapse or expand a container by clicking the top area of the container

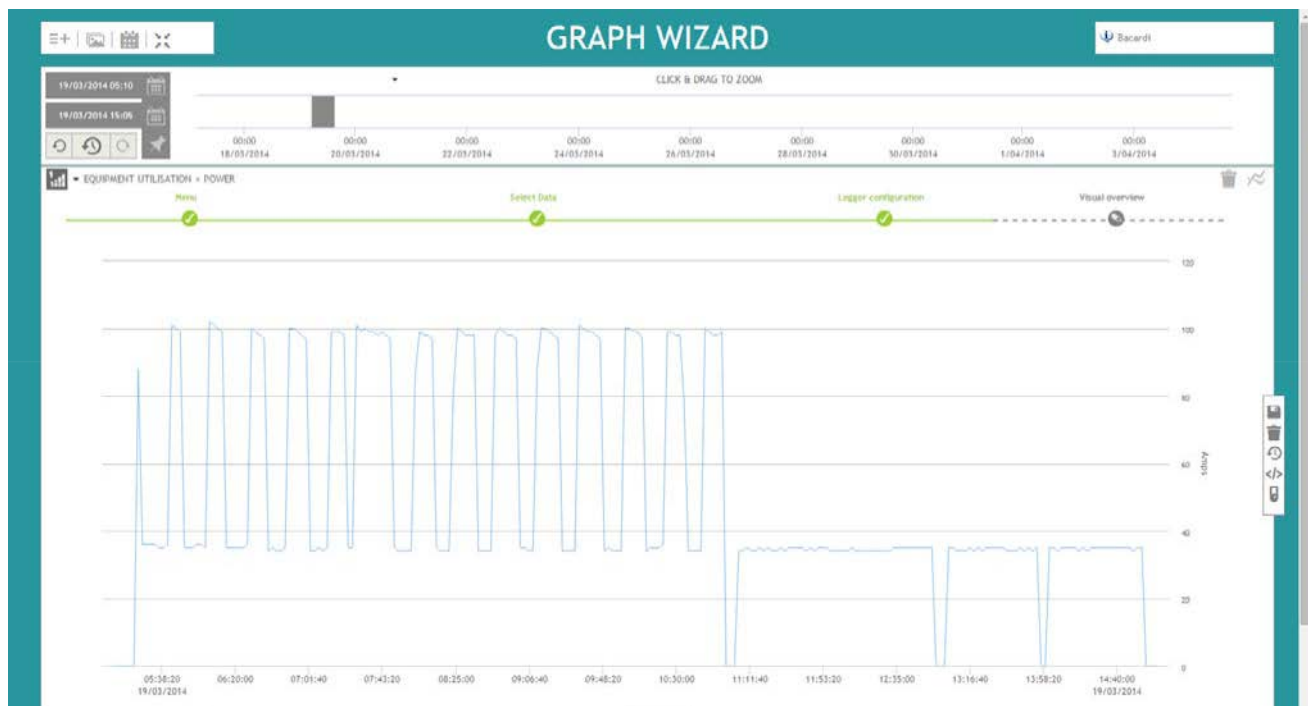
Save as Style Sheet allows you to save a selection of graphs within the 'Graphing' page as either Style 1 or Style 2. You do this by first loading the graph selections manually. Once loaded, use the 'Save as Style Sheet' button to save as appropriate. When you return to Graph Wizard in the future, select the Style tile, the audit and press the wand button. Your Style sheet 'graph selection' will load automatically

Save graphs using the Graphing page toolbar will save 'ALL' graphs contained in all the graph containers. There is no User option to rename individual graphs here, all graphs are saved using a defined format and method and are placed individually in the appropriate folder on WWW.AIR-INSITE.COM. There are other save options including 'direct download' that permits User intervention to the graph saving process. These are discussed later ...

The 'Lock audit start & end time' button has a specific purpose which is distinct! By setting and locking the audit start and end time from the Graphing page toolbar, the setting will be locked and used across WWW.AIR-INSITE.COM. So for example, if you ever return to an audit in the

future, the audit span will equal these settings or if you reset zoom settings, the zoom will reset to these span settings. If you run a Report template in Publish Wizard; these settings prevail etc.

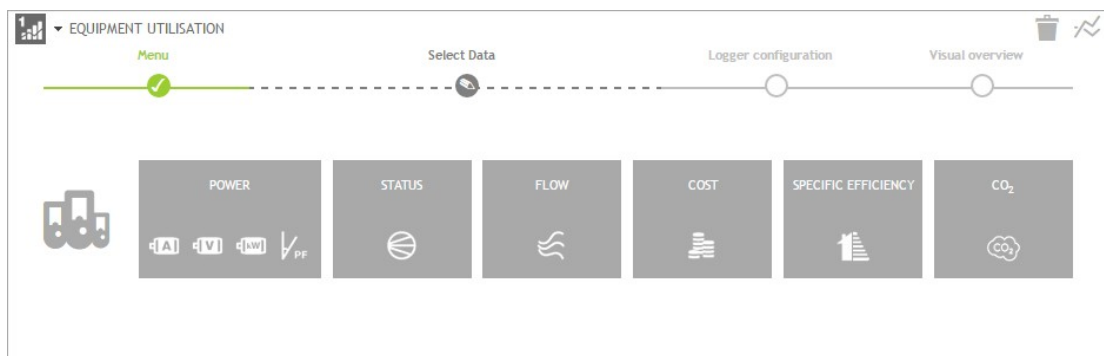
Toggle full screen mode allows you to take advantage of your entire screen 'real estate'. Below is an example of a graph displayed in full screen mode...



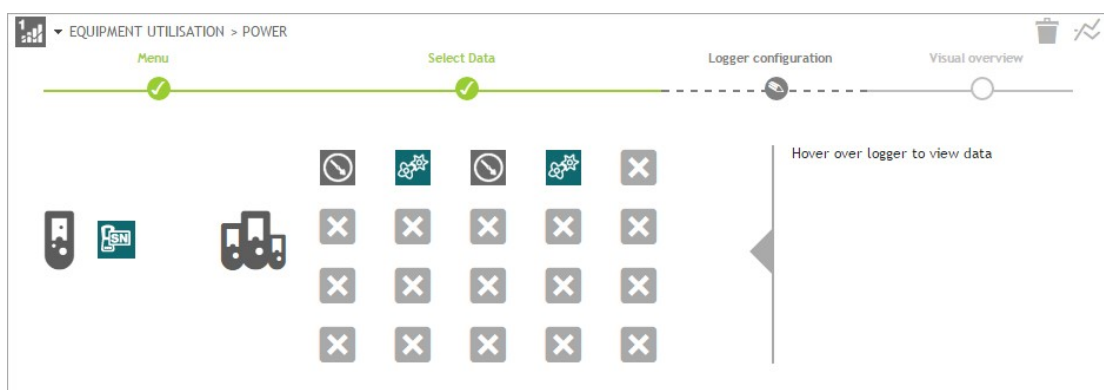
To configure a graph click 'add a graph config' and proceed to select a graph type...



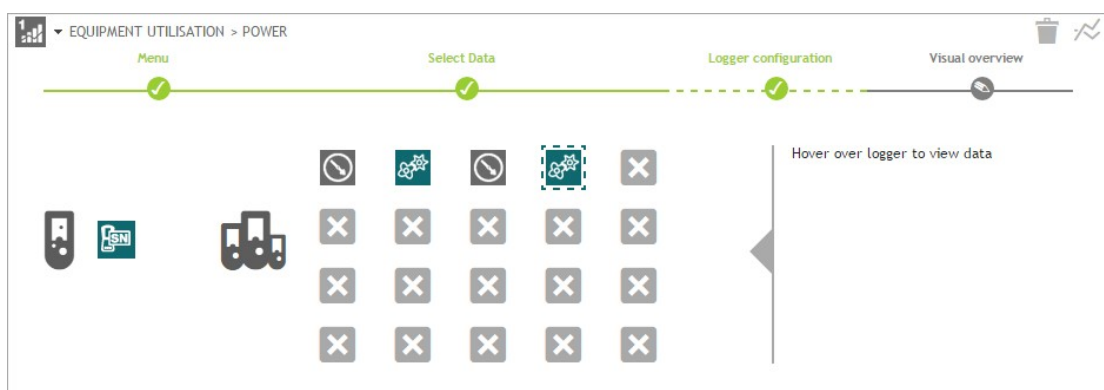
Available graph types are 'Equipment Utilisation', 'System utilisation (supply side)', 'System utilisation (demand side)' and 'Additional graph options'. Once a selection has been made, the Menu progress indicator will change color, from AMBER to GREEN and the next step can be reached. So for example, if you select 'Equipment utilisation' and then select 'Continue' your screen will look like this...



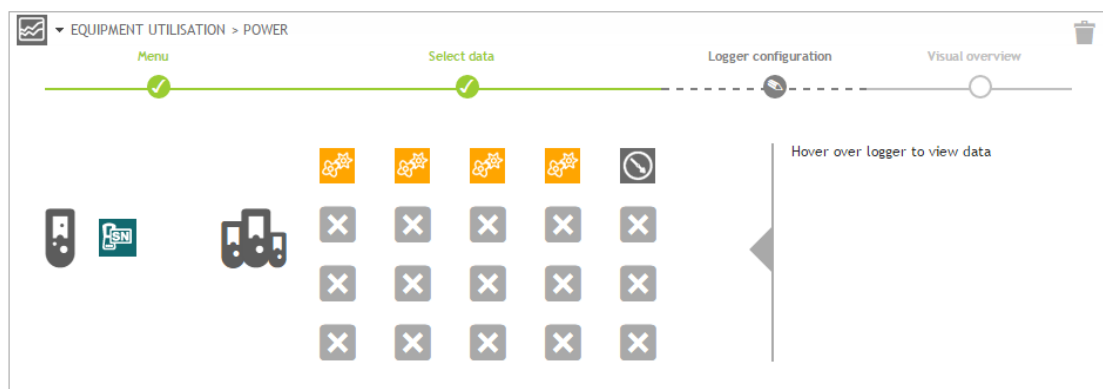
Continue to make permissible selections. We'll select Amps by selecting the Amps tile within the Power tile and continue to the next step. Your screen will look like this...



Continue to make permissible selections. Observe that permissible selections are GREEN and that Logger information can be viewed by hovering over its tile. Logger information is displayed on the right. Selected loggers will have a hatched line placed around the Logger tile.



Configuration is now complete. Select Visual overview to view your graph... Follow the afore-mentioned steps to configure all graph options adding as many graph containers as required.



Before we look at the graphs its worth highlighting ‘AMBER’ colour specific to Current & Volt logger icons. The ‘AMBER’ colour replaces the ‘warning triangle’ used in earlier versions of Graph Wizard. Its intended purpose is to alert the user to missing data and the reasons behind that missing data...

By hovering over the ‘AMBER’ logger icon you can receive up to 3 INFO messages via ‘tool tip’...

- Audit contains missing data
- Logger contains missing volt data
- Logger contains no kW data

It’s OK to use audits that contain ‘AMBER’ icons, however be aware that the ‘AMBER’ colour is alerting you to something which may have an impact on your audit results. Equally, you may be perfectly aware if the reason for the ‘AMBER’ icon and happy to ignore it. Here’s a few things to consider...

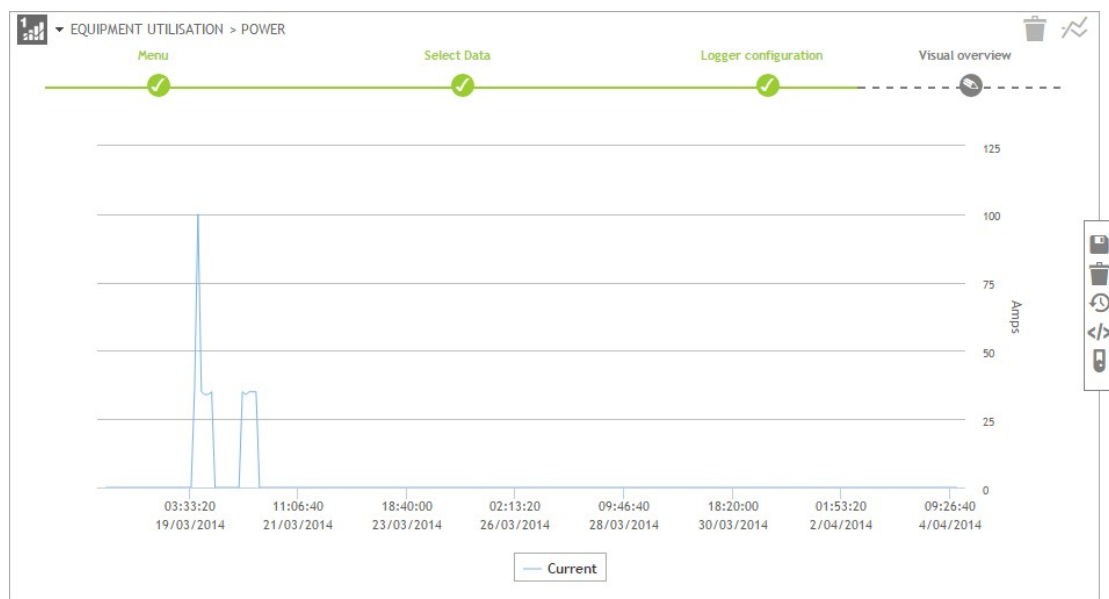
Question	Answer
What does ‘audit contains missing data’ mean?	Simply that, for some reason, the logger contains missing data.
How will adjusting the audit start & end time eliminate missing data?	During the Audit Wizard process, loggers we’re time synchronised. If you install 2 or more current & volt loggers in an audit, its impossible to install them synchroniously. Consequently, there’s often missing data atboth the start and end of any audit.
How do I adjust the audit start & end time?	You do this in Graph Wizard using the ‘Lock audit start & end time’ toolbar button.

Question	Answer
Why is this feature located in Graph Wizard?	Its located in Graph Wizard because its best to use the Equipment Utilisation feature of Graph Wizard to plot Amps, Volts, kW and Power Factor for the installed Current & Volt loggers, review results, make the appropriate start and end time decision and set accordingly.
Does locking the audit start & end time have any other effect?	Yes. Once locked, if you revisit any part of WWW.AIR-INSITE.COM and open an audit the newly locked start and end time is
What does 'audit contains missing volt data' mean?	Missing volt data can occur if the volt probe of the current & volt logger(s) was either not installed, became temporarily or permanently dislodged during the audit or if at any time during the audit, supply power was isolated from the host air compressor where the current and volt logger(s) was installed
How will adjusting the audit start & end time eliminate missing volt data?	If the supply power was isolated during installation or removal of the current and volt logger, there will be missing data.
When should I check 'Calculate my kW'	If you decide that you do not have reliable volt data then we neither have power factor data and consequently we do not have kW data. To make use of the 'Amps' data we can calculate kW by using the compressor table data entered during the Audit Wizard process. Navigate to Audit Wizard, selecting the relevant audit, go back to 'Configure base station and data loggers' and select the appropriate logger, in 'Select and configure logger' place a check mark in the box next to the calculator within the 'Edit installation conditions' section. You may repeat this process for as many current & volt loggers that have missing volt data. Then, before leaving Audit Wizard, navigate to 'Transfer data' and 'RE-SYNC' the audit that you made changes to.

Question	Answer
What does 'audit contains no kW data' mean?	Missing kW data will occur if the volt probe of the current & volt logger was either not installed, became temporarily or permanently dislodged during the audit or if at any time during the audit, supply power was isolated from the host air compressor where the current and volt logger was installed
If I have no kW data what should I do?	check ' Calculate my kW' for the logger(s) concerned

Depending on the amount of data being retrieved you may experience a delay before your Graph(s) are viewable. Progress indicators will guide you!

Below is an example of the resulting graph (Display mode = Actual data)



The progress bar remains present at all times allowing USER's to view or edit the graph's configuration at any time.

If a User selects more than one Logger at the Logger configuration step, each Logger will be plotted on individual graphs within the same graph container.

At the top of the graph container there's a Rubbish Bin for deleting an entire graph container (which will delete all graph's within that graph container!).

At the right of each individual graph there's a toolbar which extends to reveal options or information...

The save button allows you to edit the name of the graph to be saved, you can save the graph to the 'SYSTEM' which places it within the appropriate folder on WWW.AIR-INSITE.COM (for use later) or you can download the image directly to your PC using the 'direct download' button.

You can delete the individual graph using the Rubbish Bin.

You can reset any active zoom using the buttons on the right toolbar but notice that zoom settings are applied to all graphs! There's an undo and redo button either side of the reset zoom button which allows you to undo and redo zoom settings as necessary. The buttons indicate whether an undo or redo is available

There's a data button that displays the data streams used to create the graph.

Similarly, there's a logger button that displays the Loggers used to create the graph. If you hover over the Logger tile, the logger type and its Serial number will be displayed.

There's a Display mode button that allows Users to select between Actual data (default), Peak data or Average data. All 3 can be graphed as we've done in the example that follows.



It's worth considering how sample data is gathered, stored and then used to understand the benefit of Display mode. As you will know, AIRINSITE loggers are pre-configured to sample data once every second. If an audit lasted for exactly 1 week, that's 604,800 samples of data. WWW.AIR-INSITE.COM offers display support down to 1024 x 768 pixel resolution which is common place. That's a maximum horizontal display resolution of just 1024 pixels. And that's before we put the browser (e.g. Chrome) on the display or WWW.AIR-INSITE.COM onto the browser. For graphs themselves, WWW.AIR-INSITE.COM actually plots 250 pixels across a horizontal graph axis! So if you were to load a graph with a time span of 1 week, we need to somehow plot 604,800 samples onto 250 pixels which is of course impossible...

If you think about it, the only time WWW.AIR-INSITE.COM can 'truly' plot samples directly from its database onto a graph is when the time span is equal to 4 minutes and 10 seconds (250 samples = 250 pixels!). And if you ever wondered why you can't zoom to a resolution greater than what looks like 4 or 5 minutes on the graph horizontal axis, well now you know! This understood, it's worth remembering as you zoom into any graph that the effects of 'Display mode' diminish until they have no effect when you have zoomed into 4 minutes and 10 seconds of data.

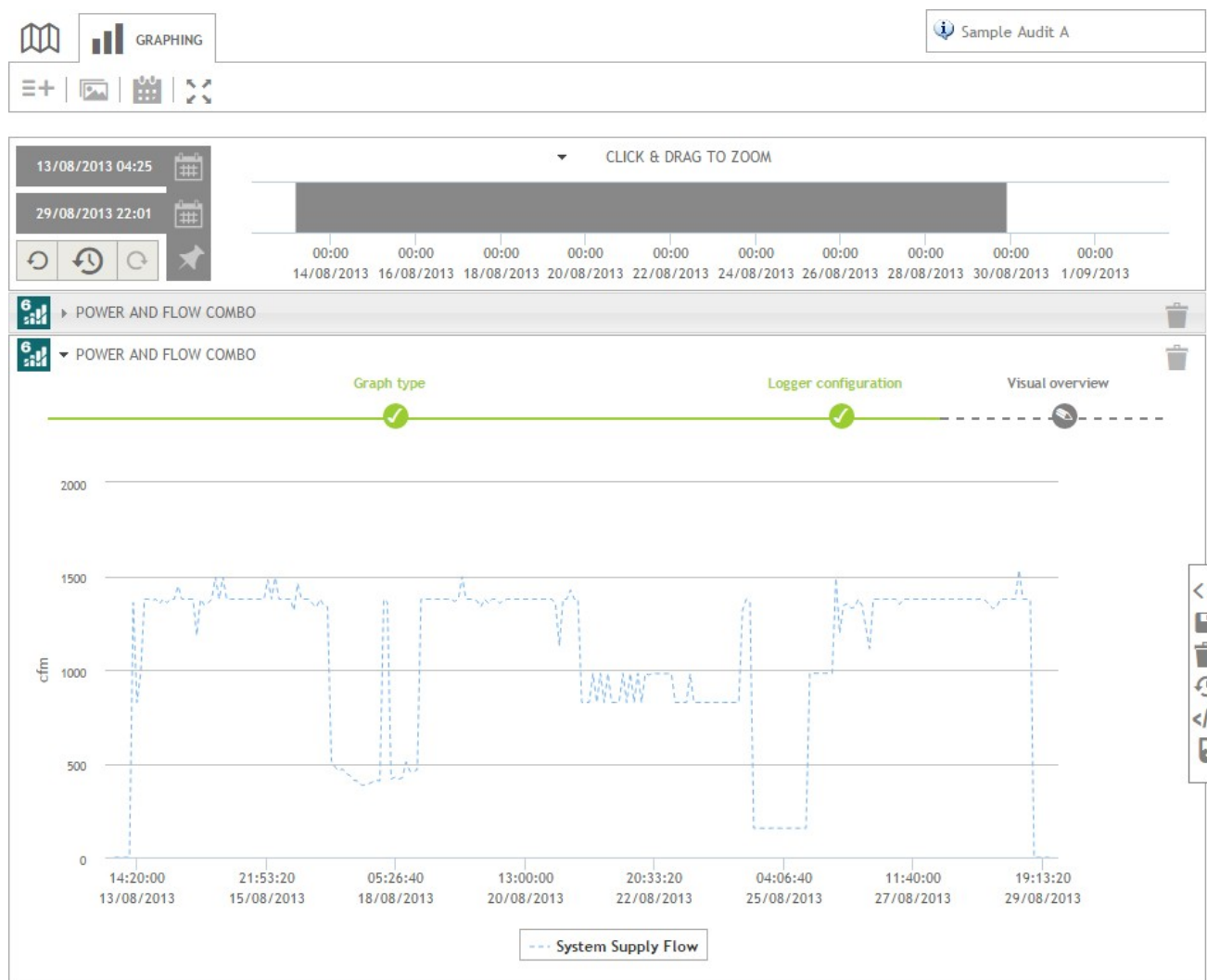
To help with this 'display challenge', WWW.AIR-INSITE.COM offers 3 Display modes; 'Actual data' (default), 'Average data' and 'Peak data'. Each mode has an alternative method to display more data than available pixel real estate.

Actual data (shown below) looks at the number of available samples (e.g. 604,800 over 1 week), WWW.AIR-INSITE.COM then divides the data into 250 equal sized groups of data and takes the first sample in each of those equally sized groups to plot a graph.



The benefit of this Display method is that you are displaying real data. However the display method has limited benefit at lower resolution because large amounts of data are simply omitted from the graph.

Peak data (shown below) again looks at the number of available samples (e.g. 604,800 over 1 week), And again, WWW.AIR-INSITE.COM divides the data into 250 equal sized groups of data but this time, WWW.AIR-INSITE.COM takes the single largest sample within each group to plot a graph.



The benefit if this Display method is that a User can easily find data peaks and peak trends in data which can be of particular interest.

Average data (shown below) again looks at the number of available samples (e.g. 604,800 over 1 week), And again, WWW.AIR-INSITE.COM divides the data into 250 equal sized groups of data but here WWW.AIR-INSITE.COM takes the number of samples within each group and establishes an

Average value for each group (e.g. $604,800 / 250 = 2,419$ samples / by the sum of the sample data within each group).



The benefit if this Display method is that all available samples have contributed to producing the graph. However some caution should be exercised when analysing average data and its beneficial to assess its value alongside the either Peak or Actual data or both.

There is no definitive answer to which Display method is best, it often depends in what data is being graphed and the specific area of focus.