Data Sheet

IQENERGY
Energy Manager

IQENERGY Energy Manager

Description

IQ™ENERGY is a versatile software tool that enables energy usage data from the Trend Building Energy Management System (BEMS) to be collected and presented using a range of visualisation and reporting methods.

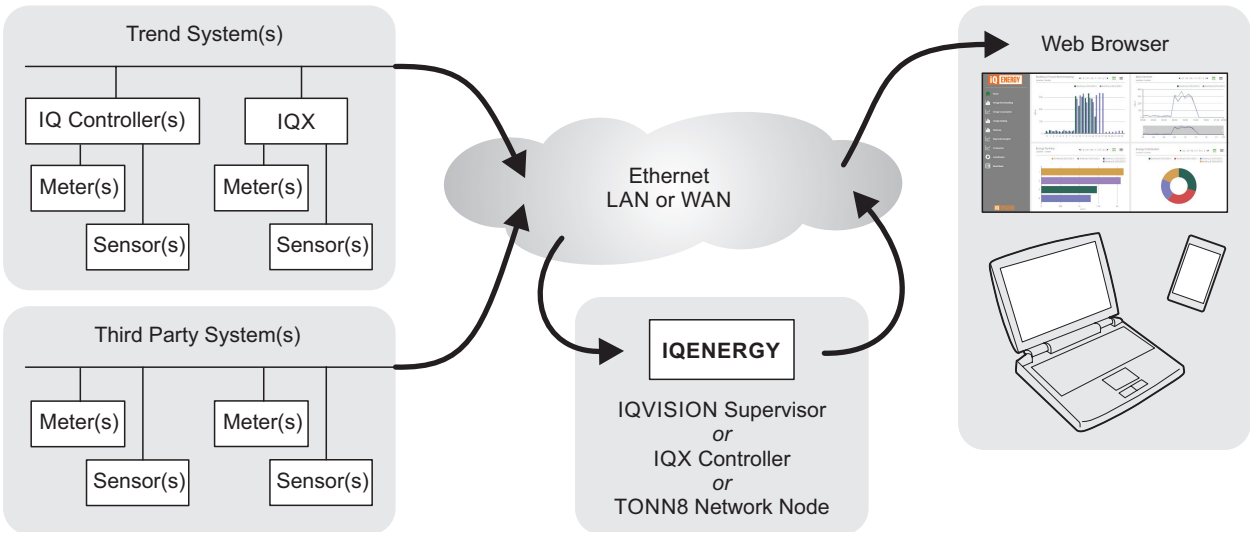
By gathering and processing data from energy meters, utility meters and sensors, IQENERGY is able to monitor building performance and analyse energy usage within a building or estate, enabling facility managers to make informed decisions to optimise energy efficiency.

IQENERGY is a licensable application within the IQVISION supervisor, IQX controller and/or TONN8 network node giving full access to both Trend and third party system data. IQVISION, TONN8 and IQX are fully web-enabled allowing all data to be viewed in any location or by any suitable viewing device.

Features

- Application resides within IQVISION, IQX or TONN8.
- Utilises existing data from meters and sensors.
- Data import option from CSV files (e.g. for manual or historical readings).
- Non-destructive processing of source data.
- Effective visualisation of energy usage and efficiency using a range of graphical presentation templates.
- Data displayed in measured units or in monetary values.
- Able to display data by weekly, monthly or yearly views.
- Able to compare data with previous year, month or day.
- Instant and automatic reporting facility for users, energy managers and auditors.
- Kiosk presentation mode to enable the promotion of energy usage and efficiency awareness in key public areas.

SYSTEM OVERVIEW



DATA COLLECTION

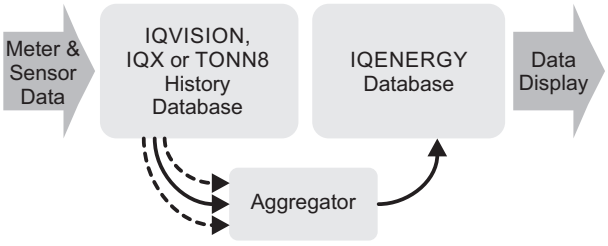
IQENERGY uses data collected in Histories that have been set up in IQVISION, IQX or TONN8. Data can also be imported from a CSV (comma separated values) file, thus enabling non-networked meter data or historical (benchmarking) data to be used.

Data from the chosen point(s) is passed through an aggregator which allows the data to be normalised into a consistent format suitable for energy analysyis.

An aggregator can merge data from up to 50 Histories. This enables the values from several sub meters to be merged into a single 'virtual' meter representing, for example, an entire floor. Another example would be to subtract renewable energy usage from non-renewable.

Note: IQENERGY is licensed based on the number of data points that you need access to (see "Licensing" on page 5). If required, data from a single point can be used by multiple aggregators, i.e. the number of aggregators is not restricted by the number of licenced points.

Aggregated data is stored in a separate IQENERGY database from where it can be presented and visualised in number of different ways.



VISUALISATION METHODS

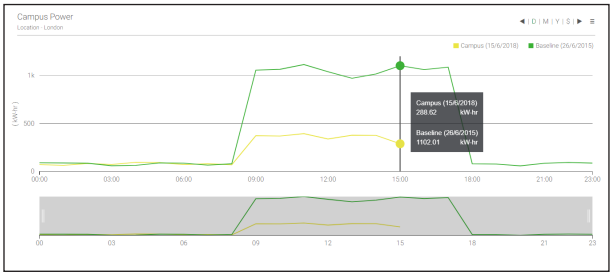
IQENERGY provides various Charts, Dials and Gauges for displaying aggregated data. Most types of chart can show data from multiple aggregators, allowing comparisons to be made.

Where data is imported from a single History the data units (facets) are derived from the History. Where multiple Histories or imported data is used the units can be specified within the aggregator. There is also the option to specify a cost per unit, enabling data to be displayed in terms of cost as well as consumption.

Controls on each chart enable the displayed period to be switched between daily, monthly or yearly and moved to the next or previous period. Where a cost per unit has been defined you can also switch between unit or cost views.

Line Chart

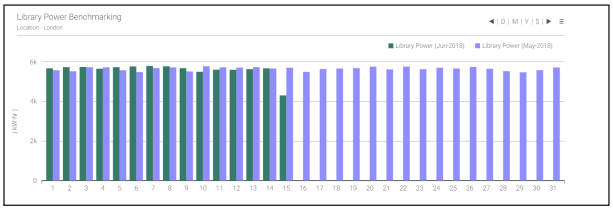
The line chart displays aggregator values as a series of points connected by straight lines.



A line chart is typically used to show the trend of data over a chosen period. The optional 'minimap' bar at the bottom of the chart can be used to zoom in on a specific region to show more detailed data on the main graph.

Bar Chart

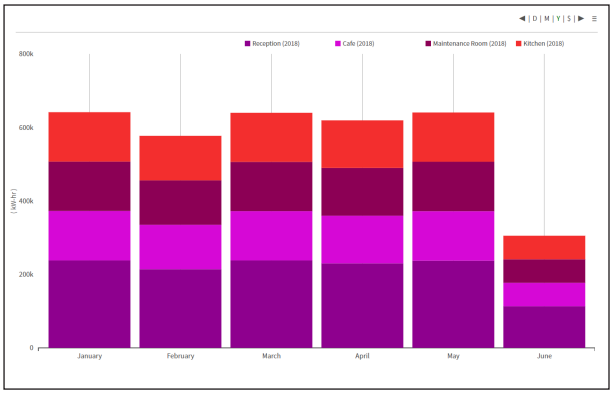
The bar chart represents the value of the aggregators assigned to it, by the height of bars.



This chart is commonly used to show comparisons between data collected over different periods, such as comparing energy usage year-on-year. By using a known (base or benchmark) data set this chart can form the basis of simple benchmarking analysis.

Stacked Bar Chart

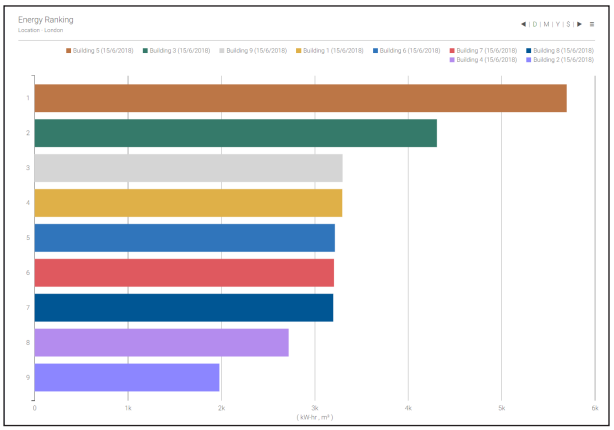
The stacked bar chart offers an alternative view to the bar chart. Where the bar chart offers the user the view of seeing data represented in bars organised side-by-side, the stacked bar chart will group and stack the data on top of each other.



A typical application for this type of chart would be to show the combined consumption from a number of sub meters in a single area, while still showing the individual meter values.

Ranking Chart

The ranking chart displays the value of each aggregator assigned to it as a horizontal bar chart. These values are then ranked into order from highest to lowest.

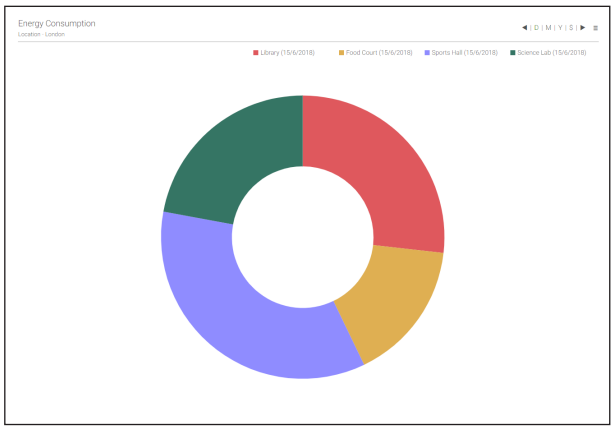


This would typically be used to rank energy usage across multiple sites.

There is no limit on the number of aggregators that can be added to a ranking chart. However, large numbers may take longer to display.

Pie Chart

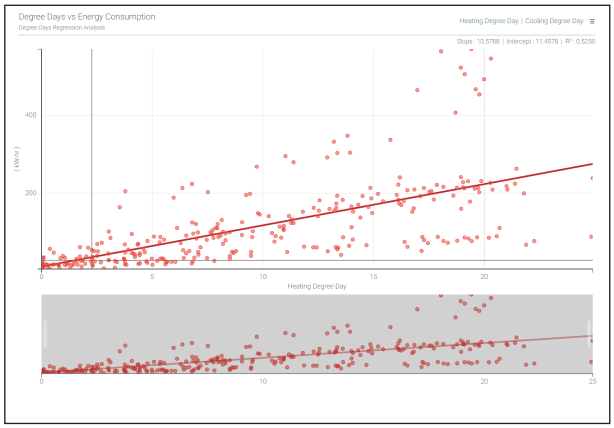
The pie chart displays the total value of all aggregators assigned to it, split into sectors of a circle.



This can be used to compare the differing energy usage of several different areas.

Degree Day Regression Chart

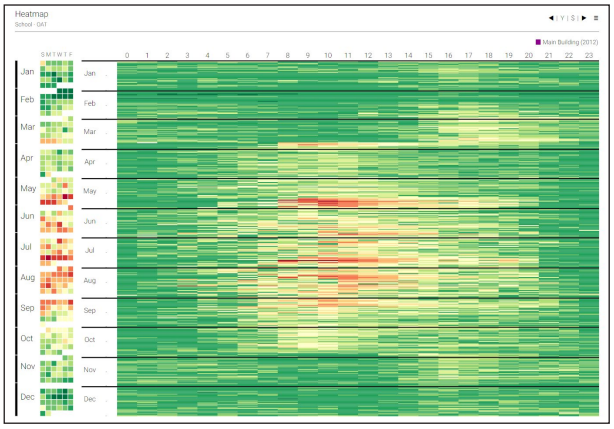
The degree day regression chart is a representation of degree days and energy consumption.



The chart can be toggled between Heating Degree Days and Cooling Degree Days. The optional ‘minimap’ bar at the bottom of the chart can be used to zoom in on a specific region and show more detailed data on the main graph.

Heatmap Chart

The heatmap chart allows the data for an entire year (if available) from a single aggregator to be represented by a variable colour. The lowest value will be assigned the deepest green and the highest value will be assigned the deepest red.



The example above represents the OAT (Outside Air Temperature) for a building. The cooler days/months represented by the darker green colours are clearly seen throughout December and January. The temperatures steadily rise until they peak between June and August, as shown by the darker red colours.

Kiosk Mode

The kiosk mode is a full-page presentation mode that allows predefined pages to carousel with a predefined interval.

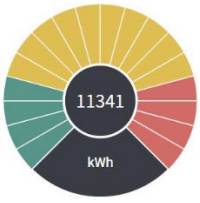
This is typically used to display eye-catching graphics of building energy usage and efficiency in key public areas, such as a foyer or reception.

A kiosk page is not designed to be interacted with or navigated from.

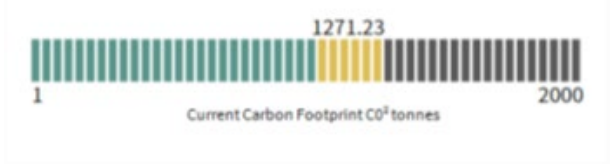
Gauges and Dials

Gauges and Dials provide an alternative way of displaying a single data value.

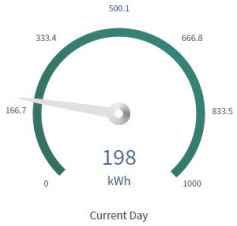
The **Segments Dial** displays a numeric value on a circular gauge split into a calculated number of segments. As the value increases the segments are 'illuminated'. The segments are grouped into three ranges corresponding to low, medium and high values. The colours and thresholds for each range is configurable.



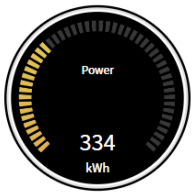
The **Bar Gauge** displays a numeric value on a horizontal bar. The minimum and maximum value are configurable, along with the number of segments in the bar. The threshold, colouring and limits can be set in a similar way to the segments dial.



The **Needle Gauge** displays a numeric value on a circular gauge with the value represented by the position of a pointer (the 'needle'). The background colour, minimum and maximum values are configurable, along with the unit type – which is displayed within the dial.



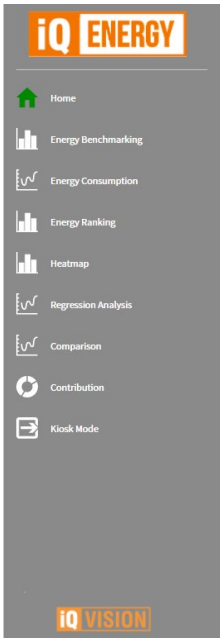
The **LED Dial** displays a numeric value in a circular gauge. The gauge is split into small segments and each one is 'lit' up to give an LED effect when the value is passed. The segment color is configurable.



Navigation Menu

A navigation menu can be included and configured to easily switch between the different Charts in IQENERGY, or to display any other viewable page or element within IQVISION, IQX or TONN8.

The integral Menu Builder enables the menu to be quickly and easily configured using icons, text and expandible levels.



REPORTING METHODS

IQENERGY provides two methods of generating reports – Instant Reports and Automated Reports.

Instant Reports

An Instant Report can be generated from any chart and can display either graphic or tabulated data. The report can be output as a PNG, PDF or CSV file.

It is possible to customise the chart prior to generating the report. Any customisation is temporary and will not affect the original chart settings.

Automated Reports

Automated Reports give a powerful way to create customised reports and automatically generate them on a schedule of your choosing.

These reports can then be 'pushed' elsewhere by using standard forwarding options from the IQVISION Reporting Palette (e.g. to an email recipient).

Note: IQX and TONN8 do not support Automated Reports..

ENGINEERING & ADMINISTRATION

Installation

IQENERGY requires additional modules to be installed into IQVISION, IQX or TONN8.

Full details of the installation procedure are provided in the IQENERGY Configuration Manual (TE201425).

Licensing

A licence is required in order to use IQENERGY in your IQVISION, IQX or TONN8 application.

IQENERGY is licensed based on the number of data points that you need to monitor. If required, data from a single point can be used by multiple aggregators, i.e. the number of aggregators is not restricted by the number of licenced points.

IQX and TONN8 have a single licence supporting up to 12 points. This licence cannot be upgraded.

IQVISION has a base licence supporting up to 25 points. Various upgrade options are available to increase the point count in steps of 50, 100, 500 or 1000. All the upgrade licenses are cumulative.

Note: With an un-licensed version of IQENERGY you can invoke a trial license valid for 1 hour. Partners can engineer their projects with this trial license. If you have not finished your presentation within one hour, you can just restart the station and visualize it for another hour.

For details of all licensing options, please refer to "Order Codes" on page 7.

Configuration

The configuration of IQENERGY is performed in IQVISION.

User Management

As with IQVISION, IQX and TONN8, users of IQENERGY can be configured to have different levels of access, e.g. normal users with limited access and energy managers with complete access.

COMPATIBILITY

Platform: IQVISION v2.60 (or above), IQX (with Niagara v4.10 or above), TONN8 (with Niagara v4.10 or above).

Note: IQX and TONN8 do not support Automated Reports.

Browsers: The IQENERGY web interface is best viewed using the newest versions of the following browsers:

- Chrome,
- Opera,
- Firefox.

ORDER CODES

IQX-EMC12	Controller licence for IQX and TONN hosted solutions (12 meters); non-expandable
IQV-EMS25	Supervisor base licence for IQVISION hosted solutions (25 meters)

To expand the Supervisor base licence, you can purchase additional packs:

IQV-EMU50	Expansion for 50 Meters
IQV-EMU100	Expansion for 100 Meters
IQV-EMU500	Expansion for 500 Meters
IQV-EMU1K	Expansion for 1000 Meters

Note: Expansion licences are cummulative. For example, the IQV-EMU100 licence will give you 125 meters (100 plus the 25 from the base licence).

SPECIFICATIONS

PLATFORM REQUIREMENTS

IQENERGY is designed to run on:

- IQVISION v2.60 (or above);
- IQX (running Niagara v4.10 or above);
- TONN8 (running Niagara v4.10 or above).

An additional license is required to run Energy Manager based on the number of points that need to be monitored (see “Licensing” on page 5).

Note: IQX and TONN8 also require IQVISION in order to configure them and IQENERGY.

PC HARDWARE REQUIREMENTS

The PC used to run the IQVISION software must meet the requirements given in the IQVISION Data Sheet (TA201381).

In addition, the following table shows the minimum and recommended hardware requirements for the installation of IQENERGY. The hardware specifications should be used as a guide only, since the number of simultaneous users, metering channels, and read frequency will affect the required hardware.

As a general rule classifying the projects into small, medium and large, we recommend the following hardware capacities:

Project Size	No of Aggregators	Processor	Minimum Main Memory	Storage
Small	<500	4-core, ≥2.5 GHz	4 GB	250 GB
Medium	<2000	8 core, ≥2.5 GHz	8 GB	500 GB
Large	>5000	≥8 core, ≥2.5 GHz	16GB	500 GB

Data Storage (IQENERGY)
For best performance the use of SSD storage is recommended. The amount of secondary data storage required by IQENERGY is dependent on many variables, including the number and size of Histories being accessed, and cannot easily be quantified.

TONN8 AND IQX DATA CAPACITY

If IQENERGY is running in a TONN8 or IQX, 12 aggregators with a 15 minute interval will provide data storage for 3 years.

Please send any comments about this or any other Trend technical publication to techpubs@trendcontrols.com

Trend Control Systems Limited
St. Mark’s Court, North Street, Horsham, West Sussex, RH12 1BW, UK. Tel: +44 (0)1403 211888, www.trendcontrols.com