Technical Information
Energy software eSight
MSE10

Create transparency - Save energy costs

Application

- Management of all energy-relevant data
- Automatic generation of reports and analyses
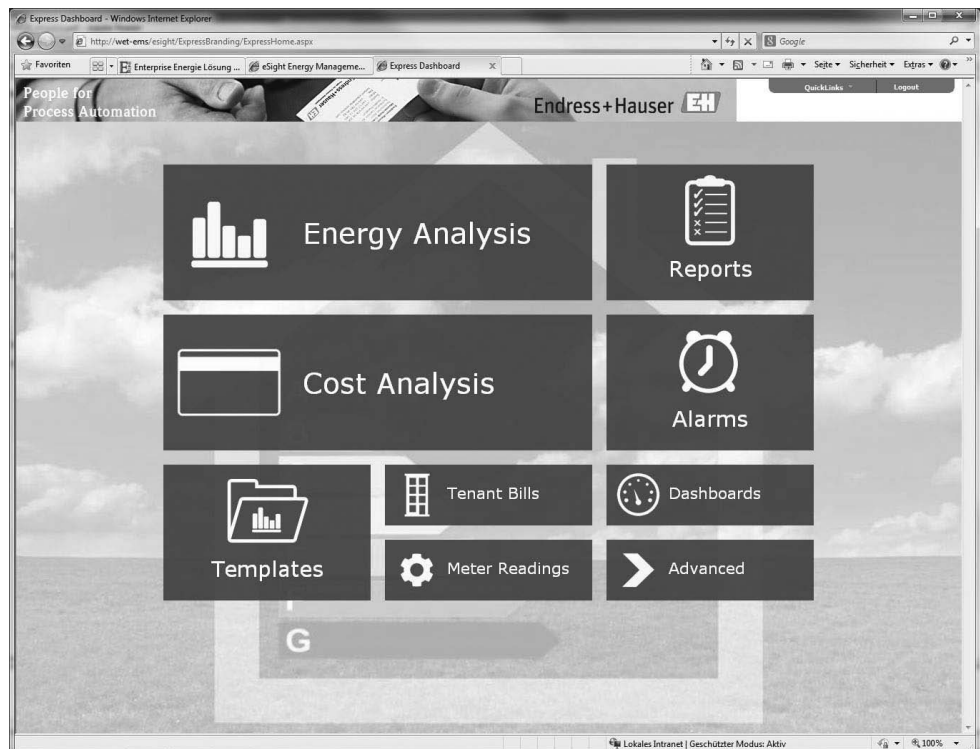- Alarm configuration

Your benefits

- Completely web-based application
- Scalable architecture
- Intuitive operation
- System configuration easy to create and maintain
- Language packages
- Automatic data import

Endress+Hauser

People for Process Automation

General Information

eSight is a comprehensive and intuitive software package offering professional methods for the management of energy-related data. eSight is fully web based making it available online. As an alternative, the software can be installed to a client.
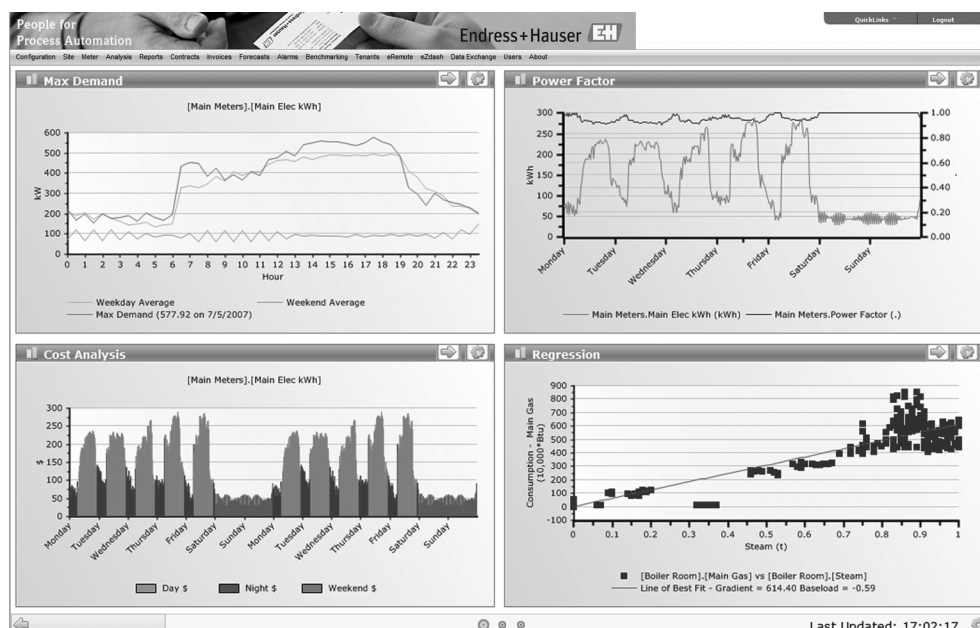
Data can be automatically imported from data loggers, BMS (Building Management Software) and SCADA systems, production systems, electronic billing and spreadsheets. Interfaces for system integration with the most important system manufacturers are available in eSight making integration of existing systems very easy.

The tool is scalable and suitable for application in all industries and companies of any size.

User interface of eSight Express

eSight Dashboard

System Requirements

The minimum and recommended system requirements for the installation of eSight and eZdash Dashboard are listed below. The system requirements are mere guidelines since the number of concurrent users, measuring channels and the measurement cycle determine the specific hardware requirements.

eSight installation

Installation requirements

eSight is designed to run on the following platforms*:[1]:
- Windows Server 2003 or 2008 (recommended)
- Windows 7 Professional, Enterprise or Ultimate
- Windows Vista Business or Ultimate
- Windows XP Professional

The Operating Systems can be 32 or 64-bit. eSight will also run in virtualized environments.

Additional requirements

Database requirements	IIS (Internet Information Service)	.NET Framework
Microsoft SQL Server 2008 x64	Version 5 or later. Users must ensure that IIS is installed before commencing eSight installation.	.NET 4.0 Framework
Microsoft SQL Server 2008 R2		
Microsoft SQL Server 2008		
Microsoft SQL Server 2008 Express		
Microsoft SQL Server 2005 x64		
Microsoft SQL Server 2005		
Microsoft SQL Server 2005 Express		

Database requirements

eSight makes use of a SQL database for storage. The eSight installer can install Microsoft SQL Server Express[2] as part of the install if required. The initial database requires about 1GB of disk space, plus the amount required per meter channel. View table below for further details.

Approximate disk space requirement			
Meter read frequency	100 meters per year	1,000 meters per year	25,000 meters per year
15 minutes	1 GB	3 GB	40 GB
30 minutes	0.5 GB	1.5 GB	20 GB
Daily	20 MB	100 MB	1 GB
Weekly or monthly	Minimal amount of disk space required		

IIS (Internet Information Service)

If you are installing onto one of the platforms mentioned in the "Installation requirements" section, IIS should already be installed on your system.

.NET Framework

The .NET 4.0 Framework is required for all components of eSight. Providing you have Internet access, you will be able to install the Framework during the install process. If not, you will manually have to download the installation and install the .NET Framework (a link is provided with the installer).

Windows account with administrative access rights

During the install of eSight you will be asked to provide a local Windows login account (which must be an account that has full administrative access rights). In this case it is strongly recommended to create

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1)   No support can be provided if eSight is used on any other platforms.
2)   Please be aware that SQL Server 2005 Express has a database size limit of 4GB and 5 users.

a new dedicated account before commencing the installation. Instructions on creating a new account are as follows:
- Right-click [My Computer], select [Manage], then expand out 'Local Users and Groups'
- Right-click 'Users', select 'New User' to activate the 'New User' form
- Create a 'User Name' and 'Password' and enter the information into the relevant boxes.

eZdash installation

Specification	Minimum	Recommended
Processor	Intel® Core™ 2 Duo	Intel® Core™ i5-430M
RAM	4 GB	6 GB
Available hard disk space	Depending on videos and images to be displayed.	Depending on videos and images to be displayed
Operating system	Windows 7 Home Premium 32-bit	Windows 7 Home Premium 64-bit
Display	Full HD 1080p Touch Screen	Full HD 1080p Touch Screen
Graphics	Onboard	Separate 1 GB graphics board
Internet connection	Required	Required

eSight is designed for use with Microsoft Internet Explorer 9 or later.

User Levels

eSight Express

eSight Express was especially created for easy access to energy data. eSight Express is the ideal application for users who work with the system only occasionally and need access to energy data and reports but do not require influence on the system configuration. The multi-language product suite eSight Express can be adapted to existing standards through customizing or re-branding.

eSight Advanced

eSight Advanced Users have full access on all functions and are granted administration rights within eSight. Advanced User access is meant for energy managers who work with eSight on a regular basis and who are responsible for the organization of energy saving measures.

License Types

Named user

A limited number of users with simultaneous access to eSight can be created in the system. Each license is assigned to an individual, single user and only this user can work with the license.

Concurrent user

The number of users working with the system is not limited. The number of concurrent users defines how many users have simultaneous access to the product.
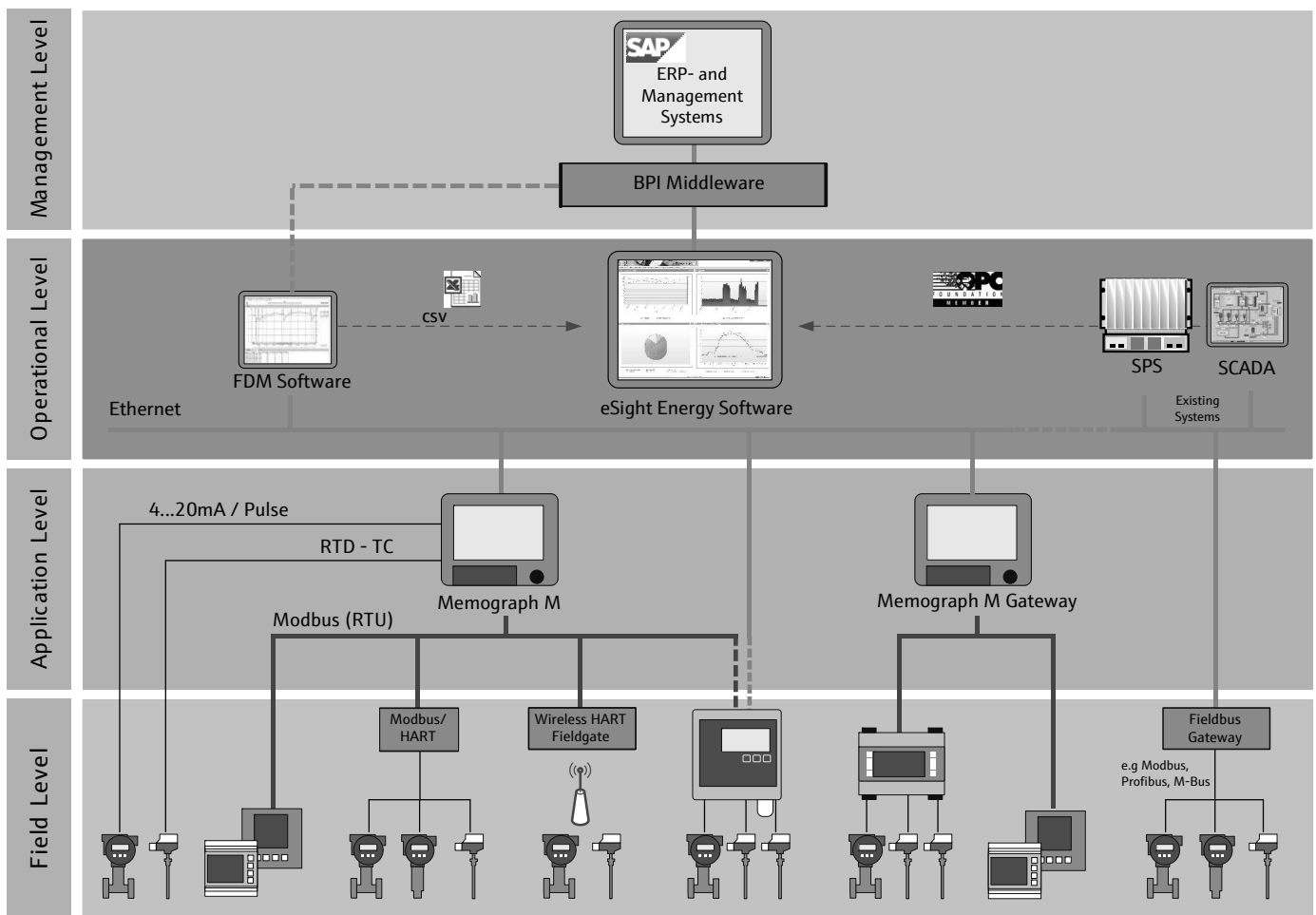
Data Exchange

There are several ways to import measured values into eSight. These are:
- Text files in form of tables as *.csv or *.tab files with different file structure
- *.xml files
- OPC
- Using additional devices, data can be integrated from fieldbus systems, for example Modbus RTU using Data Manager RSG40, Memograph M.

Using a special data quality analysis intervals with missing data can be identified and, if required, data can automatically be completed. These data are marked in a special way and can be deleted easily if required.

The detailed system structure for measurement data acquisition can vary greatly. It is developed during the engineering phase individually for each customer. A possible example for data linking:

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Supported languages

- German
- English
- Spanish
- French
- Dutch
- Czech (Express only), eSight Advanded: English
- Polish (Express only), eSight Advanded: English
- Italian (Express only), eSight Advanded: English
- Portuguese (Express only), eSight Advanded: English
- Norwegian (Express only), eSight Advanded: English

Modules

The individual eSight software modules, their application areas and most important functions are described in the following sections.

Energy Analysis (standard module)

Overview

The **Energy Analysis** module enables presentation of data using diagrams, tables and applications. In addition, data can be exported and reports may be saved as templates for later use or scheduled for automatic production and distribution.
Energy Analysis enables users to easily configure reports using a number of powerful techniques, targeted at different areas of energy management. The interface is extremely intuitive, ensuring that users are able to access and configure their data reports in the most informative way possible.

Methods for analyses

The **Energy Analysis** module enables data to be presented in a wide range of graphs, tables, reports and exports.
Energy Analysis allows the user to compare measuring devices and data areas or analyze operating costs.
Users concerned with electrical current analysis can configure reports for control of contracts, available capacity, maximum demand and load factor.
For industrial customers, energy managers are enabled to use a palette of performance efficiency graphs in order to target process, boiler or site efficiency with a number of techniques. Examples are specific energy consumption, single and multi-variable regression analysis as well as targeting, deviation and CUSUM (cumulative sum).
Within the base load analysis the energy consumption of a site can be monitored with regard to active and inactive periods, depending on measuring device and site configuration.
Ranking tables enable the comparison of facilities or measuring devices on the basis of various Key Performance Indicators (KPIs).

Reporting (standard module)

Overview

The **Reporting** module provides a standard set of report templates which may be viewed on an ad hoc basis.
In addition, reports may be automatically scheduled for automatic production and distribution.

Report Templates

The **Reporting** module offers a standard group of **Report Templates** for report generation.
Users can choose the company, site and measuring channels to which the report is to refer to. For example, one single report can be created for different branches of an organization.

SSRS reports

Via SSRS (SQL Server Reporting Service) new customized reports can be created. The overall layout and the entire content of a report can be individually configured. These reports can also be managed via the SSRS server.

Report Scheduling

The **Report Scheduling** enables automatic creation and distribution of reports via email.
Reports can be exported in various formats, e.g. graphs, tables or data exports in .csv format.
Report Scheduling allows the user to define how often a report is generated and how it is distributed.
The report can be distributed automatically via email and simultaneously saved to a server as a copy.

Report Designer

The **Report Designer** is a separate tool for configuration of report templates. Completed templates can be uploaded to the eSight "Reporting" module and can be run or scheduled for automatic distribution via email.
The Report Designer allows for configuration of complex reports containing company logos, headers and footers as well as combinations of tables and graphs.
Reports can even contain a table of contents or partial reports.
In addition, the eSight Report Designer enables the user to create tailor-made individual reports if the standard group of reports available in the eSight Reporting module does not meet the special requirements.

Calculated Meters (standard module)

Overview

Calculated Meters are used to create a metering channel with a calculation or equation behind it. Sometimes referred to as "virtual" metering channels, they can be used to aggregate data, calculate Power Factor, kVA, boiler efficiency and much more.
eSight provides the ability to easily configure and manage calculated meters.

Calculated Metering Channels

The **Calculated Metering Channels** module allows a calculation to be created and stored within eSight as a metering channel. Once the calculated meter has been created, this virtual meter may be reported on and graphed in exactly the same way as a physical metering point within a building.
eSight provides an intuitive interface for the creation of calculations and lookup tables which can be used to perform functions such as the conversion of steam to energy for efficiency monitoring.
Calculated meters may be based on a summation of physical meters or on mathematical equations to calculate efficiency for example. Calculated meters may also be based on calculations of other virtual metering points.

Financial Analysis (option)

Overview

Financial Analysis enables the conversion of consumption data into monetary units. The module provides a central way of managing and storing tariff and contract information and applying this information to the relevant metering channels within eSight.
When a report is then run and the option for a particular contract is selected, the consumption information is automatically converted into the correct monetary rate according to the supplier contract breakdown.

Supplier Contracts

The **Financial Analysis** module enables supplier contracts to be stored according to a number of different tariff structures. Validity dates may be applied to each contract and historical information can be stored for retrospective analysis.
Tariff detail can be defined down to a 15 minute change in rates and will include unit and fixed charges.
In addition, eSight also has the ability to provide a revenue contract, which may be used in the tenant billing process.
When reporting, the user is simply able to select the option to view information in terms of cost or conduct full tariff analysis. The tariff structure is then referred to and applied to the relevant metering data to provide accurate, detailed breakdown information of energy costs.

Exception Reporting (option)

Overview

The **Exception Reporting** module enables automatic generation of energy alarms based on predefined alarm conditions.
When the preset parameters have been breached, an alarm is generated and may either be dealt with in eSight or may be forwarded to a specific user or users via email.

Alarms

Energy alarms can be generated within eSight as soon as the energy data is imported into the system. Alarms may be generated based on user definable tolerance levels, changes in consumption profiles and other techniques may be applied to detect anomalies in profile data.
Additionally, **Exception reports** may be created using "real" profile data down to a minute-by-minute level, ensuring that the alarm mechanism is as accurate as possible. An alarm can include a report which helps demonstrate why the alarm condition was triggered.
Each alarm may be treated individually and forwarded according to the specific criticality levels and site requirements.
The Exception Reporting module may also be used in conjunction with the Data Exchange module, to provide reporting on missing or inaccurate data for example.

Bill Verification (option)

Overview

The **Bill Verification** module provides the eSight user with an intuitive interface to enter supplier utility bills for a variety of fuel types, such as electricity, gas, water, and oil. Users may enter general information about the utility bill as well as detailed information relating to the charges and tax rates contained within the bill structure. eSight then takes the collected meter data and automatically calculates Net and Gross totals based on the rate information provided from the bill. This results in verification that the utility bill is correct, or the ability to present the anomalies in the invoice.

Data entry

The utility billing data is entered into eSight via the web-based user interface. When adding the first invoice the user must enter all relevant billing information including the account details, invoice number, dates, charges, tax rates, etc. Subsequent bills are quickly added to the system by using the 'Add Next Bill' function of the module. This feature automatically pulls forward the information from the previous bill, meaning the rates and other relevant details are already populated. The only fields that will need updating are the invoice total and consumption amounts.
The Bill Verification module also allows for any number of notes and attachments to be stored against each invoice. eSight provides a structured way to record notes and makes storing information on anomalies that may be relevant to other users extremely easy. The feature can also be used to store scanned images of the paper bill.

Verification

eSight starts by verifying that the calculations on the utility bill itself are correct. eSight's Bill Verification Module does this by checking the preconfigured bill structure with the cost totals and consumption values entered. The 'Add Next Bill' function gives the user the capability to confirm that the unit and fixed charge rates, as well as tax rates are correct when adding the bill information.
The Bill Verification Analysis Graphs are then used to compare the utility bill usage data and costs against the collected meter data and supplier rates that were entered into eSight.

Analysis

The ability to view information from the utility bill, against the meter data allows the user to verify the invoice is correct and whether or not the bill should be paid. eSight Bill Verification Analysis makes this process easy by presenting variances between the invoice and eSight data graphically. The graphic data is backed up by detailed meter data which, if required can be exported to Excel for further analysis.

Benchmarking (option)

Overview

Benchmarking may be carried out according to industry or governmental (e.g. UK) as well as user-defined standards.
The energy required to operate buildings (heating, venting, air conditioning) is compared.

Tenant Billing (option)	**Overview**

Tenant Billing provides a simplified and automated method for management of the complete tenant billing process across one or more sites. Presented in a number of clearly structured steps, tenant billing enables users to set up and manage multiple tenants and generate bills on a scheduled basis.

Contract Management

Contract information is stored and managed centrally and simply applied to the relevant tenant or tenants across one or more sites. eSight provides the ability to store various different tariff structures and for this information to be stored at tenant level as a contract, separate from the main supplier information. This ensures that contract management is clean, easy to use and does not conflict with the utility purchase rates. The optional Financial Analysis module is required for energy billing.

Bill Generation

Tenant information may be stored against each individual tenant, thus catering for differences in billing periods or contract durations for example. Billing dates may be entered and used within eSight to raise bills as and when required for each tenant.
Bills are generated in PDF format giving the invoicing party the choice to print or forward the bill electronically to the relevant tenant. Outstanding and paid bills are stored within eSight providing a full historical record as well as any forthcoming bills.
Tenant Billing works in conjunction with eSight Financial Analysis for complete management of the contracts associated with each tenant.

Excel® Reporting (option)	**Introduction**

The **Excel® Reporting** Module allows any eSight user to access energy data from eSight directly from Microsoft® Excel® for further analysis. By using the existing Web Service Interface to eSight, a variety of data and information can be viewed from Excel® and manipulated using standard Excel® functions, even allowing the ability to upload resulting data sets back into eSight.
Simple to use, allowing analysis of energy data using any standard Excel® tools, the eSight Excel® Reporting Module requires no additional training. Users are able to manipulate data to suit their own requirements in an application they are conversant with.

Setup

A simple setup application downloaded directly from the licenced eSight installation is all that is required to run the eSight Excel® Reporting module from the desktop. Using Microsoft® Excel® 2003 or later; the setup installs a new Excel® add-in to your toolbar which allows a registered user of eSight to login and gain access to the same information they would have access to within eSight. All security and access restrictions defined for a user in eSight also apply in the Excel® Reporting Module.

Functionality

The Excel® Reporting Module provides users access to a range of information about Companies, Sites and Meters within eSight, along with Degree Day and Budgeting data. The ability to retrieve both raw and formatted meter data allows users to create new calculations for comprehensive exploration and graphical analysis using standard Excel® functionality. It is then possible to insert data and graphs into other Office applications such as Word®.
The eSight Excel® Reporting Module is preconfigured with shortcuts to easily insert this information into a spreadsheet, allowing the user to simply define which parameters they wish to import. Data may be accessed from Excel® from any location, and is automatically updated on reopening of a spreadsheet.

Licensing and Compatibility

The Excel® Reporting Module is licenced on a per eSight installation basis. Once the eSight system has been licenced for the Excel® Reporting Module, any user of that system is able to download and use the module to gain access to their data directly from Excel®.
The eSight Excel® Reporting module is compatible with Microsoft® Excel® 2003 onwards.

eZdash (option)	**Functionality**
	The new interactive **eZdash** dashboard technology is an engaging way to view the latest energy savings information with a personal touch. Specifically designed for use with a touch-screen PC, eZdash allows the user to not only view energy facts & figures, but actually interact with the display. With the simple swipe of a finger, users rotate the eZdash Information Carousel & view high-resolution videos or images displaying the latest energy usage details about that specific building. Intended for display in public areas, & perfect for the non-energy user, eZdash displays all-purpose information to draw users to the screen. This includes time, weather, and feeds from both news web sites and Twitter.

Intuitive Data

eZdash has been designed to 'talk' to your existing eSight application to pull down real energy savings information. eZdash then converts this saving data into user friendly, interesting facts, such as converting kWh saved to 'cars off the road'. eZdash allows users to create any conversion factors they require – which may be suited to their specific industry sector or audience.

Installation Options

eZdash has been specifically designed to run on an all-in-one PC display. This allows high definition images and video to be displayed to the public in an interactive and direct way.
It is also possible to run eZdash on any suitable hardware display the user has on site. The requirements are a Windows XP or later Windows operating system and a network interface on the PC.

Global Weather Service (option)

Overview

The **Global Weather Service** module enables access to and recording of weather data from over 8,400 locations worldwide. This facilitates in a simple way an optimal analysis of the energy consumption in relation to local temperatures, evaluation of building energy efficiency and improves the forecasting of future energy consumption values.

Locations

There are over 8,400 locations available worldwide which enable local analysis of the energy consumption in relation to local temperature, humidity and degree days.

Available Data Types

Access to dry temperature, effective temperature, relative humidity or heating / cooling degree days based on a user-defined base temperature.

Data Frequency

For prompt and exact analysis, the data are acquired and stored hourly.
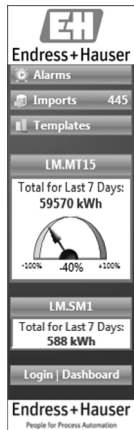
Data Import

Data are imported to an eSight "data point" automatically. Then they are available for further processing in all report and analysis modules.

Historical Data

Historical data of the last 10 years are available on an hourly basis.

Windows Sidebar Gadget

The Windows Sidebar Gadget allows the user to display important information and measured values on the Windows desktop. Relevant areas can be called up directly from eSight. The sidebar gadget updates data every minute, which means that the user sees up-to-date information at any time. Measurement data from up to five data points can be displayed. In addition, the user gets an overview of alarms, data imports and templates for energy analyses.

Buttons on the lower left-hand corner of the gadget allow the user to log into eSight or call up the dashboard without re-entering the user name and password.

The sidebar gadget is part of the standard package.

Ordering Information

License model

The eSight Enterprise Version can be installed on a server at the customer's or hosting can be ordered from Endress+Hauser.

The software requires yearly renewal of the license. Every prolongation by one year will incur costs for data updates, additional support as well as access to a special knowledge data base. An offer for license renewal is generated automatically in time before expiry. If the term expires, the software license will no longer be valid. It is possible, however, to reactivate and renew the license by paying an additional reactivation fee.

Ordering information

Detailed ordering information is available at your Endress+Hauser sales center:
www.endress.com/worldwide

Further information on Endress+Hauser Energy Solutions can be found on:
www.endress.com/ems

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