

#### About IngSoft

IngSoft GmbH is a pioneer in the field of software development for effective and long-term energy management according to ISO 50001. Through its software solution IngSoft InterWatt, the company has since 1997 been firmly established in the future market of sustainable energy management and continues to set standards in this area. We enable our customers to combine long-term economic success with environmental commitment.

The BAFA (Federal Office of Economics and Export Control) has listed IngSoft InterWatt as "eligible software".

## The solution for software-based energy management according to ISO 50001



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...turning know-how into software.



## Energy management according to ISO 50001 – holistic planning, long-term benefits

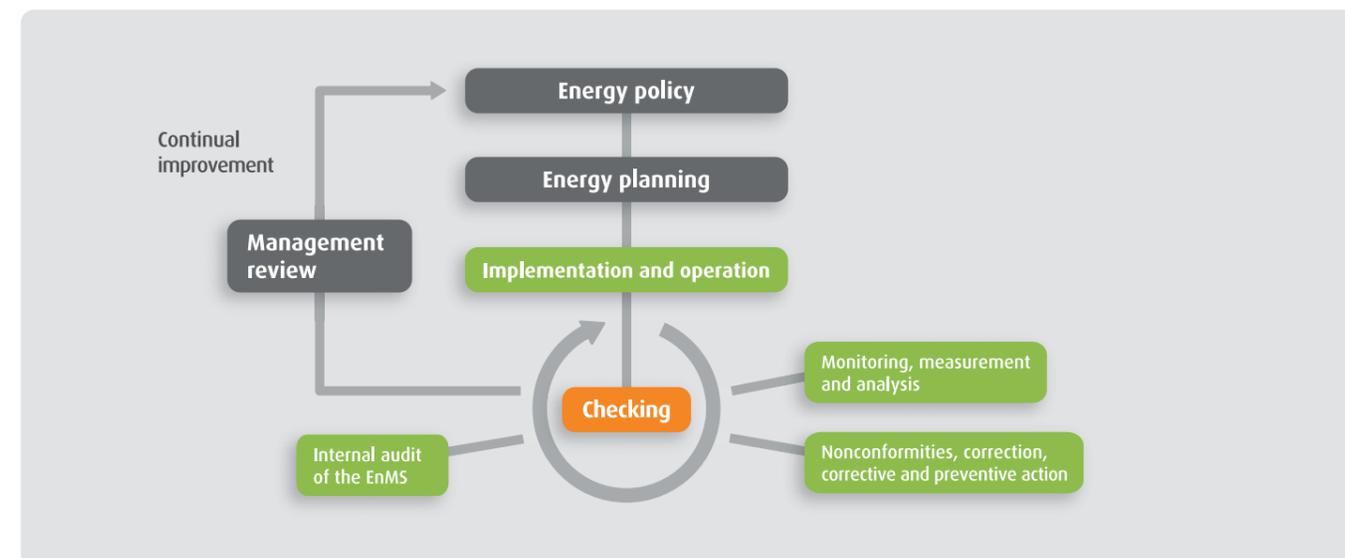
The limited availability of natural resources, coupled with an increasing demand for energy as well as increasing energy costs, is making consistent energy management a necessity. Apart from ecological and economic reasons - e.g. reduced energy costs - political framework becomes more and more specific and also plays a role in the introduction of an energy management system. Here successful energy management is viewed as a continuous improvement process that is integrated in organisation structures out of which it continually initiates measures to increase energy efficiency.

### Model of an energy management system according to ISO 50001

ISO 50001 specifies requirements for an energy management system. With an energy management system in accordance with this standard technical facilities are not so much in the foreground. The emphasis is rather on processes and procedures in the organisation, to ensure that the set targets in terms of energy consumption, energy use and energy efficiency are achieved. For this the standard describes a PDCA cycle (Plan-Do-Check-Act).

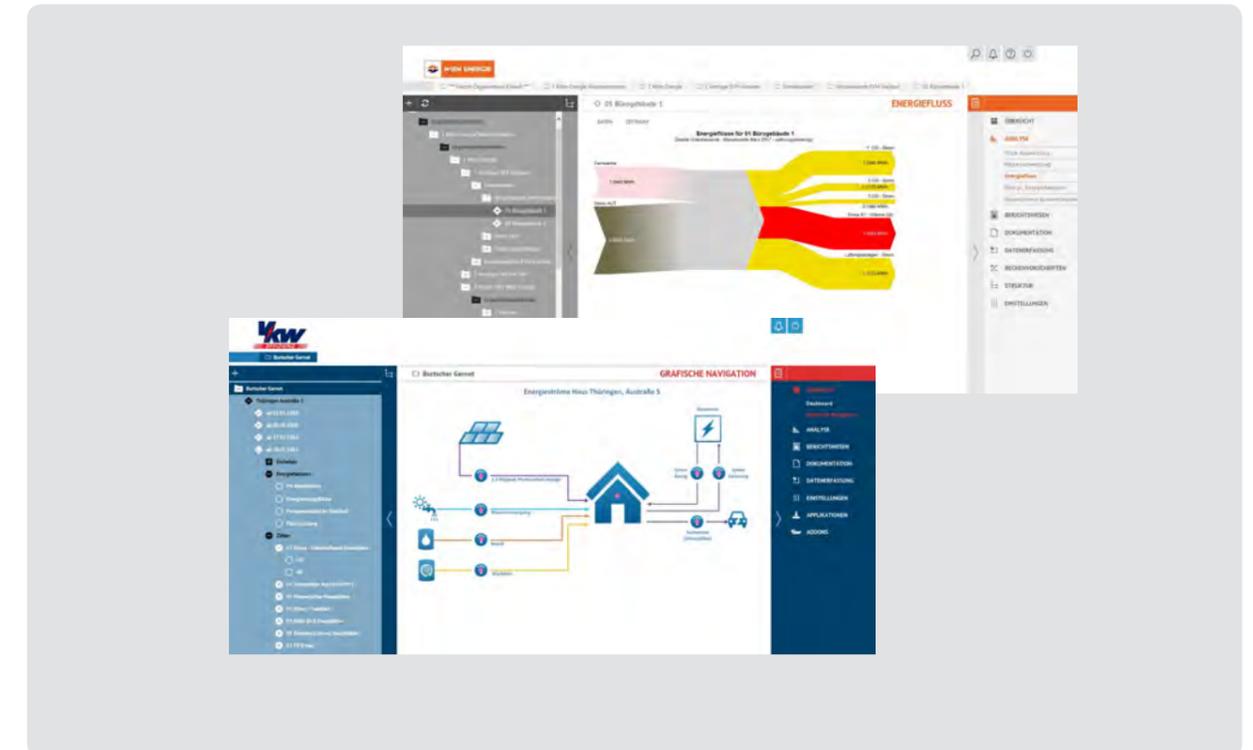
The following model shows the continuous improvement process of an energy management system according to ISO 50001. It involves, among other things, energy planning, the implementation and operation of the system as well as its monitoring and regular evaluation by senior management.

Further information on the legal framework can be found on our website [www.ingsoft.de](http://www.ingsoft.de).



PDCA cycle according to ISO 50001

### Portal integration



The integration of IngSoft InterWatt into the customer portal of Vorarlberger Kraftwerke AG and WIEN Energie

IngSoft InterWatt can be integrated into any company's own web portals. Using a customised user interface, the implementation of an individual feature set is possible. This option is especially useful for utilities and energy management service providers. They offer their customers, who have little or no energy-specific knowledge, the

ability to control their energy consumption in a simplified form. Meanwhile the energy management experts of the service provider can use IngSoft InterWatt in full with all functions. This enables them to address their client groups in a targeted manner and ensure long-term customer loyalty.

### Service

Upon request we will setup your system ready-to-use, offer the complete system integration and provide your historic consumption data in the software. In case of need we provide consultancy regarding the implementation of an energy management system according to ISO 50001 and offer internal audits for certification preparation.

IngSoft's service goes beyond the mere development of the software. Customers can rely on qualified user support and proactive server monitoring. Besides that, through regular user conferences, there is a close interaction between IngSoft and its customers. That's the way to remain at the cutting edge!

## Find out more about IngSoft InterWatt

### Automatic pattern recognition (option)

IngSoft offers an additional, innovative module: an automatic pattern recognition for energy consumption. This is an innovation no one else within the scope of energy management offers. Out of thousands and thousands of data, relevant events and their influence on the energy consumption must be identified and incorrect data must be corrected.

However, common tools such as alarms require a high set up effort. Thanks to IngSoft's innovative pattern recognition irregular energy consumption data are detected automatically. That way the user increases transparency, identifies causes promptly and can react quickly. This is a great relieve in day-to-day work.

### Invoices for third parties

IngSoft InterWatt creates utility costs accounts for pre-defined units. In addition to the energy consumption of the unit set tariffs and the distribution model are considered. The cost of energy consumption can be charged to lessees or

contractors. Even an internal cost unit/performance calculation is feasible. To pursue the invoicing process further in a commercially correct manner, it is optionally possible to pass the invoice-related data to an ERP system.

### IT – latest and proven standards

#### Internet technology

IngSoft InterWatt is an internet-based application and has a service-oriented architecture (SOA). The software solution can either be used as "software as a service" or "on-premises" installation. In both modes IngSoft provides highly skilled support.

If the customer prefers cloud computing and uses IngSoft InterWatt as "software as a service", IngSoft is responsible for the server infrastructure. The customer has access to it through the internet.

IngSoft InterWatt is suitable for use in public networks. Among other things, the communication between server and client uses SSL encryption, and passwords are stored irreversibly encrypted. Thus recognised security standards are used.

#### Microsoft SQL Server

Due to its software architecture IngSoft InterWatt is suitable for use in highly available server structures. On request, automatic self-administration of the server through IngSoft InterWatt is possible. The optional administrative database maintenance includes regular backups, consistency checks and an index optimisation.

#### Multi-tenancy

Due to the comprehensive multi-tenancy IngSoft InterWatt is optimally suited for use in the environment of energy management service providers and system operators. They operate IngSoft InterWatt themselves and on this basis they offer their customers energy controlling services. Thanks to multi-tenancy they have the overview and assure a high level of confidentiality in all processes at all times.

#### Scalability and high availability

IngSoft InterWatt has **upwards scalability**. Both small organisations and municipalities with a few hundred counters as well as large energy suppliers and service providers with data points in the six-figure range as well as industrial and trade companies appreciate the performance of IngSoft InterWatt. The scalability allows **perfect handling of extensions to existing organisational structures**.

#### Multi-core (option)

IngSoft uses multi-core technology, allowing parallelisation of the computations and **an increase in efficiency**, particularly in very large organisations.



ingsoft  
**interwatt**

- ✓ is the solution for **software-based energy management**
- ✓ provides company-wide **transparency on costs, emissions and consumption**
- ✓ serves to **lighten the workload** and increase **process automation**
- ✓ **is consistent with changes** (e.g. changes in the recording structure, usage, energy sources, tariffs and emission factors)
- ✓ allows **meaningful comparisons and detailed analyses**
- ✓ **wins valuable time for you** to spend on important tasks in energy management

### ISO 50001 – IngSoft InterWatt supports the processes holistically

**Energy planning** includes an energy assessment, the calculation of the energy baseline and the determination of the energy performance indicators (EnPIs), the energy objectives (strategic and operational) and consequently the action plans.

In the **implementation/operation** phase the defined action plans are implemented. This includes, among others, the provision of resources, improved targeted control of processes and the documentation of actions taken.

In the **monitoring** phase, the effectiveness of the energy management system created up to then is checked

and recorded in writing with regard to energy-related performance, energy policy and strategic goals. The activities carried out and measures taken are reviewed regularly, measured, analysed, corrected accordingly and documented.

The **internal audit** is used to optimise the energy-related performance and the energy management system implemented.

The effectiveness of the energy management system is reviewed at the management level (**Management review**).

## Energy planning – IngSoft InterWatt is a solution for all sectors

The energy planning required by ISO 50001 includes the identification and analysis of energy use and energy consumption as well as the definition of the variables affecting it. From this optimisation possibilities can be derived and action plans created for energy management.



### Service providers

Service providers in the field of facility and energy management face more and more customers with the need for a noticeable and lasting increase in energy efficiency. Therefore they increasingly deal with energy management applications and expand their range of service.

Service providers use IngSoft InterWatt to take over long-term energy controlling for their customers. They offer an added value through their services, are ever more closely involved in the operational processes and thus raise their customer loyalty in the long run. Contracting suppliers use the software as a tool to achieve and document the results agreed upon.

A multi-client capability, rights management, user-defined structuring and analysis options as well as web access are the necessary prerequisites for this.



### Utilities

Utilities are increasingly discovering energy management services as a business segment and as a means to achieve long-term customer loyalty.

In addition to the most sustainable and efficient energy production possible, this also means an intelligent use of energy in their own organisations. Optimisation of business processes, the use of efficient equipment and technical instruments as well as the combination of various conventional and renewable sources make energy and cost savings possible.

Utilities not only perform energy management in their own companies, they also raise their customers' awareness to use energy as efficiently as possible. For this purpose, they offer services such as energy consulting or contracting.



### Industry

In the industry sector energy costs represent a significant proportion of total costs. At the same time, there are substantial energy and cost savings to be achieved. An energy management system must reflect many issues here. Necessary key figures relate for example to large machines, refrigerators, complex processing and production processes.

In addition to this, manufacturing units, warehouses and office buildings must be sensibly defined and evaluated in terms of energy. Information on their use, i.e. shift patterns, hours of use as well as production figures also play a role. In addition to electricity consumption media such as water and heat consumption, compressed air, technical gases and temperatures must also be recorded. In many cases, energy is even generated, which must be accounted for on the holistic approach.

## Continuous improvement process / documentation

In the context of holistic energy management, ISO 50001 requires, among other things, a continuous documentation of the optimisation process. IngSoft InterWatt meets this requirement in all phases of energy management through different documentation options. All changes to counters, rights, tariffs, media, energy use or for special events such as holidays, technical failures or production changes can be recorded in IngSoft InterWatt.

### Energetic evaluation

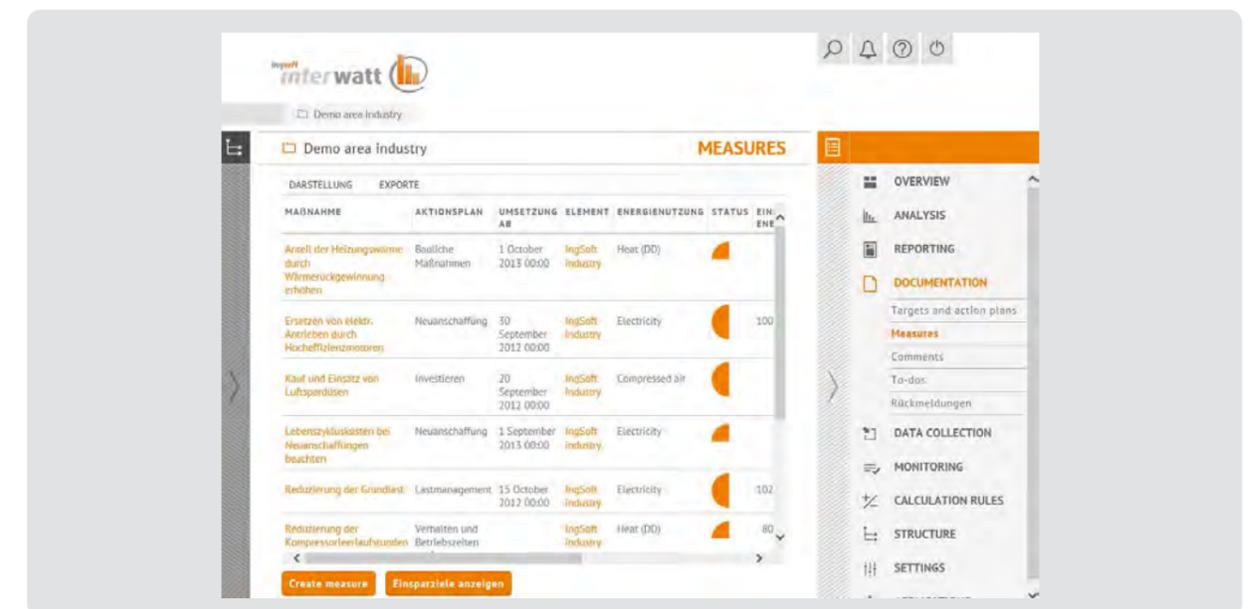
To properly capture and record energy consumption and all relevant variables IngSoft InterWatt offers the possibility to comment on counters and meters (e.g. on meter replacement). To identify potential improvements based on

the analysis of recorded energy data, the energy manager has access to **documented historical values and comments**.

### Measures taken

The application allows the user to record his action proposals and measures taken. Measures recorded by other users are always visible in the central administration. Managers

are given an **overview of objectives, budgets, initiated measures and their effects**.



Documentation of the measures taken makes the continuous optimisation process comprehensible

### Additional documentation

Not only is it possible to comment on and document all processes mapped by IngSoft InterWatt directly in the system. The software also permits the **filing** of any

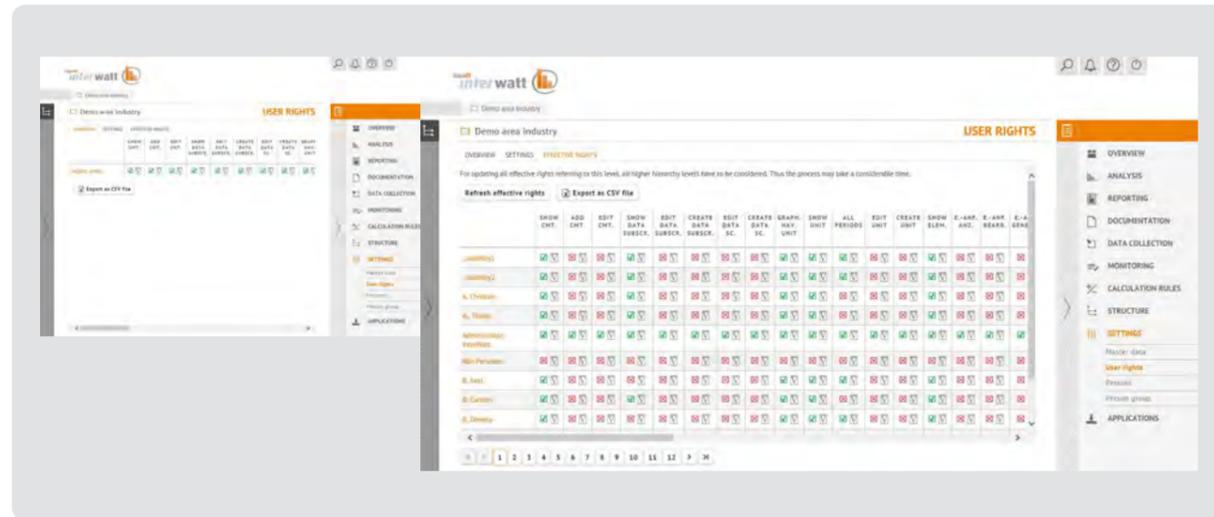
**additional documents which are important** for energy management and make the on-going optimisation process comprehensible.

### Feedback reports / user feedback

Energy managers have the opportunity to comment on the development of consumption of individual units during the relevant time period. They use a commentary form. Feedback refers to a specific unit, a specific time and each kind of

energy use, which are processed sequentially per unit. Feedback reports are used to efficiently individualise the largely automated processes. Individually created text blocks can be used for this.

### Rights management / role concept



Clear yet finely differentiated rights management makes working easy for system administrators

IngSoft InterWatt has a finely differentiated rights management. A distinction is drawn between administrator, write and read access. These rights are automatically inherited by subordinate units. Unnecessary work is avoided. Individual rights can be granted or revoked at any time. The very detailed yet easy rights management makes work easier. Particularly large organisations where many employees with

different tasks are involved in energy management benefit from this feature. Within the integration of IngSoft InterWatt into a corporate network a single sign-on can be realised, so that users can securely access the configured applications without an additional password. This can be realised by means of the Active Directory interface.

### Management review

In accordance with ISO 50001 management is required to check the energy management system for effectiveness on a regular basis. In particular such aspects as the energy-related performance, the energy performance indicators, achieving the energy objectives and the corrective measures and forecasts of energy-related services must be observed. The management review must be documented.

IngSoft InterWatt not only facilitates the daily work of executives in energy management. The software provides senior management with a sound basis for decisions through a clear presentation of complex data structures. Thanks to

numerous mechanisms all necessary information continuously recorded in the form of reports, comments and actions is available without further effort.

Energy planning differs depending on the specific requirements and challenges of the organisation and sector. Due to its adaptability IngSoft InterWatt can be used in virtually all sectors.



#### Public sector

Many municipalities and public institutions need to husband scarce financial resources. Energy costs in particular can offer enormous saving opportunities. Consistent energy management helps in the identification of low investment-potentials and the improvement of energy efficiency. But it also helps to apply means of stock renewal reasonably.

Buildings in the public sector include academic and administrative buildings, sports facilities, hospitals, libraries and cultural institutions. In addition to automatic data acquisition manual data acquisition is often still carried out for economic reasons. These should be automated with suitable acquisition processes and the potential for error should be limited using plausibility checks.



#### Finance

Financial service providers often build their business model on a long-term and intergenerational promise. Some of them are indirectly affected by the risks of climate change in different ways.

For this reason, they are making their contribution to sustainability and using it for their corporate communications. Not only do they support the initiatives of others on climate change, but they also take consistent and active measures in their own company. Numerous banks and insurance companies are committed to compliance with corporate environmental principles, to accepting responsibility and to reducing energy costs. They control their energy consumption and launch specific optimisation measures based on data analyses.



#### Trade

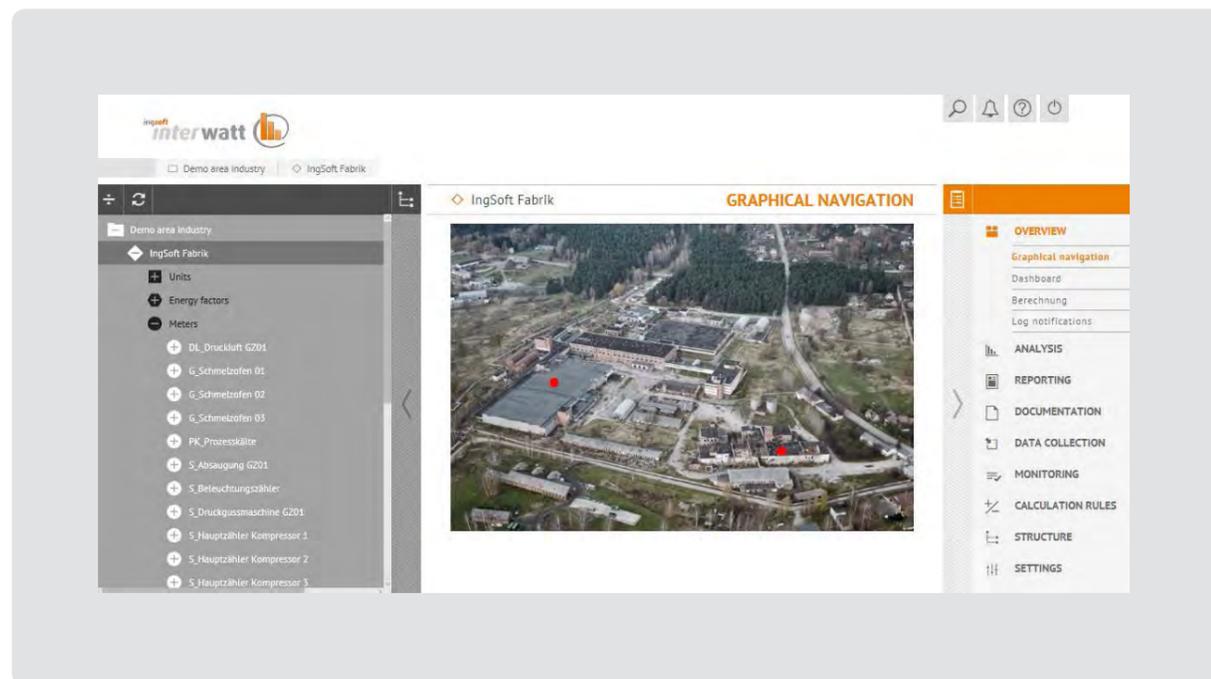
Energy managers in trade need to consider aspects such as growing sales areas, longer opening hours, integrated lighting and air conditioning concepts as well as customer volumes when setting up an energy management system.

Due to the supraregional structure there are also different climatic conditions at different locations. Furthermore, it is also important to capture the dynamic change of use. This includes, for example, the fact that the uses of sales areas and branch structures change due to new openings and relocations. In addition branch categories differ in size and features.

## Implementation and operation – IngSoft InterWatt as a central software platform

Like energy planning, the details in regards to the implementation and operation of an efficient energy management depend on the company. IngSoft InterWatt helps you define the structures and responsibilities for energy management, establish the necessary procedures and ensure reliable information flow and documentation.

### Access: web portal and configuration app



Map navigation in the web portal

The **energy monitor** is the web portal based on the latest internet technologies, which user-interface is adjusted optimal to the display resolution. All functions are centralized in a **user-friendly task structure** on the right-hand side of the screen. Besides the selected element of the navigation tree, the suitable tasks are available.

The navigation tree can be presented by the user in a necessary structure of an organisation (i.e. buildings, technical facilities of any complexity) up to individual measuring instruments. If a task is selected on the right-hand side, all necessary information and setting options with this function appears in the center of the screen. The working area changes its size depending on whether how the edge elements are shown or hidden.

Besides the **navigation tree** a **map-based navigation** is available. The user is able to upload his own maps, floor plans or functional schemes and link any points, called hotspots, with elements such as buildings or meters. This makes a purely graphical navigation to detailed counters at the lowest acquisition level possible. During the navigation the user remains always in the previously selected task. This allows efficient working. A wide range of settings can be centrally managed or subsequently changed with the configuration app. Complex scenarios can be managed clearly and effectively.

## Nonconformities

Nonconformities are documented using sophisticated mechanisms such as alerting via e-mail, SMS or fax. You can promptly identify nonconformities, initiate corrective actions

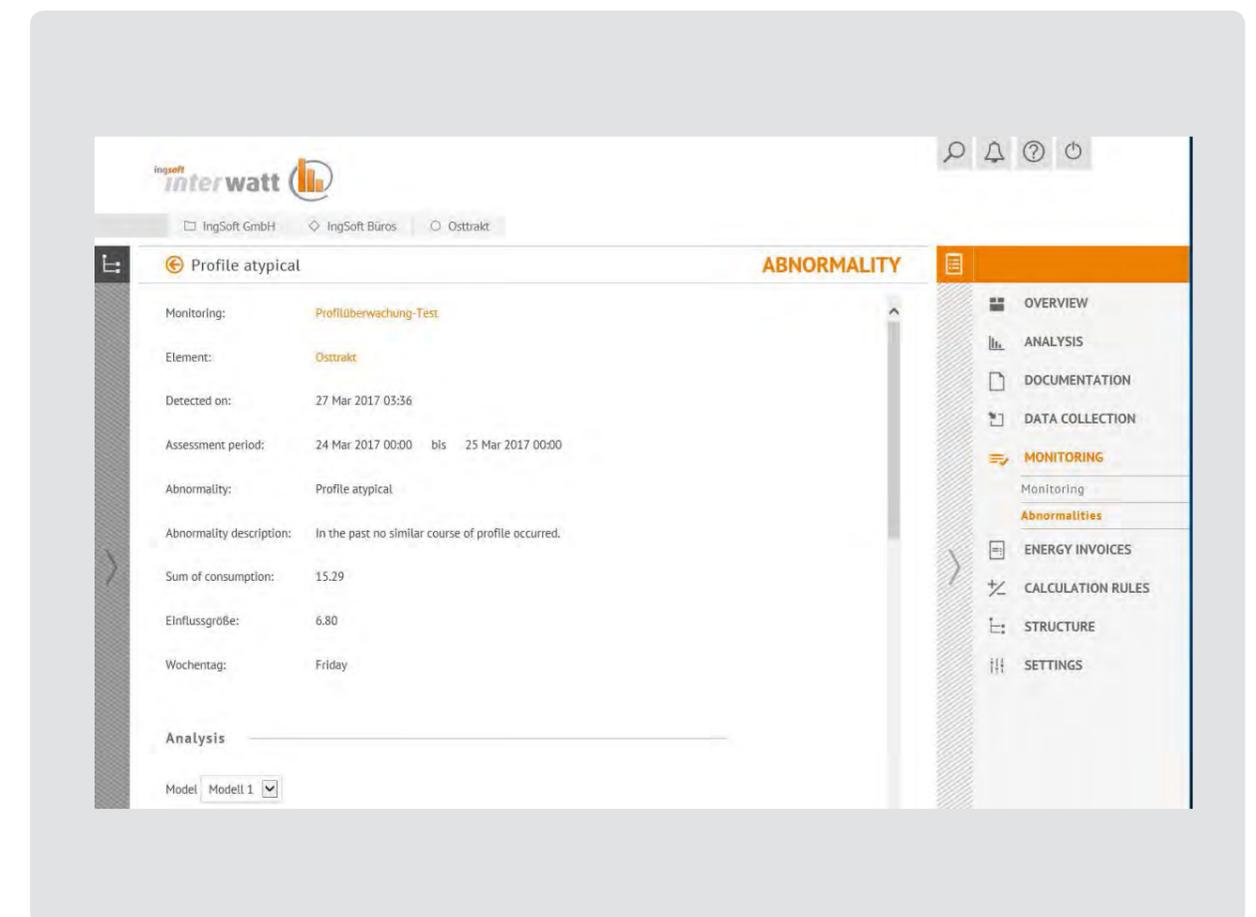
and thus limit possible follow-up costs. IngSoft InterWatt can help you with various monitoring functions. Irregularities can also be explained using a comment mask.

### Monitoring of incoming data

The incoming data in IngSoft InterWatt is automatically monitored. Inconsistencies in the data import or manual data entry are displayed in the structure tree by a simple

traffic light system with a yellow or red "status LED". The user can detect irregularities and consequently the need for action promptly and easily.

### Automatic monitoring of energy use and key characteristic values (incl. alerting)



The automatic monitoring function in IngSoft InterWatt uses a clear status indicator

Monitoring sessions can be defined at the levels of counter, meter and unit. They are automatically applied to recorded or calculated consumption values. Besides simple min/max monitoring options there are also more complex algorithms applicable, e.g. leakage monitoring or interfacing with an Energy Signature. The validity of individual monitoring criteria can be specified for particular needs. Different criteria

apply for day or night, public holidays or during works holidays etc.

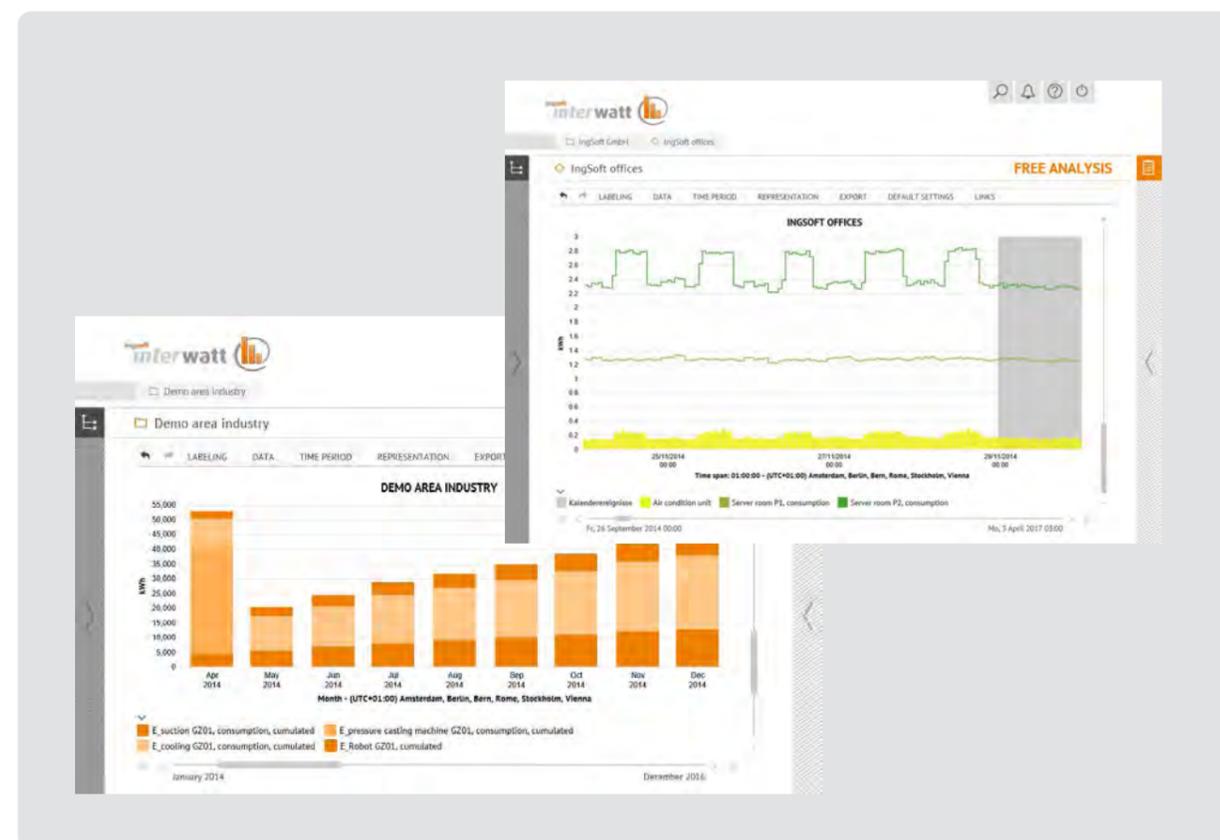
If an alarm is triggered, notification occurs standardly by e-mail (optionally SMS, fax, other) and by a colour change in the structure tree. The triggering of the alarm is also permanently documented – in line with ISO 50001.

## Classification

Units can be **freely classified according to their uses or equipment**. Users can even create their own useful energy management classifications. Grouping is possible under various aspects, such as branch types, rehabilitation conditions or technical equipment.

Users are also able to filter objects via reference values. For example, it is possible to evaluate only objects that have a net heated area within a selected range. This helps you to meet your organisation's requirements in the best possible way.

## Formation of key values



Comparative assessments of different energy consumption forms taking into account relevant benchmarks

Energy consumption or energy generation is meaningful only in the light of relevant factors. Reference values differ depending on the application. Heated gross floor area, production volumes or numbers of visitors are just a few examples. **Both energy as well as commercial indicators and benchmarks can be defined in IngSoft InterWatt**. Information on factors can be automatically

imported from ERP systems. Even for extension to wastes or other substances to be reported in the context of environmental management, practical examples are available.

By customised characteristic values, you can map all desired requirements and achieve optimal arrangement of your energy management system.

## User-friendliness

The clear hierarchical structure and the (map) navigation enable **intuitive use** of IngSoft InterWatt. The web access allows a **comfortable and location-independent working** at any time. The user can make use of a **context-sensitive Help function**.

The **clear visualisation of complex consumption situations** also contributes to user-friendliness. Among other things you can generate charts in various forms. A quick

and clear overview of the status quo of energy consumption and costs is provided by IngSoft InterWatt e.g. using a simple traffic light system as well as its "status LEDs" at nodes.

Furthermore, the **automation of information flow** in data collection as well as in report generation contributes significantly to the efficient use of the overall system.

## Structural elements

### Organisational units

The top level structure in IngSoft InterWatt is the organisational unit. It is divided according to organisational aspects of each company. It is used to group energy properties and registered users. An organisational unit contains the allocation of persons and their rights, reading lists and also suppliers and tariffs. An arbitrarily deep breakdown into suborganisational units allows the mapping of any structure in use.

### Units

A unit in IngSoft InterWatt describes buildings, production lines or machines. An arbitrarily deep subdivision is also possible to meet your requirements.

Units can be classified according to different, user-defined criteria. This allows comparisons and summaries of the same objects and/or analyses of additional virtual organisational structures. Buildings can be grouped, for example, as an "administration building" or "production facility" and classified according to their technical features. Any filter criteria - even combined - can be implemented.

### Meters

A meter in IngSoft InterWatt consists of any number of counters (data points or data series). At the meter level, volumes and values measured by counters are assigned to tariffs and invoices, and that way costs are calculated. Changes affecting the medium or the tariff are recorded in order of occurrence. Thus it is possible to make evaluations and comparisons, taking into account the applicable tariffs. If the assignment of tariffs and calculations is not possible, costs and emissions may be calculated from one or more pre-counters. A use case is e.g. heat meter in mixed heated buildings.

### Counters

Counters are used for recording any measuring and counting values. IngSoft InterWatt supports all possible physical quantities: in addition to the usual variables such as active and reactive energy, power, operating and standard volume, quantities regarding temperatures, production volumes or numbers of visitors can also be recorded. All values are saved with a time stamp, so that in the event of missing or

irregularly recorded values IngSoft InterWatt can independently determine a replacement value - if necessary also in consideration of current climate data.

### Tariffs

Each meter can be assigned tariffs on a historic basis. To simplify working they are maintained centrally for each organisational unit. Moreover, this ensures that confidential tariff information is only visible to authorised users.

IngSoft InterWatt enables the mapping of complex tariffs using innumerable price components.

Tariff elements such as labour rates, demand rates, average price limits and the collection of billing cycle, minimum purchases, quantity scales and temporal changes allow a precise and accurate description of the tariff and cost situations in practice.

This functionality is also taken as a basis for third-party additional costs settlement.

## Relevant information

IngSoft InterWatt integrates all relevant information. This includes **both automatic and manual recording**. **Factors such as climate data or usage-based variables** (attendance, production volumes, etc.) are also taken into account. The **number of counters or data points is unlimited** and restricted only by the selected licence volume or hardware.

### Automatic



#### Acquisition technique

Central building control systems and process control engineering can be integrated. Moreover, values can be automatically recorded on data loggers. A direct connection of smart meters and the use of data provided by the network or meter operator are also possible. This data is transferred using all network connections supported by the acquisition hardware (DSL, modem, wireless, ...).

Within the scope of customer projects IngSoft has, among others, integrated systems from the following manufacturers into IngSoft InterWatt\*:

#### Central building control systems and process control engineering

- Beckhoff
- Eckelmann
- Neuberger
- COPA-DATA
- HERMOS AG
- Johnson Controls
- Kieback&Peter
- SAUTER
- Siemens

#### Direct communication with controllers

- BACnet
- OPC

#### Data loggers

- BTR NETCOM
- ennovatis
- Frako
- Görlitz

#### Direct connection of smart meters

- GMC
- Janitza
- JEAN MÜLLER

#### Universal file or e-mail-based interfaces

- CSV
- IngSoft SIMD
- LPEX

#### Interfaces for utilities

- Germany/Austria: MSCONS under VEDW specification
- Switzerland: eBlX 1.1 under VES/AES specification

#### Individual solutions

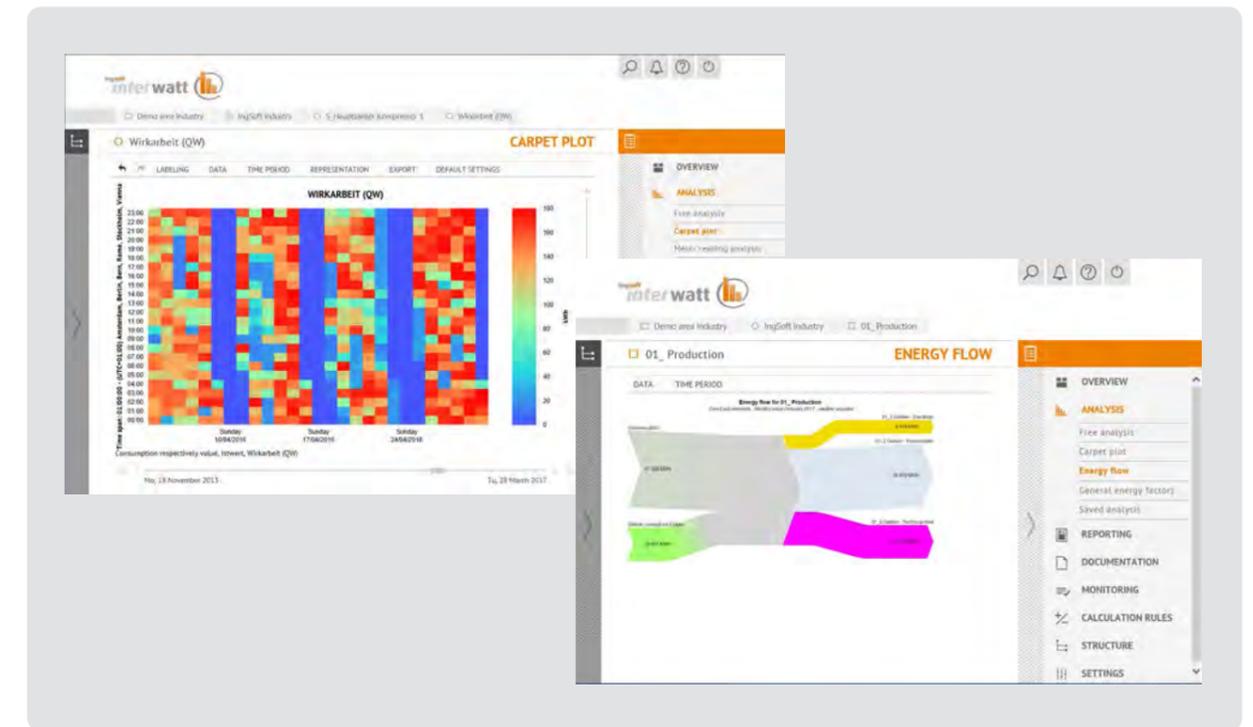
- File transfer via SFTP

#### Universal file or e-mail-based interfaces

- CSV
- E-Mail
- FTP/STP
- ODBC
- OPC

\* Interfaces are optionally licenced.

## Extended charts



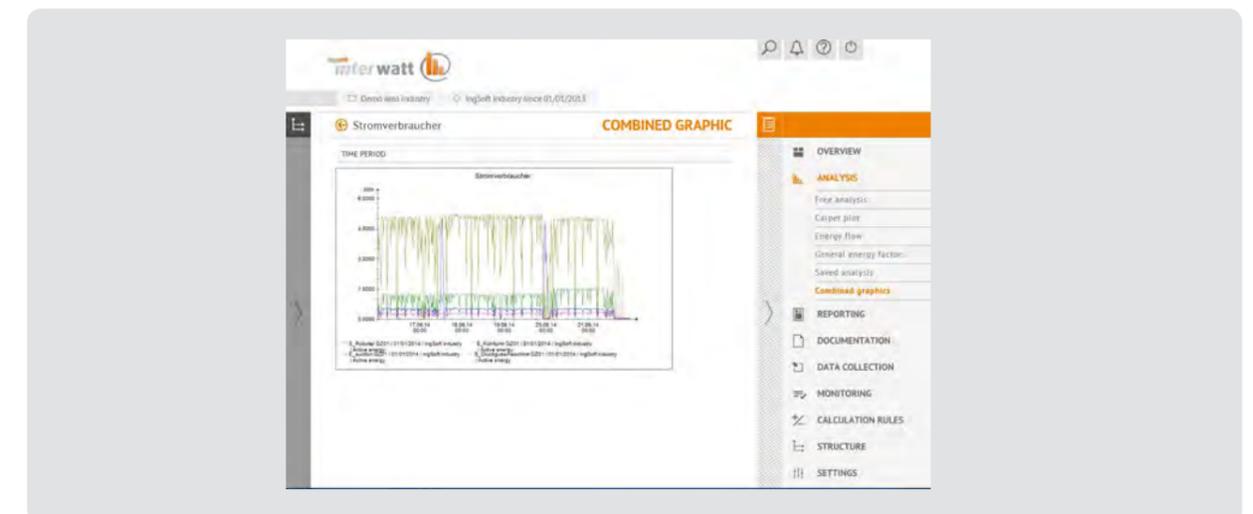
carpet plot and sankey diagramm

Charts can be generated in a variety of shapes (as lines, bars, columns, etc.). In this context, it is also possible to create characteristic values, mark weekends and weather adjustments.

In so-called combined charts different data series are combined with each other in a chart with up to two y-axes. Any elements or different variables (e.g. temperature, volume, heated gross/net floor area) can be represented.

Combined charts can be generated at any level. So you have the possibility to consider mutually related physical quantities such as gas, outside, flow, return temperatures and visualise technical energy-related relationships.

Charts can be integrated by the user as a supplement to predefined reports.



Free evaluation and individually operated combined charts

## Monitoring – core tasks of IngSoft InterWatt

The software offers numerous functions for the acquisition and evaluation of all relevant data used to monitor the energy-related performance and energy efficiency, as defined in ISO 50001.

### Evaluations and analyses

Extensive options for key value formation, weather adjustment, the selection of elements to be evaluated, the displayed physical values, the resolution, the type of representation and the time period are evaluated in any form relevant for you.

Hence you cannot only control energy consumption and energy costs. The various evaluation options will help you

to verify the yields of your photovoltaic system, create CO<sub>2</sub> balances and sustainability reports. Furthermore it helps you to examine utility bills, as well as to carry out cost centre allocations and budgetary controls. With IngSoft InterWatt you have **an extremely versatile platform**.

#### Evaluations

- are feasible **at all levels** - even automatically aggregated.
- can be **comparative or accumulative**.
- can be done under **consideration of different temporal resolutions**.
- can be done under **consideration of different filtering mechanisms and classifications**.
- are **graphically displayed** in various forms.
- are sent automatically **as target group-specific reports**.

### Evaluation levels

Evaluations are carried out on different evaluation levels, ranging from the level of entire organisational units to the level of meters and counters. Depending on the level evaluated, a range of options regarding the inclusion of variables or the filtration of objects to be included are available: physical values (active and reactive energy, power, amount of water, etc.), monetary values (cost per invoice or tariff) and

emissions. Sometimes values can be broken down, classified and displayed accordingly (e.g. active energy separately for HT/LT).

This allows you to **adjust the evaluation to your specific needs at all times**. Without additional effort accumulative and comparative reports can be generated.

### Temporal resolution

Evaluations are carried out with different temporal resolutions. A consistent time base despite different measurement times is ensured by the software. Temporal resolutions are

possible by default in the following cycle: Five minutes, 15 minutes, one hour, six hours, days, weeks, months to one year (financial or calendar year).



#### EDIFACT – Integration of data from utilities (option)

If you have agreed with your utility or meter operator on the transmission of billing data and load profiles, they can be read into IngSoft InterWatt by EDIFACT. The available data from the suppliers are automatically assigned to the meters in the database. The manual entry of invoices or semi-automatic import of load curves is not necessary.

### Manual – software-supported reading process

If an automatic recording of consumption data is economically not possible, the counters can be checked manually at any regular intervals. This of course also applies to temporary manual readings, e.g. during the implementation of an automated recording system. IngSoft InterWatt automatically ensures a **temporal adjustment**. Responsible employees receive **readings via e-mail**. They can print and edit PDF reading lists and then collect meter readings online. A **plausibility check** is carried out immediately, and colour-coded warnings are reported back to the reader to be verified. If a reading date is missed, a reminder is sent automatically. Even **escalation to third parties** can be configured in this automatism. Manual reading processes contain a **commen-**

**tary function**. The reading employee can enter additional information on consumption, not yet documented meter changes and all associated parameters. This additional information will automatically appear in the central cockpit of the energy manager.

Invoice data and information from ERP and CAFM systems (e.g. areas, times of use, users or production figures) can be entered either automatically or manually into the system. For this, the same e-mail process as has already been described or further semi-automatic functions for data exchange are available.

#### Use of “Mobile Devices” (option)

The acquisition of reading lists can take place with mobile devices such as smartphones. If the device supports HTML5, the acquisition can even be carried out offline. This is necessary if the equipment at the place of reading does not have a network connection (e.g. in the basement). For Apple devices (iPhone, iPad) and Android devices custom-made, convenient apps are available.



Convenient apps support manual reading processes and allow assessments

### Factors

Climate data, user numbers, opening hours, areas, hours of use, production volumes and other factors can affect the use of energy. IngSoft InterWatt takes these and other energy-relevant parameters from ERP (e.g. SAP) and CAFM systems to provide you with specified reports on energy consumption. Alternatively, these can be recorded manually and process-controlled.



#### Climate data

If energy consumption is subject to the weather, it requires not only the recording of energy data but also a weather adjustment to derive sound conclusions from them. For this purpose, both own weather data of the customer and also data services of weather data providers can be automatically integrated. The data from the available and free weather stations of the DWD in Germany are imported by IngSoft InterWatt by default. But weather stations from meteocontrol, Meteo-Schweiz or ZAMG Österreich and many others can also be integrated.



#### Benchmark factors – data from ERP/CAFM systems (option)

Additional data from ERP and CAFM systems not only allow a more accurate assessment of energy consumption. It is also possible to compare buildings or branches with the structures of the energy management.

### Energy sources and other media

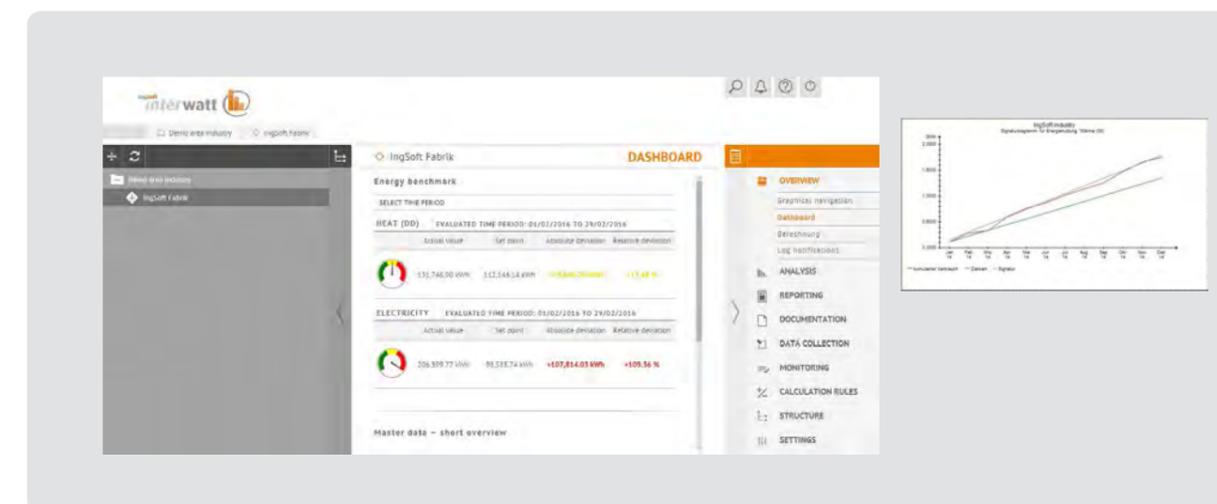
The full implementation and operation of an energy management according to ISO 50001 requires, among other things, the consideration of all media used in the organisation. **IngSoft InterWatt combines all possible energy sources or media**, to give you a complete picture of the overall consumption patterns. The user can extend the list of energy sources.

#### The media, which IngSoft InterWatt covers, include for example:

- Steam
- Compressed air
- Natural gas
- Remote or local heating
- LPG
- Heating oil
- Wood pellets and wood chips
- Tap water
- Coal and lignite
- Electricity
- Heat from thermal recycling of waste



### Review and forecast – Energy Signature (option)



Energy Signature for the energy use 'room heating'

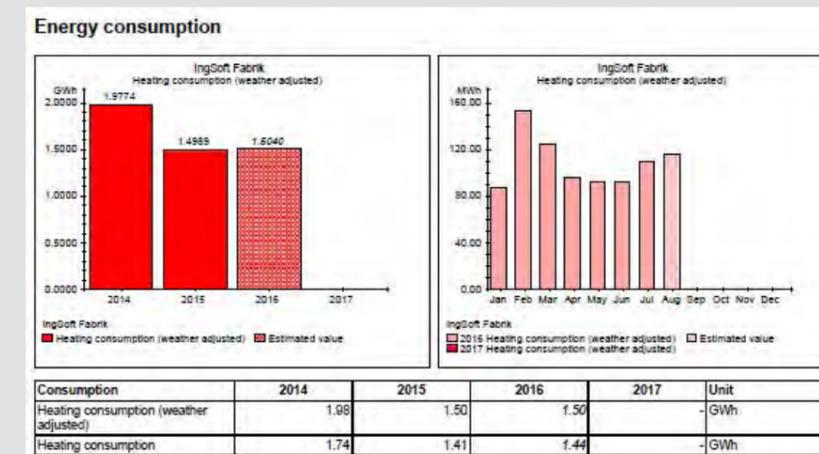
The Energy Signature serves, **on the one hand**, the purpose of **determining the energy baseline** and, **on the other hand**, is a **forecasting tool for determining the expected energy requirement**.

External factors such as ambient temperature or production volumes are taken into account, which are critical for energy requirement. The Energy Signature is based on the specific energy requirement of a building or an object and

supports operational optimisation. Accordingly, it is widely used by service providers and energy contracting companies. In addition to evaluations, reports on the Energy Signature can be produced for each building or production unit. The expected consumption can be generated for all measurable media. Thus you or the property managers responsible for the budget have a sound basis for the control of your energy consumption.

### Multilingualism

On request, IngSoft InterWatt is available in other languages and is therefore suitable for use in international companies.



Extract from an English annual report

## Reports

The standard ISO 50001 requires an information flow between all persons involved in energy management. This information flow is supported by IngSoft InterWatt through **comprehensive and automated reporting**.

Predefined reports are automatically sent (as PDF or Word file) to the designated recipient by the energy manager. There is no time-consuming setting up. **Reports contain target group-specific information.** They show, for example, short- and long-term trends of costs, consumption, characteristic values (e.g. consumption based on visitor numbers, production volumes, ...) and emissions. On request, they can also contain continuously recorded measure proposals and explanations. **Dispatch is at freely defined intervals.** This automated information flow simplifies your entire workflow. Users can get reports on request at any time.

Different reports can be generated: from monthly and annual reports with summaries to monthly and annual reports with comprehensive combined charts that contain individual data series as well as emissions and costs. Reports can be adapted to the corporate design of your company.

## Report generator

Specific analyses can be added to standard reports. Using the so-called report generator users can also create custom reports for any object themselves using freely definable combined charts.

On request, IngSoft develops individual templates (hereinafter "Standard Reports") for an organisation-wide, adapted reporting function.

## Report outbox

The entire reporting system is automated in IngSoft InterWatt. On demand, the system can also be configured so that reports are only sent after being released by an energy manager. For this purpose they are stored in a so-called report outbox. Report outboxes can be configured so that sent reports or the dispatch information will be archived in there for a specific time. This functionality is of interest to energy supply companies, large real estate operators and service providers that send numerous reports to a variety of customers automatically and might like an additional approval process.

## Use of energy



The standard areas of energy use include for example:

- Electricity
- Compressed air
- Water
- Climate cooling
- Process cooling
- Room heating
- Process heating
- Lighting

## Coupling processes and alternative energy sources

In addition, IngSoft InterWatt also takes into account alternative energy sources and coupling processes:

- **Biomass**
- **Cogeneration units**  
If a cogeneration plant is used, on the primary side e.g. gas is expended to obtain electricity and heat on the secondary side. Thus, the energy content of the amount of gas used is distributed to the energy use heat and the energy use electricity. Depending on the meter facilities available, this can be determined based on the measured electricity and heat or, for example, on fixed factors of the recorded operating hours.
- **Geothermal energy**
- **Hydropower**
- **Photovoltaics**  
The use of photovoltaic systems can be monitored up to the level of individual strings. Special report forms and evaluations are available as well as in individual cases the integration of system alarms and monitoring algorithms, e.g. string comparison (partly as options).
- **Solar thermal energy**  
If the heating system of a building is supported by a solar thermal system, whose revenue is also measured, these outputs are included in the calculation of the consumption of the energy use heat.
- **Wind power**



Example of a detailed monthly report, including different charts

