



**NEW – NEW – NEW – NEW – NEW**

# Energy Management System

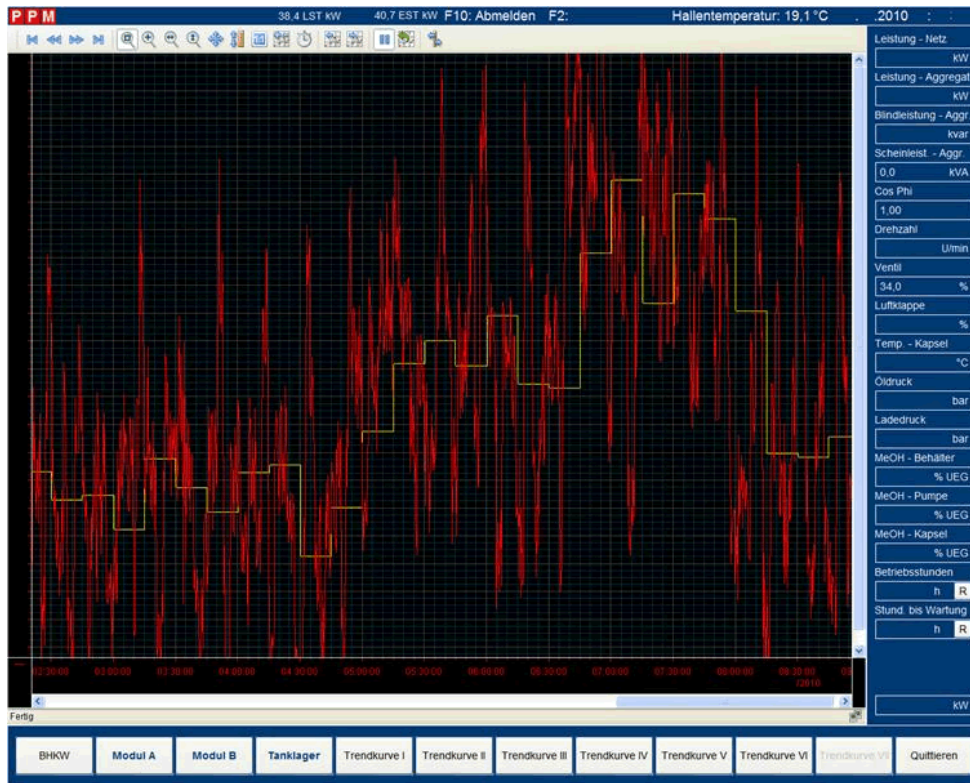
## Basic idea

The energy costs for businesses are made up of the work price and the performance price in general. The basic principle of the energy management is to save costs through the performance price. A different number of highest power ratings of the measuring periods [in Germany 15 minutes] for the performance price are set. During the monthly price adjustment one power peak is usually sufficient and during an annual price adjustment the average from approximately 2 to 3 power peaks, in order to increase the costs of the entire accounting period, although a lower average power requirement in your business is presented.

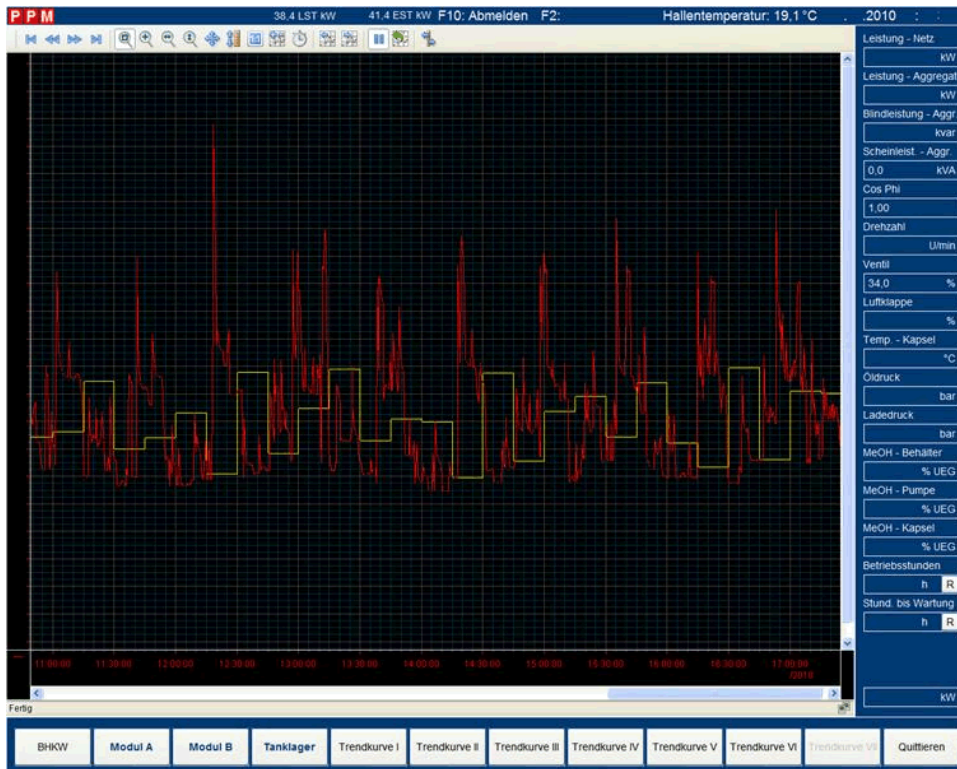
By preventing the temporal conjunction of large power requirement [grading of the consumers such as cooling units, larger pumps and electric heaters, time limitation and regulation division of maximum values] the quarter-hour performance can be limited and the additional purchase by reproaching performance can be gratefully reduced, without reducing thereby the equipment performance.

Arising of these considerations two systems were developed, which permit to integrate the highest individuality at the individual locations and bring it to a safe use. On one hand the active system was developed, in order to lower the consumption almost independently. . On the other hand emerged from the considerations, the passive system was developed, which are indications that savings can be achieved by the employees. Differences will affect the systems through their respective ability to reduce the energy budget and thus.

## Example: Power consumption WITHOUT PPM - Energy Management System



## Power consumption WITH PPM Energy Management System



Here is a short overview of the different systems:

## *Aktivsystem*

- Record the metered values by a measuring device
- Further processing of the values on the PC
- Transfer of data to an active control
- Control blocks / allow active access to the device
- Operator of the terminal has no responsibility
- No overstepping of the performance average value possible
- Full cost control

## *Passivsystem*

- Record the metered values by a measuring device
- Further processing of the values on the PC
- Evaluation takes place at the PC
- Display on the terminal signals switching status
- Operator is responsible for switching the terminal on/off
- Overstepping of the performance average value possible
- Limited cost control

### **Our basis of the selected criteria:**

1. Payable design for small and medium-size enterprises
2. Redemption of the energy management system after one year
3. Highest efficiency
4. Individual tailored advice and optimization to the conditions
5. Individual adjustment at the customers
6. Support also after project engineering

### **Goal:**

**Reduce energy costs through small measures without significantly affecting the operation !!!**

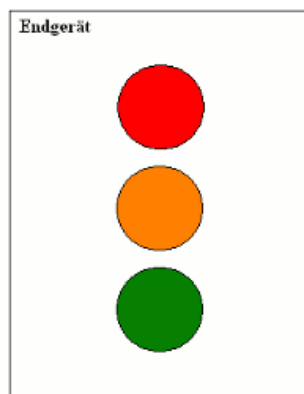
# THE PASSIVE SYSTEM

As possible solution to the active system we offer you the passive system. On the same basic considerations a simpler version was developed to the active system. The energy management system is working according to the active system on the basis of the measurement date report, data processing and data visualization.

From the predicted quarter-hour averages can be specified which endusers can be connected without increasing the quarter-hour average. This is brought via optical or rather optical-acoustic signals to the plant driver/operator.

Hence the actual difference of the systems becomes clear, because at the end the plant driver/operator can decide whether the respective terminal is connected or not. Therefore it is also necessary to train its own personnel in order to obtain the highest degree at effectiveness with the help of the energy management system.

The signals are clear thereby (fig. 2), so that a very easy operation is given here and a large saving potential can be achieved.



**RED**

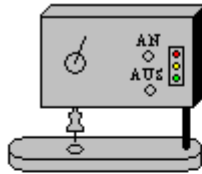
- Do not switch the machine on
- If it is switched on however, the quarter-hour average value increases to a new maximum

**YELLOW**

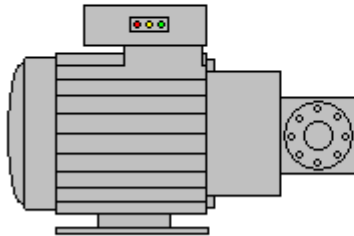
- Machine can be switched on
- Performance average value at the border for excess

**GREEN**

- Machine can be switched on without any doubts
- Performance average value below the border



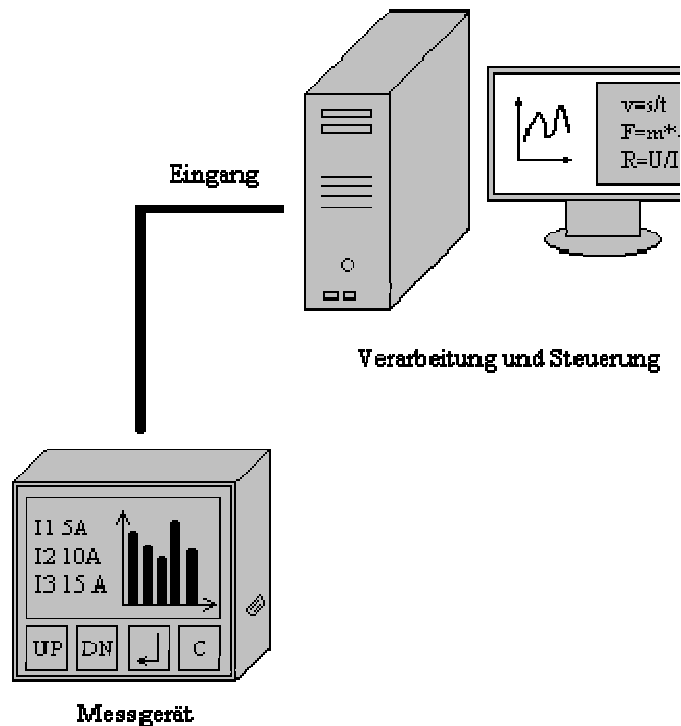
Bohrmaschine



Hochleistungspumpe

As previously mentioned trained and capable personnel is needed for the correct use of the system, because they have the power of decision if terminals in business are taken on. The optical or rather optical acoustic signals actually make it very easy for them, which must then only be put into effect

The schematic structure represented in the right picture, shows the relatively simple construction of this management system. The absence of the actuating elements shows again the difference to the active system. This difference leads in the long run to the fact that the saving factor can be obtained even with smaller means. Therefore it can be also said that despite smaller expenditure it will receive a high measure of savings.



# THE ACTIVE SYSTEM

The solution via the active system provides larger control of your energy consumption. The philosophy behind this concept is contained into "active" Intervention to the control from the end users themselves. Based on the prospective quarter-hour average values an upper limit for the consumption will be set by you. The energy management system has thereby the power of decision whether users may be switched on or not. The control is effected automatically.

Under normal circumstances you have no overview which performance in the quarter-hour was used. This is also settled by the system! By visualization of the measured values at the PC you have the complete overview anytime over your energy budget. It is possible to go back to data and to compare these for example with the statement of your electricity supplier.

Beside the evaluation by the software and appropriate circuit of the control at the final consumers, optical and / or optical acoustic signals are installed additionally, which inform the plant driver/operator at any time, about the status of the energy management system at each individual terminal. Thus full transparency is given, so that the energy management is to be used very easy and leaves no open questions.

Furthermore any human error can be excluded and a full cost control is given. As shown in the overview (fig. 1) hardly no interferences for already existing production will be necessary, in order to realize this project

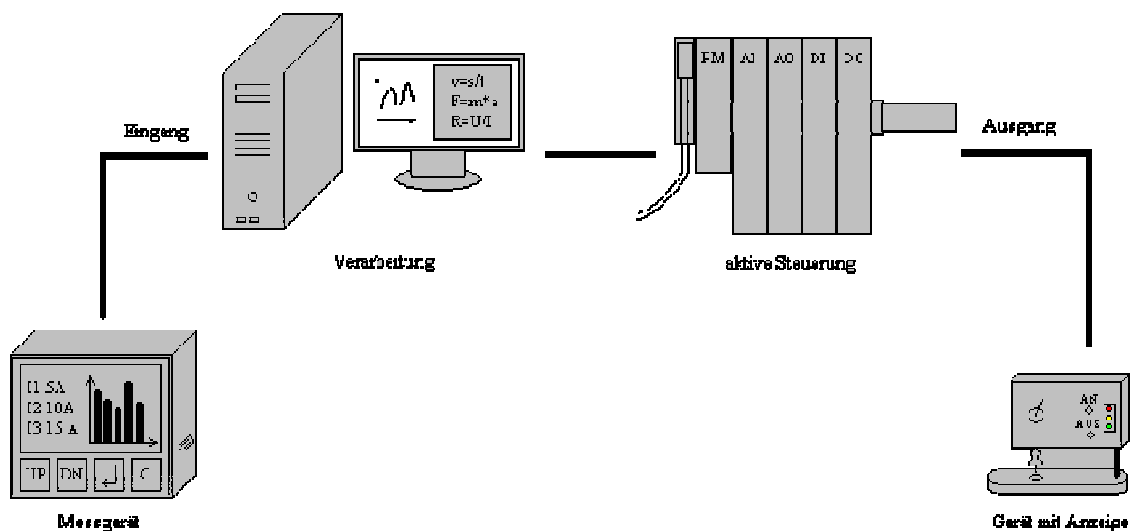
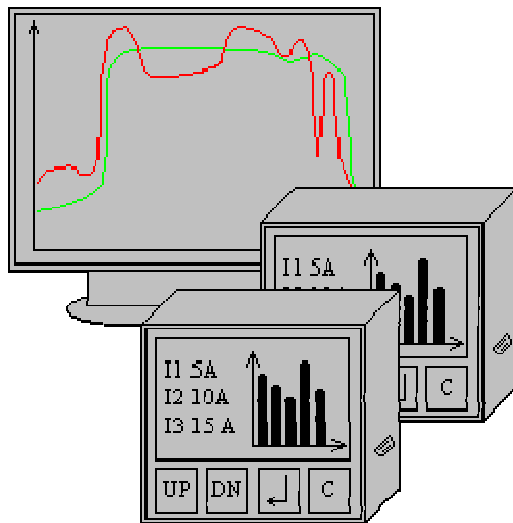


Fig 1: Overview

Another very good criteria for purchasing such a system is the durability, beside the saving potential. As soon as the set-up is done the system works reliable and stable for years.

Alternatively to the active system we provide the possibility of the passive system.

## Advantages



- Optimization of performance curve
- Saving potential is shown and used
- full cost control
- small expenditure for material and supplies
- very small construction work
- possible rationalization of the current peaks
- Individual integration into your business
- Individual adjustment
- Permanent possibility of support from PPM

Practical example:

At the bio plant Sohland the energy management [fuel depot, BD-modules 100,000 t/a and co generation] was the first use of the system. For the realization the existing hardware resources were used [master computer, circuit analyzer with professional bus connection in HV, control for module and fuel depot], only the software in the PLCs and the computers have been adjusted.

In order to offer an economic energy management prefabricated energy logging systems as for instance "Siemens WinCC - powerrate" were omitted.

Likewise the integration of an active capacity control of the CHP is excluded for the time being, in order to be able to serve plants and companies without CHP as well. The first statistically evaluable data will be available in approx. 3 months, whereby in Sohland on a reproaching performance output of 20% is expected.

This 20% savings corresponds to about 20 KW. That means a saving of approx. 3000 Euros per month. It can be anticipated that this system is maintenance free and durable. It can be always adapted to new machines, so that a high flexibility is given.

## Costs

Our stated goal is it that the initial costs of the energy management system amortize within ONE YEAR. The obtained savings are very variable and operating dependent, therefore the range of the energy management system, as well as the uniquely developing costs, will orient themselves at the saving potential of the respective customer.

It can be assumed that the acquisition pays itself also off in the future. The reliability of the system is effectively guaranteed by the employment of qualitatively high-quality, advanced technology. The effectiveness of the system is constantly examined and optimized under real conditions.

We are open for your questions and suggestions at any time.