Real time information on energy efficiency

The democratization of Energy Efficiency as a common goal, face to the increasingly acute shortage of resources has created several market trends, more or less sustained, which are defined in the different approaches adopted for this process operationalization.

The chosen strategy to define the path in pursuing this goal, leads us to the analysis of some points that become crucial to the success of the operation, as well as to the efficiency of its continuity. We must not forget that the search for any efficiency is an ongoing goal and one of the great challenges is its acquisition in conjunction with the preservation of highest quality standards.

I would like to start by addressing the thematic method (**continuous analysis vs discrete analysis**), since it is common to find in analysis procedures of efficiency parameters, the adoption of data collection methods only by discrete sample, where the analysis is limited to the audit period.

Effectively this method has its effectiveness in the analysis of various physical parameters that are static, due to its independence from day-to-day organization (eg. thermal building studies, thermography circuit, etc.).

However, this is not the case in many other parameters which are clearly interdependent of daily operational factors, including the human factor, and therefore vary over time in a continuous manner and often unpredictable.

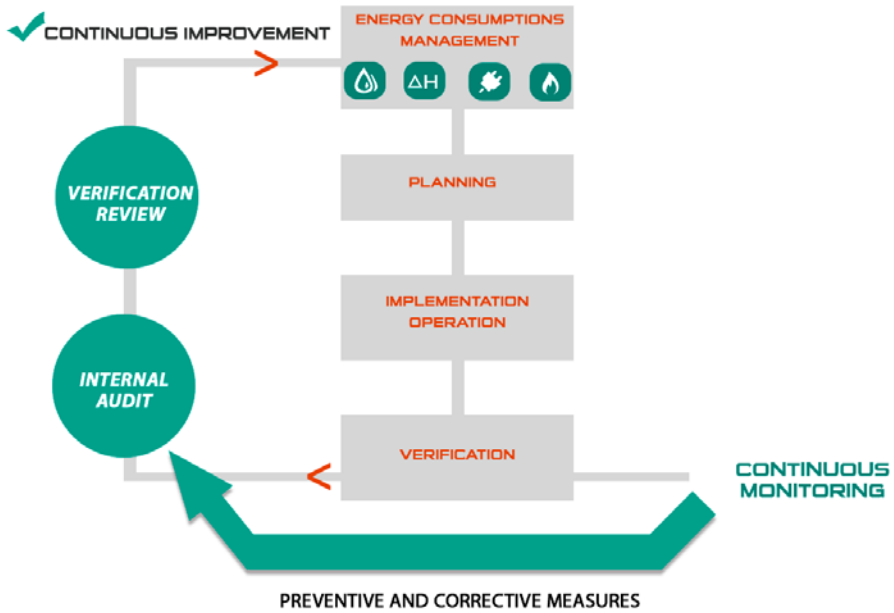
For example, we can highlight the detection of consumption peaks caused by leakage, misuse, malfunctions, among many other reasons, and which are found in electrical circuits, water, gas, medical gases or other fluids, events that are now possible to detect in real time by using continuous monitoring platforms, with intelligent algorithms developed for that purpose.

In these and other examples, in the discrete approach (a periodical survey) the probability of detecting this type of events is extremely low. The detection would only occur if the problem was clearly visible, or if such inspections were with such a high frequency level that would become financially unviable for organizations.

Many other examples could be highlighted, since the failures in air conditioning circuits control systems and DHW (DHW) circuits - which would cause its uninterrupted functioning, till deeper but relevant issues analysis, such as the quantification of the influence of preventive maintenance on equipment's energy consumption, the correlation of a building's indoor air quality with the productivity of its occupants, the absenteeism rate and the rate of nosocomial infections, among many other more or less relevant examples.

They all are supported by the same binomial - Economy, Quality - strongly reinforced by the investment in monitoring and continuous analysis tools.

The problem's identification by its evidence in ***real time***, its quantification and, later also, the evidence of its resolution, thus leads to close the cycle "identifying the problem - solving the problem." Therefore, we are facing the approach with greater financial return and quality, and consequently with greater operational efficiency.



So, efficiency is also on the correct choice of a method and its adjustment to the problem itself, so that the results can be effective.

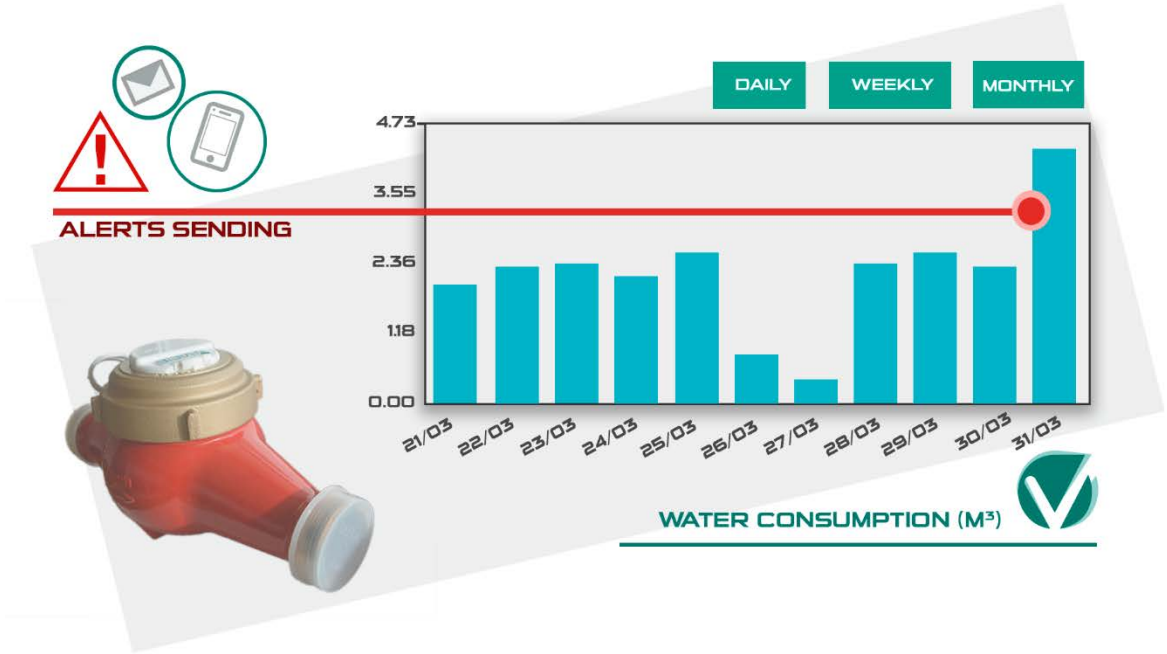
Focusing on the method - “real time analysis”, I consider important to make some considerations about how can a continuous monitoring and decision support tool be fully adaptable to the reality of different organizations, considering the heterogeneity of the various hospital services and inherent requirements.

Quite apart from a few factors that are required in an evolved platform, as being "user-friendly", easily accessible, secure, allowing mobility, responsive, modular, highly configurable, among other features, there are some key points that give these tools a determining effectiveness for success.

Among them I emphasize three main points:

Focusing on Energy Efficiency implementation, we can highlight the first point as being the existence of an intelligent alarm system that allows, as previously mentioned, the detection of consumption peaks at the time of its occurrence, regardless of its cause.

From an operational point of view, this feature is extremely relevant and with proven financial returns. Nowadays, this is a winning investment, with the automation of the detection of occurrences in due time, as well as further evidence of its right resolution.



As a second point, we have the analysis of interdependence between variables, in a cause-effect perspective, which appears to be a main need for organizations and therefore a feature that imperatively have to be available in this tool.

The strong dependency of external factors by the various equipments with significant energy consumption, leads to the need of identify, based on continuous data, which factors can lead to the increase of equipment efficiency, as well as improved operational availability and its respective longevity.

A common example of the benchmarking process is the correlation of energy consumption of a UTAN, according to the filter clogging level (differential pressure) and the Indoor Air Quality of a room or block rooms served by the machine, or even according with the equipment maintenance events. This type of approach allows the definition of a strategy for an effective preventive maintenance, supported by concrete data.

At the third point but not less important, we have the reporting functionality, which should clearly present a technical component from the analysis combined with the economic and environmental components, promoting clear and processed information, coming from continuously collected data.

One of the examples are the detailed reports containing energy consumptions distribution by service, by sector or equipments.

Those are already a reality, presenting not only the integrated consumption with the respective applicable tariff, but also allowing the simulation and comparison with other existent tariff, based on the organization actual consumption profile.

Several other indicators should be presented, always with the objective of identifying functioning or even error patterns, which could lead to targeted interventions for its optimization or resolution, respectively.

In short, we walk to a reality where efficiency is also on the tools used day-by-day to the support of decisions. The integration of monitoring data, maintenance management and control solutions, clearly opens an efficiency window, presented in the data use and its intelligent sharing, leading to an increase of the organizations operational efficiency.

The commitment of someone that is daily on the ground, and markedly can make a difference, by executing and supporting the implementation of corrective measures, is complemented and reinforced by the commitment to a timely resolution of the existent problems.

I would just like to leave a case study that addresses one of several efficiency vectors - water consumption - which I think a motivating factor and illustrative of the strong economic and financial return obtained in the usage of decision support tools at the service of efficiency.

According to the "Department of Health - NHS UK in another of their Health Technical Memoranda (HTM)", it is estimated that **about 15-30% of a hospital water consumption is caused by water leaks.** The identification and resolution of existing water leaks in a NHS hospital in the UK resulted in £ 100,000 / year savings, about 130,000 € / year.

The real-time information leads to efficiency of decision-making on the path of sustainability and quality, while corporate values.

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