

## Energy Audits: Planification, Tools, Key Success and the Pitfalls You Must Overcome

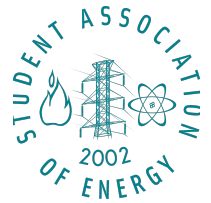
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The sixth lecture of the János Neumann memorial semester of the BUTE SBC, in cooperation with SAE and the AEE Hungary Student Chapter was held by Marc Masó, Past President of the AEE Spain Chapter, presenting the keys and challenges of a successful energy audit.

At the beginning of the presentation, Marc Masó stressed that he will approach audits primarily from a non-technical perspective. He then asked the audience that when someone says "audit", what is the first thing that comes to mind. The responses showed that most people think of "efficiency" and how to improve it. Then a survey by the European Union was presented, which showed that climate change was the second most important issue for people before COVID. This has declined during the pandemic, but was still a very important part of public awareness. To reduce emissions and increase efficiency, the European Union has developed several plans. The first was 20/20/20, which called for 20% less energy use, 20% less greenhouse gas emissions and 20% more renewable energy production by 2020. This was followed by Fit for 55 in 2030 and a plan to achieve carbon neutrality by 2050. We learned about the NZEB (Nearly Zero-Energy Buildings) indicator and the pyramid, which shows that the first priority is to reduce energy use, followed by the deployment of high-efficiency equipment, and then the widespread use of renewables.

A mandatory auditing system was introduced to ensure that the Union could meet the above requirements and because of this aim the ISO 50001 standard was created. Mr. Masó also presented the audience with figures for the last 4 years. 127 energy audits have saved 194 GWh of electricity and 57 GWh of heat energy, which is a very significant result.

In the next part of the presentation, the stages of a successful audit were presented. First of all, in order to sign a contract with a client, it is important to be clear why such an audit is important to them and what numbers can be achieved. This is followed by a kick off meeting where all the main stages of the project and the processes are discussed. This is followed by a tour of the building. This is a very long process, as all the major elements and potential loss areas need to be thoroughly examined. Where appropriate, sub-meters must also be installed. Either electrical or heat losses are possible. The former can be investigated by means of current transformers in the



appropriate cabinet, the latter by means of a thermal camera. This is followed by office work, analysis and identification of improvement options. Then comes the preparation of a report, an important part of the audit, which is handed over to the client. The final stage is a meeting at which the results and the necessary measures are presented to the client.

In the next part of the presentation, the ten most common audit mistakes were presented. The most important of these are missed opportunities for improvement, inadequate scope of the audit, and sometimes not including life cycle costs in the calculation. The problem is often that the costs of the desired development are underestimated.

In the last part of the presentation, Marc Masó highlighted how difficult it is to determine the price of an energy audit. Since every project is different, it is very difficult to calculate in advance how many hours a project will take. In addition, metering data for the whole year is usually not available. In this case, various correction factors can be applied to the measured period to infer the rest of the year. It is also very important to assess how many people and how much expertise is needed for a given project. The use of software is also a very critical point. It is important not to subscribe to software unnecessarily, as this represents a very high additional cost for the company. Most projects do not require too much software.

A key thing for an auditor is to keep the client. A very important aspect of this is that the auditor does a good job and provides the client with clear, unambiguous and well-rounded solutions.