

Managing energy efficiency in a city administration

At the workshop on Smart Energy Use at the international Conference of Climate Alliance in Essen, where Karl-Ludwig Schibel presented ENERJ, Alexander Nordhus, Energy Manager in the City of Nuremberg, illustrated in the discussion his work in the energy efficiency management crew of the municipal building department. What seemed interesting and was followed up in the interview below, were the successes but also the challenges municipal energy management meets in a fairly privileged situation like the one in Nuremberg. Data seem to be always an issue, but also "soft" factors, like the cooperation of the technical personnel in the public buildings.

Interview by Dr. Karl-Ludwig Schibel, Climate Alliance Italy

What does the municipal energy management do in the city administration of Nuremberg? You are a separate unit in the building department. Is that normal for German cities?

There is no typical case; every city handles that differently. In many cities, property management is outsourced, sometimes in municipal companies, sometimes private ones, where the owner is the city, but managed privately. We have a situation in Nuremberg that we consider to be quite fortunate that we are part of the municipal administration with a building construction department with a total of about 250 employees 11 of which are experts for municipal energy management and building physics. We are an interdisciplinary team, each colleague has a certain qualification and a special subject. We work with civil engineers, heating and electrical technicians, electrical engineers, ... We monitor the energy consumption of the urban buildings and intervene when we encounter abnormalities.

What are your fields of activity, what is he added value for the city?

Our fields of activity are very broad, we are advising in new projects, for example for equipment with meters, what should be measured, cabling A challenge for us is to be adequately involved in the projects because the other actors not necessarily are aware, with what kind of qualifications and contributions we can collaborate and accompany them. So, we often have to become active ourselves and signal our willingness to participate in projects that get under way. We advise and support, but are often also active in planning, especially in building physics, i. e. in determining the components or the U-values. Interesting examples are landmarked buildings, of which there are quite a few in Nuremberg; for example, recently there was the case where roof windows should be installed for an art exhibition hall. There we found a solution for the sun protection, which could not be installed on the exterior because of the monument protection. In short, we are looking for good solutions that are not yet widely used, trying to get the wider picture of where things are going.

One area that I am dealing with together with three other colleagues is energy control. We record the energy consumption data of the buildings, evaluate them and inform the users,

when we detect irregularities. Once a year we make an evaluation, which we send to the users, which gives them an overview of the energy consumption of the last year. We want to intensify this and give feedback on energy consumption more often during the year.

Did I understand this right: You make an energy control at the municipal properties and then transmit the data? To whom?

To the departments that use the respective buildings. In the case of schools, on the one hand, the house management unit, i.e. the object manager. These are colleagues who are responsible for the maintenance and operation and who, for example, in accordance with our data start retrofitting measures in cooperation with the building construction department. In addition, the school management is given this information, or, in the case of administrative buildings, the person responsible for the building. It is a report of several pages, in which the annual consumption is shown in detail month after month and compared with the consumption in the previous years. We collect heat, electricity and water, sometimes there are interim meters, so we can evaluate individual building parts. In this context, we have been working to improve automatic data collection for almost two years. In the context of the European project EDI-Net (<https://dashboard.edi-net.eu/p>), we aim to record the data automatically every 15 minutes. We are in the process of equipping more and more properties with this automatic data collection system. In the medium term, the user should also have access to these data in real time, so that he can constantly monitor the consumption, for example, every Monday those of the past week. With such timely information one can also remember what has happened last week and interpret data that are outside of the normal. This means that the user is able to take action without the need for energy management, thus strengthening self-activity.

Do the involved parties - headmasters, object managers, etc. - have room to act on the basis of such information?

As supervisors of the staff, they certainly have possibilities to act, for example to change temperature regulations, always ensuring that the users are satisfied. They can also implement smaller retrofitting measures, such as switching to more efficient lighting. For this they have the means and that also happens. However, they can also take initiatives for larger projects, which must then be inserted into the medium-term financial planning. The user behaviour can be influenced through campaigns like the energy savings day. In schools, the campaigns become more elaborate as part of an overall energy education. We are also involved in a project that has been going on for 15 years, where a prize is awarded each year for the most successful action on energy efficiency. We provide, for example, data for "energy detectives", which then go to search for "energy thieves", and we train the teachers in this context.

The data situation seems to be very good in the energy sector of the city of Nuremberg. What are then the main problems?

There are problems also with the data, although our situation might be better than elsewhere. For buildings that we do not automatically capture, the data are sometimes very poor. This also depends on the people who collect the data. In general, it is the caretaker who, in a fixed cycle, usually reads out the data every two weeks and inserts them into lists which we provide. He sends them back by fax and we then enter the data by hand into the data base. Still quite old school. The quality of these lists is very uneven, be it in terms of the reading frequency, or the completeness of the data, so that we sometimes do not know more, than what we already see in the annual accounts we receive anyway. This is one reason why we want to have the automatic data acquisition for the large-scale users.



Our other problem is the implementation of what we propose to the users and which is not always accepted. In order to increase the user's understanding of the energy consumption of his "own" building, we would like to make public consumption information easily available in the framework of the aforementioned EU project EDI-Net on screens in buildings. This could be followed up by information and motivation events. We hope to increase in this way the acceptance of efficiency measures.

What resources are being used to finance the energy efficiency measures of the City of Nuremberg?

An important part comes from the city budget, but we also try to stay up-to-date with regard to funding. The funds are mainly provided by KfW (Kreditanstalt für Wiederaufbau) and the Ministry of Foreign Trade and Export Control, both of whom have launched a series of programs, such as conversion to LED or electronic display panels, to visualize the income of the photovoltaic system. These are co-financing sources we use.

How do you establish your level of ambition for energy efficiency measures?

There are energetic standards for new constructions and for retrofitting, which the competent committee of the city council already in 2009 decided unanimously. These are on average 30% above the legal requirements in Germany. If the added costs are economically viable, this is the standard we apply. In new buildings, they come close to the passive house standard. Always a big issue is the economic viability, that is, we always have to prove that our measures are also economical. New technologies can only be tested in pilot projects. Two years ago, in a school we installed a battery storage unit, to get to know the technology and how to deal with it. But in the case of normal projects, the economic viability must always be ensured. However, we make a life cycle analysis and look no longer only at the amortization time. We thus can prove the viability with many measures, eg in the field of insulation. On the other hand, we recently proposed a seasonal heat storage under a new building, which would have fed during winter time a heat pump. Unfortunately, this was not economically feasible. The engineer in me cried, but the decision we naturally accepted.

