

# **Implementing energy information and management systems in municipalities in Saarland**

## **Approach and results**

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### **1. Introduction of SEA**

SEA (Saarländische Energie-Agentur GmbH) was founded 1987 as the first energy agency in Germany. It is organized as a company with limited liability and outstanding common stock worth DM 3.150.000. The shareholders are the State of the Saarland (holding nearly 21%), four utilities holding 19% each (Stadtwerke Saarbrücken AG, Vereinigte Saar-Elektrizitäts-AG, Fernwärme-Verbund Saar GmbH and Südwestgas GmbH) and one utility (Pfalzwerke AG) holding another 3%. In addition to this capitalization SEA received only DM 275.000 subsidies during its first two years of operation.

The main objective of founding the innovative center that SEA has become was to demonstrate how energy efficiency projects can be carried out for profit, including all steps involved, from engineering and financing right down to actual implementation. The entire contracting service pays for itself in the form of energy costs saved over a period of 5-10 years, including payback of the original investment (energy performance contracting).

Besides these contracting activities SEA plays an important role in implementing the Saarland's innovative energy policies. SEA manages projects on behalf of the Saarland and its utilities, such as evaluating municipal and industrial energy concepts and strategies, implementing energy information and management systems in municipalities, evaluating Least-Cost Planning activities and organizing information campaigns as well as training and educational events.

Increasingly, SEA is cooperating on international level, especially in the fields of Regional Energy Planning, Municipal Energy Management, Third Party Financing, Renewable Energies and Rational Energy Use. Since 1994 SEA is partner in the OPET network as leader of CORA (Co-Operation of Regional Agencies), a consortium of 5 regional energy agencies (Brandenburgische Energiespar-Agentur GmbH, Energie-Agentur Sachsen-Anhalt GmbH, hessenEnergie GmbH, Zentrum für Innovation und Technik in North Rhine-Westfalia and Saarländische Energie-Agentur GmbH). Moreover SEA is involved in several THERMIE-B actions and in two PHARE-projects.

## **2. Municipal energy plans as a starting point**

Around ten years ago the ministry of economics in Saarland created a subsidy programme for municipal energy plans. In addition to the already existing 5 energy plans for small towns 44 municipal energy plans had been prepared by independent expert teams. Today even all 52 municipalities of Saarland have such an energy plan. The ministry subsidized 50% of the costs together with the regional electricity utility (more than 1 Mio. DM altogether).

Together with a consultant office (IC Consult) SEA evaluated the 44 energy plans, which had been prepared between 1988 and 1991. The results showed that a reduction of the CO<sub>2</sub> emissions by 25% between 1987 and 2005 is possible, if all suggested measures with a pay back less than 10 years are realized. For public buildings even a reduction of 33.5% is possible, half of which happens without additional efforts and the other half if all measures suggested in the energy plans are realized.

Since the preparation and evaluation of the energy concepts a lot of initiatives have already been taken by the municipalities themselves and/or together with utilities, SEA and others. Funded through Third Party Financing or similar models concrete measures are for example the exchange of heating systems, cogeneration plants, solar collectors, etc. But the main CO<sub>2</sub> reduction effect was reached through the extension of the gas grid especially in rural areas of the Northern Saarland.

## **3. Steps towards an Annual Energy Reporting System**

Nevertheless we wanted to go a step further and implement energy information and management systems in the Saarlandish municipalities. The next step after the preparation of the energy plans was the implementation of a regular annual energy reporting system in the municipalities. For this reason an existing software programme (Ekomm) had been adapted and improved and then tested in 6 pilot municipalities. This project had been cofinanced by the Ministry of Economics as well as by two utilities (VSE AG and Südwestgas GmbH), the municipalities had to pay 5.000 DM each.

The 6 chosen municipalities are representative for the whole Saarland. Although all these municipalities have been supported intensively by the project team (SEA, IC Consult and Institute for Social- and Environmental Research, [Isuf]), only two of them could handle the programme themselves without problems and prepare an energy report. One major problem has been the lack of a responsible energy manager. As the municipalities have a lot of different tasks to fulfill and at

the same time get more and more financial problems, there is a lack of personnel in general and especially for energy management.

In order to overcome this lack of personnel a pool of 20 unemployed people had been created and publicly financed for two years by the „Bundesanstalt für Arbeit“. These people were intensively trained (around 600) hours to understand the philosophy of a successful energy management and to work with the software programme. This training had been financed by the Ministry of Environment, Energy and Transport. Then these persons were organized in two regional offices and send to more than 30 municipalities to collect the necessary data of all public buildings. These are mainly the basic data of a building (like year of construction, area in m<sup>2</sup>, volume in m<sup>3</sup>, etc) and the energy consumption of the last three years. Using the software programme, which mechanises the record of data, they prepared a report about the last three years which form the basis for the implementation of an energy management.

#### **4. Energy management an internal or an external task?**

The idea of the above mentioned concept is the creation of long term jobs, which is quite difficult to reach for a pool of 20 persons. As the municipalities have severe financial problems we didn't expect them to take over all or even some of the unemployed people. Instead we created a new service package as an offer to the municipalities. As the municipalities had still problems to implement an energy mangement in their administrations we offered to take over this task with an external team. Based on a cooperation of SEA and Isuf some of the trained and now experienced unemployed people should take over the main tasks.

The service package consists of the following parts:

- every month all public buildings are visited and checked for inefficiencies
- the energy consumption of every existing meter is documented
- once a year an energy report will be prepared
- small problems with energy using equipment or the building itself will be solved immediately together with the municipalitiy
- small investments up to 1000 DM will be done by SEA

For this service the municipalities pay only a small basic charge of 5.000 DM (small municipalities) or 10.000 DM (cities) at the end of each year. Moreover they pay 75% of the realized energy cost savings up to 10% and 50% for the energy cost savings above 10%. The contracts have a duration of 3 years.

These contracts bared quite some risk for SEA and Isuf, because they depend on a great extend of the realized savings. SEA is prefinancing the necessary work of its own personnel and its partners as well as the small investments.

## **5. Results of municipal energy management**

After more than one year the results are very positive and promissing. In all 8 municipalities measurable energy cost savings could be reached. The savings can be distributed to the following sectors:

Electricity	2-5%
Water	8-12%
Heating costs	17-24%

What are the reasons behind these savings? Around 50% of the saved heating costs were reached by an optimization of the regulation system together with local installation companies. Similarly 50% of the water savings were gained through a consequent removal of defects The rest of the savings is based on „human factors“, i.e. controlling on the one hand and transparence of information and data on the other.

Through the processing of collected data with the special software programm (Ekomm), for each building the monthly development of energy consumption and costs over time can be controlled. Also a feedback can be given to the housekeepers and the personnel responsible for the energy equipment. Once a year a complete energy report for all public buildings in a municipality is presented. Besides a lot of data and figures also comments for necessary actions/investments are given.

In the next steps SEA and Isuf are planning a workshop for Saarlandish municipalities to present these successes and offer similar contracts to more municipalities. If in other regions and/or countries similar services are planned SEA is ready for cooperation.

## **6. International Cooperation**

We have already gained some experience in other countries, especially Austria and Hungary. In a PHARE project SEA together with the O.Ö. Energiesparverband and Isuf developed and accompanied a training programme for municipal energy managers in Hungary. Like in Hungary in most Eastern European Countries the lack of capital is one main problem. But, as our experience has shown, even with no or small investments measurable energy cost savings can be reached. This is definitely also true in Hungary and other Eastern European Countries.

In a Twinning project under the PHARE programme with 3 western partners (ESV, SEA and Irisch Energy Centre) and 5 eastern partners (Czech Energy Agency, Hungary EU Energy Centre, Agency for Efficient Use of Energy in Slovenia, Slovak Energy Inspection Agency, Foundation for the Efficient Use in Municipalities in Slovakia) we will exchange experience about energy management in municipalities, energy audits (energy advice) and financing. Here we hope to motivate others to copy our positive experience.

## **7. Conclusions**

Today municipalities have a lot of responsibilities and tasks but more and more they face financial restrictions. Through these conditions a consequent energy management is on the one hand necessary but because of lack of personnel and money difficult to realize. Therefore SEA has decided after several years of experience in the cooperation with municipalities to offer a complete service package for the implementation of energy and information systems in municipalities in Saarland. So far the results are promising not only in terms of energy cost savings reached but also as far as the basis for a consequent energy management had been formed. In the longterm SEA aims at supporting the municipalities to run this important task by own employees and to further increase their cost savings.