

REPORT OF VEGTP AND CEGE TRAININGS SUPPLIED TO BUILD ENERGY EFFICIENT MANAGEMENT CAPACITIES OF SENIOR ENERGY GUARDIANS

D.T.3.2.3 Report of VEGTP and CEGE trainings

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Edited by PP4 KSENA

PP9 - City of Stuttgart





Introduction

This is a report of two implemented training programs in Energy@school project. First it was Vocational energy guardian training program - VEGTP which was intended for Senior energy guardians and other school staff, energy managers and municipality employees. And the second was Continuous energy guardian training program - CEGE intended for all that have already received first part of the training and also for all interested in learning more about energy management, energy efficiency and the use of renewable energy sources in schools and public buildings.

List of project partners

1. Union of Municipalities of Low Romagna Region, Lead Partner - Italy
2. CertiMaC s.c.r.l. - Italy
3. City of Bydgoszcz - Poland
4. ENERGY AGENCY OF SAVINJSKA, ŠALEŠKA AND KOROŠKA REGION - Slovenia
5. City of Karlovac - Croatia
6. University of Bologna - Dept of Industrial Chemistry - Italy
7. Municipality of the CITY Szolnok with County Rank - Hungary
8. Local Government of Town Újszilvás - Hungary
9. City of Stuttgart - Germany
10. Klagenfurt - Austria
11. Graz Energy Agency - Austria
12. City municipality of Celje - Slovenia



A. Report of VEGTP trainings

1. Executive summary

In Stuttgart, five schools are participating the Energy@school project. In each of these schools, two teachers/staff members have been chosen as senior energy guardians (SEG). These SEGs are responsible for improving the energy consumption and the energy efficiency in their schools. As many of the SEG are new to the subject, it was necessary to train them. On 12 October 2017, all Senior Energy Guardians were invited to join an exclusive training session. Eight people from four schools took part in the training session. The training, which took four hours, was held in a conference room at the office of environmental protection in Stuttgart.

The participating SEGs learned about general topics like energy consumption and its impact on the climate change, energy management in Stuttgart and consumer awareness. Furthermore, technical issues were on the agenda like energetic standards, heating systems and constructional thermal insulation. As expected, these issues were not familiar to most of the participating SEGs. Therefore they were very interested and learned a lot at this point. Moreover the SEGs also learned about different ways and possibilities to reduce energy at their school, e.g. through control technology, economical heating or efficient ventilation. This part of the training session was the one with the most practical orientation and therefore very helpful for the teachers in their role as SEGs. The training focused on the interpretation of consumption analysis and the user-related impact on energy consumption.

In addition, an abstract of the energy audit was included in the presentation. By comparing two schools it was demonstrated, how structural differences result in different energy and water needs in the consumption sectors.

Each school has received a detailed project folder with the following content:

- Script of the VEGTP training program,
- energy consumption evaluations,
- energy bills of recent years,
- load profile of the electrical consumption in weekly display, incl. previous year and
- the energy audit.



2. Official agenda of event/seminar

Agenda in German

Begrüßung

1. Hintergründe Energie und Klima
2. Energiemanagement der Stadt Stuttgart

Kleine Pause

3. Energetische Vorgaben
4. Heizsysteme
5. Baulicher Wärmeschutz und Behaglichkeit
6. Einsparung von Energie und Kosten
 - 6.1. Regelung

Große Pause

- 6.2. Lüften
 - 6.3. Beleuchtung
 - 6.4. Kühlen
 - 6.5. Strom
 - 6.6. Wasser
 7. Nutzersensibilisierung
- Abschluss

Agenda in English

Welcome

1. Background information about Energy and Climate
2. Energy Management in the city of Stuttgart

Short break

3. Energetic standards
4. Heating systems
5. constructional thermal insulation and thermal comfort
6. Saving energy and costs
 - 6.1. Control technology

Long break

- 6.2. Ventilation
- 6.3. Lighting
- 6.4. Cooling
- 6.5. Electricity
- 6.6. Water
7. Consumer awareness

Conclusion



3. Fact sheet

In Stuttgart, all necessary topics were discussed in one SEG Training Session. All SEG of the five participating schools in Stuttgart were invited.

| | |
|-------------------------------|---|
| VENUE | Office of environmental protection, Department for energy management, Gaisburgstr. 4, 70182 Stuttgart |
| DATE OF THE MEETING | 12th of October 2017 |
| NUMBER OF PARTICIPANTS | 8 |
| TOPICS DISCUSSED | <ol style="list-style-type: none"> 1. Background information about Energy and Climate 2. Energy Management in the city of Stuttgart 3. Energetic standards 4. Heating systems 5. constructional thermal insulation and thermal comfort 6. Measures for saving energy and costs 7. User awareness |

EVENT PICTURES





4. List of participants

There is no attendance sheet available, but the photograph above shown all the participants.

| <i>Name</i> | <i>School</i> |
|--|-----------------------------|
| (see picture above, beginning from the left) | |
| <i>Herr Bodmer</i> | Geschwister-Scholl-Schule |
| <i>Frau Gronen</i> | Birken-Realschule |
| <i>Herr Müller</i> | Wirtschaftsgymnasium West |
| <i>Frau Graß</i> | Birken-Realschule |
| <i>Herr Lachnit</i> | Birken-Realschule |
| <i>Herr Kratky</i> | Realschule Feuerbach |
| <i>Herr Schmid</i> | Wirtschaftsgymnasium West |
| <i>Herr Westphal</i> | Geschwister-Scholl-Schule |
| <i>-/-</i> | Ferdinand-Porsche-Gymnasium |
| <i>TOTAL NUMBER OF ALL PARTICIPANTS</i> | 8 |



B. Report on CEGE trainings

1. Executive summary

On 25 October 2018, all Senior Energy Guardians were invited to join the Energy@school CEGE training session. Eight people took part in the training session. The training was held in a conference room at the Office of Environmental Protection in Stuttgart.

The CEGE-Training for SEG introduces economic efficiency calculations. First, it is important to know and understand the factors that affect profitability, because they can vary very much. The example of a specific PV system was presented as a concrete calculation. In this case, a distinction will be made in the consideration between the own use of the generated current and the full supply of it. As expected, this topic were not familiar to the participants.

Static capital return time

For the static capital return time, the annual profit is divided by the cost of capital. In case of own use, the profit is determined by the avoided electricity costs. Since 2014, a proportionate renewable energy apportionment has been paid for self-used electricity, which has a major impact on economic efficiency. When feeding-in solar power, the profitability depends on the feed-in tariff granted, which in the present case amounts to 11.7 ct/kWh. With a lifespan of 20 years and a static return time of 18 years, (both variants are sufficient). The investment is considered economic.

Method of annuitized capital costs

With this method, the capital is financed by a loan. Depending on the term and interest, this results in an annual rate for the investment costs. This is then offset against the annual profits. In the present cases, the yield of power generation does not quite cover the expenses for the loan. In terms of self-use, one can assume that electricity prices will increase. With only one percent price increase, the loan is paid after 20 years. With a price increase of 2% after 20 years already a yield of 17,300 €. In the case of full infeed, the remuneration remains rigid. In order to achieve the same economic efficiency as with the price increase of 1%, the plant must be built around 16% cheaper. In order to equalize the profitability of full feed-in compared with self-consumption and assumed price increase of 2%, the cost have to be 30% cheaper.

Conclusion: Own use is physically more sensible and is therefore now being promoted more by the legislator. However, the full-feed systems can be economical too, depending on the constellation.



2. Official agenda of event/seminar

1. Welcome
2. Dates and current projects
3. Economy on Energy Efficiency measures
4. Project feedback
5. Miscellaneous

3. Fact sheet

| | |
|-------------------------------|---|
| VENUE | Office of Environmental Protection, Department for Energy Management, Gaisburgstr. 4, 70182 Stuttgart |
| DATE OF THE MEETING | October 12 th 2018 |
| NUMBER OF PARTICIPANTS | 8 |
| TOPICS DISCUSSED | <ul style="list-style-type: none"> ▫ Investment costs ▫ Funding ▫ Construction costs ▫ Interest on capital ▫ Energy costs savings ▫ Development of Energy prices ▫ Relevant assessments, bonuses, taxes, expenditures ▫ Maintenance and repair costs ▫ Lifetime of systems |



4. List of participants

| TARGET GROUP | NUMBER OF PARTICIPANTS - CEGE (number of participants that have already participated at VEGTP trainings) | NUMBER OF PARTICIPANTS - CEGE (number of participants that have only participated at CEGE trainings) | TOTAL (total number of participants from) |
|--------------------------|---|---|--|
| Senior energy guardian | 2 | 0 | 2 |
| Teachers | (the 2 SEGs were teachers) | 6 | 6 |
| Energy managers | 0 | 0 | 0 |
| Municipalities employees | 0 | 0 | 0 |

| TARGET GROUP | NUMBER OF PARTICIPANTS - VEGTP |
|--------------------------|--------------------------------|
| Senior energy guardian | 8 |
| Teachers | (6 SEGs were teachers) |
| Energy managers | (2 SEGs were energy manager) |
| Municipalities employees | 3 |