

Curriculum to the seminar

"Renewable energies and energy efficiency - overview on market situation and funding schemes"

for small and medium-sized enterprises

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The course was developed by the QUICK project partner, Hamburg Chamber of Skilled Crafts and Small Businesses, Department "ZEWU - Centre for Energy, Water and Environmental Technology" and practically tested on 23 and 24 November 2010 in Międzywodzie near Szczecin / Poland with 23 participants (Lecturers: Bernard Weyres Borchert, DGS, Hamburg, Germany; Dipl.-Ing. Jörg Wortmann, Wortmann-Energy, energy + climate - engineering consulting in the science center Kiel, Germany and dr inż. Ewa Figiel, Szczecin Technical University, Poland).

1. Summary of the most important characteristics

1.1 Objective

The objective of this seminar is to give the employees and decision makers in small and medium-sized enterprises (SMEs) an overview of the possibilities of energy saving measures in their enterprises through the adoption of energy-saving measures and /or the use of renewable energies. The seminar provides information and facts about various possibilities, costs and benefits, as well as good examples to enable the participants to assess the implementation of possible measures in the sector-specific enterprises.

1.2 Target groups

Entrepreneurs, executives in companies, start-ups.

1.3 Duration and Timing

The seminar is designed as a full-time course and includes 2 days. The first day includes a presentation and discussion on the basics of both technical and financial terms (6 teaching units). During the second day, applications of good examples are learned and enterprise specific solutions are worked upon by individual participants (8 teaching units).

1.4 Qualifications of lecturers

The seminar should possibly be conducted by teachers who have both a sound knowledge in the field of energy efficiency, renewable energy, technology, costs, benefits and also have country-specific knowledge, in particular the financial framework for the implementation of measures. It is advisable to have at least three lecturers at the seminar. The lecturers should not only be professionally competent but also have experience in the area of education, presentations and discussions. The advantage is of course the guidance of group work and directing the presentation of partial results from working groups.

1.5 Required technical equipment

- System components as visual models (e.g. flat collector, vacuum tube collector, mono-crystalline and polycrystalline solar modules, inverters, energy saving lamps)

In addition:

- Flip chart
- Blackboard
- PC with a beamer
- Internet access for the lecturer's laptop
- Screen

1.6 Methodological and didactic remarks

Depending on the knowledge of the seminar participants, the basic relationships are considered as far as necessary but they can be deepened at any time if requested. In order to give the group work a certain systematics, individual projects should be conducted in four steps:

- Status quo analysis of energy consumption and evaluation
- Selection of possible saving measures
- Implementation of preliminary planning
- Determining the costs and expected energy savings

2. Seminar concept

2.1 General concept

2.1.1 Overview over key topics and contents (based on the content of the master set of slides for the instructor)

Key topics 3 and 5 are implemented by instructors of the respective countries!

Key topic 1: Why should we use renewable energy and energy efficiency measures? 1 TU

- Topic 1.1: Increasing energy consumption with decreasing supplies (peak oil)
- Topic 1.2: Increasing energy prices
- Topic 1.3: Global warming and climate change

Key topic 2: Overview of the use of renewable energy and energy efficiency measures in small and medium-sized enterprises - 2 TU

- Topic 2.1: Availability of renewable energies
- Topic 2.2: Solar energy use and supply
- Topic 2.3: Structure and functions of solar thermal systems
- Topic 2.4: Planning and design of solar thermal systems
- Topic 2.5: Costs and benefits of solar thermal systems
- Topic 2.6: Structure and functions of solar power systems
- Topic 2.7: Planning and design of solar power systems
- Topic 2.8: Costs and benefits of solar power systems
- Topic 2.9: Energy efficiency measures (lighting, heating, cooling, compressed air)

Key topic 3: Market situation, development of renewable energy and energy efficiency in Europe and in Poland - 2 TU

- Topic 3.1: Solar thermal market situation in Europe, Germany and Poland
- Topic 3.2: Solar power market situation in Europe, Germany and Poland

Key topic 4: EU guidelines and support programmes – 1 TU

- Topic 4.1: Guidelines and decisions
Topic 4.2: Support Programmes in Poland

Key topic 5: Good Examples – 4 TU

- Topic 5.1: Examples from the field of energy efficiency
Topic 5.2: Examples from the field of renewable energies

Key topic 6: Project Work – 4 TU

- Topic 6.1: Status quo of the energy situation (Check lists)
Topic 6.2: Examining the possibility of the solar energy use
Topic 6.3: Planning and design
Topic 6.4: Cost savings estimate and forecast
Topic 6.5: Presentation and discussion

2.2 Learning objectives and methodological and didactic comments on the key topics of the concept

The main learning objective include being able to assess the energy situation of participants' own enterprises and recognise opportunities of energy saving by improving energy efficiency or the application of renewable energies.

Specific learning objectives of the seminar include the following topics:

- Assessment of the global energy situation
- Raising awareness of the need for energy saving measures
- Dimensioning a solar system (solar thermal and solar power)
- Cost / benefit analysis taking funding into account

The learning objectives for each priority topic are described below:

2.2.1 Key topic 1: Why should we use renewable energy and energy efficiency measures?

The participants ...

- ... recognise the importance of energy saving measures in the light of rising energy prices and decreasing availability of resources of fossil energy.
- ... get an idea of the real consequences of progressive global warming

2.2.2 Key topic 2: Overview of the application of renewable energies and energy efficiency measures for small and medium-sized enterprises

The participants ...

- ... learn to assess the solar energy supply and its quality
- ... know the structure and function of solar thermal and solar power systems

- ... obtain parameters for the design of solar systems
- ... can estimate costs and benefits
- ... learn about various fields of application for energy efficiency measures
- ... get an idea of the savings potential of energy saving measures

2.2.3 Key topic 3: Market situation and the development for renewable energies and energy efficiency in Europe and in Poland

The participants ...

- ... get an overview of the European and national market
- ... recognise the market opportunities of their companies to increase competitiveness through predictable energy costs

2.2.4 Key topic 4: EU guidelines and support Programmes

The participants ...

- ... recognise the international significance of climate change by reducing energy consumptions
- ... are informed about state funding programmes and the contact points

2.2.5 Key topic 5: Good examples

The participants ...

- ... learn by implemented examples from different areas how successful energy efficiency measures and the use of renewable energies can be...

2.2.6 Key topic 6: Project work

The participants ...

- ... learn to assess the electricity consumption of their enterprise
- ... are able to find suitable energy-saving measures for their enterprise
- ... know what costs and energy saving is possible through a targeted action

3. Certificate

The participants receive a certificate upon completion of the seminar, in which the training contents (main topics) are listed and signed by the training centre (Chamber of Crafts) and the Hanseatic Parliament. The certificate contains possibly the INTERREG Disclaimer.