This document presents the Education & Training Services provided by Flow energy S.A. in the Field of Renewable Energy Systems.

flow sa
Energy & Environmental Operations

RENEWABLE ENERGY SYSTEMS

Educational Services for Business Professionals

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Flow energy S.A. provides upon request, the following Education & Training Services in the field of:

RENEWABLE ENERGY SYSTEMS

There are eight in total different seminar subjects concerning the Renewable Energy Systems. Each subject has been divided into four sections.

Wind Energy Systems (20 hours)

This Subject refers to the systems used in the production of electrical energy from the wind. It starts with the basic principles and wind turbine models that are used in small and large scale projects, and how these models have been developed over time. Legal aspects will be presented in depth according to the level of the section selected. Examples of Techno-economic analyses as well as evaluation criteria of sample wind parks (test case scenarios) will be performed. Furthermore, advanced topics such as grid connectivity and stability of wind energy systems will be presented. Environmental effects, social acceptance and benefits are topics included.

- Introduction to Wind Energy Systems (5 hours)
- Advanced Topics on Wind Energy Systems (5 hours)
- Present Situation and Future Perspectives (4 hours)
- Technical and Legal Issues (6 hours)

Solar Energy Systems (20 hours)

This Subject refers to the systems that utilize the energy from the sun. It starts with the basic principles on topics that are not limited to photovoltaic systems (i.e. CSP-concentrated solar power systems). Small and large scale projects will be analyzed in electricity production, heating and cooling. Legal aspects and techno-economic analysis will be performed on a number of test cases. A short introduction will be carried out in the Energy storage methods and development, deployment and economics. Furthermore, advanced topics

such as grid connectivity and stability of these systems will be presented. Environmental effects, social acceptance and benefits are also included.

- Introduction to Solar Energy Systems (5 hours)
- Advanced Topics on Solar Energy Systems (5 hours)
- Present Situation and Future Perspectives (4 hours)
- Technical and Legal Issues (6 hours)

Geothermal Energy Systems (20 hours)

This subject deals with the Geothermal Energy Systems. Brief introduction on history and electricity production of these types of systems used around the world is given. Advanced topics include analysis of different types of geothermal power plant units followed by grid connectivity issues. A small introduction is given also in cogeneration. Furthermore, extended analysis is carried out on the Legal framework and two-phase economics. Production and environmental effects are further topics as well as social acceptance.

- Introduction to Geothermal Energy Systems (5 hours)
- Advanced Topics on Geothermal Energy Systems (5 hours)
- Present Situation and Future Perspectives (4 hours)
- Technical and Legal Issues (6 hours)

Bio-Energy Systems (20 hours)

This Subject refers to the systems used in the production of electrical energy from the utilization of bio-matter. It starts with the basic principles and different types of burning bio-matter plants. Small and large scale projects are presented and analyzed, for electricity production and heat. Legal aspects are covered in the more advanced section. Examples of Techno-economic analysis as well as evaluation criteria of these systems will be analyzed. Environmental effects and impact as well as grid connectivity and stability of these systems will be presented. Supply chain, and socio-economic impact are topics covered as well.

- Introduction to Bio-Energy Systems (5 hours)
- Advanced Topics on Bio-Energy Systems (5 hours)

- Present Situation and Future Perspectives (4 hours)
- Technical and Legal Issues (6 hours)

Hydroelectric Energy Systems (20 hours)

This Subject deals with the electricity produced by the hydraulic power of water. Different sizes and types of plants will be presented. Advantages and disadvantages, Legal issues, and energy storage matters will be covered. Environmental impact and project assessment methods will be covered as well.

- Introduction to Hydroelectric Energy Systems (5 hours)
- Advanced Topics on Hydroelectric Energy Systems (5 hours)
- Present Situation and Future Perspectives (4 hours)
- Technical and Legal Issues (8 hours)

Ocean Energy Systems (20 hours)

The topics covered by this section are related to the systems extracting energy from the oceans. Tidal, wave and current power will be briefly analyzed. Projects of these types around the world will be used as examples to analyze the philosophy behind this new concept. Techno-economic analyses will be presented as well as Legal schemes that bound these new energy producing systems.

- Introduction to Ocean Energy Systems (5 hours)
- Advanced Topics on Ocean Energy Systems (5 hours)
- Present Situation and Future Perspectives (4 hours)
- Technical and Legal Issues (6 hours)

Hybrid Energy Systems (20 hours)

Hybrid System is when a combination of simple energy production systems is used. Different combinations show different profile of energy generation with interesting characteristics. Advantages and disadvantages of different hybrid systems will be analyzed followed by the relevant techno-economic analyses. The Legal framework will be presented as well as Environmental impact and social acceptance. Short introduction on energy storage is also included.

- Introduction to Hybrid Energy Systems (5 hours)
- Advanced Topics on Hybrid Energy Systems (5 hours)
- Present Situation and Future Perspectives (4 hours)
- Technical and Legal Issues (6 hours)

Energy Management (20 hours)

The management of energy is a very important issue which the society has not given it yet the appropriate attention. This can be claimed to be the most important consideration before moving into the power production methods and systems. This subject deals with prediction of energy load and energy usage, energy efficiency, automated control systems etc. Further topics are covering energy management software and energy economics in small and large scales.

- Introduction to Energy Management (5 hours)
- Advanced Topics on Energy Management (5 hours)
- Present Situation and Future Perspectives (4 hours)
- Technical and Legal Issues (6 hours)

All above topics can be delivered as a package or separately, depending on the desired focus and educational/experience of our client, in any into depth level required, from basic principles to on-business specific techniques and case by case examination.