Technical Education System & Wind Energy: Strategies, which can make the difference

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Issues to be Discussed

- Requirement of the Wind Industry
- Status of Technical Education to cater the needs of the Industry
- Strategies for improvement

Wind Energy Visa-Vis Programmes in Renewable Energy

- **Leading renewal energy source**
- **Multi disciplinary field**
- **Big body of knowledge**

Excerpts of BOG Meeting of Edinburgh university on M.Sc. (Sustainable Energy Systems)

*"Wind energy is the major source of renewable energy yet we did not have a course devoted specifically to wind energy. Fortunately our new Professor …….is a wind energy specialist and she has agreed to give a course on wind. To make room for her course, Energy Systems and Power System and Machines will be demoted to the option status. This is a good move as both courses are shared with 4th year undergraduate students and we have had complaints about that from our M. Sc. students." (*April 2006)

Current Efforts for Enhancing Educational Activities

a. Curriculum for M.Tech(Wind Energy)
b. Short term training programmes
c. Joint programmes in collaboration with a Swedish University
d. Research on competencies for wind engineers
e. International Conference on wind energy (WETI – 2006)
f. Development of learning resources

Strategies for Further Enhancing Educational Activities

a. Initiatives Needed in Technical Education System
b. Support from Wind Energy Industry to Educational Programmes
c. Support from governmental agencies

Initiatives Needed in Technical Education System

a. **Elective courses related to wind energy technology**
b. **M.Tech. (Wind Energy Technology)**
c. **PG Diploma (Wind Energy Technology)**
d. **Modular programmes in distance mode for working professionals**
e. **Focus on wind energy in 'renewal energy programmes'**
f. **Learning resources development**

Support from Wind Energy Industry to Educational Programmes

a. **Involve educational institutes in R&D projects**
b. **Donate sample equipments/machines**
c. **Use institutes for wind mapping**
d. **Provide wind turbines at subsided rates to institutes**
e. **Encourage training of faculty and students in wind industry**
f. **Allow professionals from industry to deliver guest/expert lecture**

Support from Governmental Agencies

a. **Incentives for launching programmes in wind energy technology**
b. **Curricula development/revision**
c. **Tax rebates and soft loans**

Elective courses related to wind energy technology

- **Wind Power Plants and Development of Wind Farms**
- **Aerodynamics and Wind Turbine Design**
- **Electrical Generators for Wind Turbines and Grid Connection**
- **Power Electronics and Control Systems for Wind Turbines**

M.Tech. (Wind Energy Technology)

- **Aerodynamics and aeroelasticity**
- **Construction of wind turbines**
- **Grid connection and electrical machines**
- **Control and regulation**
- **Wind turbine diagnostics**
- **Wind turbine siting**
- **Operation and optimization**

Video Programmes Developed by NITTTR, Bhopal

i. **Wind Power Scenario in India – A perspective**
ii. **Types of Large Wind turbine Generator**
iii. **Components of Geared Wind Turbine Generator (WTG)**
iv. **How a large WTG works (under production)**
v. **Assembly of Large WTG Nacelle (under production**
vi. **Installation of Large WTG**


Thanks