CC4E – The Competence Center for Renewable Energies and Energy Efficiency

Fossil fuel resources are dwindling, dependence on imports of primary energy sources is increasing, energy costs are rising and climate protection goals have to be achieved in Germany, Europe and the rest of the world. The formidable challenges of climate protection and energy supply require innovative solutions and new concepts for both renewable energies and energy efficiency (RE).

Hamburg University of Applied Sciences (HAW Hamburg) aims to develop sustainable solutions to society’s energy problems. Through innovative, application-oriented research and by means of comprehensive transfer-partnerships with companies and institutions, HAW Hamburg consistently expands its academic courses in the field of renewable energies.

The CC4E aspires to bundle HAW Hamburg’s diverse interdisciplinary capabilities and skills which are communicated in- and outward. Our goal:

» HAW Hamburg – Leading University in Northern Germany for renewable energies and energy efficiency «

CC4E presents an interface between science, economy, politics and society. In addition to the organization of thematic workshops, the range of tasks encompasses the cultivation of contacts with companies, public authorities and associations as well as the initiation and coordination of projects with companies and other scientific organizations. Moreover, own research and development (R&D) projects are carried out and findings are published. Our vision:

» HAW Hamburg develops sustainable solutions to society’s energy problems. «

HAW Hamburg – the energetic university
HAW Hamburg brings attractive educational concepts and innovative research projects to an interdisciplinary level. Across the university’s faculties and together with our cooperation partners, solutions for renewable energies and energy efficiency are researched and taught.

- wind energy
- bioenergy
- smart grids & virtual power plants
- energy storage
- energy efficient buildings
- photovoltaics
- fuel cell technology
- acceptance & sustainability
Innovative and attractive educational concepts

Already today HAW Hamburg is the second largest university in Hamburg and the largest specialist in educating engineers in Northern Germany. Further, HAW Hamburg aims at becoming the major educational institution in the field of renewable energies and energy efficiency in Northern Germany. Currently, RE-competencies are imparted in existing Master and Bachelor degree courses. But also PhD programs enable an education for RE-experts. Since 2008 the number of students in this trendsetting field of academic training has more than doubled, reaching approximately 1,300 in 2013.

PhD programs
promotion at HAW Hamburg within the »Promotionskolleg«

**Graduate School Key Technologies for Sustainable Energy Systems in Smart Grids**
(in conjunction with Universität Hamburg)

**Individual PhD-cooperations**
with German universities

**Individual PhD-cooperations**
with international universities

**Master**

- Automation Technology
- Sustainable Energy Systems in Mechanical Engineering
- Renewable Energies
- (in conjunction with the Academy for Renewable Energies)
- Business Administration and Engineering
  (in conjunction with Universität Hamburg and Helmut Schmidt University)

**Bachelor**

- Environmental Engineering – Renewable Energies
- Process Engineering
- Electrical Engineering & Information Technology
- Mechanical Engineering & Plant Systems

- RE-courses/PhD programs
- courses/PhD programs with reference to RE

Pkt. Minerva Studio
HAW Hamburg has numerous research and student projects that are usually carried out in cooperation with business partners. Practical transfer skills and problem-solving capabilities enable innovative, application-oriented RE-research. Companies greatly benefit from this interdisciplinary know-how.

The interdisciplinary approach arises from cross-faculty cooperation between engineering, natural sciences, business, social sciences and communications. This generates a wide array of competencies in the field of renewable energies and energy efficiency resulting in a broad range of solution possibilities:

- Development of new potentials for renewable energies in wind power, bioenergy, grid integration and energy storage. Fields of power electronics, environmental sustainability, and electro mobility are of further relevance.

- Business-, management- and communication solutions for promoting the renewable energy sector

- Innovations for energy efficiency in production, conversion, recovery and distribution of energy, especially for buildings

- Research on sustainability and acceptance in order to identify success factors and to implement projects promoting the energy turnaround

Applied research and projects
Transfer partnerships

As a point of contact for companies, institutions and public bodies CC4E brings the right partners together for finding answers to diverse leading questions in the field of renewable energies and energy efficiency:

**Research and development**

- Cooperative R&D projects: using expert knowledge to find practical solutions
- Subsidies: using development funds for joint projects
- Theses and research projects: companies challenge young researchers with practical problems and receive creative solutions

**University partnerships**

- Dual courses: university and companies work together in educating specialists
- Endowment chairs: companies safeguard and expand their expertise through university education

**Networking and communication**

- Job and project exchange: brings together companies with students, young specialists and professors
- Roundtable events: regular information exchange with the RE-sector
- Symposia: experts discuss tomorrow’s technologies and trends (»energy week«)
- Newsletter: information of stakeholders about CC4E’s RE-activities
- Meeting point: representatives of science, economy, politics and society are brought together with experts of HAW Hamburg
The CC4E builds the Technology Centre Energy-Campus Hamburg. The technological emphases of the Energy-Campus are wind energy and the interdisciplinary connected research fields (smart grids, demand side integration) as well as subareas of energy storage.

The Energy-Campus is supposed to promote the settlement of companies operating in the field of renewable energies – especially wind energy – by creating potentials for research, sales, management and technological innovations. The implementation of a research institute including a wind and smart grid/demand side integration laboratory as well as a wind farm provide the basis for the growing Energy-Campus. The laboratories and the wind farm are supposed to serve the application-oriented research as well as education and qualification. Both will be integrated into the fields of research and teaching at HAW Hamburg.

The activities at the laboratories aim at generating research findings, extending knowledge and insights concerning specific questions on wind power generation, distribution and grid integration as well as energy storage. The innovations emerging at the Technology Centre Energy-Campus Hamburg are supposed to strengthen the renewable energy sector and create a significant input as well as acceptance for the energy turnaround in Hamburg.

In addition to the development and implementation of sustainable solutions, it is also important to communicate these solutions effectively and to enter into a dialogue with all social groups. Therefore, economic and social purposes present further focus areas of the Technology Center.