EBC

Energy in Buildings and Communities Programme

Factsheet

Towards Net Zero Energy Public Communities

EBC ANNEX 73

Until recently, most planners of public communities - for example military and university campuses - have addressed energy systems for new facilities on an individual building basis without consideration of energy sources, renewables, storage, or future energy generation needs. This situation in planning and execution of energy-related projects does not support attainment of current energy reduction goals or the minimization of costs for providing energy security.

The project summarised the state-of-the-art technologies and concepts for community-wide 'near zero energy' masterplanning that consider both power, heating and cooling needs. The project advanced the methodology of the 'near zero energy community' which enhanced existing masterplanning strategies and modelling tools, and expanded their application by adding standardized country-specific building data on specific building types, and information on advanced energy efficiency technologies and on their performance and cost characteristics.

The 'Rintheim' municipal housing district, in Karlsruhe, Germany
Source: Volkswohnung GmbH

PROJECT OBJECTIVES

1. establishing energy goals and a database of energy utilization indices for representative buildings and building communities
2. developing a catalogue of building models, including mixed-use buildings, applicable to national public and private communities and military garrisons
3. collecting and analyzing best practices of energy master planning with the goal of establishing a step-by-step energy master planning process to be executed using the computerized tool
4. collecting information on the architecture of advanced central energy systems, analyzing their applicability to different building communities' needs and constraints, and evaluating these scenarios from the technical, economic, financial, and business perspective
5. dissemination and training in participating countries designed for decision makers, planners, building owners, architects, engineers, and energy managers of public-owned and operated communities .

ACHIEVEMENTS

The project developed the methodology and the decision-making process that can be transferred into computer-based modelling tools for achieving near zero energy in public communities such as military garrisons, universities, housing areas, and so on. The guidelines and

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INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA) was established as an autonomous body within the Organisation for Economic Co-operation and Development (OECD) in 1974, with the purpose of strengthening co-operation in the vital area of energy policy. As one element of this programme, member countries take part in various energy research, development and demonstration activities. The Energy in Buildings and Communities Programme has co-ordinated various research projects associated with energy prediction, monitoring and energy efficiency measures in both new and existing buildings. The results have provided much valuable information about the state of the art of building analysis and have led to further IEA co-ordinated research.

EBC VISION

By 2030, near-zero primary energy use and carbon dioxide emissions solutions have been adopted in new buildings and communities, and a wide range of reliable technical solutions have been made available for the existing building stock.

EBC MISSION

To accelerate the transformation of the built environment towards more energy efficient and sustainable buildings and communities, by the development and dissemination of knowledge and technologies through international collaborative research and innovation.

tools developed within the project supported the energy masterplanning process and addressed the technical, economic, social, financial, and business components presented in a way that is easy to understand and execute. The outcomes are applicable to public communities in the participating countries.

The deliverables from this project are:

- Collection and Evaluation of Input Data for Energy Master Plan
- Collection of Existing Case Studies and Implementation of Pilot Studies
- Description of Existing and Innovative Technologies, Architecture and Calculation Tools for Performance of Central Energy Systems (Power and Thermal)
- Develop Guidance for Net Zero Energy Master Planning
- Develop a Functional Modeling Tool to Facilitate the Net Zero Energy Resilient Communities Master Planning Process
- Business, legal and financial aspects of Net Zero Energy Master Planning.

Project duration

Completed (2017–2021)

Operating Agents

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Austria, Australia, Canada, Denmark, Germany, Italy, Norway, UK, USA
Observer: Estonia, Latvia

Further information

www.iea-ebc.org

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