Energy Benchmark Pool Frankfurt in Commercial Buildings

Information and exchange of experience as a success factor for efficient planning and running of commercial buildings

Energy Agency of Frankfurt, Germany

Summary

The energy agency of Frankfurt organised an Energy Benchmark Pool for commercial buildings. Users, owners and investors of buildings are invited to analyse and optimise the energy use of their buildings in small groups of max. ten participants. The results are published in an anonymous way. The aim is to enforce competition of energy efficient buildings in Frankfurt and to give owners and investors clear figures to describe energy efficiency for their planners.

End-user area		Target Audience		Technical	
■	New buildings		Citizens	■	Energy efficiency
■	Refurbishment of buildings		Households		Heating
	Transport and mobility	■	Property owners		Cooling
	Financial instruments		Schools and universities	■	Appliances
	Industry		Decision makers	■	Lighting
	Legal initiatives (municipal regulations, directives, etc)		Local and regional authorities		CHP
	Planning issues		Transport companies		District Heating
	Sustainable communities		Utilities		Solar energy
	User behaviour		ESCOs		Biomass
	Education		Architects and engineers		Wind
	Other		Financial institutions		Geothermal
			Other		Hydro power
					Other

Context

"Energy Benchmark-Pool Frankfurt" is part of the CO2-reduction programme of the City Council. In commercial buildings a huge potential of energy efficiency namely saving of electricity can be identified.

Objectives

Reducing energy demand in commercial building with emphasis on planning and running phase of the buildings. Special emphasis is given to the electrical demand of the buildings. Electricity is the biggest part of primary energy demand in commercial buildings and in the past energy optimising aimed mostly on the heat demand.

Process

The first Benchmark-Group for existing buildings started September 2001 and finished March 2002. Regularly experience exchange still goes on. The first Benchmark-Group for building, which are planed or

under construction started August 2002 and finished February 2003. New Benchmark-Groups are under preparation and will be started by end of 2003.

Facilitation of a Benchmark-Process with the owners, users or investors of a commercial building:

- Step 1 Introduction Workshop (questionnaire and determination of the benchmark process;
- Step 2 Data collection through the participants;
- Step 3 Data analysis through the energy agency;
- Step 4 Discussing of the analysis, experience and information exchange and best practice presentation in up to three workshops;
- Step 5 Collection and public presentation of the (anonymous) results;
- Step 6 continuous experience exchanges twice a year.

Financial resources and partners

Benchmark-Group "existing buildings"

- Own manpower 20.000 € (including development of the questionnaire);
- Consulting for the participants 35.600 € (one external consultant per participant as a process coach);
- Workshops, publications 2,800 €;
- External funds 48.000 € (Frankfurter Förderprogramm Energie, E.ON).

Remark: The participants of the Benchmark-Pool "existing buildings" need support for the data analysis and the estimation of the saving potential. The first group received external funds. The following groups have to cover these expenses on their own. (about 3.000 € per participant).

Benchmark-Group "planned buildings"

This group does not need external support. During the planning and construction phase know how is available to get and discuss all the necessary data. Consequently the total costs reach 25.000 € including all.

Results

On average, 25 % of the total demand of the buildings was identified as a saving potential with a pay-back-time less than 5 years. Typically 10 to 15 % of the total demand could be saved only by optimizing the running time of the equipment without any investment. For the first time the electricity demand in 10 big office buildings in Frankfurt was analysed in very detail (parts of lighting, HVAC, office equipment etc.) showing large deviations in specific demands as well as high saving potentials. The implementation of the defined saving potential is still in process.

Lessons learned and repeatability

A huge improvement of awareness for energy efficiency of the responsible manager is one of the positive aspects of project implementation. It is necessary to hold the process attractive for both, the technical and economical responsible persons. The Energy Agency of Frankfurt acts as process facilitator and organizer.

Problems encountered and how overcome:

- No funds in future available, particularly needed for existing buildings. The solution would require a Financial contribution of the participants;
- Elaboration of the questionnaire for planned buildings is time consuming. The solution would require the questionnaire to be simplified, which is under process.

As for repeatability the project is applicable everywhere. The experience of this project was the basis for the ALTENER proposal project "Integrating saving of electricity and purchasing of green electricity in office buildings (Greeneffect)", which started march 2003.

Contact for more information:

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Printed reports or other literature available:
Title:"Energiecontrolling in Bürogebäuden – Endbericht" (in german) Cost: 20 euro