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The Total Concept method for major reduction of energy use in non-residential buildings

TOTAL CONCEPT

This project has demonstrated and promoted that large-scale energy performance improvements in existing non-residential buildings can satisfy profitability demands set by the building owner/investor and thus become a market driver for major refurbishment of existing buildings towards Nearly Zero-Energy Buildings. In order to reach the 20-20-20 EU-target it is a fact that the existing European building stock must improve its energy performance. With today´s knowledge and economical methods there is a great risk that only the easy measures, “the low hanging fruits”, will be carried out while a number of possible and profitable measures will be overlooked. This will lead to small energy savings that will be far from the economic potential of carrying out large energy efficiency measures. In order to overcome this obvious risk a new and innovative method, called the Total Concept has been developed. The basic idea is to make an energy saving package of all measures that together fulfil the profitability frames set by the building owner. In this way, the economic realities a building owner has to take into account are considered at the same time as the ambitions is increased which will make it possible to come much further with the energy savings than with traditional methods. The Total Concept method has been adopted and tested in 12 pilot projects situated in northern Europe.

Results

- Detailed information, guidelines and a tool-kit have been developed for the Total Concept method. The guidelines and tool are available in English, Swedish, Norwegian, Danish, Finnish and Estonian.
- Demonstration of cost efficient larger energy performance improvement has been realised in existing non-residential buildings based on the Total Concept method. These pilot studies respond to the market barriers of the stakeholders (e.g. finding cost efficient solutions for major decrease in energy use). Action packages based on Total Concept method have been developed for 12 existing non-residential buildings. A practical implementation of action packages has been carried out in 8 of the buildings and of those, 5 have measured follow up data.
- New knowledge and practical know-how has been transferred to stakeholders and key actors within national training courses. At least 463 stakeholders and key actors have been trained within the project.
- High level dissemination activities, including promotion, seminars and Total Concept workshops/meetings have been performed. These events have had a participation of close to 1000 stakeholders and key actors.
- A plan for further dissemination on national and European level beyond the project frames have been established.

Lesson learned

- The method is more successful when the building is to be renovated anyways. Energy use on its own is often not suffiicnet to convince the building owner to undertake renovation works. It is recommended taking into account only the cost of upgrading from a standard energy system to a very low energy system. The approach of Total Concept that takes into account the difference between the energy improvements and upgrading the building is effective in order to render the financial benefits of energy improvement visible.
- The Total concept method is easy to apply to national conditions requiring only small adjustments. However, it is a challenge to convince building owners to use the method in the first place. In the pilot projects, the results have been found to be useful and easily understandable. The pilot project owners have been convinced and they use the tool to convince their tenants and several have ordered Total Concept analyses for further buildings. The tools strength is that it communicates well and especially the internal rate of return diagram is appreciated.
- It can be difficult to change the building owner's opinion to choosing the complete package of measures. If it is not possible to do all measures at once, the Total Concept method has the benefit that it is possible to do a refurbishment plan for the next years making it possible for the complete package to be performed in the long term.

Partners and coordinator

CIT Energy Management AB [1]	Sweden
CIT Energy Management [2]	Sweden
Ramboll Danmark A/S [3]	Denmark
SINTEF - Stiftelsen for industriell og teknisk forskning ved Norges tekniske høgskole [4]	Norway
Estonian Regional and Local Development Agency [5]	Estonia
Bygherreforeningen / Danish Association of Construction Clients [6]	Denmark
Byggherrarna Sverige AB / Swedish Construction Clients [7]	Sweden
Bionova Oy [8]	Finland
Aalborg University - Danish Building Research Insittute [9]	Denmark
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Budget

Overall budget: 1.814.796,00 € (EU contribution: 75,00 %)

Key documents

- OH Presentation total Concept [11]
  PDF 758.34 KB
- Final Report [12]

In brief

Sector: Buildings

Duration: *11/03/2014* to *10/03/2017*

Contract number: IEE-13-613

Website: http://totalconcept.info/

Tags:

energy consumption
nearly zero-energy buildings (NZEB)
retrofitting

Related projects

- [SQUARE [13]] A System for Quality Assurance when Retrofitting existing buildings to...
- [EPBD CA III [14]] EPBD Concerted Action III (2011-2015)
- [ECCC [15]] European Citizens Climate Cup
- [INTENSE [16]] From Estonia till Croatia: Intelligent Energy Saving Measures for...
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- [NZB2021 [20]] NZB2021 'Doors Open Days' – sharing experiences from low energy buildings...
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- [MINUS 3% [23]] Shining Examples for the Implementation of the Energy End-use Efficiency...
- [SURE-FIT [24]] Sustainable Roof Extension Retrofit for High-Rise Social Housing in Europe
- [POWER HOUSE EUROPE [25]] The big green housing and energy exchange
- [TRAINREBUILD [26]] Training for Rebuilding Europe (TRAINREBUILD)
- [REE_TROFIT [27]] Training on Renewable Energy solutions and energy Efficiency in...

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