

Delft University of Technology, The Netherlands RENOVA/RESEO-tool

"The RENOVA-tool will help you to get your house more sustainable and energy-efficient."

Hans van Meerendonk
project manager

Project description

RESEO, stands for Renovation Strategy for Energy Optimization of holiday houses on the North Sea islands inspired by Cradle to Cradle®. It is a part of the RENOVA Decision Tool and can be used as a guide and a database on energy renovation.

It provides six steps to be followed during the energy-renovation of a house. It includes a review of methods and technologies that can be implemented during each step.

The six steps are:

- 1: Analyze and set an energy demand target
- 2: Reduce energy demand
- 3: Reuse energy flows
- 4: Provide clean and renewable energy supply with microgeneration
- 5: Interconnect energy, water, materials
- 6: Evaluate the scenarios and select the final renovation design

There are 74 energy related methods and technologies that can be used, including (dis)advantages, seasonal potentials, efficiency, an indicator on the Cradle to Cradle® design principles, technology producers and an indicator on the level of potential for holiday houses.

Targets of the project

While the consequences of global warming are already present, the existing building stock is overly unsustainable and energy-inefficient. It contributes by large to CO₂ emissions and the depletion of natural resources. The implementation of clean and renewable energy is necessary to minimize their ecological footprint and transform them into beneficial elements of the environment.

Many houses in the North Sea Region are designed and constructed in an old-fashioned way, equipped with conventional long-gone-by energy technologies. Fossil fuels are predominantly used as the primary energy source for supplying the domestic electricity and heat demand, depleting natural resources and emitting greenhouse gases (GHG) that contribute to the global warming phenomenon. Furthermore, inefficient energy conversion and distribution systems result in the dissipation of a substantial amount of energy within this sector.



April 2011

As a response to this problem, this energy tool is developed. It focusses on the renovation of existing houses and especially holiday houses in the North Sea Region. RENOVA was created by Vasileios Antonopoulos Papageorgiou for his MSc graduation thesis at the Delft University of Technology, as part of the Cradle to Cradle Islands project.



WATER



ENERGY



MATERIALS

Innovation and value of the project

The RENOVA-tool can be used by decision makers with technical knowledge involved in renovation projects, such as engineers, architects, building technologists and installers. Nevertheless, it can also be used by non-technical decision makers, such as house owners, managers or government officials.

The benefits of RENOVA are:

- Enhanced property value due to labels like Energy Performance Directive Building (EPDB) or Cradle to Cradle®, the increase of public awareness regarding energy-efficiency/sustainability and the higher demand for improved living comfort.
- Improved building energy labelling and CO₂ emissions indicator due to the improved overall performance of the building. Many design support tools, certifications and classifications are available for various aspects of a building.

- Improved comfort due to comfortable indoor climate, noise reduction, prevention of condensation on indoor surfaces, prevention of moist air penetrating the structure (which will result in damages) and constant air renewal.
- Increased social status due to image improvement and identification of the neighbourhood.

Start and end date of the project

January 2009 - Summer 2012

Project leader

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