Building Energy Tools

ECO*nirman*
Prescriptive

ECO*nirman*
Whole Building Performance

ECO*bench*
Energy Benchmarking

The Ministry of Power, Government of India, under the provision of the Energy Conservation Act of 2001, launched the Energy Conservation Building Code (ECBC) in May 2007 for its voluntary adoption in the country. Since then, the Bureau of Energy Efficiency (BEE) has been promoting the implementation of the ECBC through several capacity building programs. United States Agency for International Development (USAID) supported Energy Conservation and Commercialization - Phase III (ECO-III) Project has been working closely with BEE on these initiatives. During these capacity building efforts, a strong need was felt to assist architects and engineers at the design stage so that they are able to assess the conformance of their proposed buildings with respect to the ECBC and accordingly incorporate design improvements. It is with this objective that the development of two ECBC Conformance Check tools, ECO*nirman* Prescriptive Tool and ECO*nirman* Whole Building Performance Tool, was undertaken by ECO-III in partnership with BEE.

BEE also has, as one of its primary objectives, focused on efforts to reduce energy intensity of the Indian economy by reducing the wasteful use of energy and bridging the power demand-supply gap. This has led to an initiative to provide sector-specific energy consumption data and the development of an energy benchmarking model. In collaboration with BEE, ECO-III has developed ECO*bench*, a benchmarking tool to measure the performance of commercial buildings.

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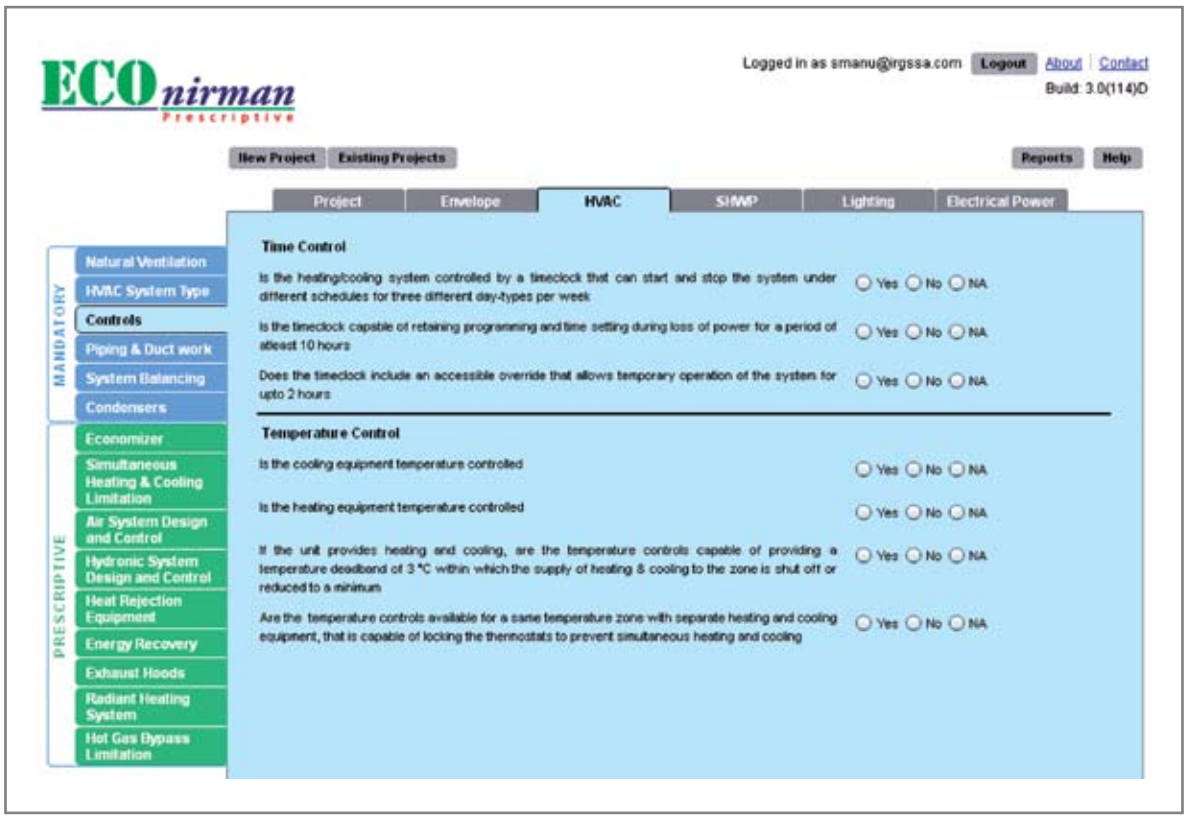
ECO*nirman* Prescriptive Tool is an online tool for assessing conformance with the ECBC using the Prescriptive method. It enables building developers and designers to test their building design against the prescriptive requirements of the code. It is a web-based conformance tool that can be made available to the users over the Internet with minimal software requirements or building science expertise. It can be used with minimal learning involved. Being a web-based tool, it allows design teams to collaborate remotely. The tool requires inputs from the user to arrive at conformance results for different buildings components. A report that may be submitted to demonstrate conformance with the ECBC, can be generated.

Tool features

- Facilitates the users in assessing if a building meets the conformance requirements, keeping in view the five climatic zones in India as specified in the ECBC
- Generates conformance reports that compile the data provided by the user and also indicates if the systems and sub-systems of the building are conforming or not conforming to code requirements
- Stores multiple building projects under a single user profile
- Stores the information in a central database for future reference, review, edit, and analysis purposes
- Keeps the information secured and confidential
- Is available in public domain for easy access to the users
- Offers an additional option of checking the conformance of building envelope using the Trade-off option



ECO*nirman* Whole Building Performance Tool is an online tool to assess conformance with the ECBC using the Whole Building Performance (WBP) method. It enables building developers and designers to test their building design using the energy simulation protocol established in Appendix B of the code. The tool also predicts the performance of the building in terms of its annual energy consumption normalized to the building area. Being a web-based energy simulation tool, it can be made available to users over the Internet with minimal software requirements and building science or simulation expertise.

The tool runs the Standard Design (baseline parameters from the ECBC prescriptive requirements) and the Proposed Design (user specified inputs that allow the user to modify the ECBC prescriptive requirements) versions of the building and compares the Energy Performance Intensity (EPI) from the simulation results. A report that may be submitted to demonstrate conformance with the ECBC, can be generated.

Tool features

- Facilitates the users in assessing if a building meets the conformance requirements, keeping in view the five climatic zones in India as specified in the ECBC
- Generates a building's conformance report that compiles the data provided by the user and also indicates if the systems and sub-systems of the building are conforming or not conforming with the code requirements
- Stores multiple building projects under a single user profile
- Stores the information in a central database for future reference, review, edit, and analysis purposes
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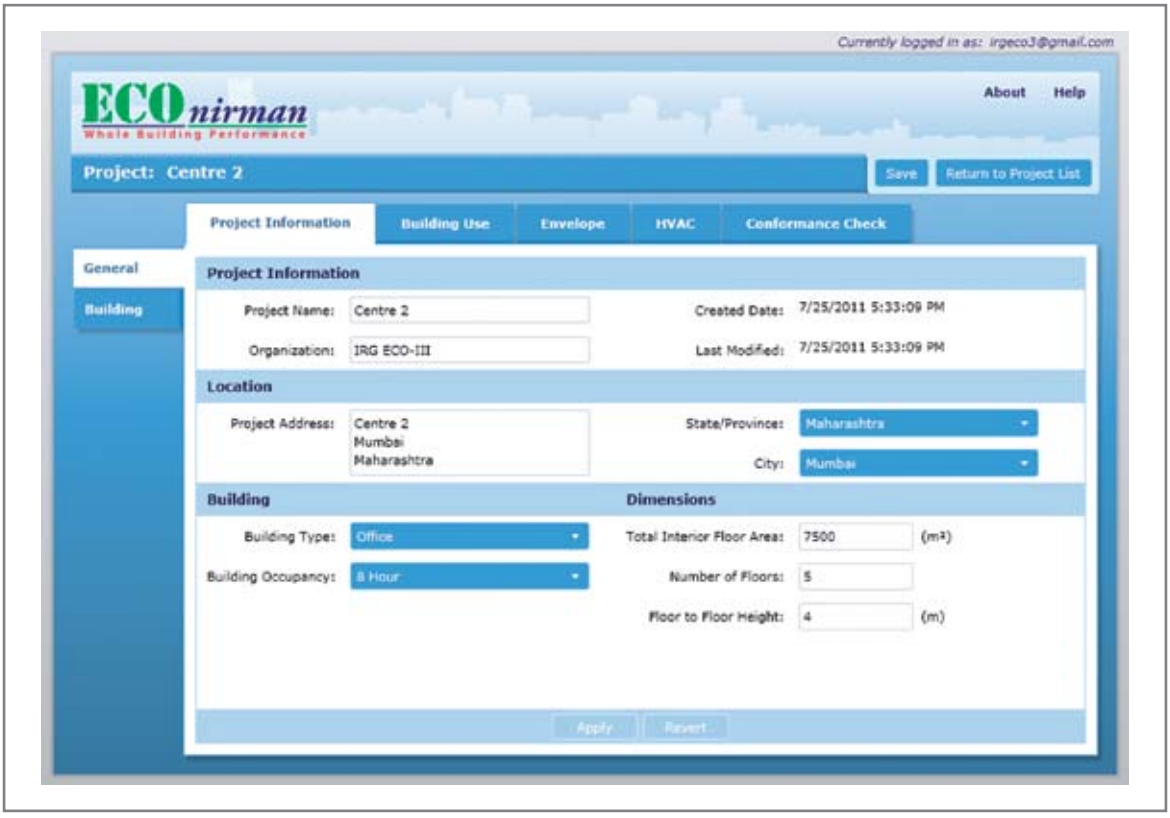


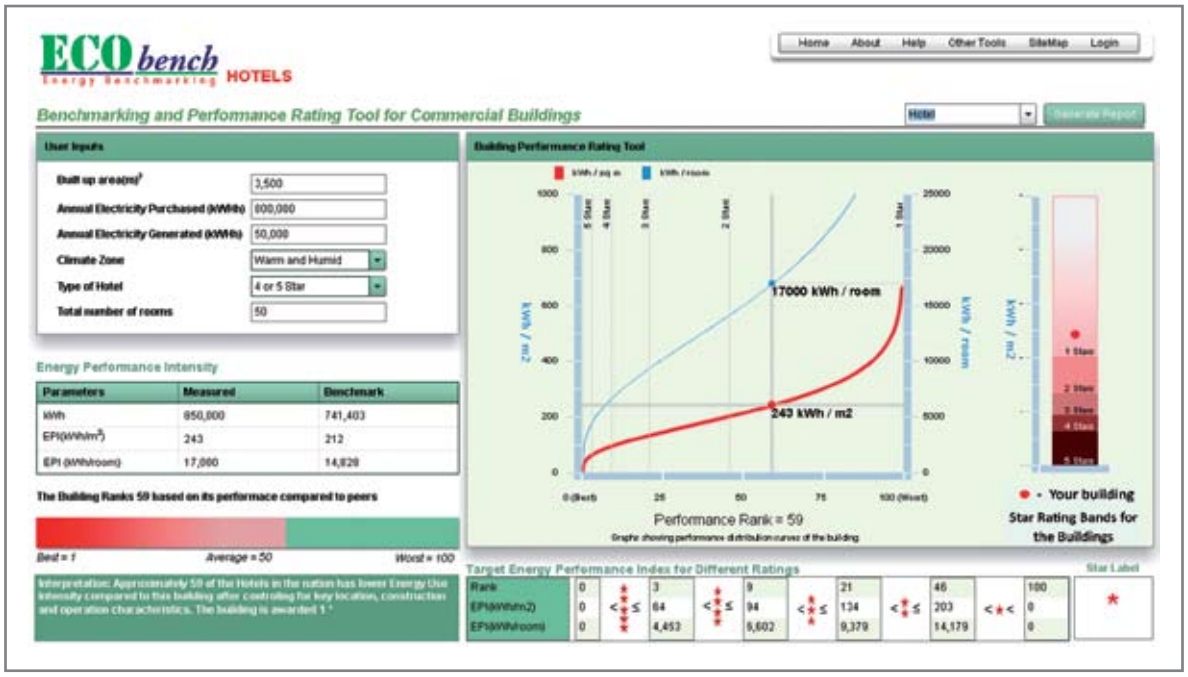
ECO*bench*
Energy Benchmarking

Buildings must continuously monitor and improve their performance in order to transition to an energy efficient economy. It is important to improve the design, construction, maintenance, and operation of buildings by measuring the energy performance against established benchmarks, and recognize and reward exemplary buildings. Energy benchmarking is a process of creating a whole building energy consumption profile of a group of buildings characterized by their primary use, construction, physical, geographic, and operating characteristics. The rating is derived by assigning a score to the performance differential between the building under consideration and a benchmarked building in relation to all other buildings in the stock.

ECO*bench* Tool is a web-based tool that gathers inputs from the user to measure the performance of a building against its peers available in the database. It displays the benchmarking result in graphic as well as tabular fashion for the convenience of the user. A report that may be submitted to demonstrate the building's performance can be generated.

Tool features

- Can be used with minimal learning involved
- Is available in a public domain for easy access to the users
- Comprises of the following three utilities:
  - Energy Benchmarking
  - Data Query
  - Data Submission



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