EvapCal

EvapCal is a design analysis tool for evaluating performance of direct, indirect, and two-stage (indirect-direct) evaporative coolers. It is designed to help decision makers in taking informed decisions related to system sizing, water requirement, required air changes and resulting supply air condition with respect to thermal comfort of occupants.

The tool utilises hourly weather files for analysis and offers three main utility tabs, namely:

1. Evaporative Cooler Design

This tab displays calculated design parameters based on user input data of weather, building heat load and design of evaporative cooler. Hourly heat maps are generated for resultant indoor air in 2D and 3D format to visually present performance of the system.

2. Evaporative Cooler Design Chart

It displays psychrometric chart based on the calculated design parameters for the application-based operational schedule in terms of months/days/hours to calculate achievable thermal comfort hours. Comparative thermal comfort analysis is facilitated among user defined comfort zone, ASHRAE-55 2017 comfort zone and India composite bioclimatic comfort zone.
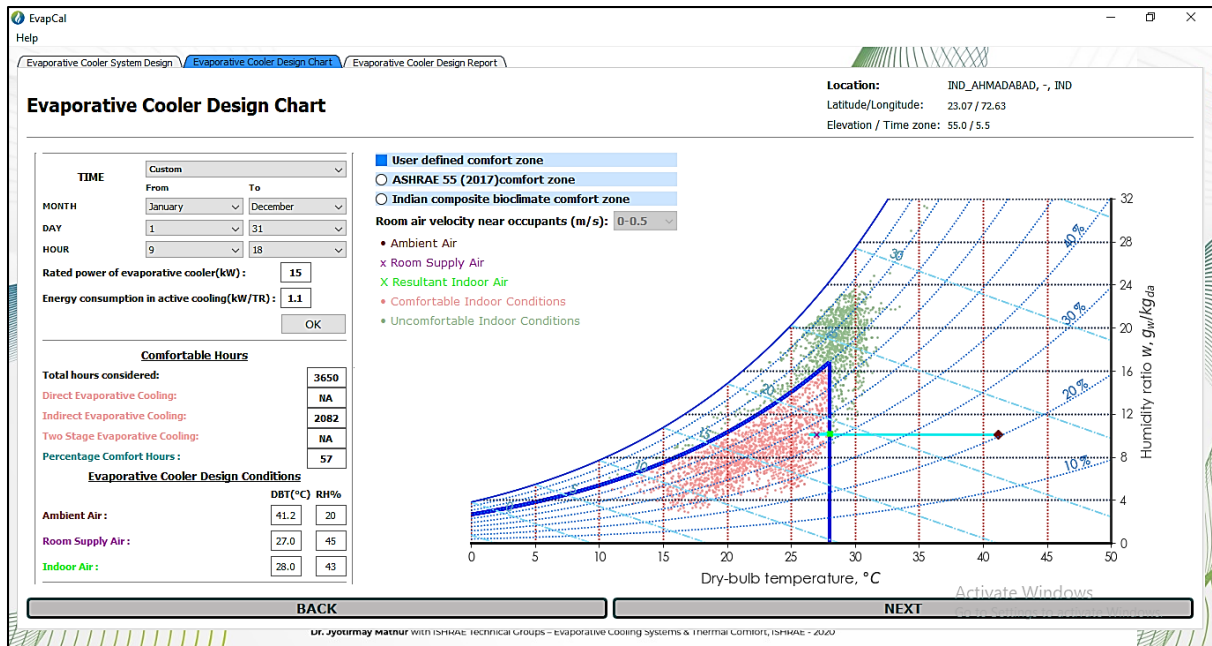
3. Evaporative Cooler Design Report

Info-graphic reports can be generated in PDF and EXCEL formats to refer to the project data whenever required in the future. Projects can be saved in ".evp" format that can be imported in the tool for further revision in the design data.
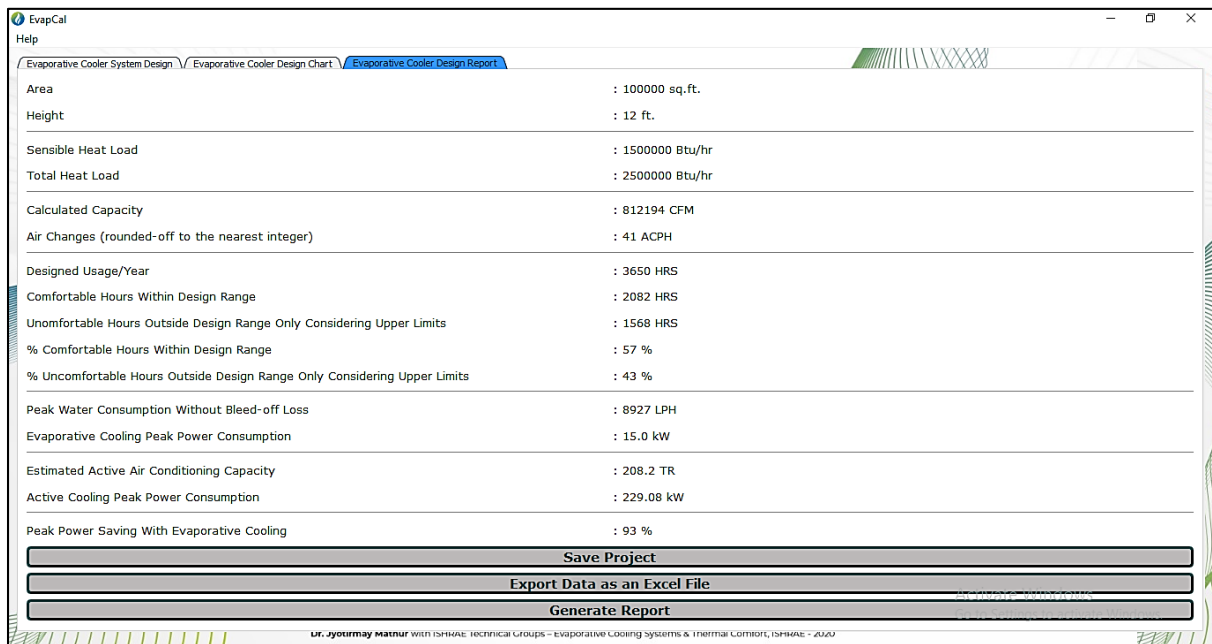
The "EvapCal" tool is developed by Ms. Khyati Paghdar and Mr. Raj Gupta (as a part of their M.Tech. Theses in two successive years at Centre for Energy and Environment, MNIT Jaipur) in association with ISHRAE (Indian Society of Heating, Ventilation and Air-conditioning Engineers). The project was mentored by industry experts: Mr. Nishant Gupta (Managing Director, Degree Day Pvt. Ltd., Indore, India), Mr. Vaibhav Gupta (Director, Humidin Casilica,

Delhi, India) and Technical Groups of ISHRAE - Evaporative Cooling and Thermal Comfort in association with Prof. Jyotirmay Mathur of MNIT Jaipur.

EvapCal software and user manual may be downloaded from:
https://ishrae.in/home/DownloadEvapCal