

Short description

DALEC (Day- and Artificial Light with Energy Calculation) is an online concept evaluation tool for lighting designers, architects, building engineers and building owners. Although easy to use, the software accounts for the complex thermal and light processes in buildings and allows a simple evaluation of heating, cooling and electric lighting loads. Not only energy, but also user behavior is considered, and visual and thermal comfort is evaluated (glare, overheating frequency). This novel and innovative, holistic approach makes sustainable and energy efficient building design possible for new buildings as well as refurbishment. The simulation tool has been developed by Bartenbach, Zumtobel Lighting and the University of Innsbruck.

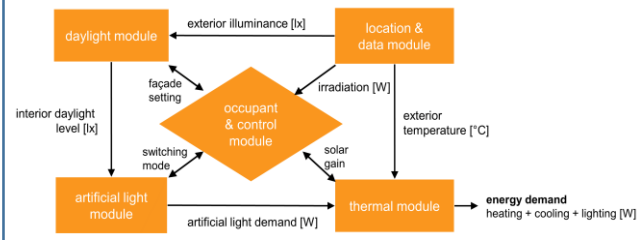
How to use it?

DALEC is an online tool that can be used directly in a web browser. It does not need to be installed. DALEC is freely available at www.dalec.net.



How is the model structured?

DALEC is composed of five modules that cover the relevant steps for the integrated lighting and thermal evaluation. The chart shows schematically the connections between the modules.



How to run a simulation?

1. When opening the software, a default project is loaded. The user then needs to specify the project-related inputs in the five property sets "Location", "Dimension & usage", "Building Physics", "Façade" and "Artificial Light".
2. Clicking on "Show results" triggers the calculation which only takes a few seconds.
3. The main results are presented on the front page ("Configuration" tab), detailed can be found in the "Results" tab. For even further analysis, the overall calculation results including hourly values can be exported to a spreadsheet using the "Copy to clipboard" function.
4. To compare different systems, control strategies or even different rooms, "Project Elements" can be duplicated and adapted. The results are displayed clearly arranged in the "Comparison" tab.
5. The project is saved on the DALEC server and can be shared and further edited with the "Share project" functionality.

	Redirecting...	Veneian...	Interior Sc...
kWh/(m²a)	41.0	54.4	61.5
kWh/(m²a)	40.0	44.0	45.0
kWh/(m²a)	15.8	20.9	23.6
lg(m²a)	10.7	14.2	16.1
l/(m²a)	2.52	3.35	3.78
%	86.6 84.9	72.3 65.2	55.7 40.8
%	33 4.8	2.8 4.3	0.0 0.0
%	0.0	0.0	0.0
pcs	8	8	8

Strengths

- ✓ Evaluation of façade and electric lighting systems in early design phases for
 - annual daylighting
 - annual demand for electric lighting
 - annual demand for heating and cooling
 - visual and thermal user comfort
- ✓ Simple input
- ✓ Short calculation times
- ✓ Easy to learn even without strong expertise
- ✓ Clear Graphical User Interface
- ✓ Online tool
- ✓ Free

