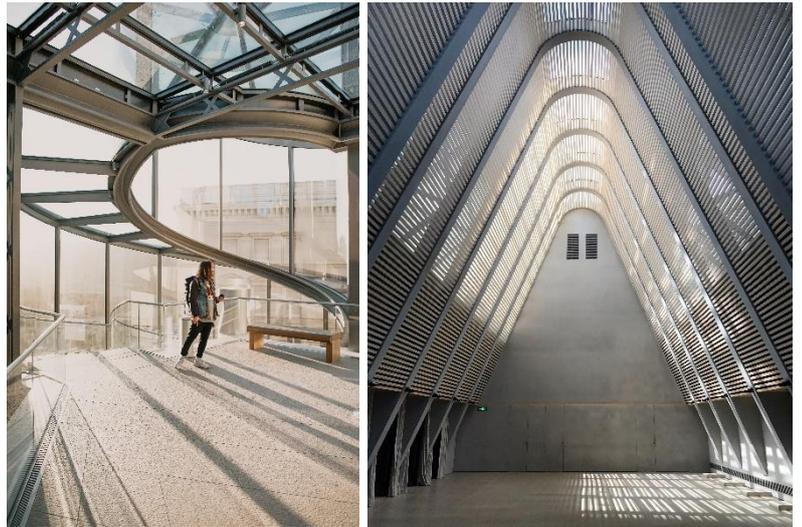


SOLAR STUDIES

Quantifying buildings' interaction with sun.
Sustainability, comfort, and efficiency.



Climate change and scarce energy resources are two of the biggest challenges the world will face in the near future. Therefore, we need to make deep changes not only to reduce our energy use, but also to change our way of production. Among renewable energy sources, solar energy has the greatest potential. If the solar energy usage is optimized for electricity, heat load and daylight, a building has the potential to achieve average net zero energy consumption.



Allowing natural light into a space also means allowing the heat of solar gains. To have visual and thermal comfort, a careful balance must be struck between allowing daylight and negative gains such as overheating, discomfort and glare.

Our Service

We provide engineers, architects, and designers with the information they need to fully understand how their buildings or developments interact with the sun. We can share with you:

- How much solar energy is available to your project? (Even for complex buildings or large areas)
- The quantity and quality of daylight inside your building (See also our services focused on daylighting)
- Where your building's shadow falls and how it moves (even moment to moment)
- Whether there is glare from a proposed or existing building, whether the glare is dangerous, and what to do about it

We have a team that can quickly and thoroughly calculate analyzes to help address your concerns like the above.

By analyzing the interaction of your project with the sun, you can answer the following questions.

- How can we reduce the operating cost of the building and increase the comfort of the residents?
- How can we better use the natural advantages of the construction site?
- How much light / heat gain will there be in the space?
- How do we optimize solar energy strategies?
- How do we reduce dangerous or negative conditions such as glare and dark area?



TO BE YOUR MOST VALUABLE PARTNER...

ALKAZAR,

Explores Innovations

We are at your side in low energy consuming building design that takes advantage of passive solar strategies.

We are with you in designs that do not disturb users in terms of open space design and solar strategies for pedestrian paths.

Creates Opportunities

By determining your energy consumption, we balance system performance, feasibility, and payback periods.

With preliminary analyses on facade design, we minimize possible problems.

Meets Challenges

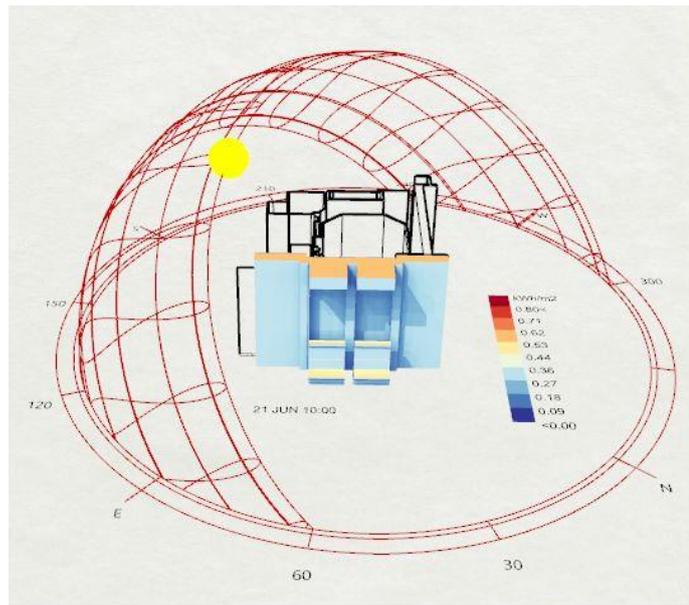
We offer comfortable spaces by balancing passive daylight strategies against glare and overheating.

In addition to providing excellent quality of vision, we report overshadowed areas to meet requirements.

Fulfills Your Expectations

From the beginning of the design, we analyze each parameter and take you to the correct conclusions.

We are at your side in providing the conditions for green building certificates.



How We Work?

We start by defining the most accurate sun and sky data for the project area. Next, we calculate the total solar energy on the relevant surfaces. This calculation may be based on general climate files, measured solar data, or mathematical algorithms that predict local solar conditions in the environment. Next, we consider the material properties of the surfaces. These properties define how solar energy is reflected and how it is transmitted and absorbed from the façade. When the analysis is completed, we follow up the reflections and shadows of the building.

We determine how much solar energy occurs on the facade. This assessment is critical in passive design, feasibility of solar energy systems and financial appraisal. We also support you in obtaining green certificates with these analyzes.

Working from the perspective of the occupants, we simulate brightness levels and evaluate the undesired glare effects. We can test mitigation measures from the same perspective. Our goal is to avoid design decisions that disturb the occupants. Also, we strive to create solutions that work with little maintenance and occupant intervention.

While developing suggestions as a result of analyzes and simulations, we use our expertise in climate as well as modeling complex geometries and materials. We constantly improve our work to identify and refine the most useful metrics in interpreting solar interaction performance of buildings.