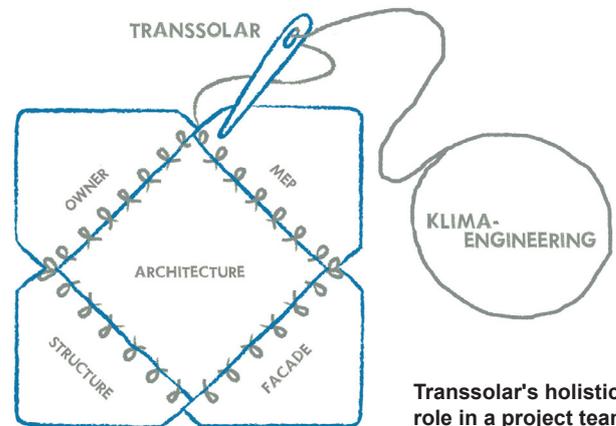


# Our Services

We combine climate protection, architecture and engineering. We offer flexible collaboration models from focused support to full project service — for small and large projects alike.

1. Full-Project Service
2. Strategic Planning
3. Technical Focuses
4. Project Types and Scales



## 1. Full-Project Service

The foundation of our practice is a unique, holistic service spanning from project conception to final occupancy (and post-occupancy), based on our Protect & Adapt approach. We facilitate vision, generate ideas, and integrate design, combining deep physical expertise with creative collaboration. From day one, we work closely with clients, architects, planners, and users to develop comfort and energy concepts that respond to climate, architecture, and human needs. Using advanced simulations, custom tools, and physical testing, we validate and refine solutions grounded in the dynamic interplay of sun, wind, heat, light, and building systems.

### Visioning and Target Setting

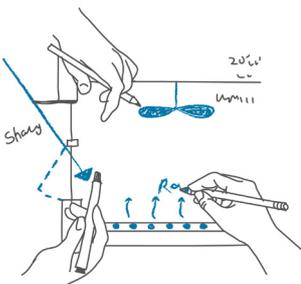
Before design work begins and in parallel with project programming, we work with owners, occupants, architects, and project teams to define a project vision. What might a human-centric, climate-responsive space for this climate and program look like? What sort of carbon and energy targets are achievable? Are there sustainability certifications that should be pursued? We share examples, study the climate, and evaluate benchmarks to arrive at a shared goal.

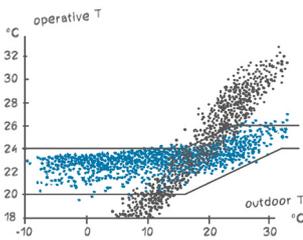
**We often describe the final vision in a custom, outcome-oriented project charter that outlines the goals for the project with far more clarity than generic certification goals.**



### Brainstorming and Idea Generation

As design starts, we begin generating ideas for how a project meeting the charter might physically manifest. We sketch ideas and exchange them with the architect, and comment on and share ideas in response to design sketches from the architect. The same process happens with other team members, especially the mechanical engineer for high-level system selection. This exchange of ideas happens continuously throughout the design process, starting with the highest-level decisions (basic architectural massing, façade design) and progressing to more detailed design decisions. **Our driving this process provides a holistic, interdisciplinary viewpoint that pushes toward integrated design solutions unlike ly to be found by traditional architecture and engineering disciplines, who focus on their own area of responsibility.**





### Advanced Engineering Analysis and Decision Support

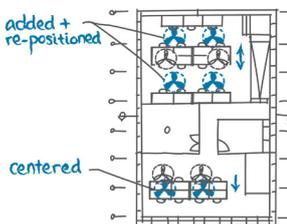
Emerging design ideas result in the need for diverse types of analysis (daylight, thermal/energy simulation, airflow simulation, and more) to help us and the team understand: What's the design driver – what decisions are most important? Does a proposed boundary-pushing idea work for this climate and program – and what's necessary to make it work? What's the resulting performance (comfort, energy use, carbon emissions). What can be adjusted to get the best possible performance?

**We choose what analysis is necessary to explore these questions and iterate the analysis with the team until a decision is made. Our simulation capabilities and our holistic perspective provide clear guidance and answers that are difficult to provide within the focused responsibility and tool sets of traditional design disciplines.**

### Technical Coordination and Implementation

As projects move into final product specification and detailed coordination and documentation of the design, our expert guidance supports the team in successful implementation of the concept. What performance specifications are important, and what products meet them? What key details, controls, or other features are necessary, especially for more unusual or unfamiliar aspects of the design? Are any special tests or mock-ups necessary to test and verify performance of a new design idea? In some cases we even perform testing ourselves. We also review plans to ensure the design is remaining on track to meet the design intent and project charter.

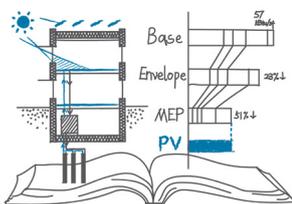
**Our expert guidance provides project teams three decades of worldwide experience implementing new or unconventional concepts. Our holistic perspective ensures that gaps between disciplines are addressed and not left unspecified.**



### Storytelling and Narration

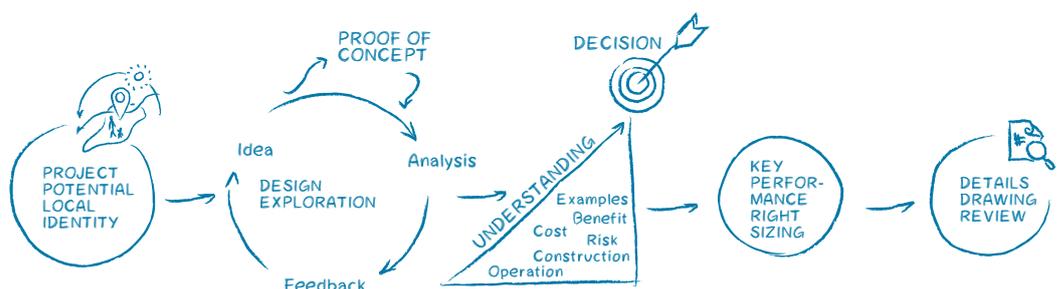
We help project teams keep sight of the big picture – why was a certain design chosen and how do different elements work together? We also communicate this to owners – both for their project decision-making and for branding or marketing the project. The same applies to occupants, especially to ensure they make the best use of the building features we designed and can do their part to contribute to building performance.

**We excel at making complex design interdependencies understandable, explaining the science behind design drivers, and focusing on what's important. Our unique perspective allows us to deeply understand technical complexities, while reducing them to their 'need-to-know essence' in graphics or words for different audiences.**



### Post-Occupancy

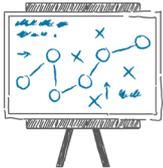
Even after a building has been commissioned, we remain by your side. Through post-occupancy services, we support the transition from planned to actual operation and ensure that the technical systems are functioning exactly as designed. We analyze operational data, assess comfort levels, compare actual performance with simulation results, and identify potential areas for optimization. Through targeted measurements, user feedback, and systematic evaluations, we help identify discrepancies early on and improve operational quality in the long term. **Our commitment doesn't end with commissioning: we ensure that every project operates stably, efficiently, and in the best interests of its users over the long term.**



**Transsolar's process  
for a full-service  
project**

## 2. Strategic Planning

Some projects require our support on a more specific topic. We provide a wide range of focused services for projects that need unmatched creativity or analytical capabilities. Project and work sample examples are available on request.



### Strategy/visioning advisor

We help clients develop an overall zero carbon, sustainability, or experience-focused vision or strategy for a single project, an entire campus or neighborhood, or a portfolio. This can even include applying an ESG lens to real estate decisions, such as comparing leasing or site selection options.



### Design brief/competition advisor

We help clients develop carbon, energy, and sustainability requirements for design competitions, requests for proposals, and similar project briefs. Briefs go beyond numeric targets and certification, describing the vision for the project and clarifying the ambition expected of design teams. We then serve as the owner's advisor, reviewing how well teams respond to the requirements of the brief. In some cases we also act as a design advisor to all participating teams.



### Post-Occupancy evaluations

With a POE (Post Occupancy Evaluation), we analyze a building in real-world operation. The goal is to assess how well the building's technical systems perform and to identify potential improvements. This helps maintain or increase the long-term value of the property. Above all, we address key questions: Do occupants feel comfortable and satisfied? Do the systems operate as intended, and do they consume or generate the expected amount of energy? What can be optimized? To answer these questions, we use a combination of long-term monitoring, on-site measurements, surveys, and targeted interviews.



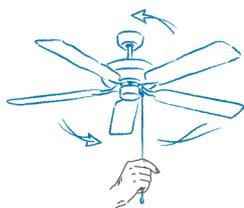
### Sustainability certifications

We support owners in reaching their sustainability certification goals, beginning with early evaluations of the feasibility of different certifications, advising on what's appropriate, and deciding on the right target for each project. We support the certification process for a variety of certifications, including ILFI Zero Energy, Zero Carbon, CORE, Living Building (petal or full certification), LEED, WELL, DGNB (Germany), CaGBC Zero Carbon (Canada), and more. In some cases we work with long-term partners to support detailed administration of the certification process.



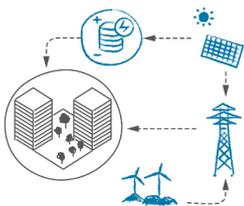
### Funding Identification & Support

We help identify potential funding sources, primarily by recommending state or federal energy efficiency grants or tax incentives. We provide technical support when applying for these programs, such as required whole building energy models or explanations of the strategies and technologies applied on the project.



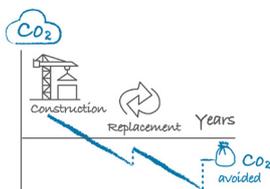
### Low Tech Advisory

Low-Tech focuses on robust, easy-to-use, and user-centered solutions as an alternative to overly complex and failure-prone building systems. It does not mean avoiding technology, but applying it thoughtfully and context-specifically, with a focus on comfort, durability, and intuitive operation. We advise on Low-Tech strategies that enable short commissioning phases, reduce long-term maintenance risks, and increase user acceptance and spatial quality — especially for existing buildings.



### Energy planning

We provide energy planning for campuses, neighborhoods, and city districts, including comparison of both thermal (heating/cooling) and electricity generation, storage, and distribution options. We focus on the interaction with buildings, and how building efficiency influences the choice of options – a perspective often missed by traditional utility engineering. We also study system dynamics, and how both building design and energy storage can change load profiles, especially reducing peak loads and resulting system size.



### Carbon planning for portfolios

Institutional owners and real estate portfolio managers need to plan for a zero carbon future now. What actions have the most impact on their carbon emissions today? Which actions might be combined with planned renovation projects? We define scenarios, help owners understand their options for reaching their carbon emissions goals, ultimately deciding on a roadmap for implementation or framework for ongoing decision-making.

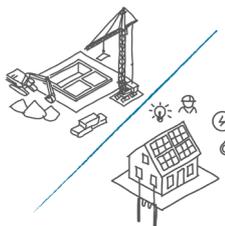


### Funded research

We provide detailed engineering analysis, test measurements, surveys, and more for funded research projects in our areas of expertise. This work is often in collaboration with universities or non-profit research agencies.

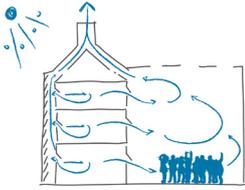
## 3. Technical Focuses

We are deeply skilled sustainability and climate-engineering experts. The following technical services can be integrated into a comprehensive project concept or offered independently as specialized consulting and analysis. Our work is rooted in continuous research, rigorous simulation, and hands-on experimentation — ensuring that every technical recommendation is grounded in evidence, innovation, and a profound understanding of how buildings and climate interact.



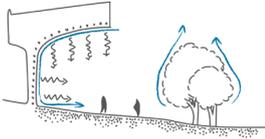
### Embodied & operational carbon consultant

We study the sum of operational carbon emissions (mostly from energy consumption) and embodied carbon emissions (mostly from manufacturing of materials). This creates a full understanding of the trade-off between the two, for example in amount and type of insulation or thermal mass.



## Natural ventilation

We support design teams in the development of ventilation concepts with a focus on natural ventilation. To this end, we define the required air paths together with suitable opening elements and free cross-sectional areas, size stacks or fans for assisted driving forces, and develop the necessary control strategies.



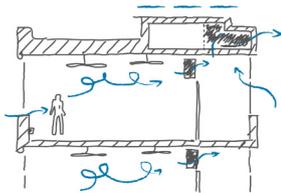
## Outdoor comfort

We develop and analyze concepts specifically for outdoor comfort in plazas, parks, streetscapes, campuses, and neighborhoods. We have the unique capability to characterize the temperatures and comfort expected over the course of the year. When appropriate, we analyze outdoor airflow patterns and their impact on comfort using computational fluid dynamics (CFD).



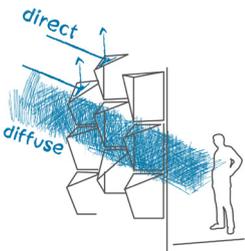
## Outdoor air quality

We advise on the impact of buildings and developments on local outdoor air quality. Pollutant dispersion studies are critical for ensuring laboratory exhaust leaves a building without creating a hazard in surrounding areas. We can evaluate the impacts of emergency generators, local traffic sources, and similar point sources on air quality in a neighborhood.



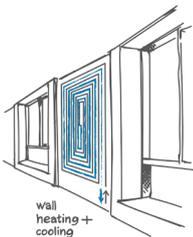
## Thermal comfort and ventilation

We develop concepts and analyze thermal comfort for thermally diverse spaces that challenge traditional disciplines: atriums, winter gardens, arenas and stadiums, greenhouses, and similar spaces. We have the unique capability to characterize the temperatures and comfort expected over the course of the year. When appropriate, we analyze indoor airflow patterns and temperature distribution using computational fluid dynamics (CFD).



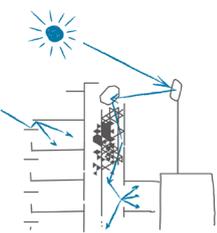
## Advanced Envelope performance

We develop concepts and analyze energy, thermal, and visual comfort performance of advanced building envelope concepts: alternative insulation strategies, external shading, internal shading with cavity exhaust, operable shading, and more. We have the unique capability to characterize the temperatures and comfort expected over the course of the year. Some concepts are developed to meet emerging ultra-high performance code requirements, such as the Massachusetts Opt-In Specialized Energy Code.



## Mechanical systems consultant

We develop advanced mechanical system concepts and analyze their energy and comfort performance. This includes both zone-level concepts such as radiant cooling, silent 'gravity walls', radiant water walls, and more, and thermal plants including heat pump chillers, geothermal, daily or seasonal thermal storage, and more. Zone-level analysis often focuses on showing feasibility of the system concept, whereas plant-level analysis focuses on system selection and right-sizing for the best economic and carbon performance.



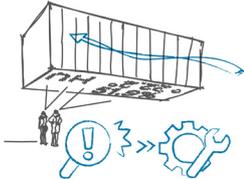
## Advanced daylight consultant

We develop concepts and analyze daylight and visual comfort for spaces that challenge traditional disciplines: atriums, highly glazed spaces with strict visual criteria, art museums and galleries, and similar spaces. We also develop and study daylight redirection concepts. We characterize the lighting conditions and visual comfort expected over the course of the year.



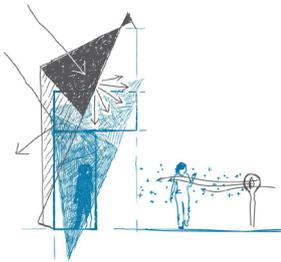
### Peer reviews

We provide engineering peer reviews of both design concepts and technical analyses, often with a focus on façade performance or mechanical engineering concepts for projects that are uncertain if they have the right approach. We review and comment on design assumptions, analysis approaches, and sizing of systems, and offer opportunities for improved performance, reduced cost, or simplifications – either as adjustments to the current design, or as new design alternatives.



### Troubleshooting

We support projects in implementing new or unconventional concepts, including façade designs, mechanical systems, and daylight concepts. If a system isn't operating as expected, does the installation meet the required physical or performance specifications? Are the controls operating correctly, or do they need to be adjusted? Our know-how, on-site measurements, and focus on deep understanding are the foundation of the troubleshooting process.



### Technical Developments

We develop our own technical solutions to continually push the boundaries of climate engineering. From innovative facade elements to novel active components such as the Dry-Mist system, which we have refined into a high-performance, comfortable, and energy-efficient outdoor comfort solution based on biometeorological models and extensive field tests. Our work encompasses the entire development process: from initial functional concepts through simulations, prototyping, and mock-ups to real-world testing in a project context.



### Mock-Up Testing

We build analog mock-ups to realistically test, refine, and validate design concepts. Through targeted measurements and evaluation, we assess performance, comfort, and robustness, reducing risks and identifying optimization potential early on. Our mock-ups provide a reliable basis for confident decision-making and real-world implementation.

## 4. Project Types and Scales

We work on projects of all sizes and types, from tiny houses to urban planning and from renovations to new constructions. We support projects holistically or with quick, targeted advisory. We are highly skilled, creative, and open to unconventional solutions. Every outcome we deliver is grounded in detailed simulations, solid analysis, and our “Protect & Adapt” and KlimaEngineering approach toward a sustainable built environment.



### Nachhaltige Stadt- und Quartiersentwicklung

We develop climate-responsive, future-ready districts as well as sustainable transformations of commercial and educational campuses. By analyzing local climate conditions, integrating energy planning and CO<sub>2</sub> strategies, and designing climate-adapted outdoor spaces, we create livable neighborhoods and campuses with high outdoor comfort and long-term planning reliability.



### Climate-fit Schools

We design school buildings that perform reliably in everyday use — climatically, technically, and organizationally. Our approach prioritizes robust, simple, and intuitive low-tech solutions instead of overly complex systems that are prone to failure and costly to maintain. With realistic simulations, sound analysis, and decades of experience, we create schools that provide good air quality, thermal comfort, and resilience in a changing climate. The result: learning environments that are efficient, durable, and truly fit for daily use.



### Existing Residential Buildings

We support the future-proof transformation of existing residential buildings. Using detailed building analyses and dynamic simulations, we develop data-driven renovation and decarbonization strategies that balance energy efficiency, comfort, and economic viability. This ensures planning certainty, avoids misinvestment, and safeguards long-term asset value.