

PASSIVHAUS

CONSULTING SERVICES



PASSIVSCIENCE
Knowledge saves power

Passiv Science's Services

- Architectural design & consulting
- Engineering design & consulting
- Energy modeling
- Building science analysis
- Feasibility studies & economic analysis
- Construction management
- Integrated design counseling
- Lean construction consulting
- Contractor education
- Construction implementation
- Quality assurance testing
- Commissioning
- Monitoring & verification
- Results Analysis





Introduction

Passiv Science guides institutional, commercial and large-scale Passivhaus projects nationwide, empowering teams with the expertise and integration for success.

While our experts offer industry-leading expertise in building science and high performance design, our strengths go beyond the theoretical. We also have the deep understanding of project development, gained through decades of combined experience in completing successful projects, to plug-in to your project nimbly, where necessary.

Integrated Project Delivery

High performance Passivhaus construction brings unparalleled durability, efficiency, and comfort to buildings, reducing the carbon footprint and operational and maintenance costs. We achieve this by fusing 21st century building science knowledge with cross-disciplinary integration. This approach represents a necessary break from convention because the traditional, often fragmented method of delivery cannot guarantee building performance or cost.

We know through experience that cost efficient high performance building relies on holistic analysis and implementation. So our system of integrated delivery leads design and construction teams through the entire process: from schematic design through construction administration to ongoing monitoring and verification of building performance. We ensure rigorous coordination and control throughout design, construction and operations and offer a single “buck-stops-here” point of contact.

The result? High performance buildings built at cost parity with standard construction, delivered on time and on budget.



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Our Method

Phase 1 – Kick-off

Phase 2 – Schematics

Phase 3 – Development

Phase 4 – Construction

Phase 5 – Follow-up

Photovoltaic array, solar thermal system and green roof.



Phase 1 – Kick-off

Convene entire team to build a foundation of high performance building knowledge and share stakeholder goals and concerns across disciplines.

- Conduct an educational session to cover an introduction to Passivhaus principles; Passivhaus design methodology and construction means and methods.
- Lead an integrated design kick off session with the owner, architects, engineering consultants and contractors (the team) as follows:
 - Project Objectives - The assumption is that project goals and objectives have been established. These are reviewed and the entire team is brought to consensus.
 - Project Concerns - Members of the team may have expectations or concerns that have not been addressed directly. The process of integrated design depends on open and honest dialogue with mutual respect. This process opens what may be difficult issues for discussion and resolution.
 - Project Decision Making - To develop and agree on a conceptual method for presentation, discussion and resolution of project differences that will occur based on an inclusive and collaborative process that will use the combined wisdom and experience of the group to find the best possible solutions.
 - Project Task Definition - Define project tasks and resource allocation.
 - Project Management Methodology - Develop and agree on a project management method and develop an initial initial critical path schedule for the project from inception to completion.





Phase 2 – Schematics

Facilitate cross-disciplinary collaboration, informed by energy modeling and hygrothermal durability analysis. Create schematic design for the project, sitting side-by-side with project architects, engineers, and contractors to create the best holistic solutions guided by Passivhaus building science.

- Review the initial conceptual design for Passivhaus implementation.
- Determine initial interior heat gain and energy use assumptions with team.
- Run a “first pass” Passivhaus Planning Program (PHPP) simulation based on initial conceptual design.
- Review results of “first pass” PHPP with the team.
- Consult with the team to help determine constructability and fiscal feasibility.
- Consult on revisions of design as required for both constructability and cost efficiency for Passivhaus construction.
- Review the revised schematic design for Passivhaus implementation.
- Run “second pass” Passivhaus Planning Program (PHPP) simulations based on revised schematic design.
- Review results of “second pass” PHPP with the team.
- Agree on assumptions and changes to make project objectives feasible.





Phase 3 – Development

Assist in comprehensive development of design drawings and construction detailing to support Passivhaus design and construction principles, emphasizing simplicity over complexity. Ensure all disciplines are integrated and remain in conformance with aesthetic, energy and budgetary objectives.

- Complete detailed interior heat gain calculation with lighting and plug loading.
- Conduct thermal bridge analysis of intersections.
- Conduct hygrothermal (WUFI) modeling of construction assemblies.
- Run final PHPP calculations, with complementary dynamic energy simulations.
- Consult with electrical engineer on final design of lighting and controls.
- Consult with mechanical engineer on final design of HVAC system.
- Review drawings and specifications @ 10% & 30% completion for final pricing.
- Consult with contractor for hard pricing of project @ 30% document completion.
- Review pricing and recommend changes to meet budget if exceeded.
- Review & comment on drawings and specifications @ 60%, 90% & 100%.
- Submit design to Passive House Institute US (PHIUS) for pre-certification if the metrics are met and Owner requests. (NOTE: PHIUS fees to be paid by Owner)





Phase 4 – Construction

Conduct the training and oversight of the construction team and lead comprehensive quality testing to ensure design implementation through comprehensive envelope and system commissioning.

- Conduct training for contractor and subcontractor teams.
- Conduct air sealing training and observation.
- Conduct pre-insulation blower door testing and air seal troubleshooting.
- Conduct post insulation thermal image testing.
- Conduct final blower door testing.
- Conduct final thermal image testing.
- Oversee final test and balance of HVAC system.
- Submit final documentation to PHIUS for certification if desired.





Phase 5 – Follow-Up

Monitor the performance of the building post occupancy to verify both occupants understanding of systems and correct functioning of equipment.

- Monthly performance reports in the first year post occupancy.
- Quarterly performance reports in year two – five post occupancy.
- Semiannual performance reports after year five.
- Re-commissioning.
- Performance problem alerts.





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