EXTREME PANEL
TECHNOLOGIES

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FAST BUILD, HIGH PERFORMANCE

Extreme SIPs

Being able to enclose a structure earlier in the process means less energy to heat or cool the interior workspace, interior work can begin much sooner, and the project can advance quickly.

Let's build better together!

Besides cutting down on construction time, Extreme SIPs outperform traditional building methods almost from the moment the first panel is installed.

Terms like “fast” and “high performance” sound more like a reference to a world-class athlete than to building materials, but they definitely apply to structural insulated panels (SIPs). Besides cutting down on construction time, SIPs outperform traditional building methods almost from the moment the first panel is installed.

When framing a structure, the team needs to work quickly and with precision. With SIPs, much of that work is already done, which means:

- **Fast installation time – the large panels assemble like a jig-saw puzzle**
- **Minimal requirements for skilled framing labor**
- **Factory-engineered and precut-per-floor plans nearly eliminate measuring or cutting material on-site**
- **Integrated sheathing and roof deck means one-step roof framing**
- **Reduces subcontractors: framing crew, insulation installer and air sealing contractor**
- **90% less construction site waste**

Much like yards gained on the football field or every strike a pitcher throws, these time- and labor-saving points add up quickly. And the result is a significant victory! Results from a BASF Time-Motion Study indicate construction timelines are slashed by up to 55% when using SIPs instead of traditional stick-building methods. Being able to enclose a structure earlier in the process means less energy to heat or cool the interior workspace, interior work can begin much sooner, and the project can advance quickly.

So, SIPs are fast. But what does “high performance” mean when discussing a structure? Great question! According to the American Institute of Architects, it is a building that “integrates and optimizes all major high-performance building attributes, including energy efficiency, durability, life cycle performance, and occupant productivity (which includes health).”

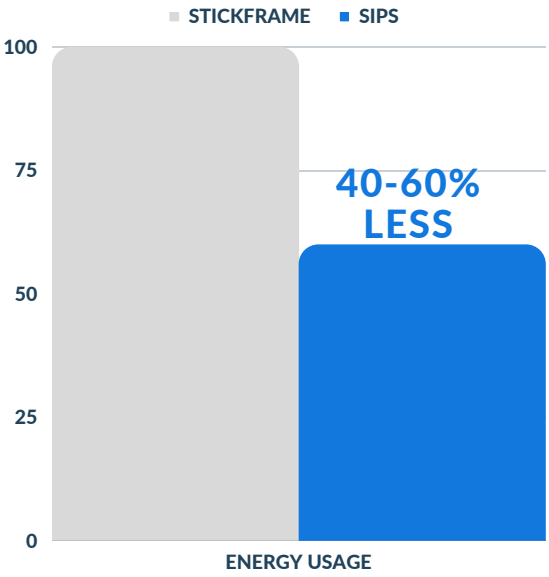
Does that seem like a tall order for a building? Perhaps. But, SIPs check every box on the list. Let’s take a look.

ENERGY EFFICIENT ENVELOPE

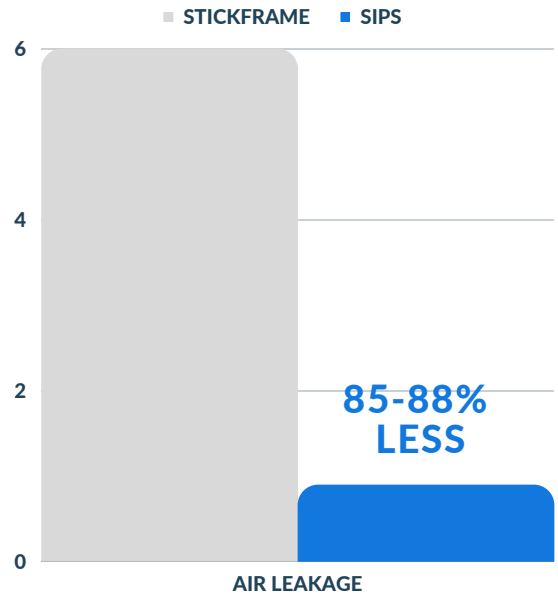
The tightly-sealed building envelope is key to energy efficiency and optimizing thermal resistance and thermal transmittance. Continuous insulation (ci) refers to the insulating material that runs continuously over all parts of a structure without any breaks (known as thermal bridges) except fasteners and service openings.

Using SIPs increases the R-value and reduces air leakage – a duo that performs well every season, year-in and year-out. Keeping the building envelope continuous and tight means high thermal values, exceptional insulation, and less cooling and heating efforts to maintain a consistent, comfortable temperature.

SAVE ENERGY



15X MORE AIR TIGHT



SIP homes save 40-60% on energy, depending on the climate zone.

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DURABILITY

SIPs gained more widespread popularity in the energy-conscious 1970s, but they've been around since the 1930s when SIP development began. Researchers built a test structure using panels featuring several types of skin material – plywood, hardboard, and treated paperboard. Each skin surrounded a corrugated paperboard core. Some thirty years later, the test structure was carefully taken apart and examined. Except for the ones with paperboard skins, the panels retained their original strength.

Extreme's SIPs utilize OSB skins, which are extremely durable. OSB is designed (hence the name – the strands are oriented in overlapping patterns) to resist uniform loads. That's why, for example, a SIPs roof panel can span a much larger area without truss support or tolerate a heavy snowfall more easily than a traditional roof.

Besides their superior load-bearing capabilities, SIPs are impact-resistant due to the cross-laminated nature of their construction and OSB also tolerates surface wear to some degree – how well depends on the wood species, the panel's construction and the finish on the panel surface. A panel covered in shingles or siding will last a lifetime. Panels that will be exposed directly to the earth (basement or foundation panels) are treated to withstand the moisture inherent in their use.

LIFE CYCLE PERFORMANCE

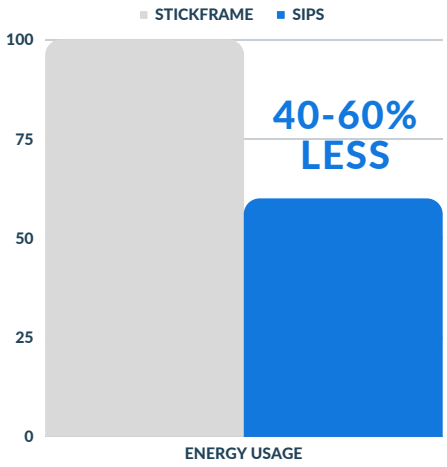
A recent study by Franklin Associates for the EPS Industry Alliance SIPs Work Group quantified "the energy savings and greenhouse gas reductions provided by the use of SIPs walls as an alternative to traditional stick construction."

Once again, the building envelope was the star player, as the results make a powerful case for SIPs. Two homes were constructed, similar in size and style The difference: One was stick-framed and insulated and the results indicate SIPs are a great trade for a winning outcome:

> ***"The results of this SIP Life Cycle Analysis demonstrate the average energy savings over 50 years were 9.9 times the energy invested when using SIPs compared to traditional stick framing for a home in the U.S. and would provide a reduction in global warming potential 13.2 times the CO2 equivalent of the emissions produced. This represents an energy payback period of 5.1 years and a recapture of greenhouse gas emissions in 3.8 years for using SIPs for America's homes. In Canada, the analysis demonstrates the average energy savings over 50 years were 18.6 times the energy invested when using SIPs compared to traditional stick framing for a home and would provide a reduction in global warming potential of 18.2 times the CO2 equivalent of the emissions produced. This represents a return on energy invested in 2.7 years and greenhouse gas emissions in 2.7 years. It is worth noting that the payback period for energy is as low as 2.7 years for U.S. Zone 1 and 1.4 years for the Northwest Territories of Canada. This is an excellent return on investment (ROI) by any measure."***

CONVENTIONAL VS. EXTREME SIPS CONSTRUCTION

SAVE ENERGY



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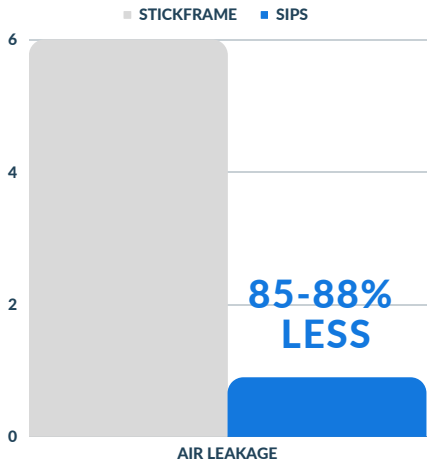

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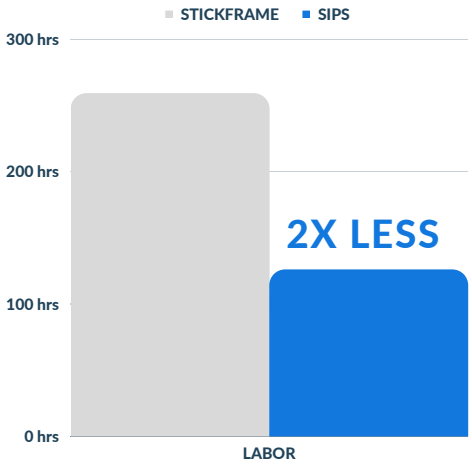
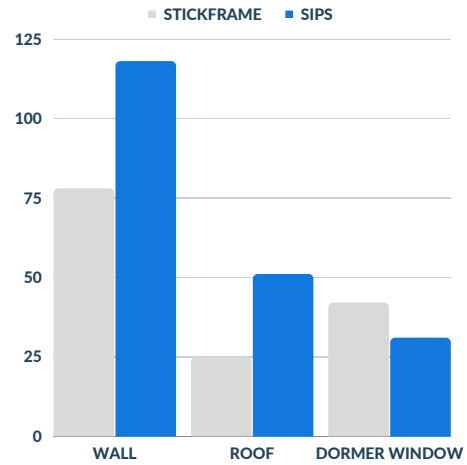
SAVE TIME & MONEY





EXTREME ADVANTAGE

- Lower energy costs
- Stronger, more disaster-resistant home
- Greener, more sustainable process
- Improved resale value
- Healthier, quieter, more comfortable living space

HOW SIPS SAVES TIME:

- Entire wall/roof assembly installs quickly and easily in sections
- Openings and chases precut at factory
- No sheathing or insulating on site
- Uniform nailing surface for siding
- Fewer callbacks

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CONVENTIONAL VS. EXTREME SIPS CONSTRUCTION

Cost Comparison

1552 sq. ft. 3-bedroom home with 730 sq. ft. 3-car garage on an insulated concrete slab. Constructed with 6-inch exterior walls, wall and ceiling insulation, 6/12 roof, HVAC system, miscellaneous fasteners and sealants, and framing labor. Costs based on Maryville quotes prepared in September 2020.

Materials and labor for interior walls, painting, trim, doors, windows, roofing, siding, plumbing, electrical, exterior concrete and brick work, and lot cost and site preparation are not included in this comparison as they are the same for both conventional and panel-constructed houses.

	CONVENTIONAL	EXTREME SIPS
Exterior Walls	$14,970	$27,479
Wall Insulation*	1,086 (R-19)	Included (R-24)
Roof Trusses/Sheeting	12,575	12,575
Attic Insulation	1,504 (R-48)	1,504 (R-48)
HVAC System	14,471	9,150
Labor	20,320	10,160
Misc. Sealants, Fasteners & Wraps	1,300	600
Total (Exterior Shell)	**$66,228**	**$61,468**

**Replacing fiberglass insulation in conventional exterior walls with 2 inches of spray foam insulation (R-13) would add $2900 to cost.*

This comparison does not factor in future energy cost savings calculated at $200 per month--$24,000 during the term of a 10-year mortgage, $48,000 over a 20-year term, and $72,000 over 30 years at current energy prices.

COURTESY OF ERIC COUTS WITH PREMIER HOMES, MARYVILLE, MISSOURI 660-541-3525

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