
SIGA-Majvest
te
STUDIO


BILDRITE
GP


PROJECT DESIGN BY
te
STUDIO
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TESTUDIO.COM
RJ
STEGORA INC
612-889-8277
DensGlass
GP
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Whole House Heat Recovery Ventilation

Insulated Tubes

Home-Run Distribution with Tubes

Installation/Service Cavities

Registers: Plug & Play

Heat Source: On-Demand Boiler (existing)

Unique Feature: Water Tree

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Minisplit AC

The Result

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Photos: Spaces Magazine


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Photos: Spaces Magazine

Homeowners Paul and Desiree Brazelton whip up a fresh egg breakfast. All their eggs come from a brood of hens cooped in the back yard.

Photos: Spaces Magazine

Photos: Spaces Magazine

Photos: Spaces Magazine

Photos: Spaces Magazine

Penelope, 7, Amelie, 9, and Madeline, 5, jump for joy (with special permission) in the master bedroom.

> **Bedding and curtain,** westelm.com

Photos: Spaces Magazine

Photos: Spaces Magazine

Photos: Spaces Magazine

Speed racer Madeline is all about pink.

> **Bedding,** target.com
> **Rug and curtain,** ikea.com

Photos: Spaces Magazine

Certified Performance

≤1.0

Airtightness

Final Test

0.65 ACH_{50} [195 CFM_{50}]

Passive House Performance

Component Approach
Minimum R-values throughout

Heating Load
20 W/m² [6.3 Btu/h/ft²]
4.1 kW [14 kBtu/h]

Cooling Load
2.6 kW
[0.74 tons, 8.8 kBtu/h]

Airtightness
0.65 ACH_{50} [196 CFM_{50}]

≤ 1.0

Specific Primary Energy Demand
112 kWh/m² a [35.5 kBTU/ft² a]

≤ 130

QP ≤ 120 kWh/m²a + ((QH - 15 kWh/(m²a)) * 1.2)

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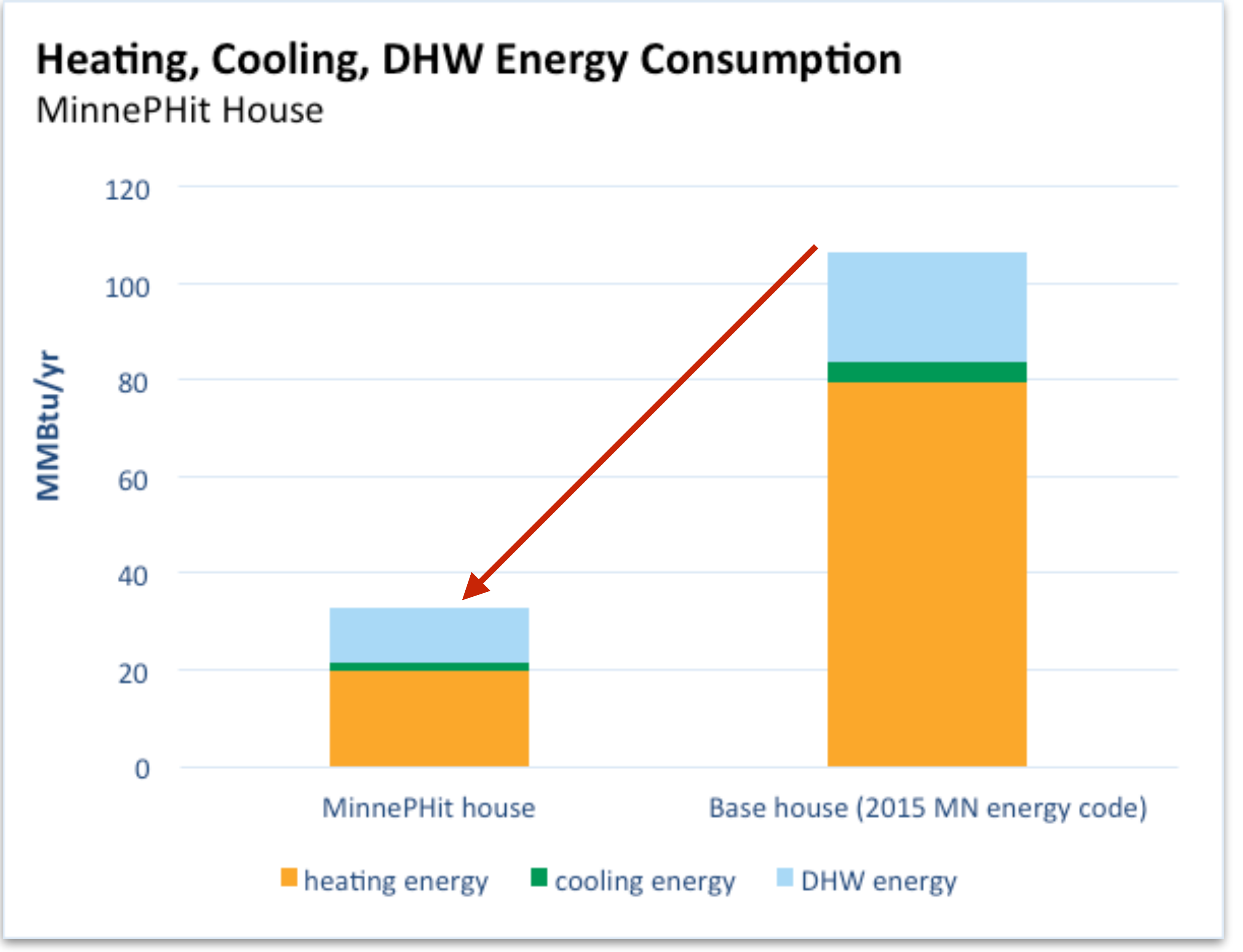
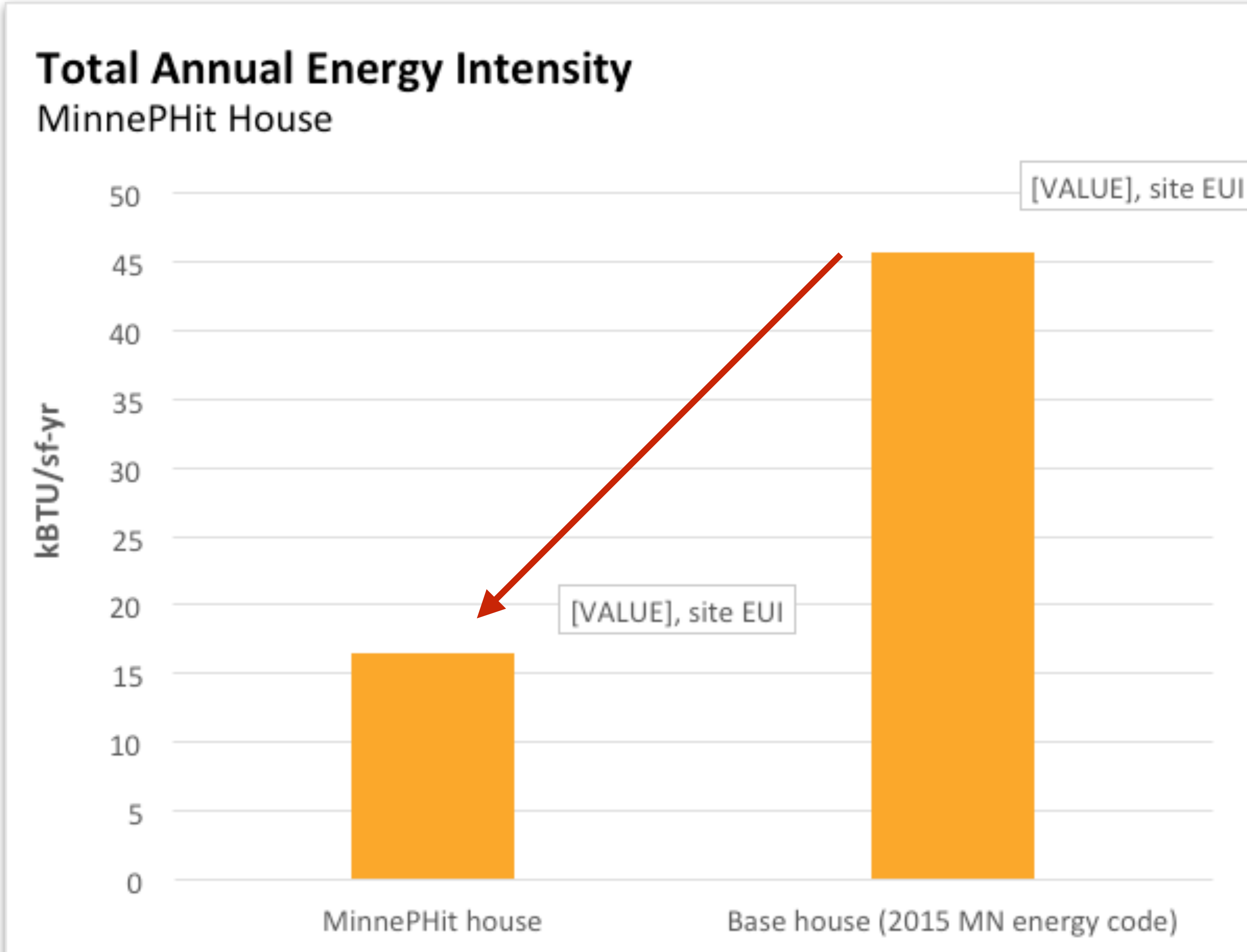
Passive House Comparison



Heat loss is dramatically reduced by more than 66% over current new construction in Minnesota.

Passive House Comparison



Annual energy intensity was calculated at 16.5 kBTU/(sf yr).

This is a savings of 64% compared to a similarly-sized house meeting MN 2015 residential energy code—modeled at 45.7 kBTU/(sf yr).

Passive House Certification

Certificate

Certificate ID: 5583_PHI_EP-Pilot_20130110_STh

Passive House Institute
Dr. Wolfgang Feist
Rheinstraße 44/46
64283 Darmstadt, Germany

PHI

The Passive House Institute hereby awards the EnerPHit Pilot Project certificate to the following building:

EnerPHit Pilot Project in Minneapolis, 5605 Bloomington Avenue S., MN 55417 Minneapolis, USA

EnerPHit ✓
Pilot Project
Passive House Institute

Client:	Paul&Desiree Brazelton 5605 Bloomington Avenue S., MN 55417 Minneapolis, USA
Architecture:	Tim Eian - TE Studio, Ltd. 212 2nd St.SE #222, MN 55414 Minneapolis, USA
Building Services:	TE Studio, Zehnder USA, Paul Brazelton

This building was designed to meet the Passive House component energy retrofit criteria as defined by the Passive House Institute Darmstadt. Given appropriate on-site implementation, this building has the following characteristics:

Building characteristics:	Achieved	Required	
Annual specific space heating demand	27 kWh/(m²a)	= 25 kWh/(m²a)	-[1]
Annual specific primary energy demand[2] for heating, DHW, ventilation and all other electric appliances for standard use	120 kWh/(m²a)	= 134 kWh/(m²a)	✓
Airtightness of building envelope n_{50} as per test result	0.7 h^{-1}	= 1.0 h^{-1}	✓
Mean value of individual building component thermal protection :			
Exterior insulation to ambient Thermal transmittance (U-value)	0.11 W/(m²K)		✓
Exterior insulation to ground Thermal transmittance (U-value)	0.17 W/(m²K)		-
Interior insulation to ground Thermal transmittance (U-value)	0.17 W/(m²K)		✓
Thermal bridges Δ_U Building envelope (window installation excluded)	0.01 W/(m²K)	No limiting value	
Windows Thermal transmittance $U_{w,installed}$	0.77 W/(m²K)		✓[2]
Exterior doors Thermal transmittance $U_{w,installed}$	0.79 W/(m²K)		✓
Ventilation unit Effective efficiency of heat recovery	89 %		✓

[1]Limiting value is not relevant. [2]Improved windows ($U_{w,installed}$ = 0.65 W/(m²K)) are recommended in order to meet comfort criteria in winter conditions as optimal thermal comfort directly near window areas cannot currently be guaranteed. Thick curtains or use of floor heating is thus recommended.

Certification criteria met? Selection of the evalulation method	Space heating demand	
	Component quality	✓

issued:
Darmstadt, 10.01.2013

Wolfgang Feist
Dr. Wolfgang Feist

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Mission Accomplished!

- Structure ✓
- Weather Barrier ✓
- Insulation ✓
- Airtightness ✓
- Moisture Management ✓
- Ventilation/ Air Quality ✓
- Comfort ✓
- Daylight ✓
- Durability (50-100 years) ✓
- Design ✓
- Lifecycle Cost ✓
- Environmental Impact ✓
- Deconstructability ✓

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HOLISTIC DESIGN


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Thank you!

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Resources

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