

# COMPONENT AWARD 2014

Producers of certified passive house windows were invited to make an offer for the windows of a single family home.

41 windows took part in the categories timber, timber-alu, alu and vinyl.

These offers were compared to each other and to a “standard window” according to German legal standard.

## THE RESULT:

Passive house windows are profitable for building owners.

*Hersteller zertifizierter Passivhaus-Fenster waren eingeladen, ein Angebot für die Fenster eines Einfamilienhauses zu machen.*

*41 Fenster nahmen in den Kategorien Holz, Holz-Alu, Alu und PVC teil.*

*Die Angebote wurden untereinander und mit einem “Standard-Fenster” nach EnEV verglichen.*

## DAS ERGEBNIS:

*Passivhaus-Fenster sind profitabel für Bauherren.*



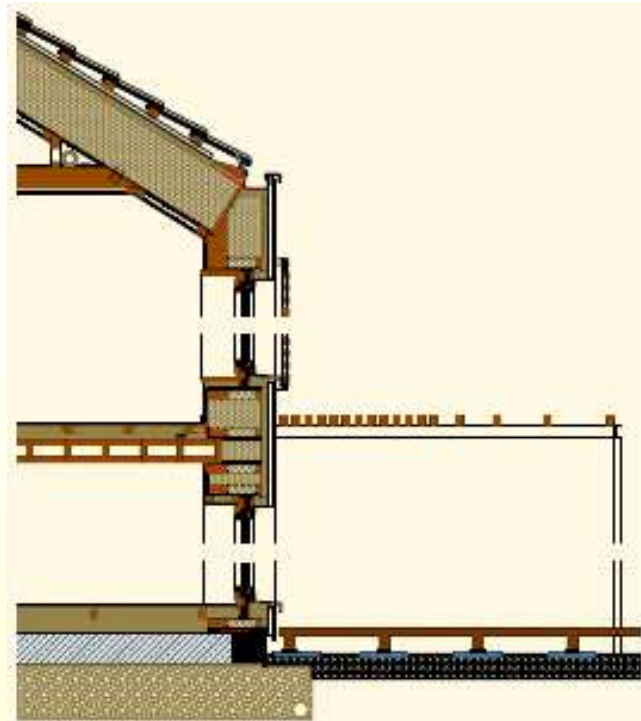
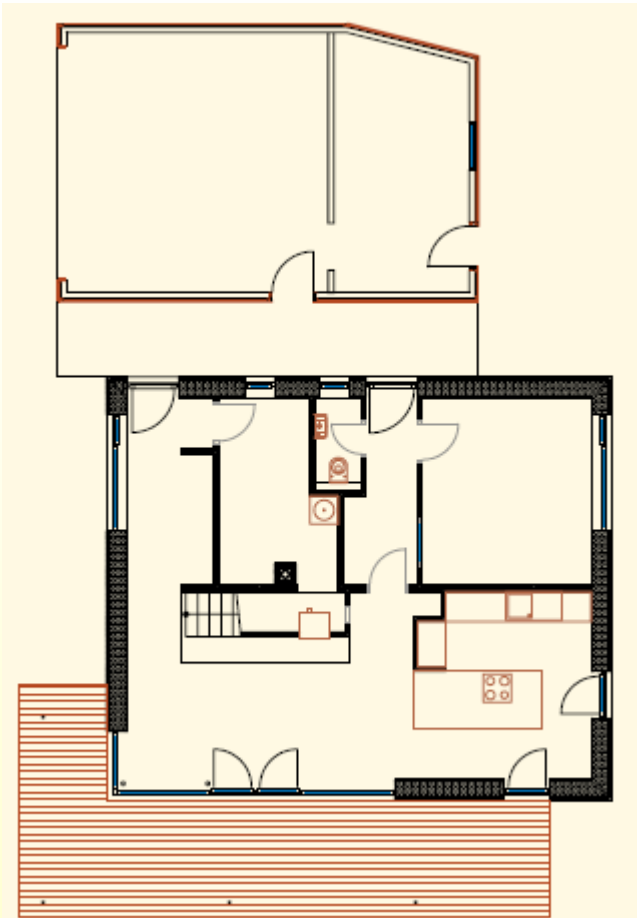
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**THE CHALLENGE**

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Living area: 155 m<sup>2</sup>  
Heating demand: 14 kWh/(m<sup>2</sup>a)  
PE-demand: 61 kWh/(m<sup>2</sup>a)  
Airtightness (n<sub>50</sub>): 0,2 1/h  
Architects: passivhaus-eco

[www.passivhausprojekte.de](http://www.passivhausprojekte.de): ID 1200



Photos: passivhaus-eco®



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**THE REFERENCE BUILDING**

The competing windows were compared to a “standard window” according to German legal standard EnEV:

*Die teilnehmenden Fenster wurden untereinander und mit einem “Standard-Fenster” nach EnEV verglichen.*

## **Standard window | Standard-Fenster**

**Glazing | Glas:** Double, lowE coated | *2-fach Wärmeschutz*

**U<sub>g</sub>:** 1.2 W/(m<sup>2</sup>K), **g:** 0.60

**U<sub>w, installed</sub>:** 1,3 W/(m<sup>2</sup>K) (for a window size 1.23\*1.48 m)

**Prices** (installed window, incl. VAT) | **Preise** (*eingebautes Fenster inkl. MwSt*)

**Timber | Holz:** 387 €/m<sup>2</sup>

**Timber-Aluminum | Holz-Alu:** 449 €/m<sup>2</sup>

**PVC:** 298 €/m<sup>2</sup>

**Aluminum | Aluminium:** 449 €/m<sup>2</sup>



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**REFERENCE WINDOWS**

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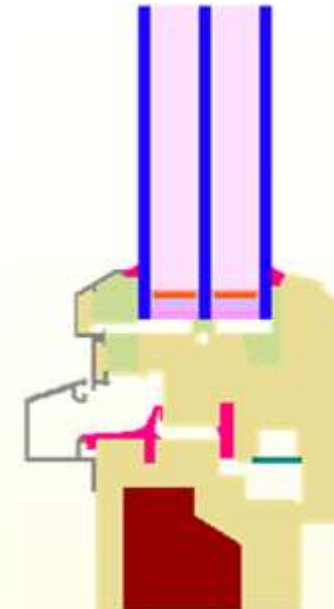
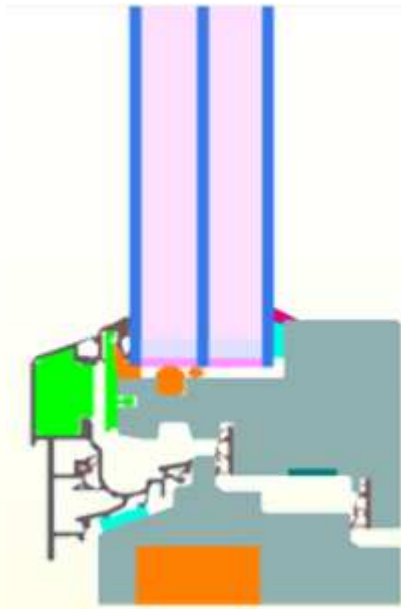
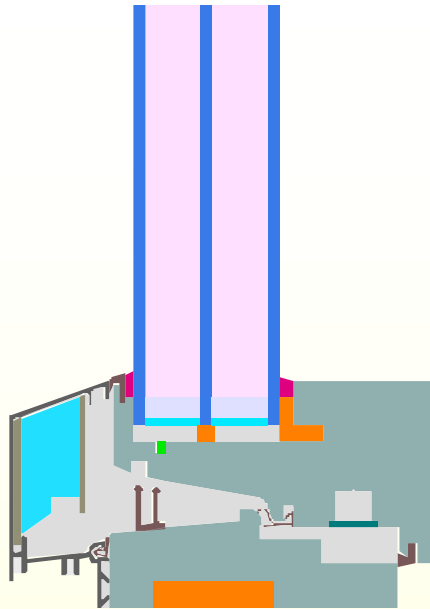


Photo: passivhaus-eco®

**1 Lorber I pro PHf.**  
smartwin compact

**1 Bieber I OPTIWIN**  
FUTURA

**2 Freisinger I OPTIWIN**  
Alu2Holz

**Prize, Company**  
Product

451	450	452	Price [€/m <sup>2</sup> inst.w]
24%	22%	20%	LCC savings [%]
288	246	214	Oil savings [l/m <sup>2</sup> ]

Price: Investment costs for reference building [€/m<sup>2</sup> ins. Window]. Life-Cycle Cost savings: compared to ref. case [%]. Oil savings: per m<sup>2</sup> window compared to ref. window (life-cycle 40 a)



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**WINNERS: Timber-Aluminum (18 participants)**

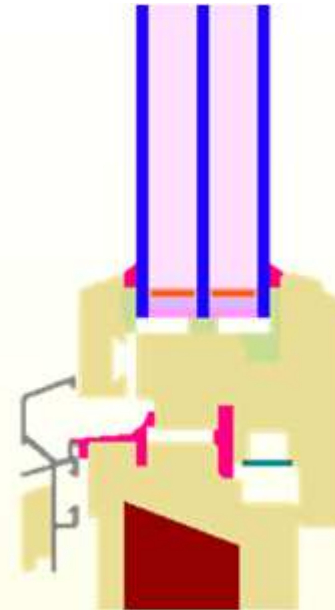
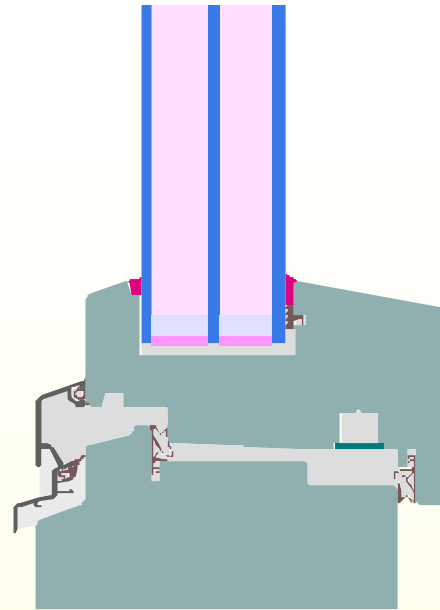
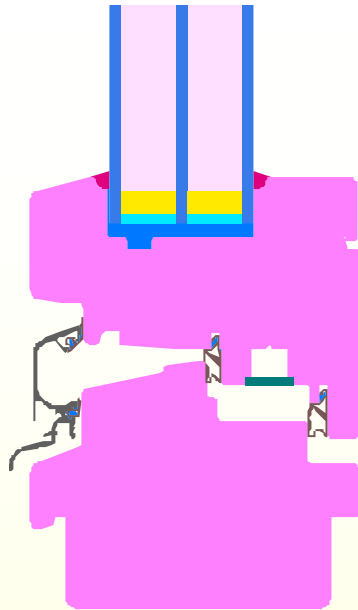


Photo: passivhaus-eco®

**1 M SORA**

**1 Pfeffer Fenster**

**2 Freisinger I OPTIWIN**

**Prize, Company**

NATURA OPTIMO XLT	RPS	Holz2Holz	Product
384	396	452	Price [€/m <sup>2</sup> inst.w]
23%	22%	13%	LCC savings [%]
228	222	201	Oil savings [l/m <sup>2</sup> ]

Price: Investment costs for ref. building [€/m<sup>2</sup> inst. window incl. VAT]. Life-Cycle Cost savings: compared to ref. case [%]. Oil savings: per m<sup>2</sup> window compared to ref. window (life-cycle 40 a)

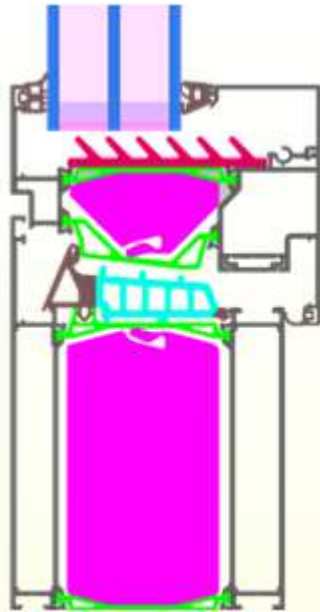


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**THE WINNERS: Timber** (6 participants)



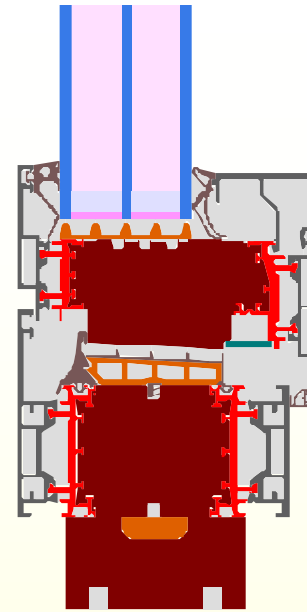
1 RAICO

FRAME 90 WI

492

14%

185



1 PURAL

eco90

540

12%

230



Photo: passivhaus-eco®

Prize, Company

Product

Price [€/m<sup>2</sup>inst.w]

LCC savings [%]

Oil savings [l/m<sup>2</sup>]

Price: Investment costs for ref. building [€/m<sup>2</sup> inst. window incl. VAT]. Life-Cycle Cost savings: compared to ref. case [%]. Oil savings: per m<sup>2</sup> window compared to ref. window (life-cycle 40 a)



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**THE WINNERS: Aluminum** (3 participants)

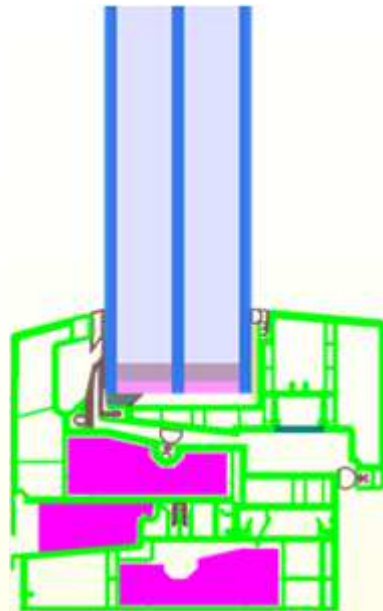


Photo: passivhaus-eco®

**1 Hilzinger**

**Prize, Company**

VADB 550	Product
224	Price [€/m <sup>2</sup> inst.w]
37%	LCC savings [%]
257	Oil savings [l/m <sup>2</sup> ]

Price: Investment costs for ref. building [€/m<sup>2</sup> inst. window incl. VAT]. Life-Cycle Cost savings: compared to ref. case [%]. Oil savings: per m<sup>2</sup> window compared to ref. window (life-cycle 40 a)



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**THE WINNERS: PVC (3 participants)**

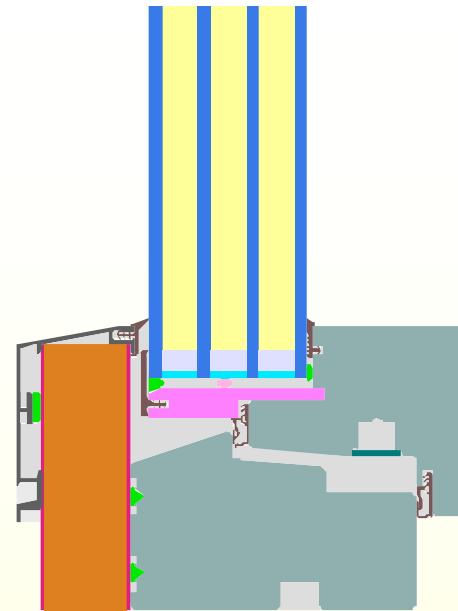
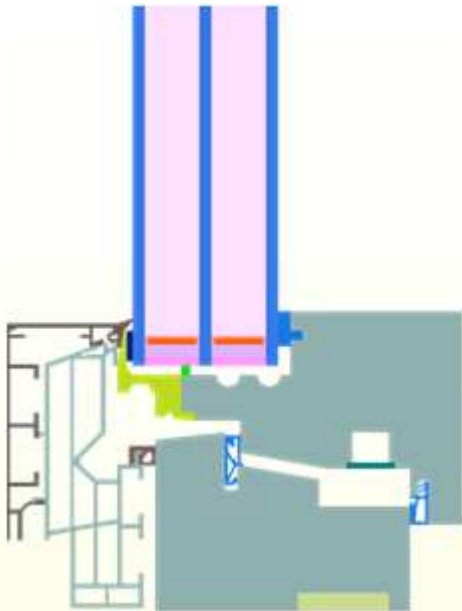


Photo: passivhaus-eco®

### Glazing, Wiegand

### U-value, Pazen

### Prize, Company

DWplus	ENERsign arctis*	Product
543	599	Price [€/m <sup>2</sup> inst.w]
12%	8%	LCC savings [%]
237	276	Oil savings [l/m <sup>2</sup> ]

Price: Investment costs for ref. building [€/m<sup>2</sup> inst. window incl. VAT]. Life-Cycle Cost savings: compared to ref. case [%]. Oil savings: per m<sup>2</sup> window compared to ref. window (life-cycle 40 a)



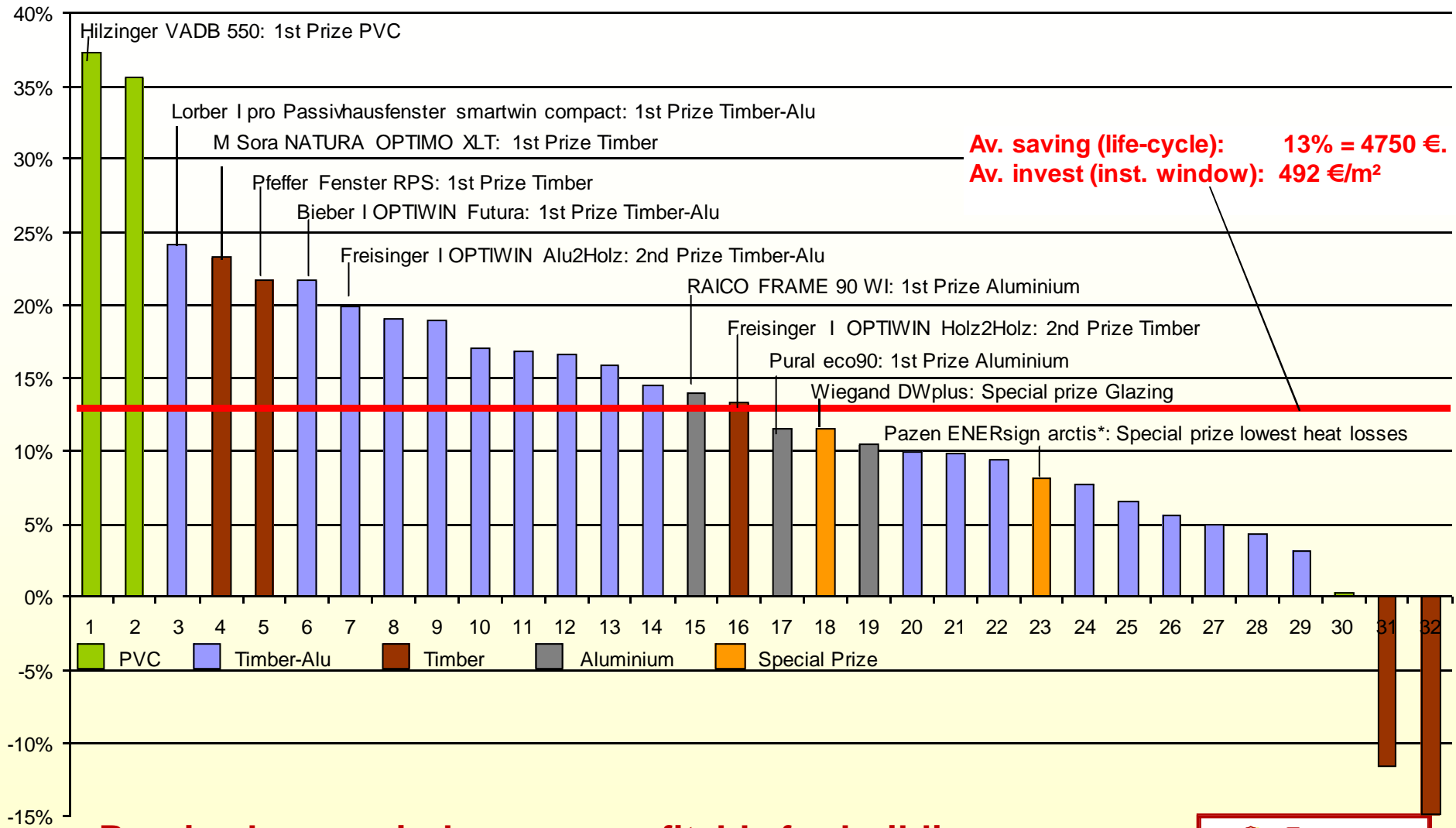
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**SPECIAL PRIZES**





**Passive house windows are profitable for building owners**

***Passivhaus-Fenster sind profitabel für Bauherren***



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**RESULTS: Savings to reference**

	Standard window* <i>Standardfenster</i>	Passive House Window** <i>Passivhausfenster</i>
Investment <i>Investition</i>	~ 16.900 €	~ 18.250 €
Credit <i>Kredit</i>	2% real interest, 20 years	
Annual rate <i>Jährliche Rate</i>	~ 1.030 €/a	~ 1.120 €/a
Energy costs <i>Energiekosten</i>	~ 250 €/a	~ 3 €/a
Sum <i>Summe</i>	~ 1.280 €/a	~ 1.123 €/a

**Saving | Einsparung: ~ 160 €/a (12,5%)**

**After 20 years | Nach 20 Jahren: 250 € - 3 € = 247 € (99%)**

\* Average over the standard windows of all categories.

\*\* Average over all winners excepted special prices.

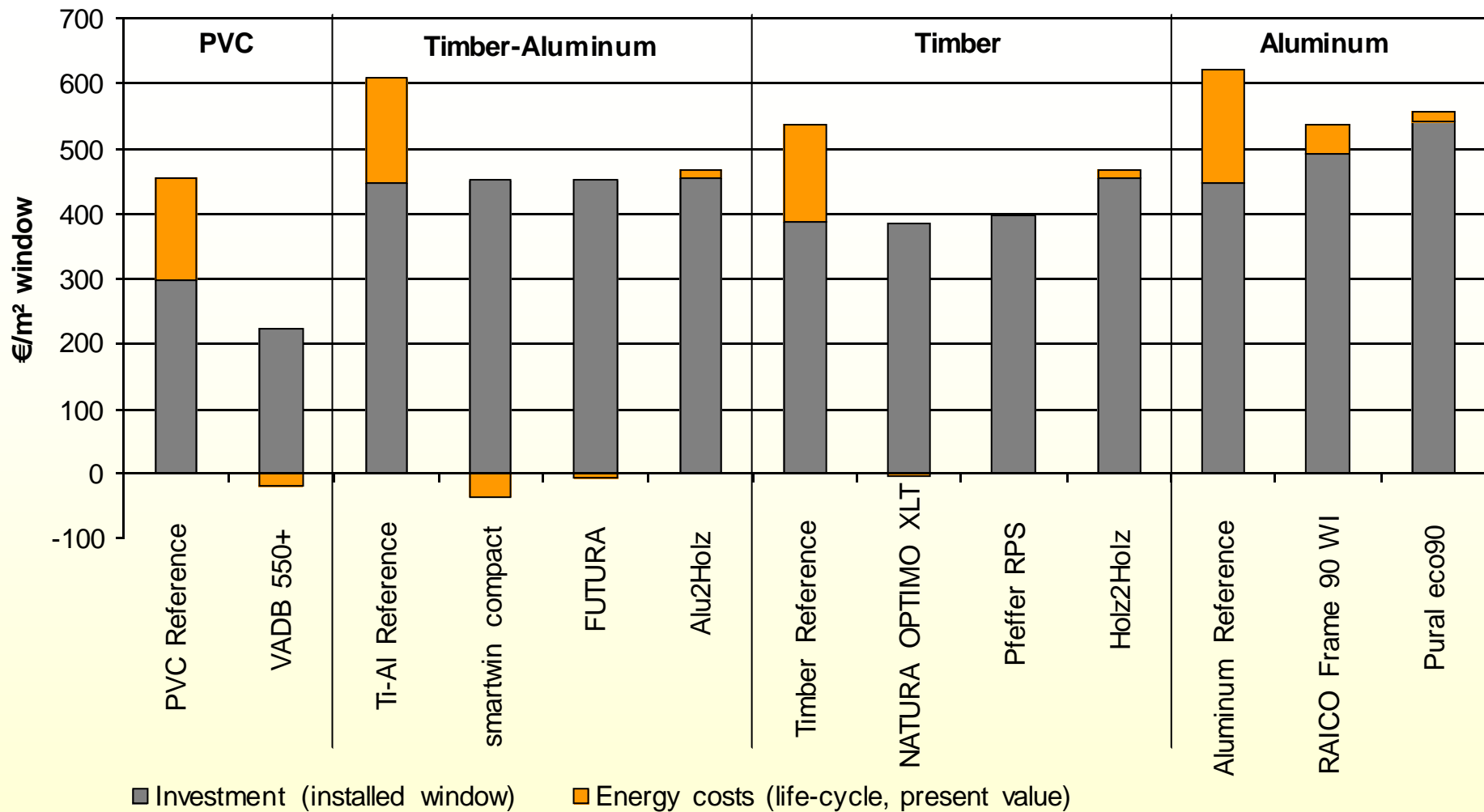


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**RESULTS: Profits right from the start!**



**Investment and energy costs | Investitions- und Energiekosten**

No energy costs for passive house windows | Keine Energiekosten für Passivhausfenster

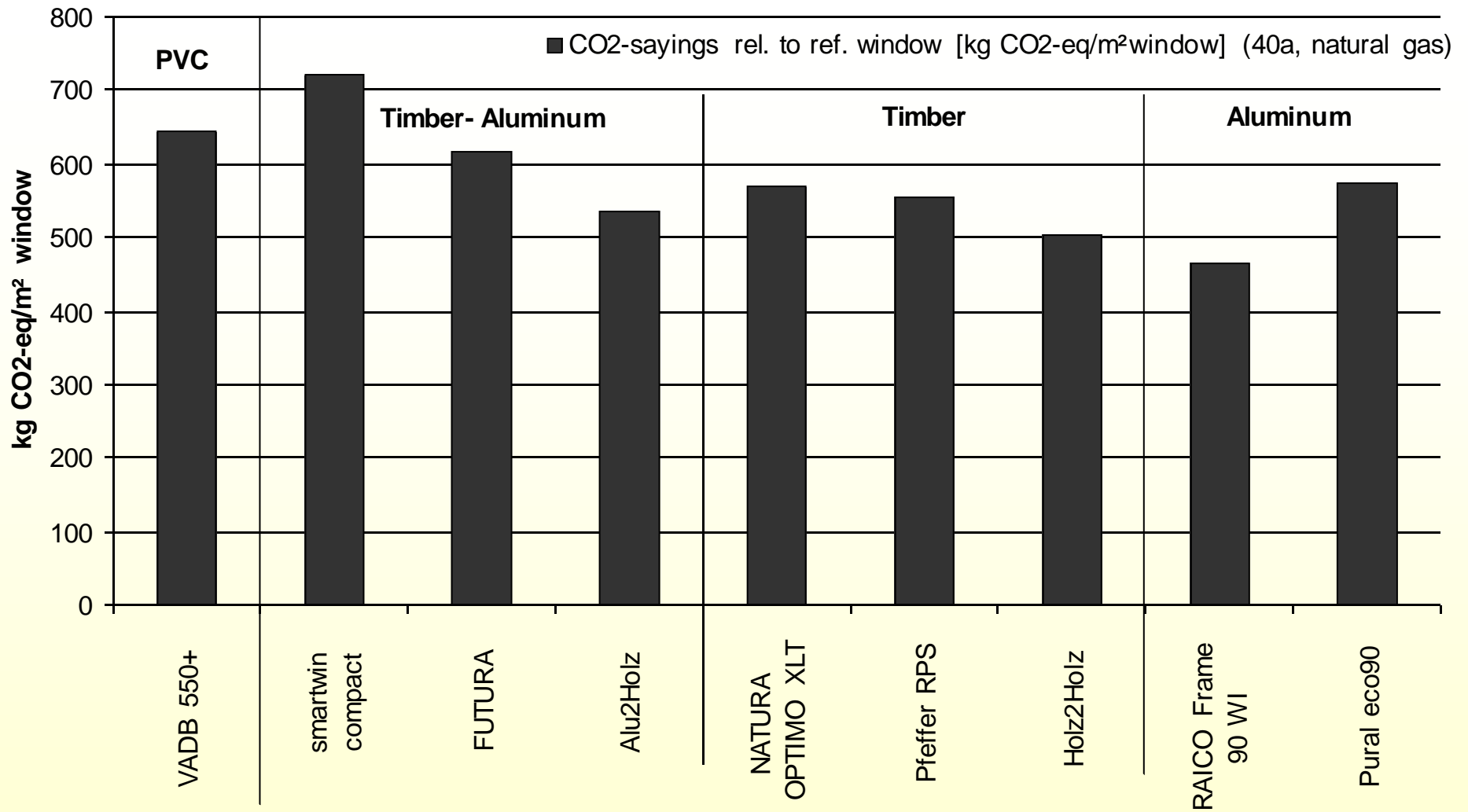


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**RESULTS: The winners**

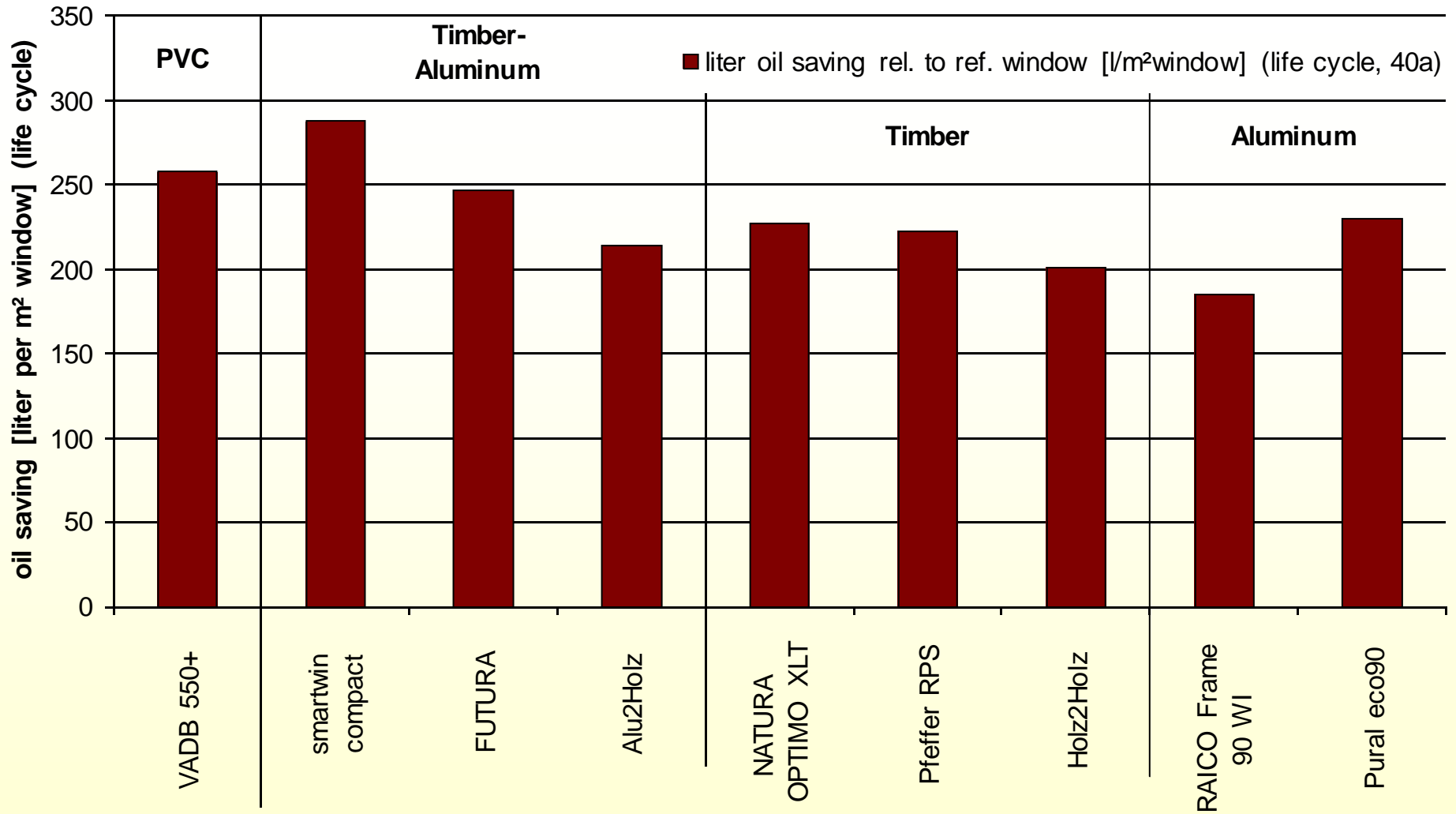


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**RESULTS: The winners – CO<sub>2</sub> savings**



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**RESULTS: The winners – fuel savings**

# Passivhaus-Fenster: Komfort, Kosteneffizienz, Klimaschutz



*PH windows: comfort, profit, environmental protection*

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