

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.

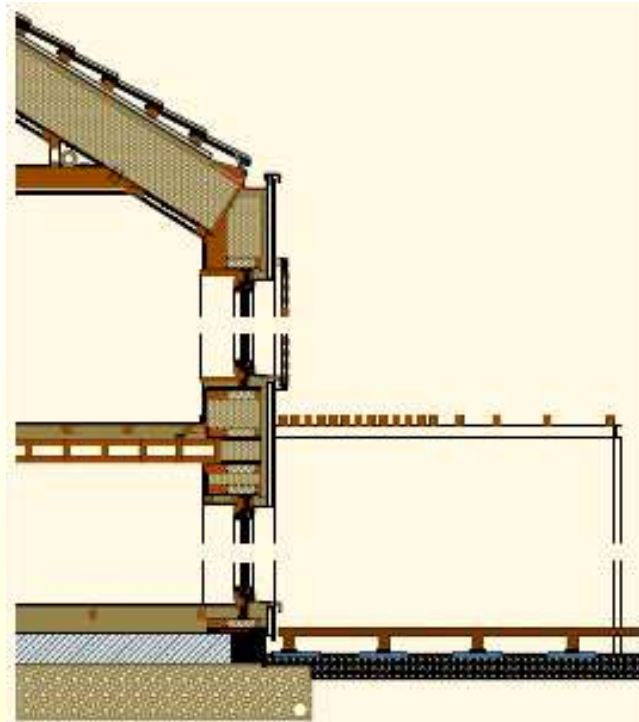
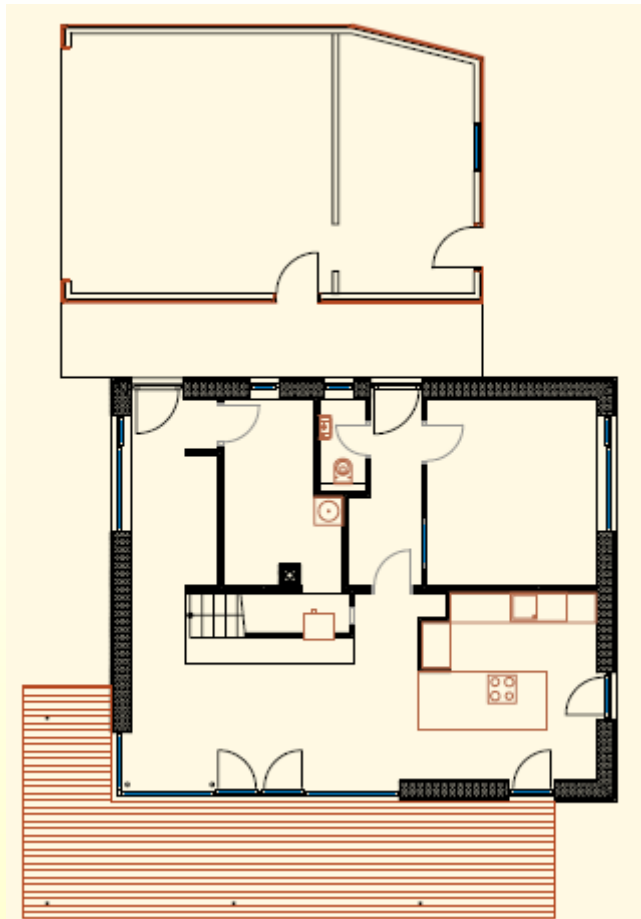


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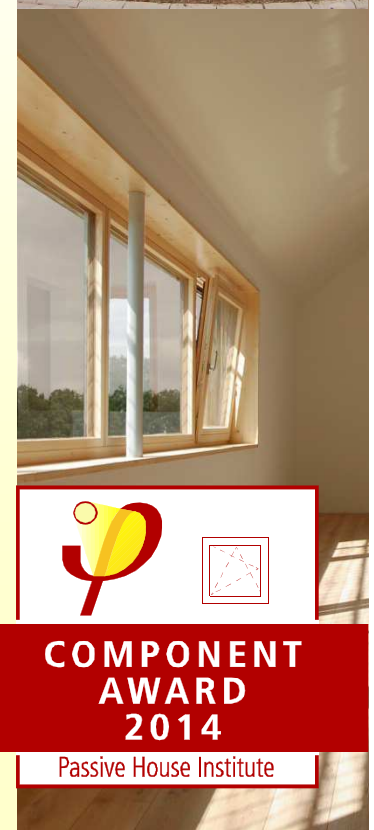
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THE CHALLENGE

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Photos: passivhaus-eco®



www.passivhausprojekte.de: ID 1200

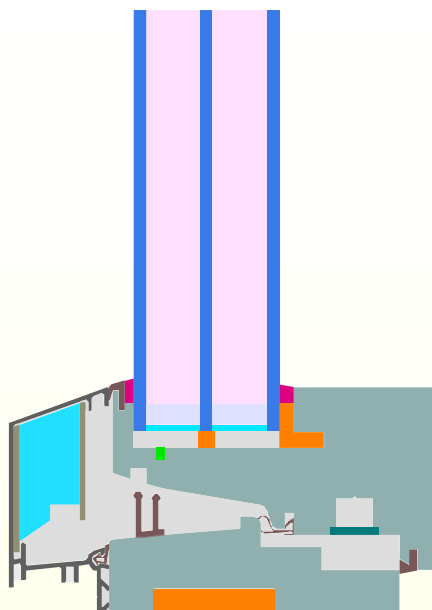
Living area:	155 m ²
Heating demand:	14 kWh/(m ² a)
PE-demand:	61 kWh/(m ² a)
Airtightness (n ₅₀):	0,2 1/h
Architects:	passivhaus-eco



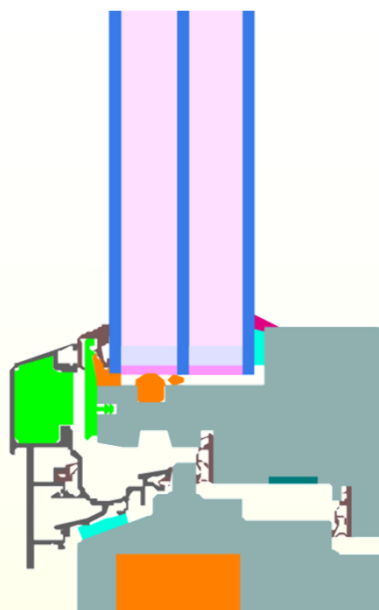
THE REFERENCE BUILDING

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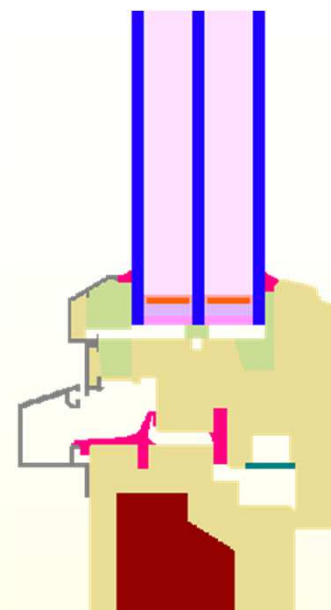
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1 Lorber I pro PHf.
smartwin compact



1 Bieber I OPTIWIN
FUTURA



2 Freisinger I OPTIWIN
Alu2Holz



Prize, Company
Product

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

Price: Investment costs for reference building [€/m² ins. Window]. Life-Cycle Cost savings: compared to ref. case [%]. Oil savings: per m² window compared to ref. window (life-cycle 40 a)



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THE WINNERS: Timber-Aluminum (18 participants)

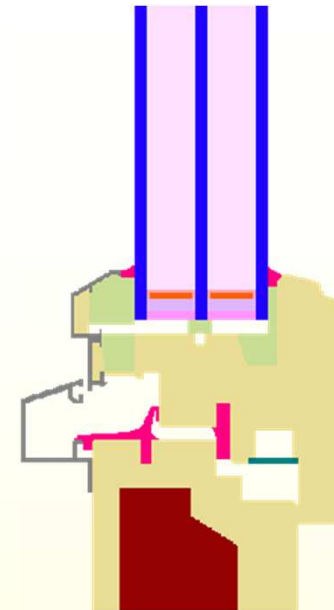
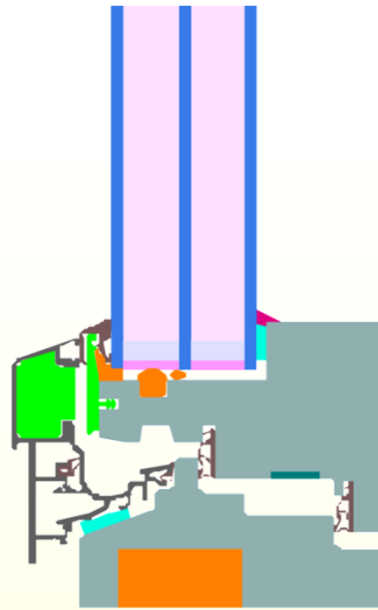
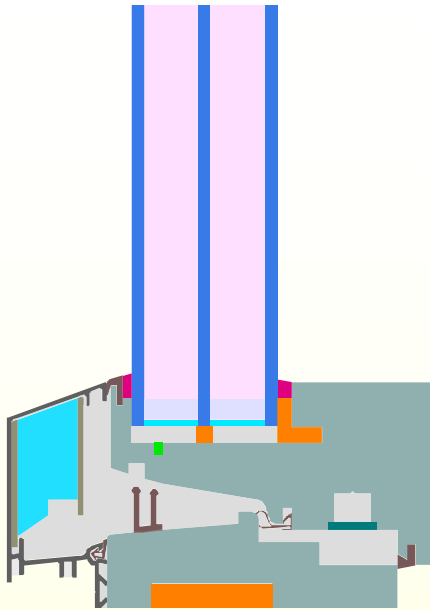


Photo: passivhaus-eco®

1 Lorber I pro PHf.
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LCC savings [%]: What does it mean?

The image shows a handwritten table on a piece of paper. The title is 'Wirtschaftlichkeit'. The table compares two window types: 'Standard Fenster' and 'Passivhausfenster'. The 'Standard Fenster' row has a circled investment of '16.500 €' and a circled interest rate of '2% real, 20 Jahre'. The 'Passivhausfenster' row has a circled investment of '19.250 €' and a circled annual cost of '1.120 €/a'. Below the table, there are labels for 'Investition:', 'Kredit:', 'Jährliche Rate:', 'Energiekosten:', and 'Summe:'.

	Standard Fenster	Passivhausfenster
Investition:	16.500 €	19.250 €
Kredit:	2% real, 20 Jahre	
Jährliche Rate:	1.030 €/a	1.120 €/a
Energiekosten:		
Summe:		

For a Passive House Window the Investment is a bit higher

LCC savings [%]: What does it mean?

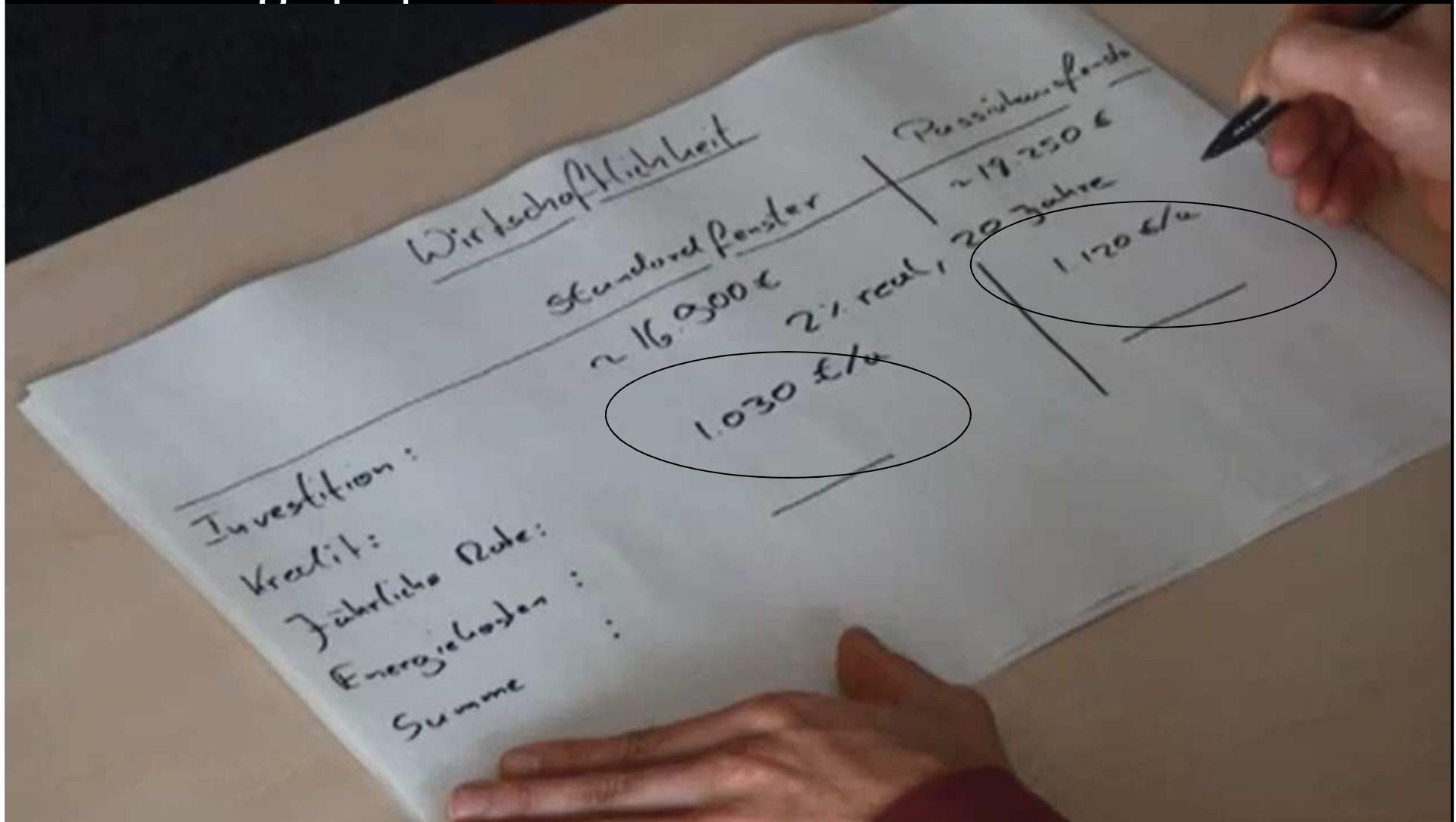
The handwritten notes on the paper are as follows:

Wirtschaftlichkeit		Passivhausfonds	
Standard Fenster	~ 16.900 €	~ 19.250 €	
	2% real, 20 Jahre		
	1.030 €/a		1.120 €/a

Investition:
Kredit:
Jährliche Rate:
Energiekosten:
Summe

Most important are the annual costs (investment+heating).
2% real interest rate means: effective and including inflation

LCC savings [%]: What does it mean?

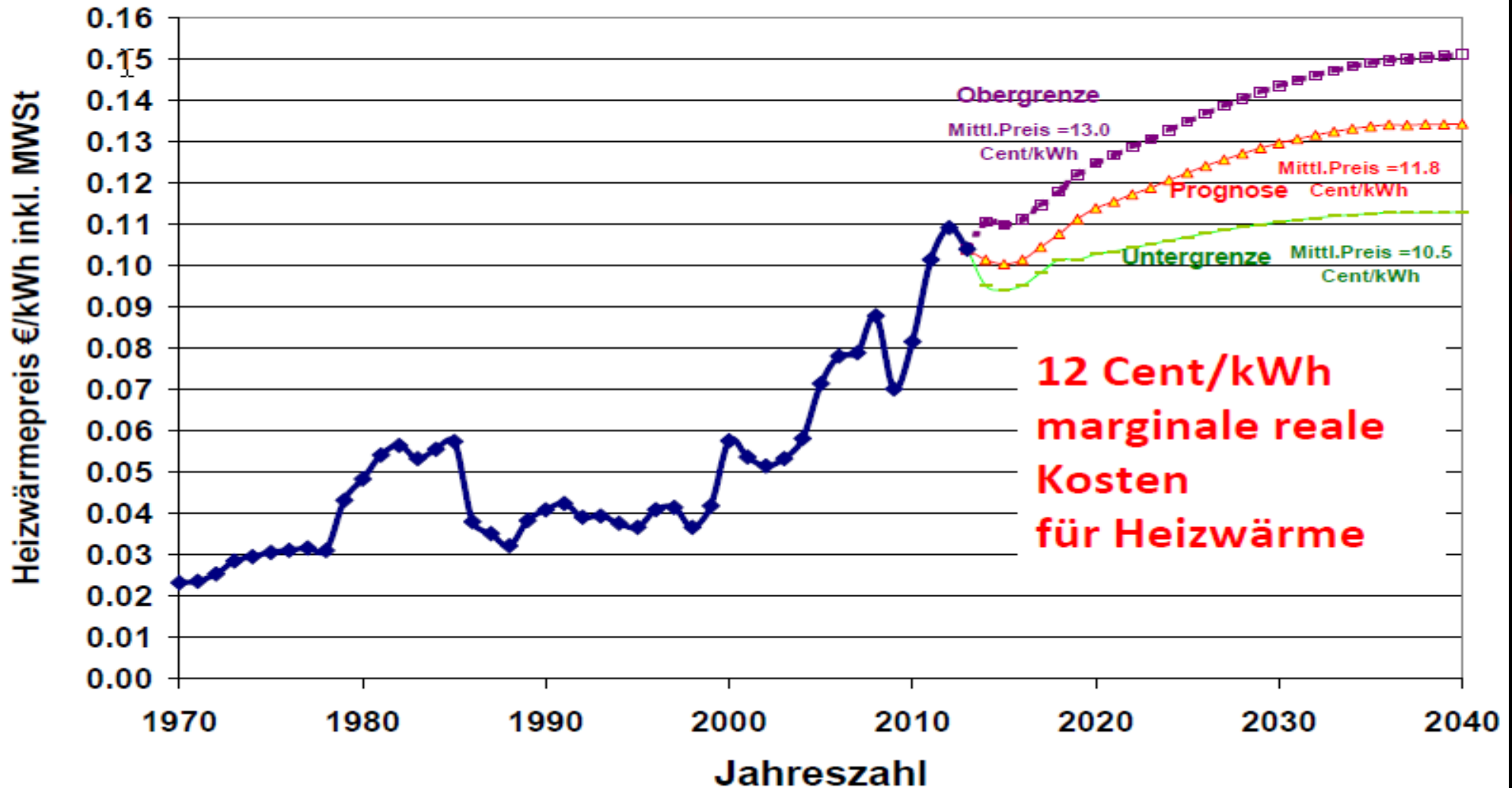


My loan repayment is €90 more for my Passive House Window .
PHPP gives me the annual cost for heating energy.

Energy costs rise and rise



Wärmepreis-Entwicklung



But there is a peak, because of more renewable energy.

Energy costs come from the energy balance

Wirtschaftlichkeit

Standardfenster
~ 16.900 €

2% real, 20 Jahre

1.030 €/a

~ 250 €/a

Passivtausch

~ 19.250 €

1.120 €/a

3 €/a

Investition:
Kredit:
Jährliche Rate:
Energiekosten:
Summe

Without PHPP you just have „wild speculation“

Investment + energy = total amount

Wirtschaftlichkeit

	Standard Fenster	Passive House
Investition:	~ 16.500 €	~ 19.250 €
Kredit:	2% real, 20 Jahre	
Jährliche Rate:	1.030 €/a	1.120 €/a
Energiekosten:	~ 290 €/a	3 €/a
Summe:	~ 270 €/a	1.123 €/a
	160 €/a Ersparnis	~ 20 €

Passive House Windows save €160/yr.

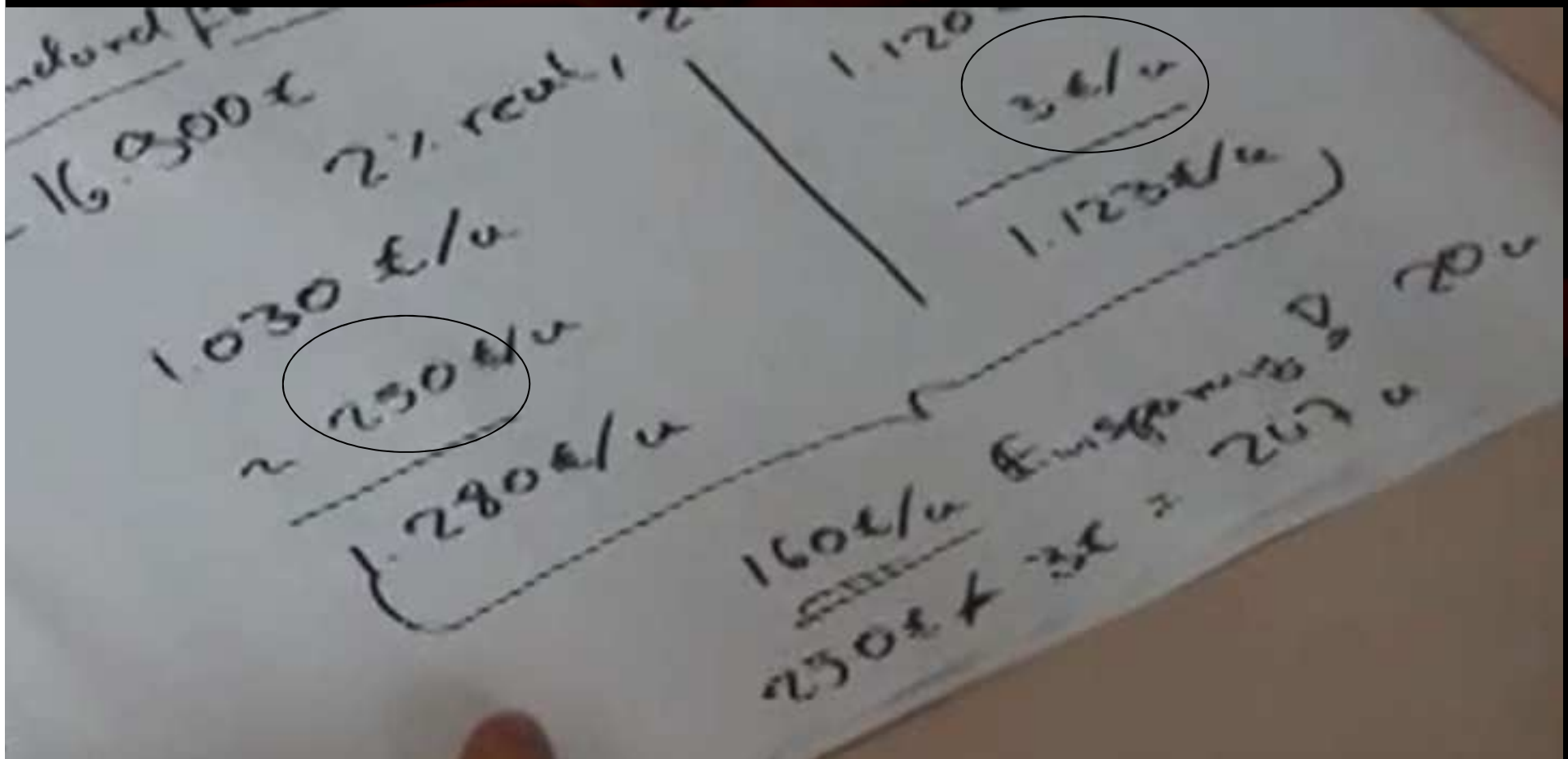
Investment + energy = total amount

Wirtschaftlichkeit

	Standard Fenster	Passive House
Investition:	~ 16.500 €	~ 19.250 €
Kredit:	2% real, 20 Jahre	
Jährliche Rate:	1.030 €/u	1.120 €/u
Energiekosten:	~ 250 €/u	36 €/u
Summe:	~ 280 €/u	1.123 €/u
		160 €/u Ersparnis @ 20u

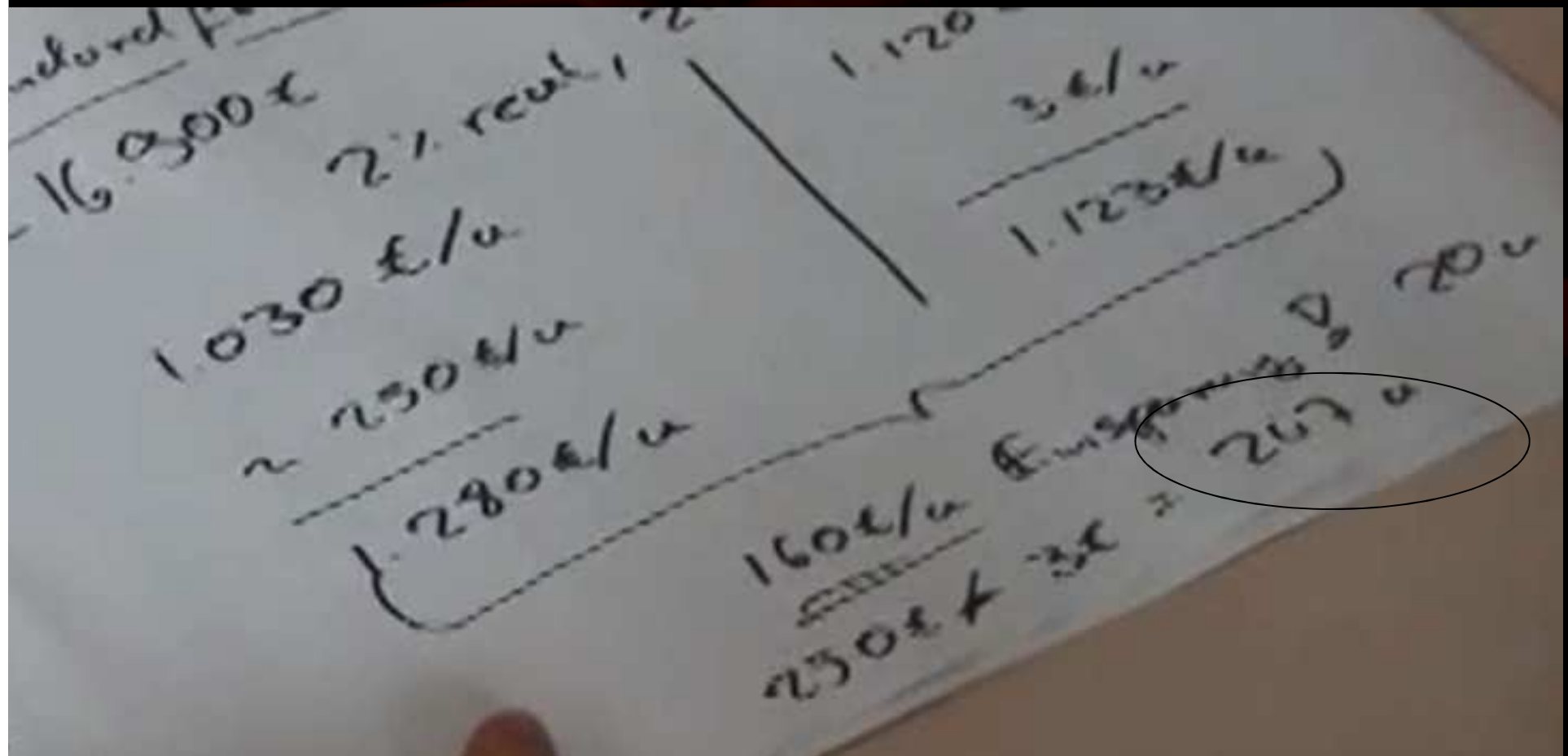
Passive House Windows save €160/yr.

What happens in 20 years when the loan is repaid?

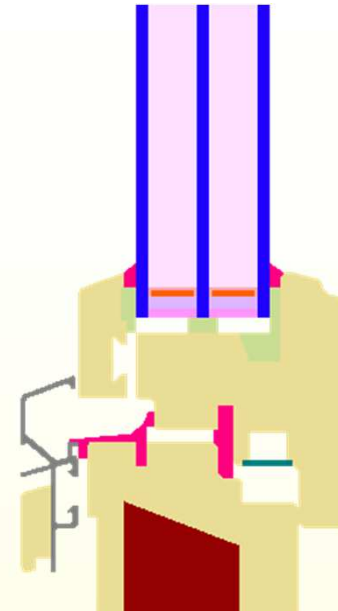
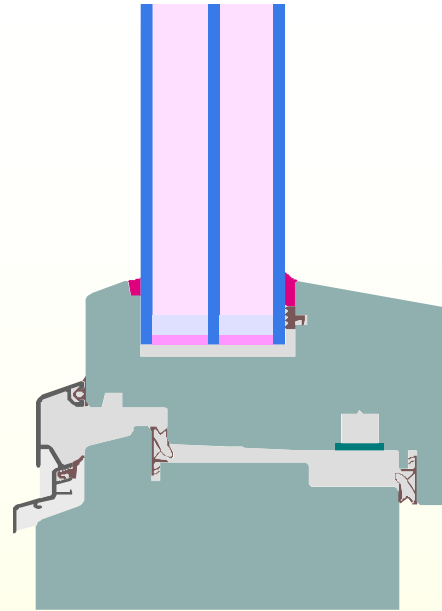
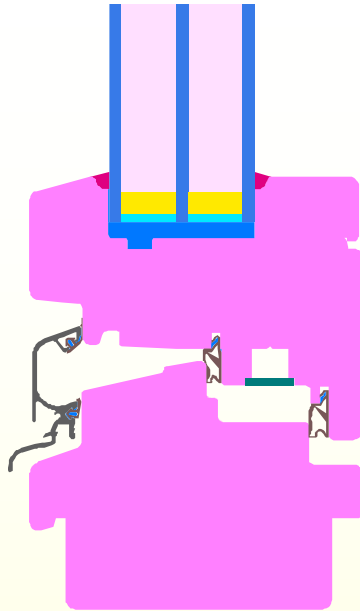


We only have to pay the energy costs.

What happens in 20 years when the loan is repaid?



Now the Passive House Windows save €247/yr for the rest of their life.



1 M SORA

1 Pfeffer Fenster

2 Freisinger I OPTIWIN

Prize, Company

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

Price: Investment costs for ref. building [€/m² inst. window incl. VAT]. Life-Cycle Cost savings: compared to ref. case [%]. Oil savings: per m² window compared to ref. window (life-cycle 40 a)



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THE WINNERS: Timber (6 participants)

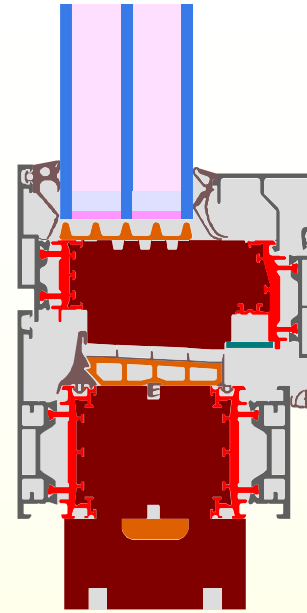
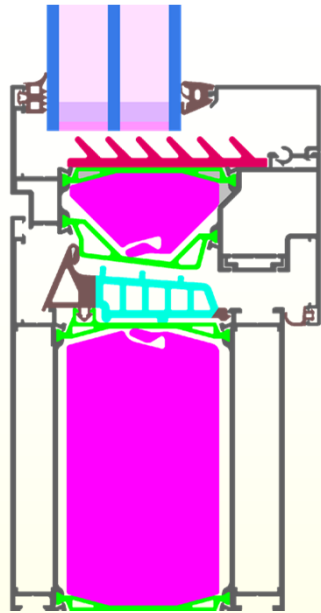


Photo: passivhaus-eco®

1 RAICO

1 PURAL

Prize, Company

FRAME 90 WI	eco90	Product
492	540	Price [€/m ² inst.w]
14%	12%	LCC savings [%]
185	230	Oil savings [l]

Price: Investment costs for ref. building [€/m² inst. window incl. VAT]. Life-Cycle Cost savings: compared to ref. case [%]. Oil savings: per m² window compared to ref. window (life-cycle 40 a)



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THE WINNERS: Aluminum (3 participants)

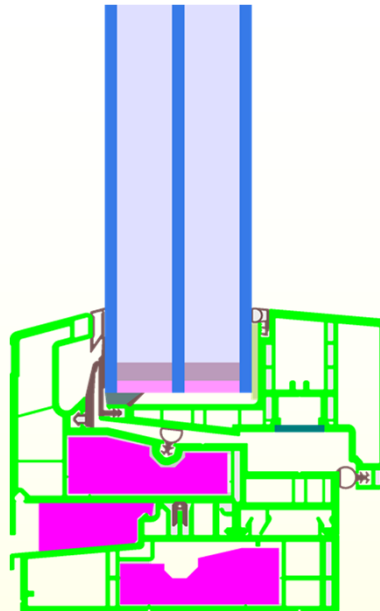


Photo: passivhaus-eco®

1 Hilzinger

Prize, Company

VADB 550

Product

224

Price [€/m²inst.w]

37%

LCC savings [%]

257

Oil savings [l]

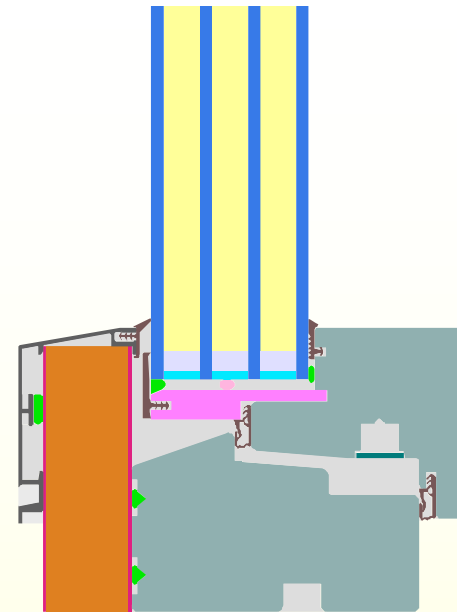
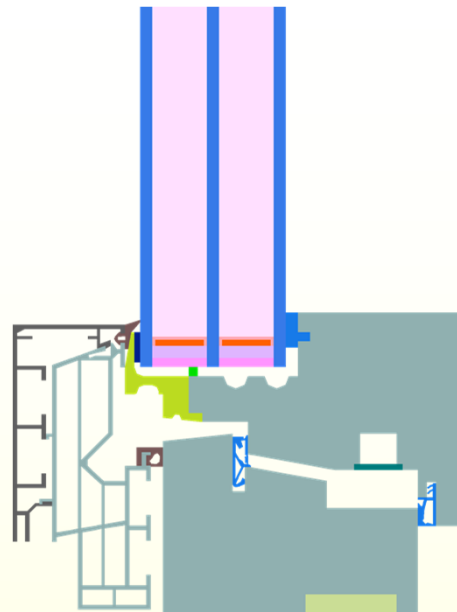
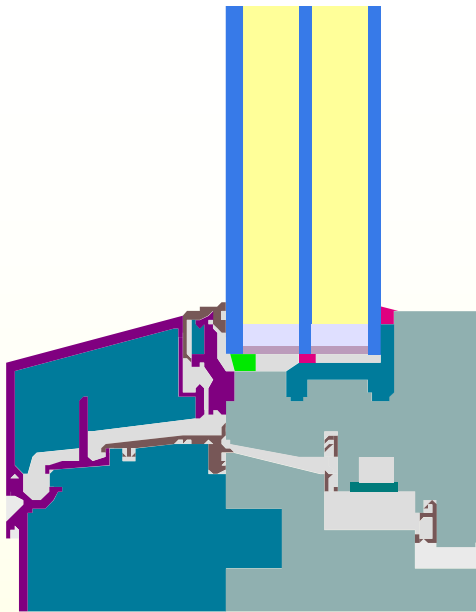
Price: Investment costs for ref. building [€/m² inst. window incl. VAT]. Life-Cycle Cost savings: compared to ref. case [%]. Oil savings: per m² window compared to ref. window (life-cycle 40 a)



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THE WINNERS: PVC (3 participants)



Timber-GRP, dHPt	Glazing, Wiegand	U-value, Pazen	Prize, Company
Delta Plus cold climate	DWplus	ENERsign arctis*	Product
353	543	599	Price [€/m ² inst.w]
27%	12%	8%	LCC savings [%]
225	237	276	Oil savings [l]

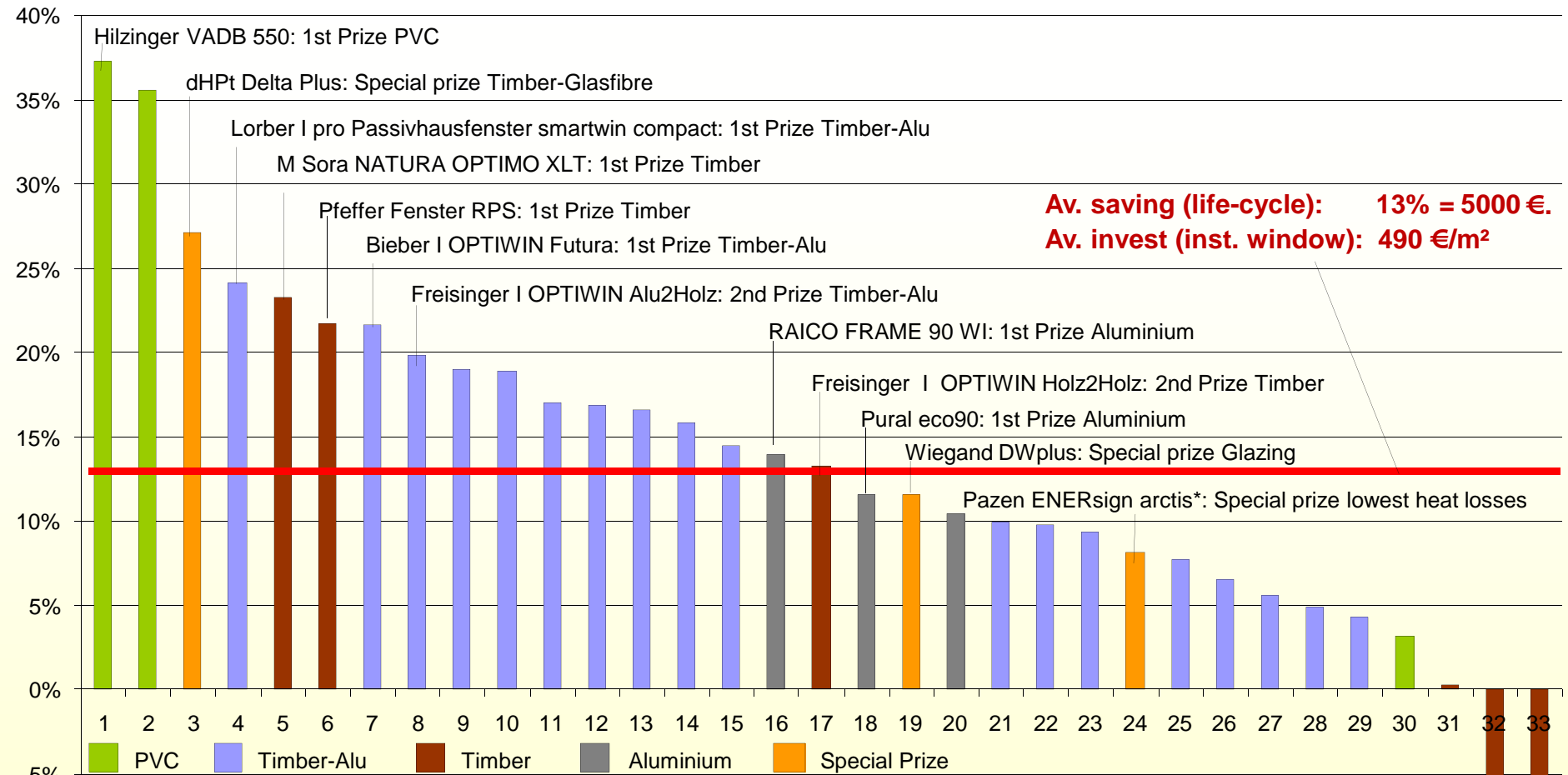
Price: Investment costs for ref. building [€/m² inst. window incl. VAT]. Life-Cycle Cost savings: compared to ref. case [%]. Oil savings: per m² window compared to ref. window (life-cycle 40 a)



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SPECIAL PRIZES



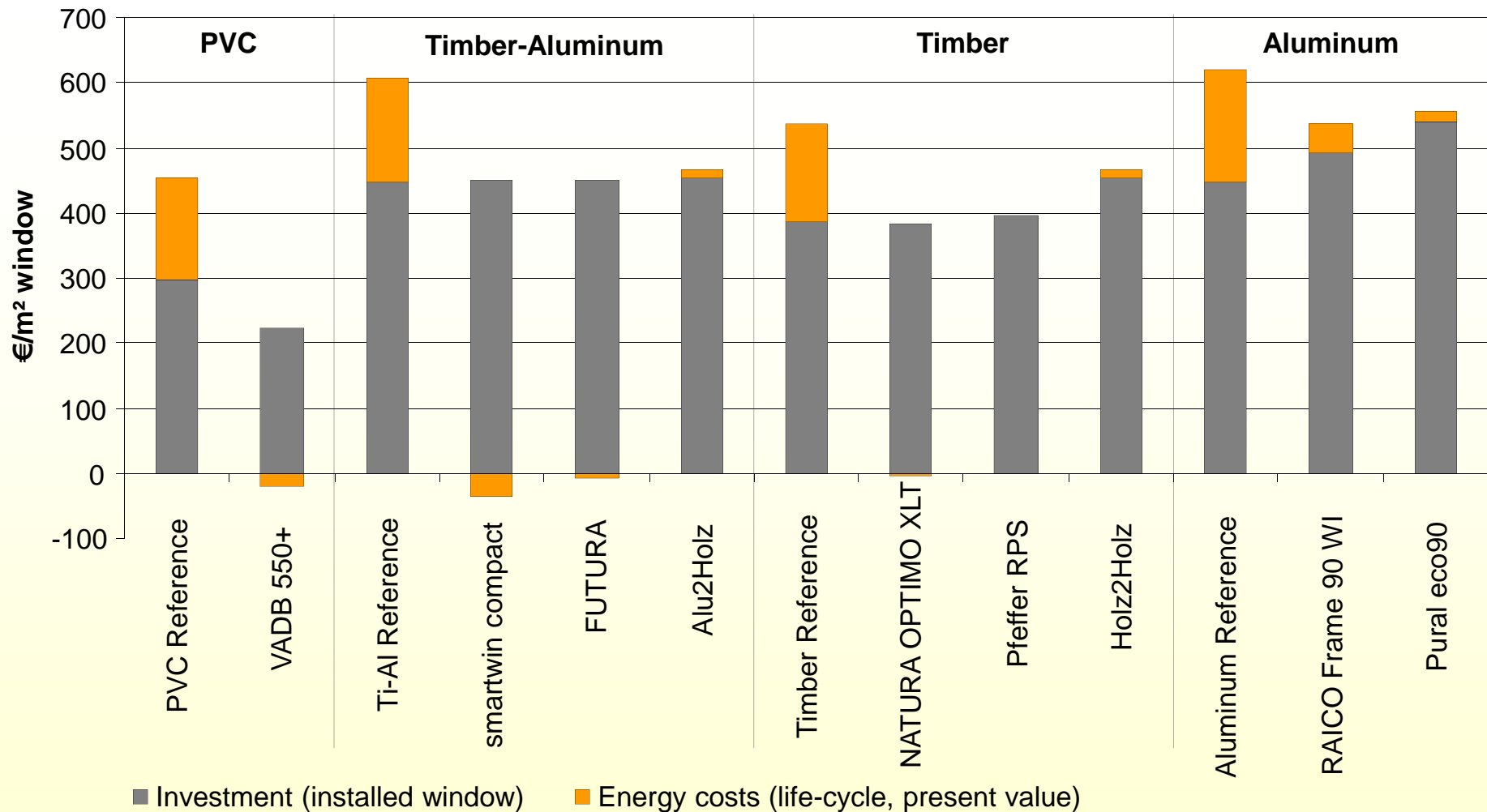
Passive house windows are profitable for building owners
Passivhaus-Fenster sind profitabel für Bauherren



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RESULTS: Savings compared to reference



Investment and energy costs | Investitions- und Energiekosten

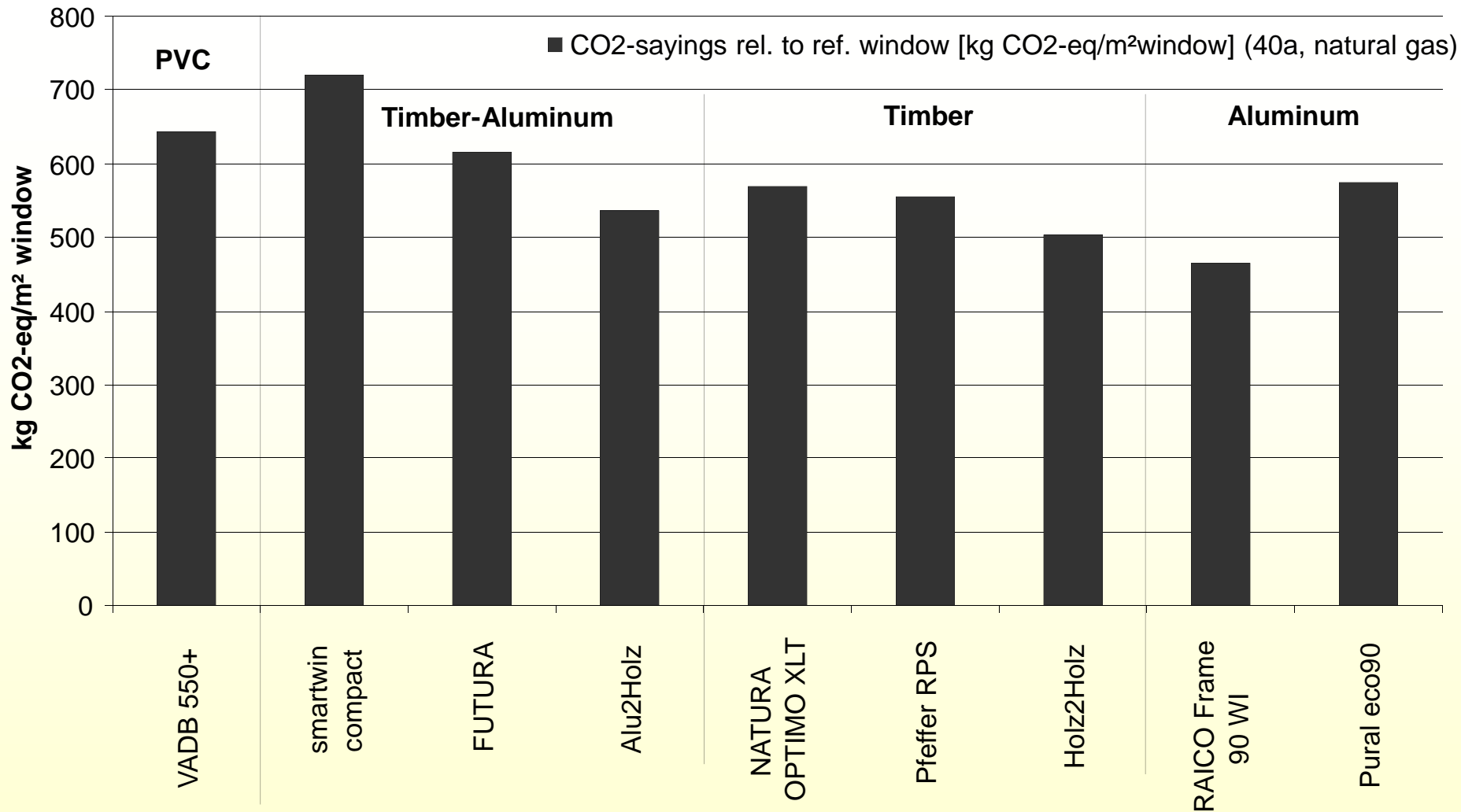
No energy costs for passive house windows | Keine Energiekosten für Passivhausfenster



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RESULTS: The winners

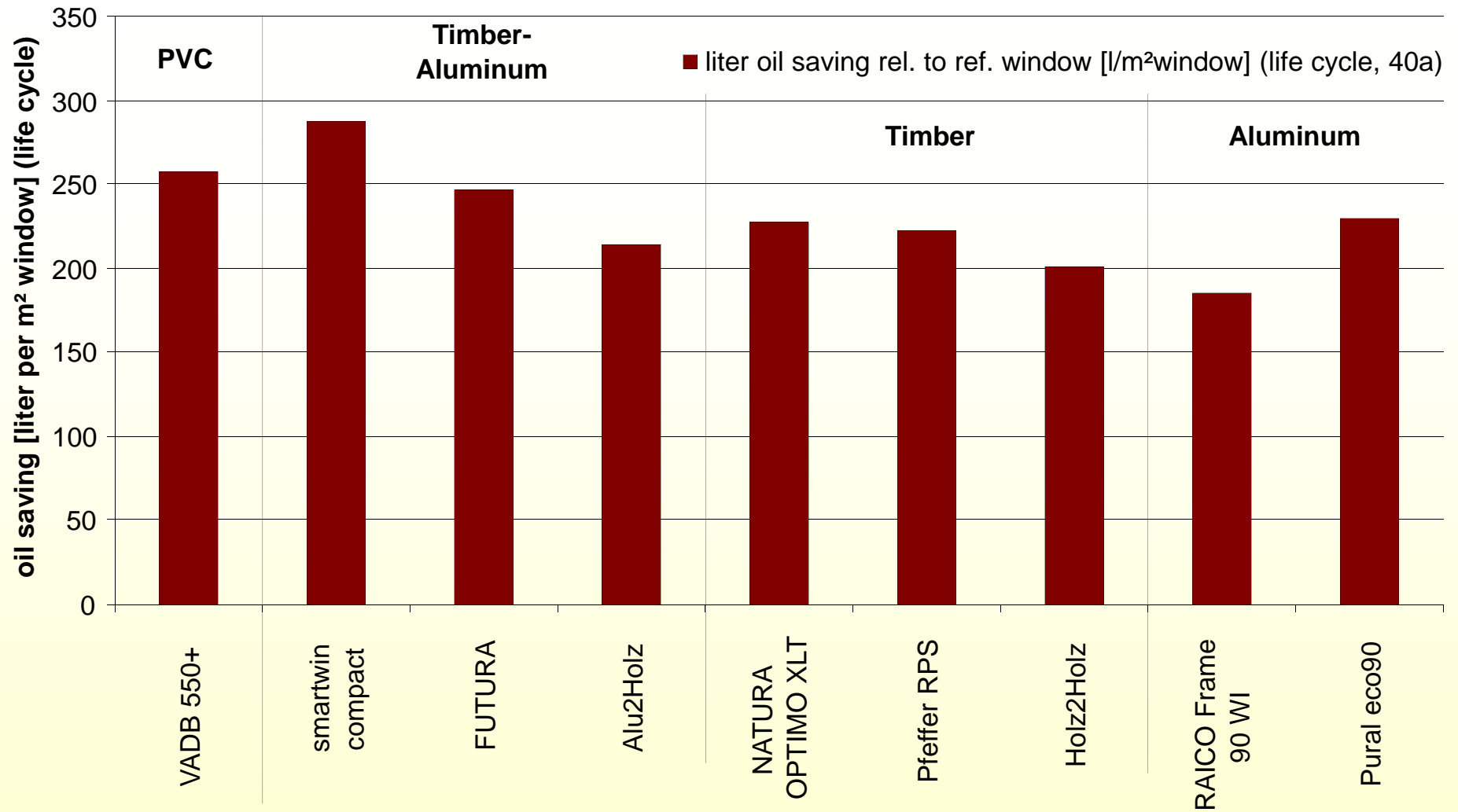


RESULTS: The winners – CO₂ savings



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RESULTS: The winners – fuel savings



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