

Energetic improvement/renovation of accommodation in Neumarkt- Progam Faktor10

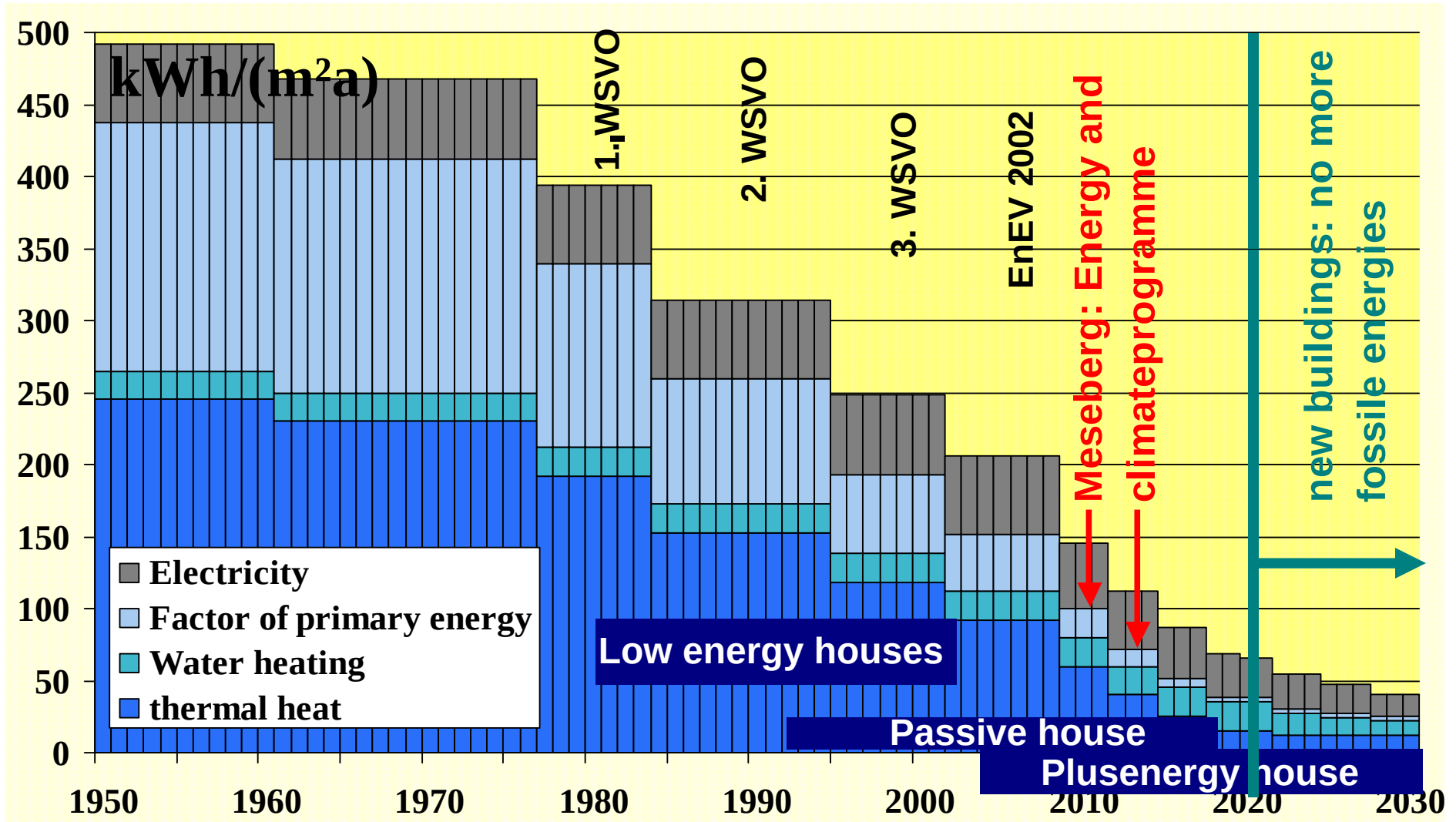
Content:

- Definition EnEV 2009 and better energy efficient standards for buildings
- Faktor 10 Program Neumarkt

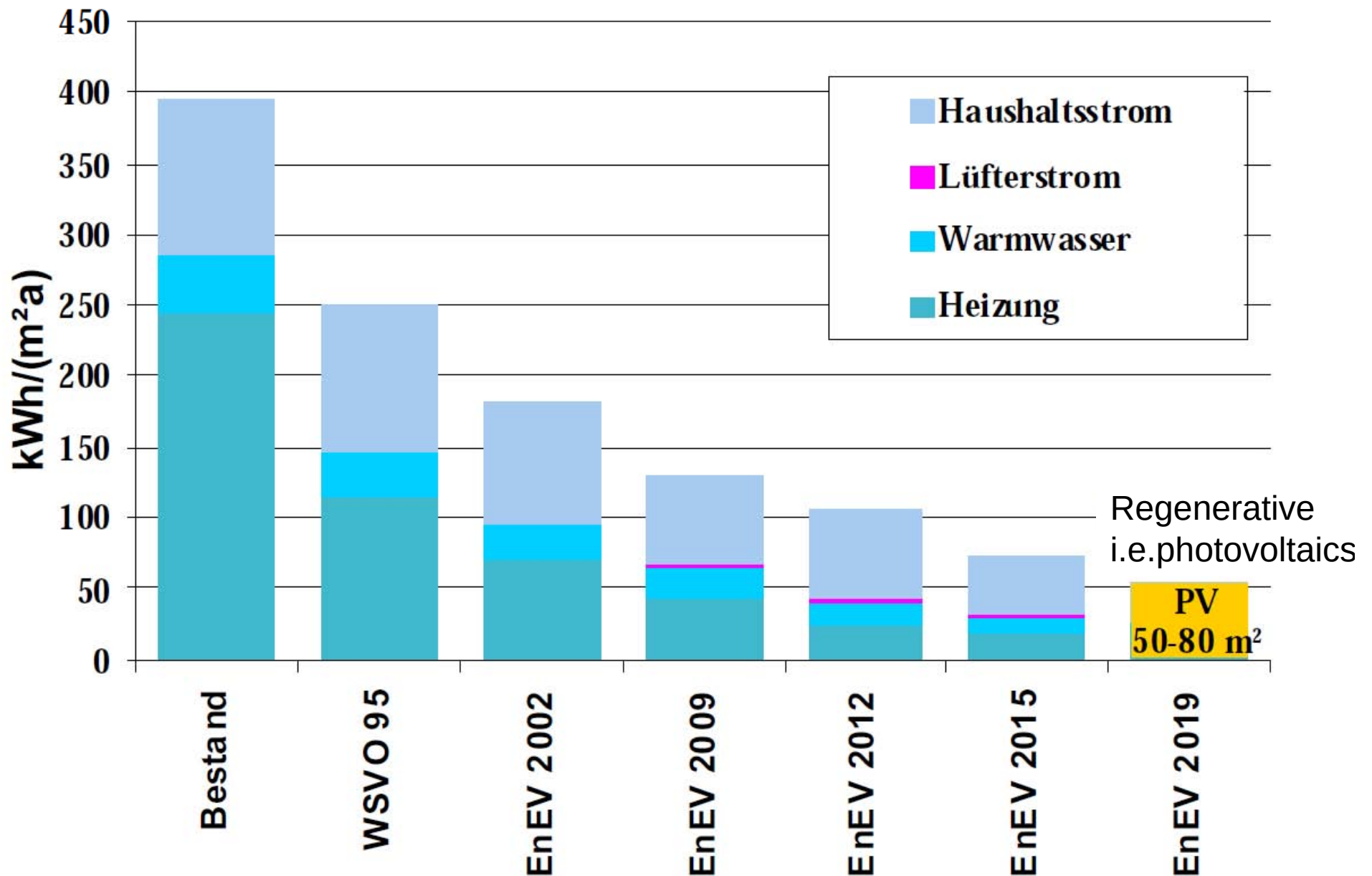
Dipl. Ing. Rupert Diels
Schulze Darup & Partner
Nürnberg
www.rupert-diels.de

Energy-standard (Germany)

Effective primary energy per m² living space



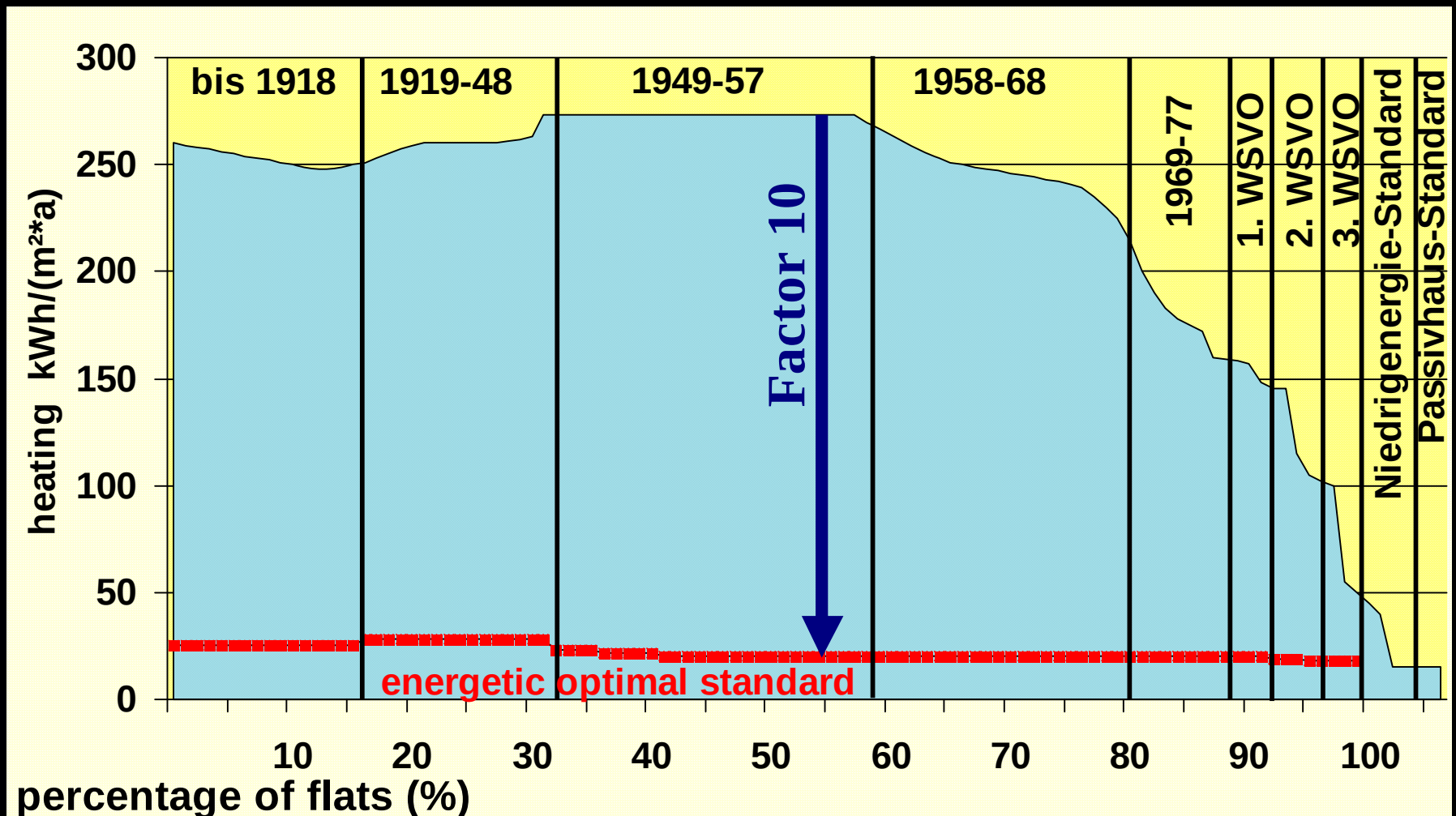
Primary Energy- Source Energy Values



Quelle: Dr. Burkhard Schulze Darup

Resources

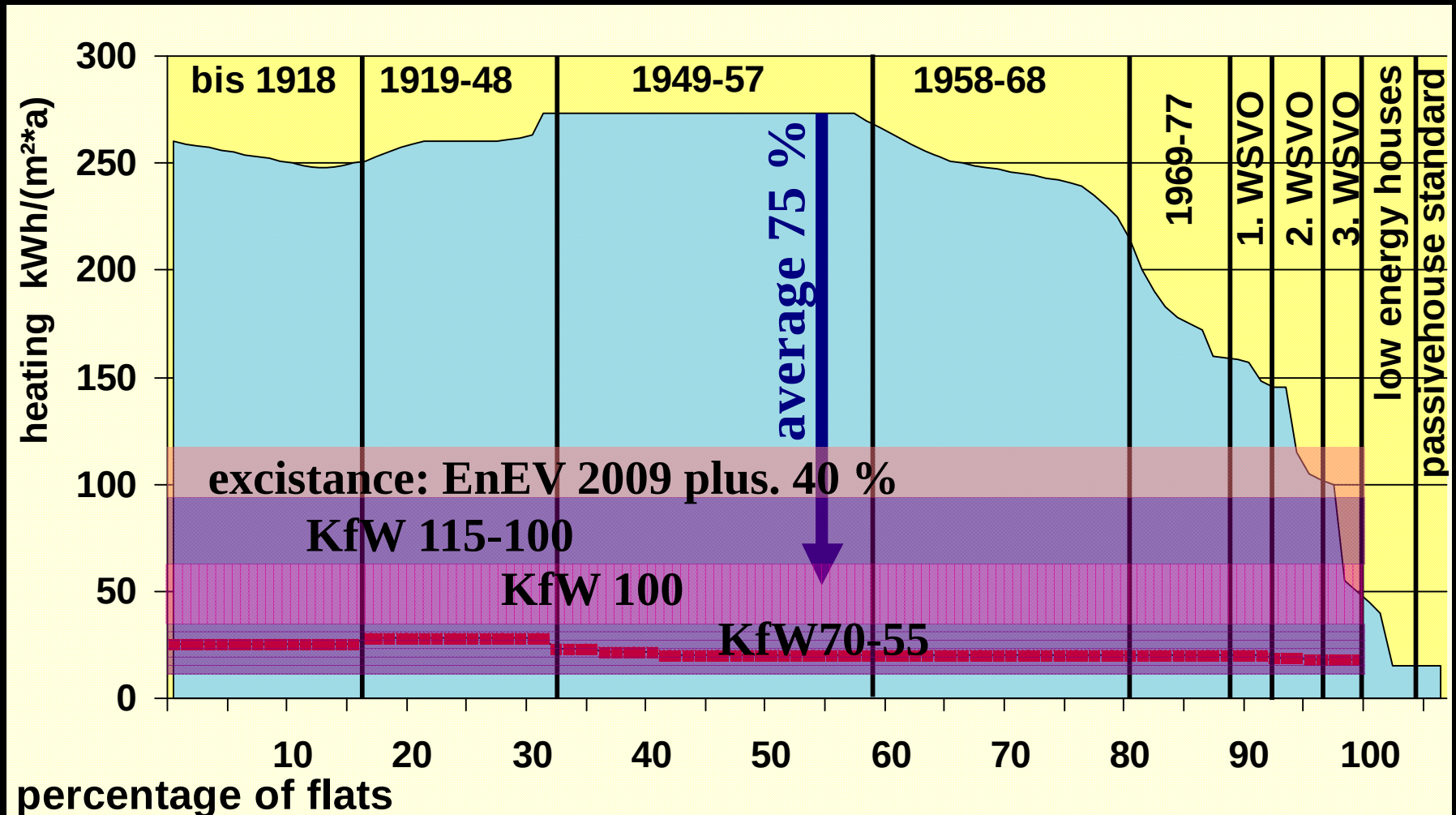
heating-reduction



source: ARENHA 1993, IWU 1994, Bundesarchitektenkammer 1995, Schulze Darup 1998/2000

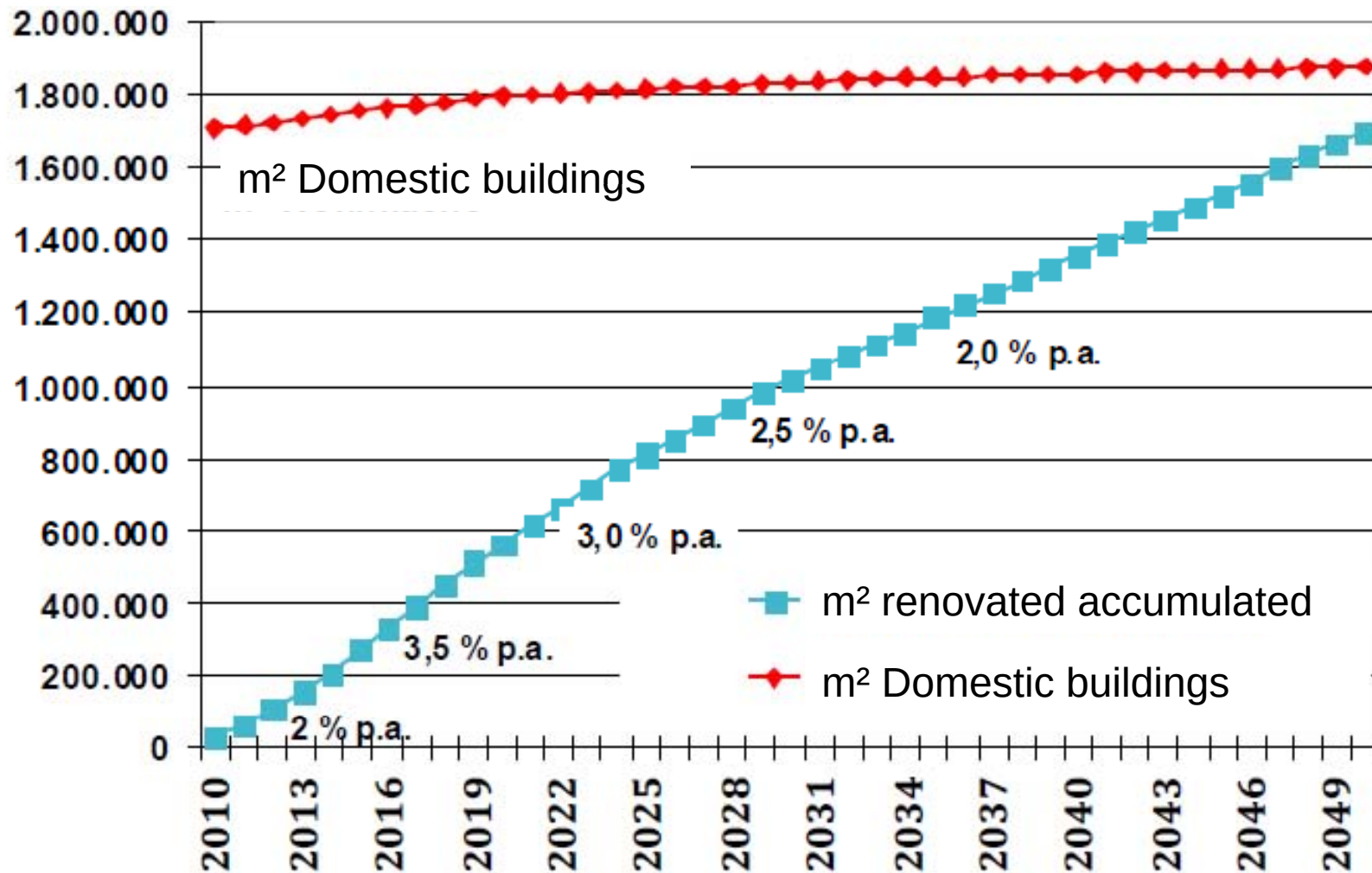
Promotion

heating-reduction



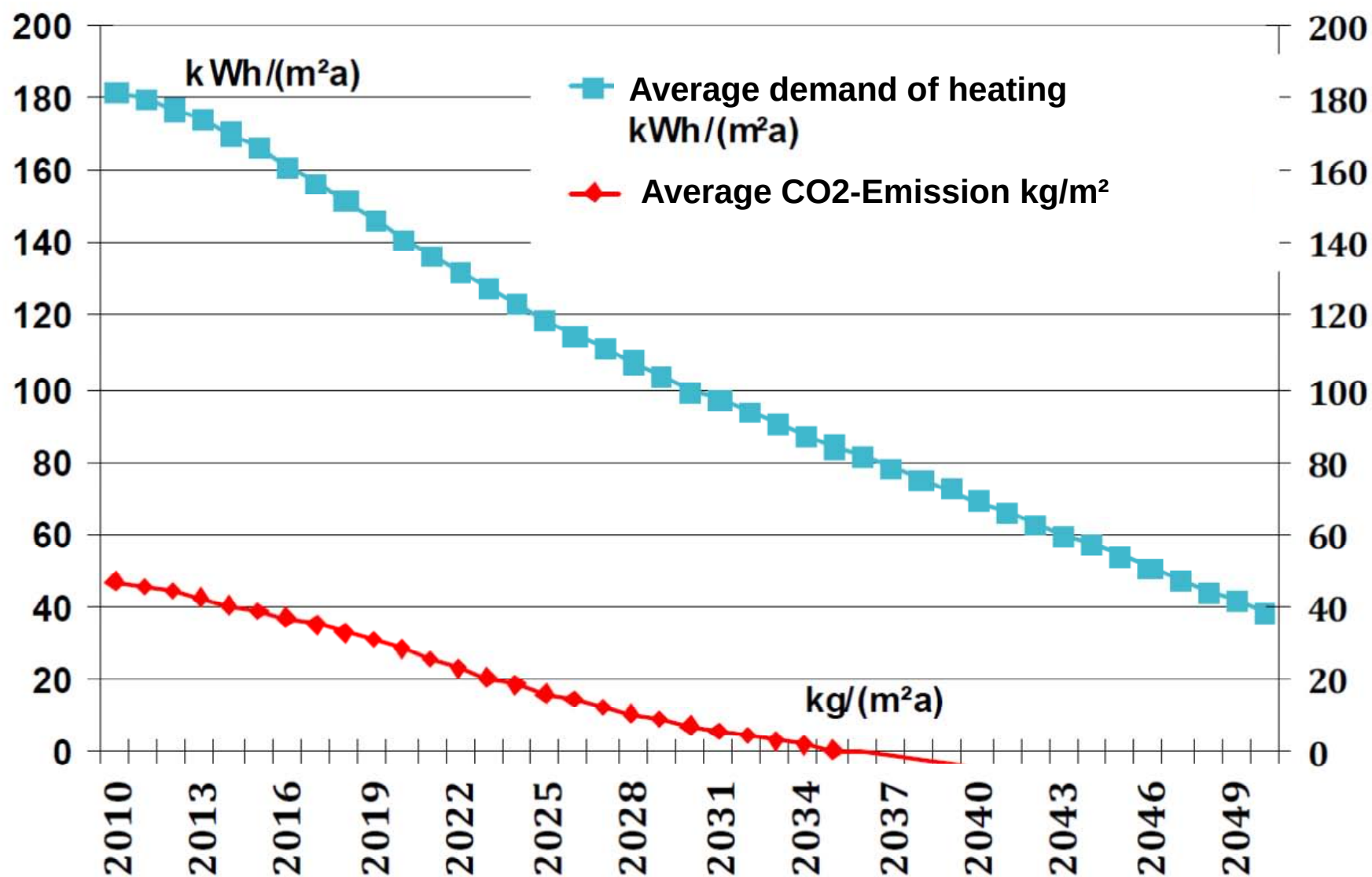
source: ARENHA 1993, IWU 1994, Bundesarchitektenkammer 1995, Schulze Darup 1998/2000/2009

Set target of rate for renovation in Neumarkt until 2050

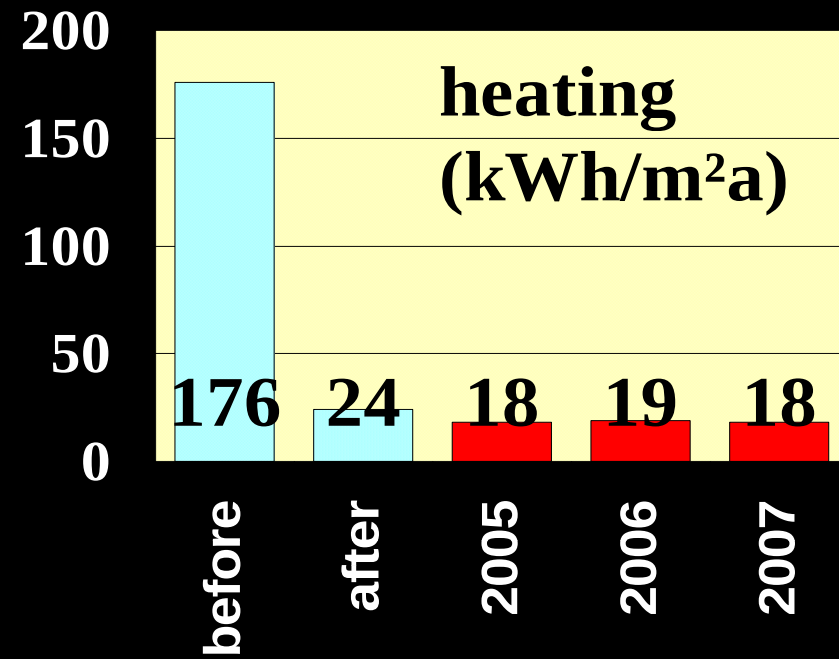


Reference: Dr. Burkhard Schulze Darup

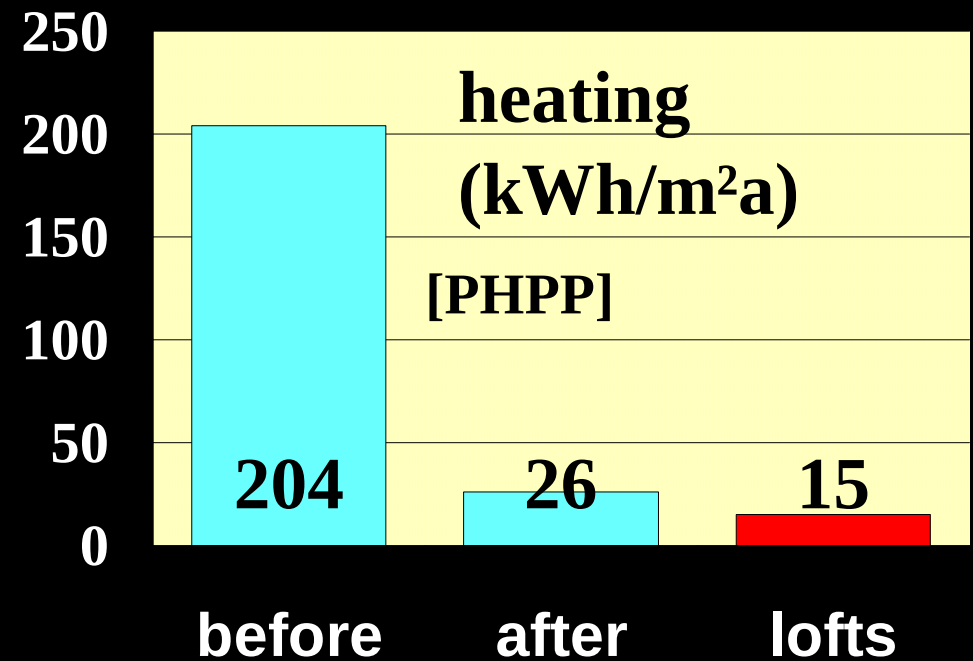
Reduction of heating demand and CO2 emission for domestic buildings



Reference: Dr. Burkhard Schulze Darup



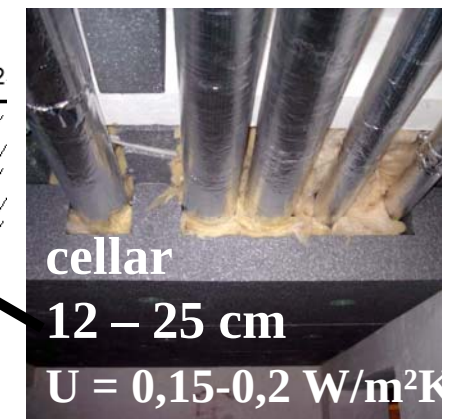
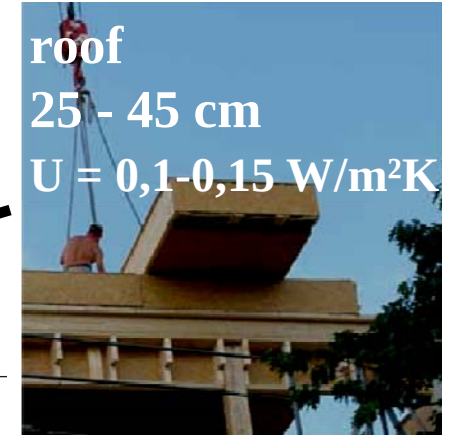
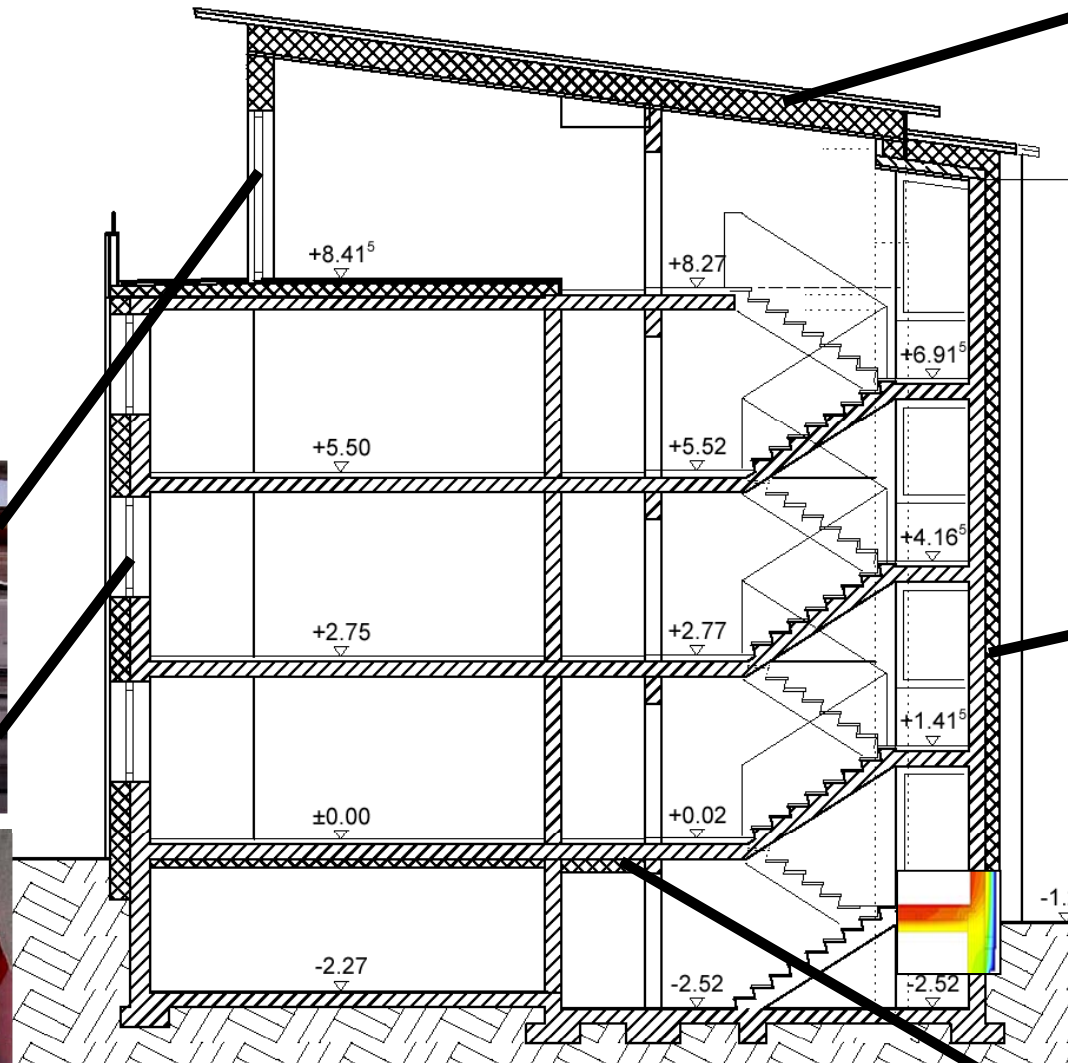
Apartment building
Ingolstädter Straße 139/141
Owner: wbg Nürnberg
2004
Arch. Schulze Darup & Partner

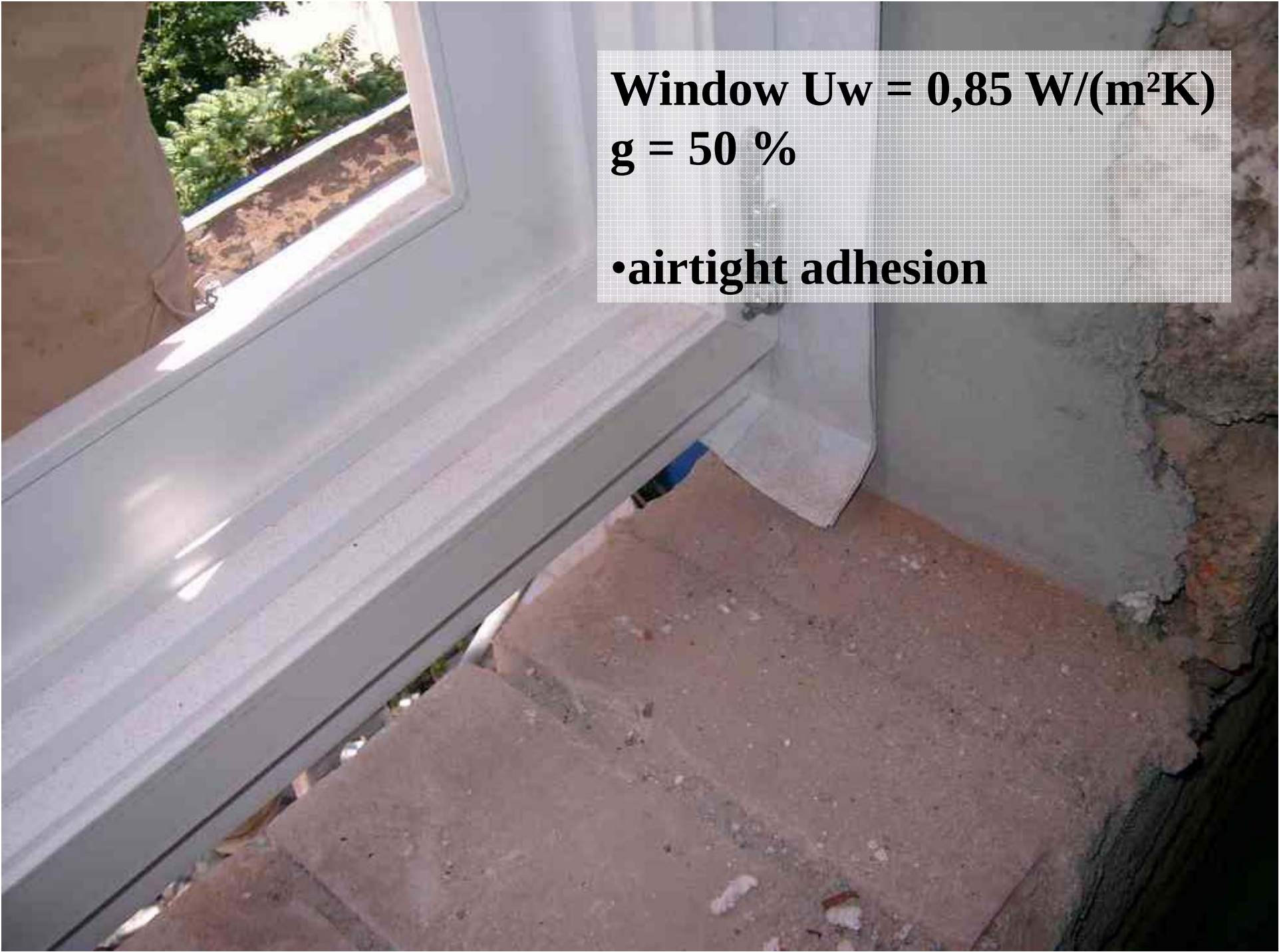


**Apartment building
Bernadottestraße, Nürnberg
Owner: wbg Nürnberg
2006**

Arch. Schulze Darup & Partner

Components



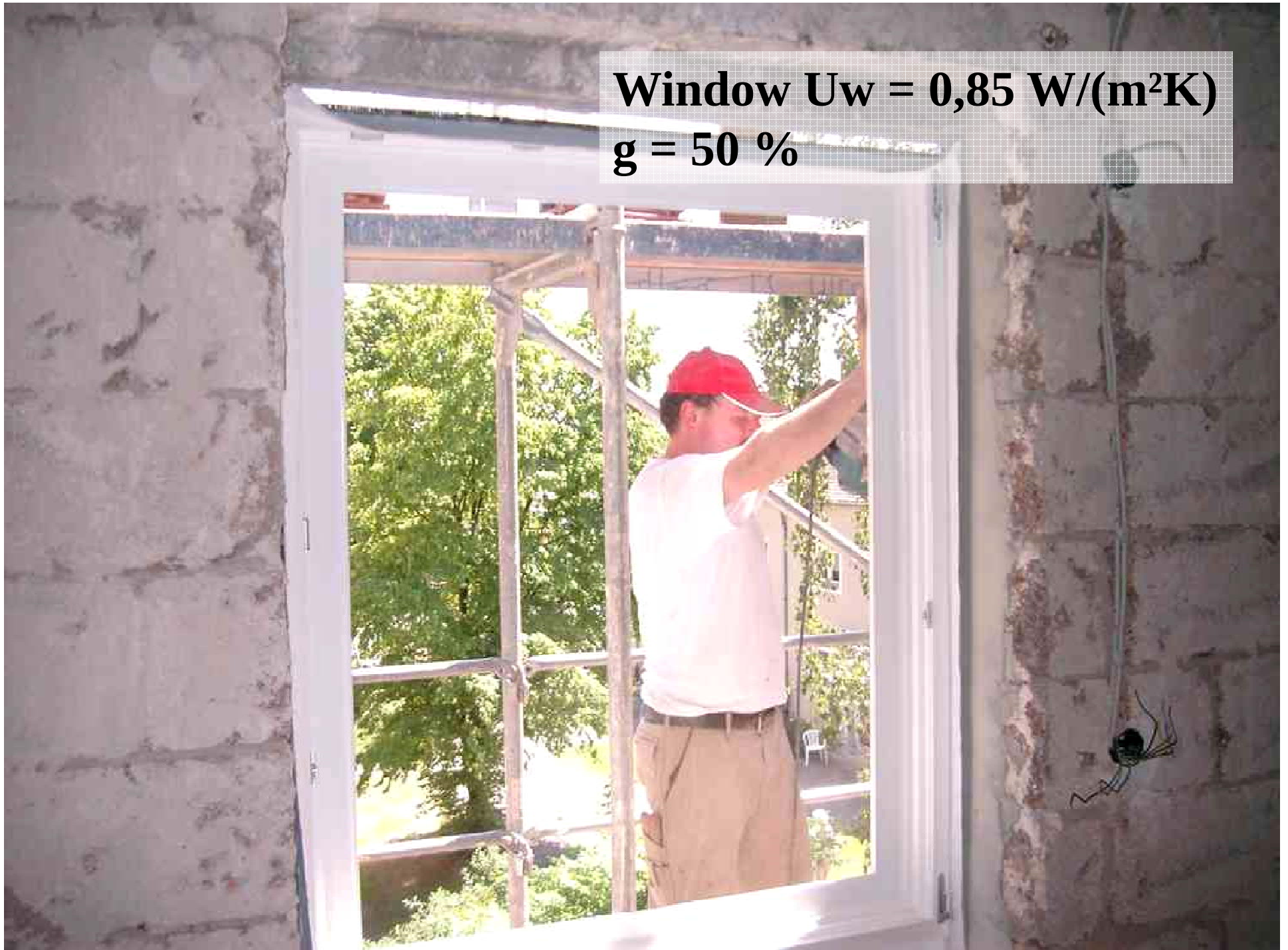
A photograph of a window frame, likely made of white-painted wood or metal, set into a wall. The window is partially open, showing a view of green foliage outside. The frame has a multi-paned design. A semi-transparent grey box with a grid pattern is overlaid on the right side of the image, containing technical specifications and a bullet point. The wall around the window shows some signs of wear and peeling paint.

Window $U_w = 0,85 \text{ W}/(\text{m}^2\text{K})$

$g = 50 \%$

• airtight adhesion

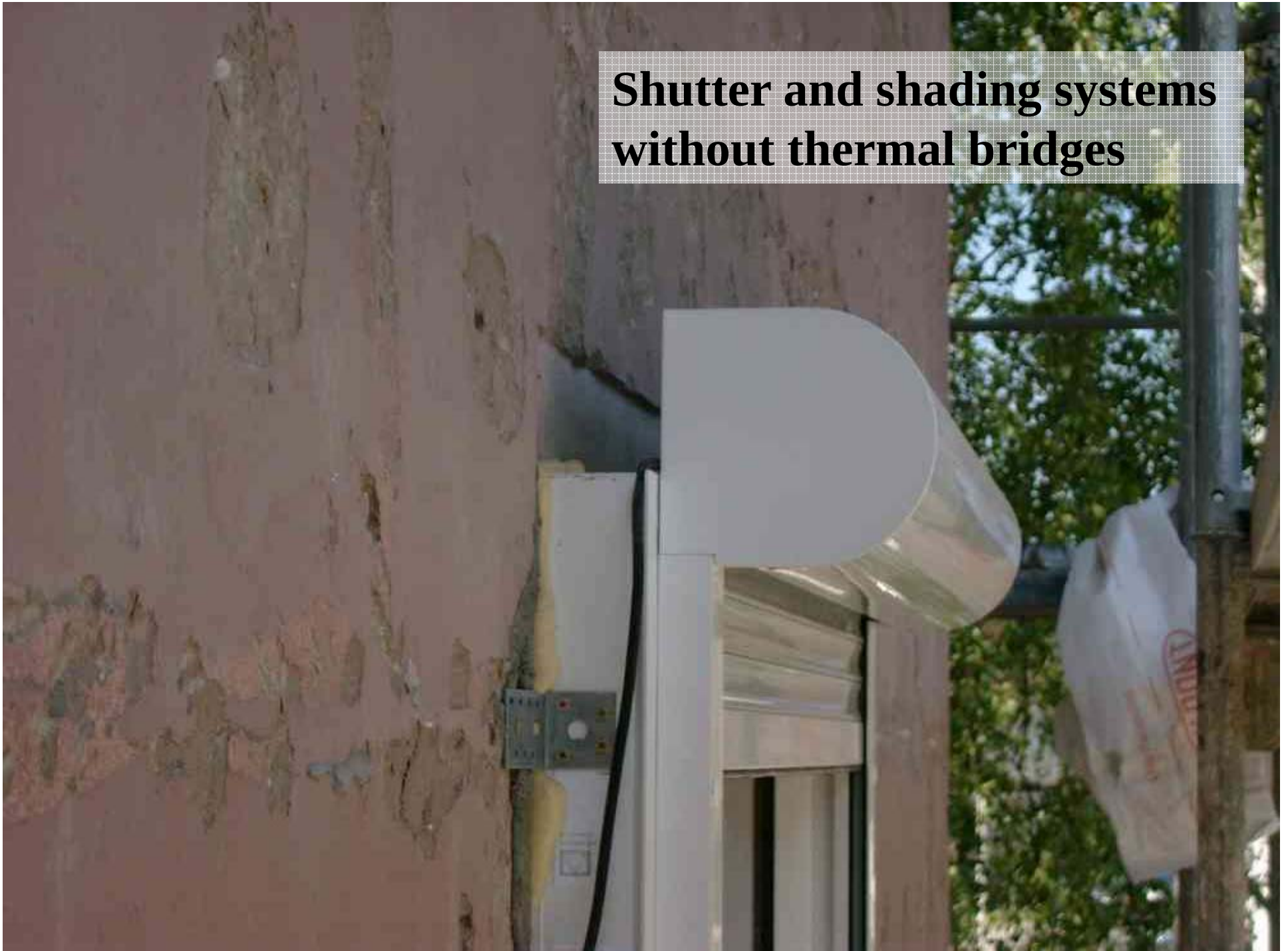
**Window $U_w = 0,85 \text{ W}/(\text{m}^2\text{K})$
 $g = 50 \%$**

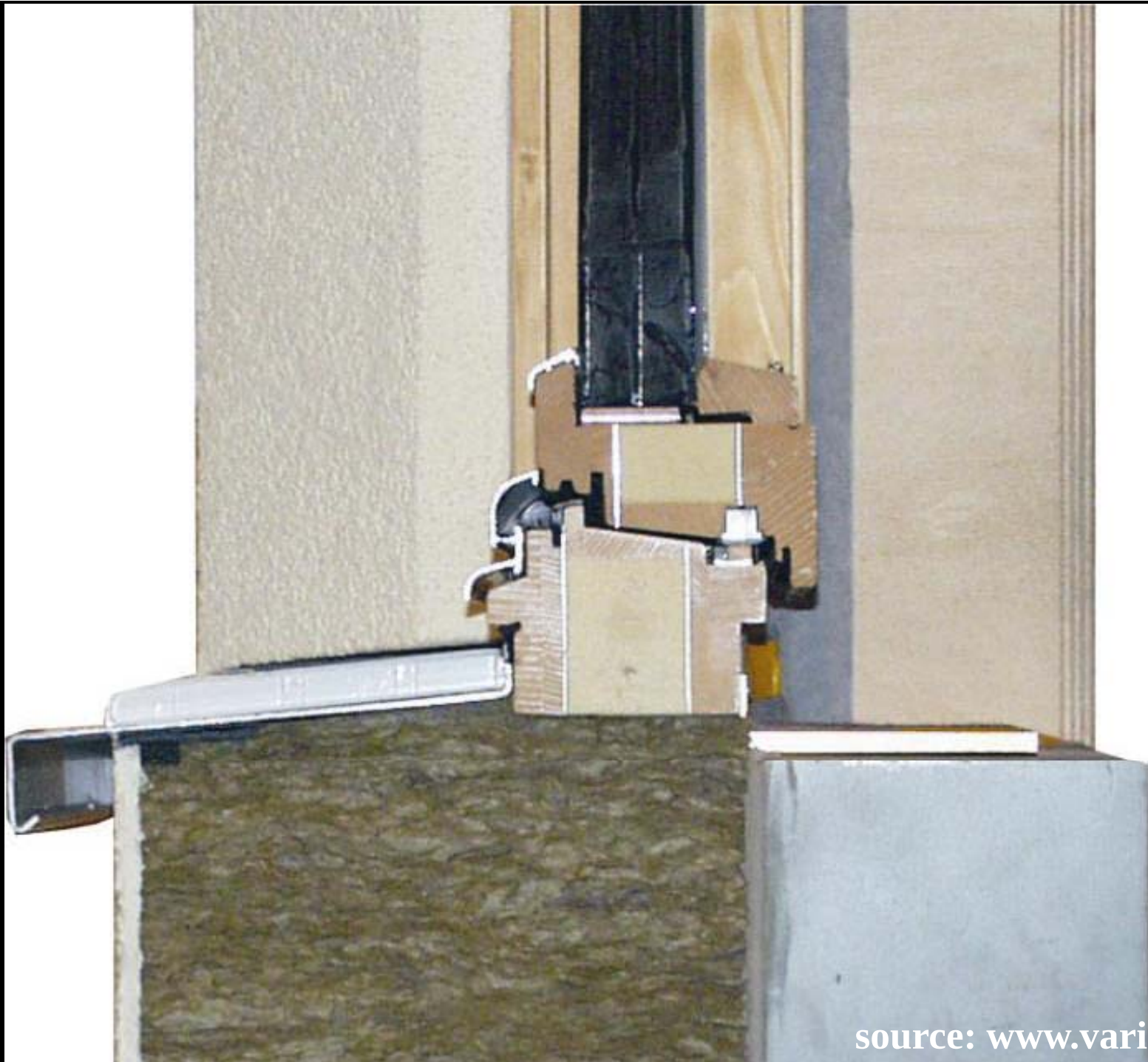


**Window $U_w = 0,85 \text{ W}/(\text{m}^2\text{K})$
 $g = 50 \%$**



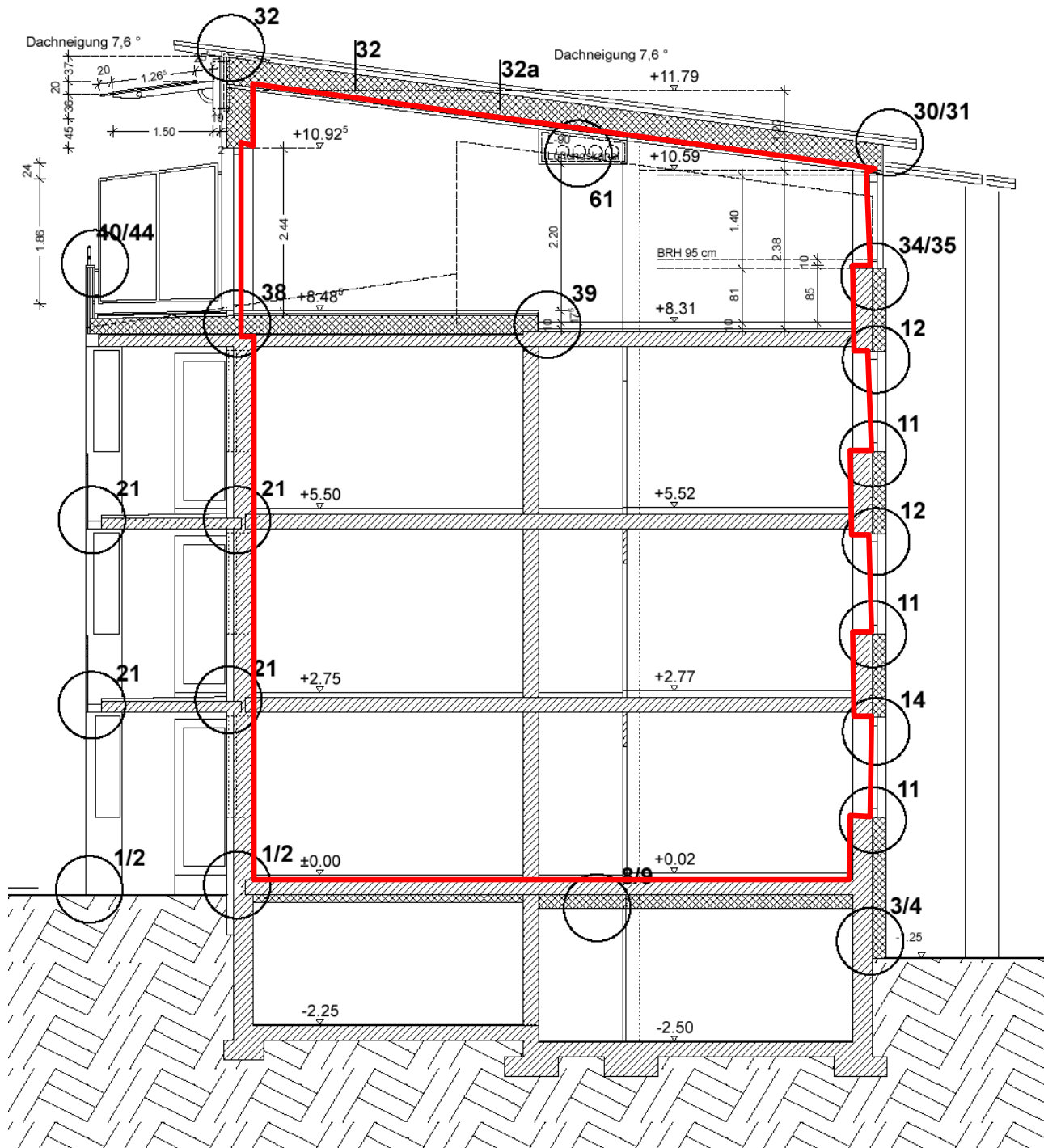
Shutter and shading systems without thermal bridges

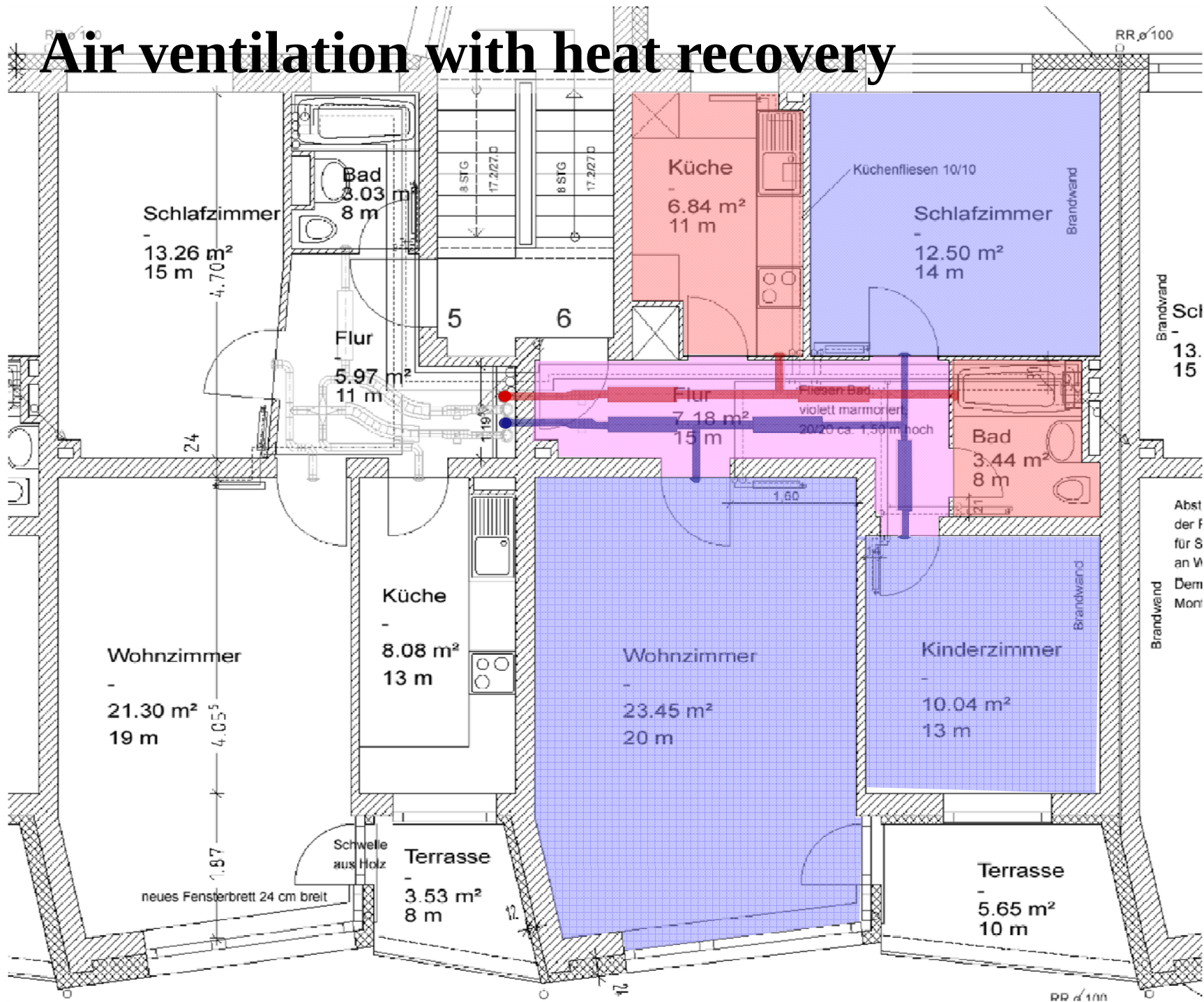




source: www.variotec.de

Air-tightness





Specific Values: Example for two energy-efficiency Standards compared to the Standard EnEV 2009 to reduce the heating consume for houses in Neumarkt

	EnEV 2009	Faktor10	Passivhaus
Wall	16 cm $\lambda=0,032$	20-24 cm $\lambda=0,032$	24 cm $\lambda=0,032$
Roof	20 cm $\lambda=0,035$	25-35 cm $\lambda=0,035$	35 cm $\lambda=0,035$
Ground	15 cm $\lambda=0,035$	15-20 cm $\lambda=0,035$	25 cm $\lambda=0,035$
Window	$U_w=1,1 \text{ W/m}^2\text{K}$	$U_w=0,8-1,0 \text{ W/m}^2\text{K}$	$U_w=0,8 \text{ W/m}^2\text{K}$
Door	$U_w=1,3 \text{ W/m}^2\text{K}$	$U_w=1,0 \text{ W/m}^2\text{K}$	$U_w=0,8 \text{ W/m}^2\text{K}$
Thermal Bridges	$\Delta U_{WB}=0,05$	$\Delta U_{WB}=0,02-0,03$	$\Delta U_{WB}= - 0,01$
Airtightness	$n_{50} < 1,0 \text{ h}^{-1}$	$n_{50} < 0,6 \text{ h}^{-1}$	$n_{50} < 0,6 \text{ h}^{-1}$
Heating Syst.	Gas-BW	Gas-BW	Gas-BW
Hot Water Syst.	Gas-BW, Solar	Gas-BW, Solar	Gas-BW, Solar
Lüftung	Vent. Abluft	Zu-/Abl. 80%	Zu-/Abl. 85 %
Heating	55 kWh/(m ² a)	30 kWh/(m ² a)	15 kWh/(m ² a)
PE-Energy q_p	85 kWh/(m ² a)	49 kWh/(m ² a)	30 kWh/(m ² a)

Local heat and heating Systems in Neumarkt

local heat:

- Combined heat and power plant „Pfleiderer concern“
- additional in planing: biomass plant

further heating systems:

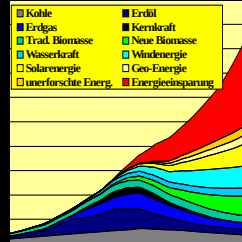
- electrical heat pump in combination with solar heat
(good for energy efficient buildings/ high standard)
- wood pellet (for sparesly populaded regions)
- gas heating value technology
- ...

in principle:

every building has to be considered individually

10 Reasons for energy-efficient modernisation

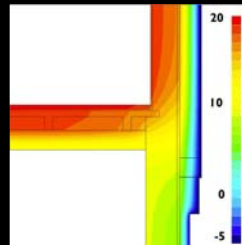
1 Saving of resources



2 Winning of comfort



3 Preservation of structures & no mold



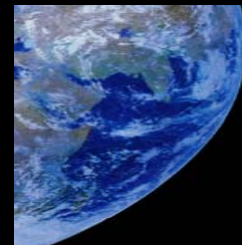
4 Ambient air & health



5 Value of the building for the future



6 Structural- physical save & comfortable



7 Climate protection & pattern/ antetype



8 Insurance against rising costs for energy



9 Qualification/ skill & local economy



10 Upgrading of the location