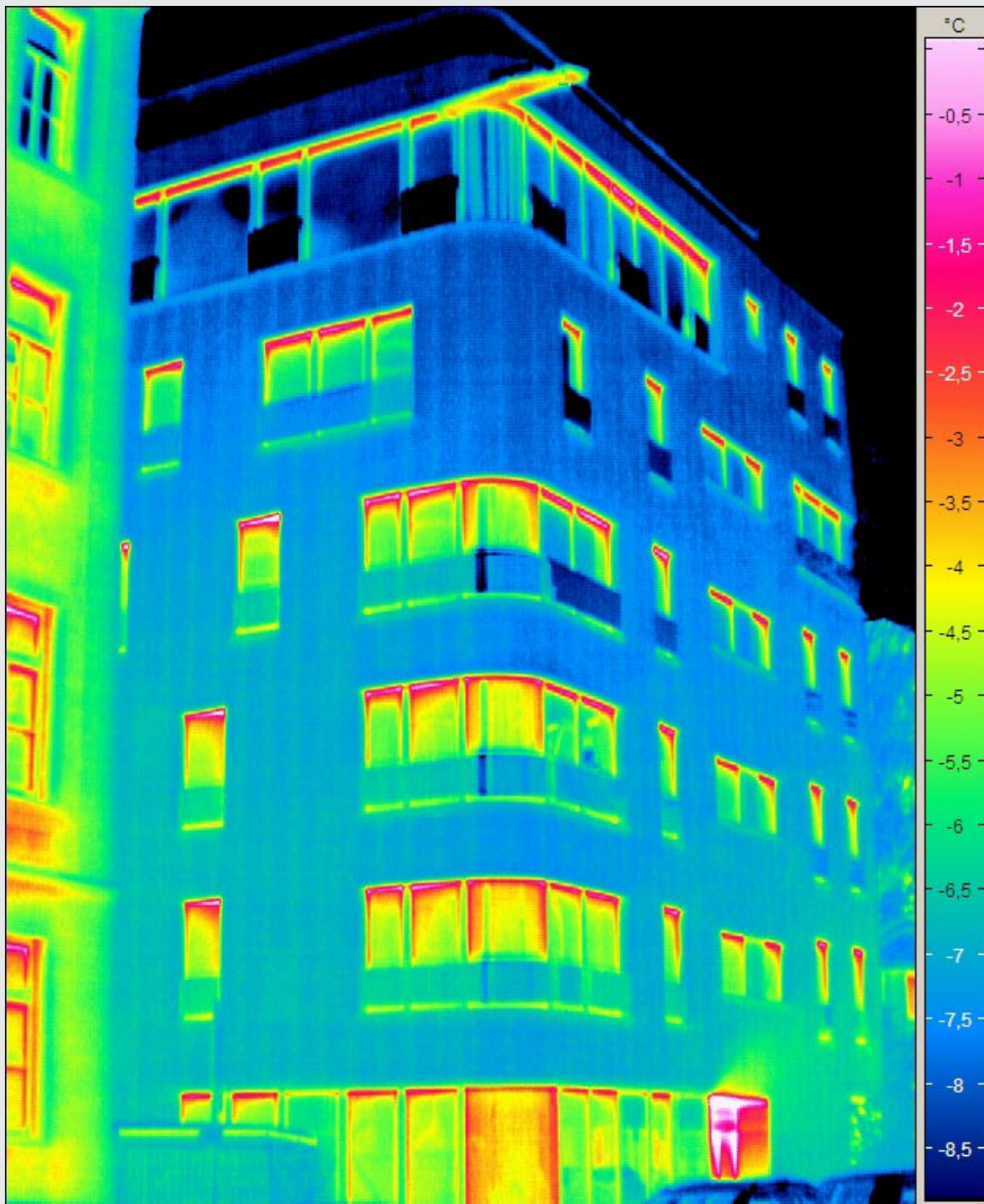




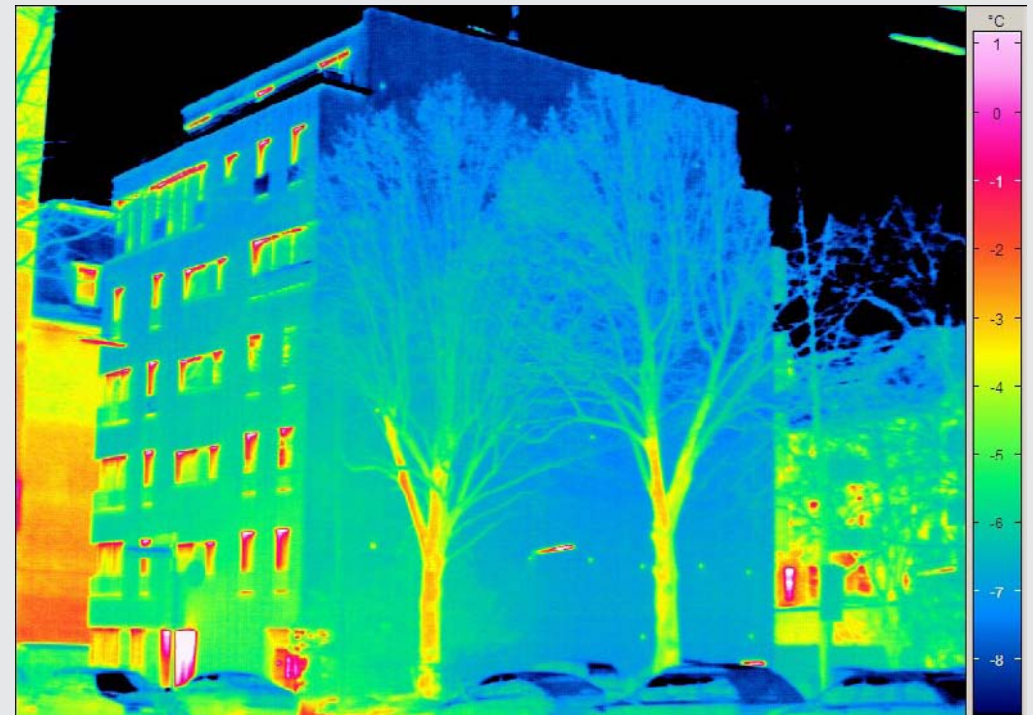
Seitzstraße 23

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- Motivation for VIP
- System Design
- Future for VIP



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## „More Work, More Risk, and the Profit goes to the Client“

- More Work:

VIP systems need to be invented, designed, certified, planned

Specialist firms essential

Extra site supervision necessary

- More Risk

Unproven

Limited cover from the supplier

Additional responsibility for the planner

- More Space

... for the client.

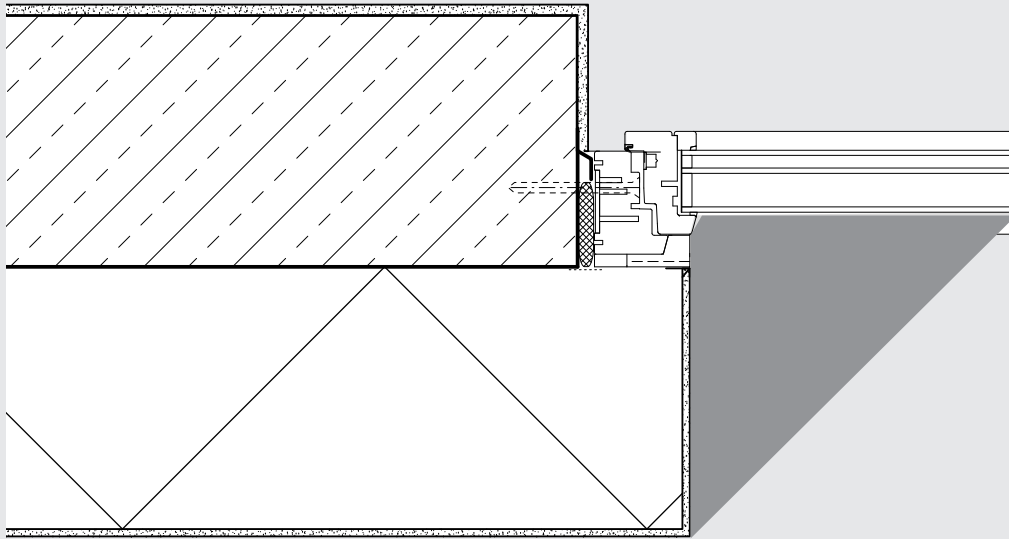
## Further Difficulties

- Fear of the unknown
- The need to involve VIP early in the design process
- VIP is an „invisible“ technology, therefore unspectacular



On the plus side ...

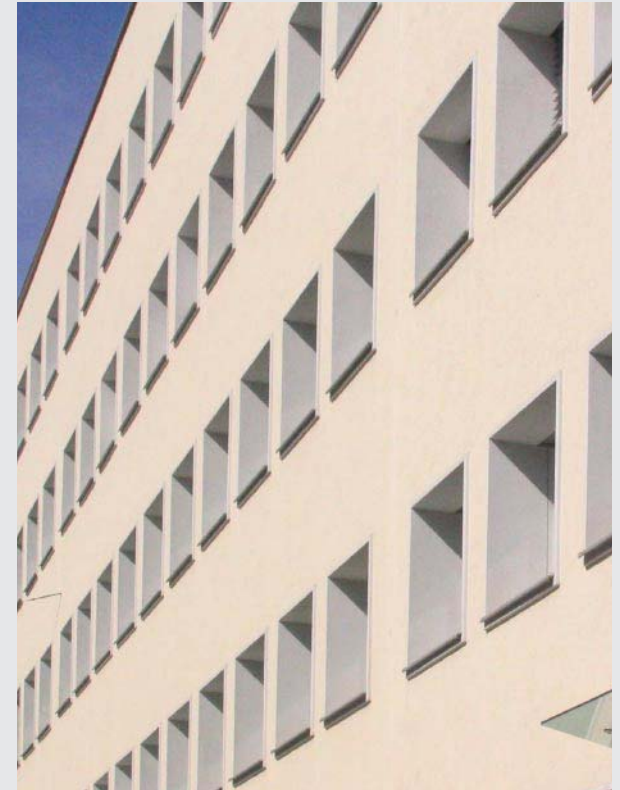
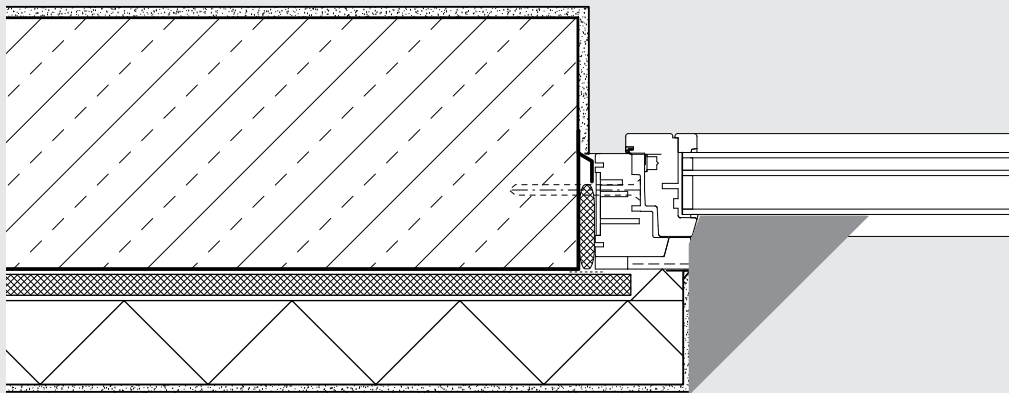




Psychological  
Reasons

Idealistic  
Reasons

Aesthetic  
Reasons



Motivation for VIP



## Reasons for Using VIP

Maximising Space:

25 cm Insulation  
= 1 m<sup>2</sup> / 4 m Facade

Seitzstraße:

500 m Facade =

125 m<sup>2</sup> Floor Area

10% of Total Floor Area

Half of one Floor.

## The Economic Argument

Real Estate Costs / m<sup>2</sup> Floor Area >

$(\text{Extra Cost of VIP/m}^2 \text{ Façade}) \times (\text{Height of one Storey}) / (\text{Reduction of Façade Thickness})$

- 1) Limitation on the absolute size of the building is a precondition
- 2) Absolute saving in facade thickness
  - U-Value of facade (energy standard)
  - Thickness of VIP System
  - Length of facade (proportional to compactness)
- 3) Cost of real estate
  - Facade gain must be saleable (Offices often sold by gross area)
- 4) Supplementray cost of VIP and VIP system

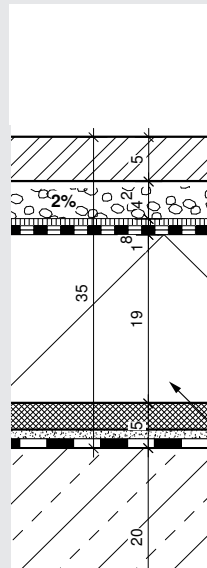
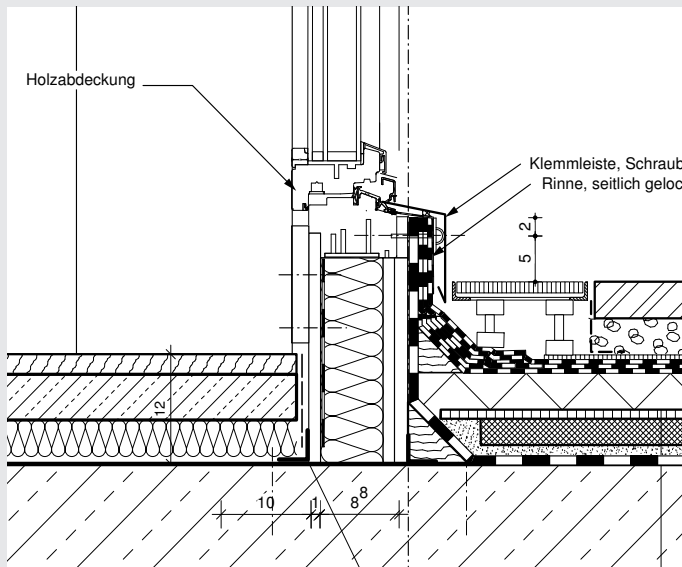
Break - even Seitzstraße: 3.500,- € / m<sup>2</sup> Usable Floor Area.





## Horizontal Use: Roof and Terraces.

- Reduction in step from inside to outside from 22 cm to 10 cm
- Gain in room height  
e.g. a reduction in roof insulation from 25 cm to 5 cm translates to a gain in room height of 5 cm for a 4 storey building.





## Fixing VIP to a wall

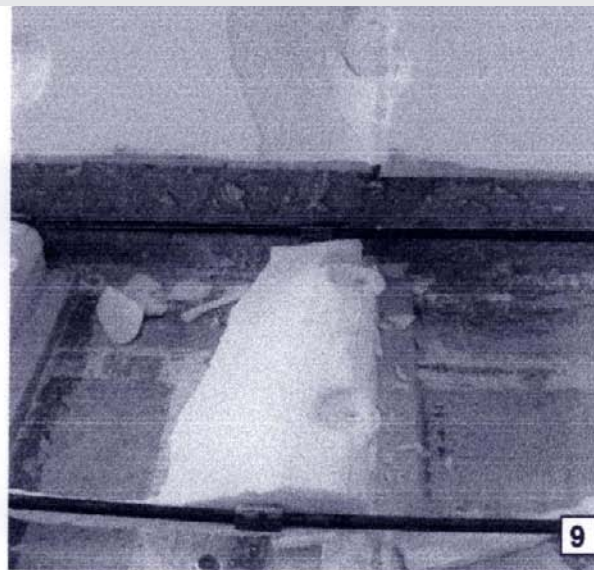
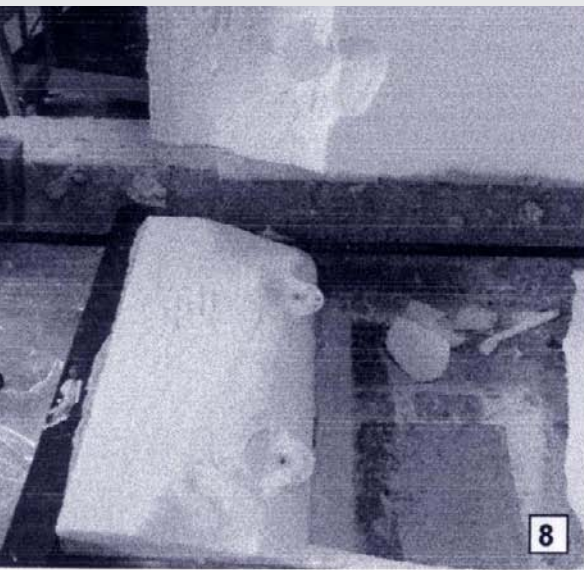
Two basic principles

- 1)  
VIP as an integral part of the  
facade facing  
(eg sandwich panel)
- 2)  
Construction system which  
holds both the facing and the  
VIP



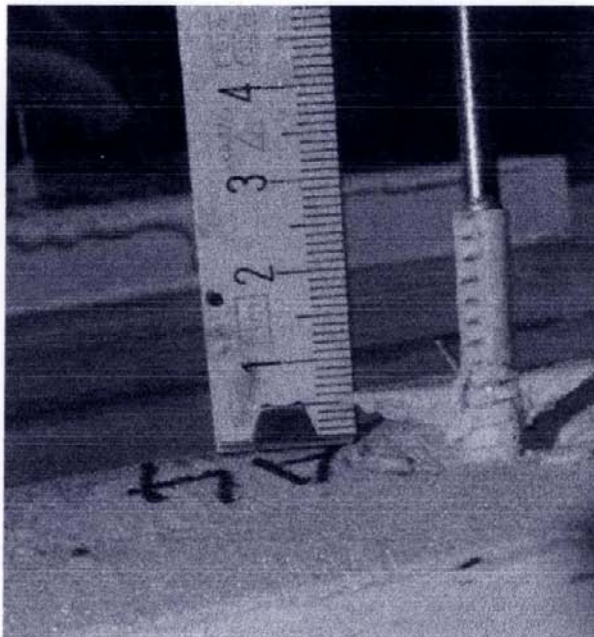
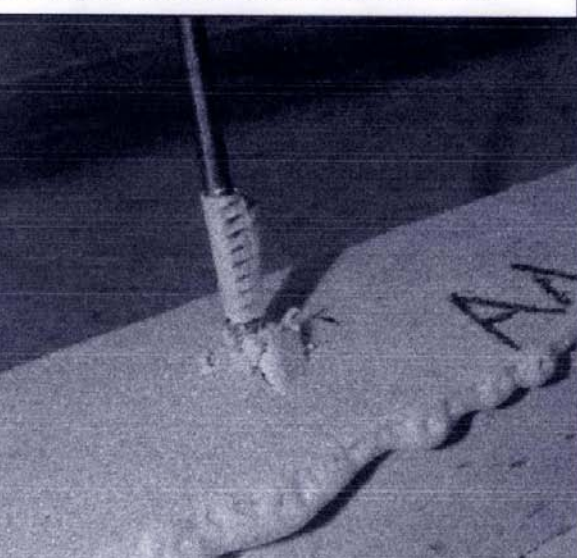
Overall thickness 12 cm  
Reduction by half  
Gain in floor area by 50 m<sup>2</sup>





**Bilder 8 + 9** Versuch Nr.4 zum kombinierten Schubtragverhalten in Scheibenebene und Zugtragverhalten im Lastfall Windsog, Versagensbild

Das Klebeband wurde aufgebracht, um für die Montage die Einschraubtiefe zu markieren.



The choice of system was largely dictated by the need for approval of the construction system.

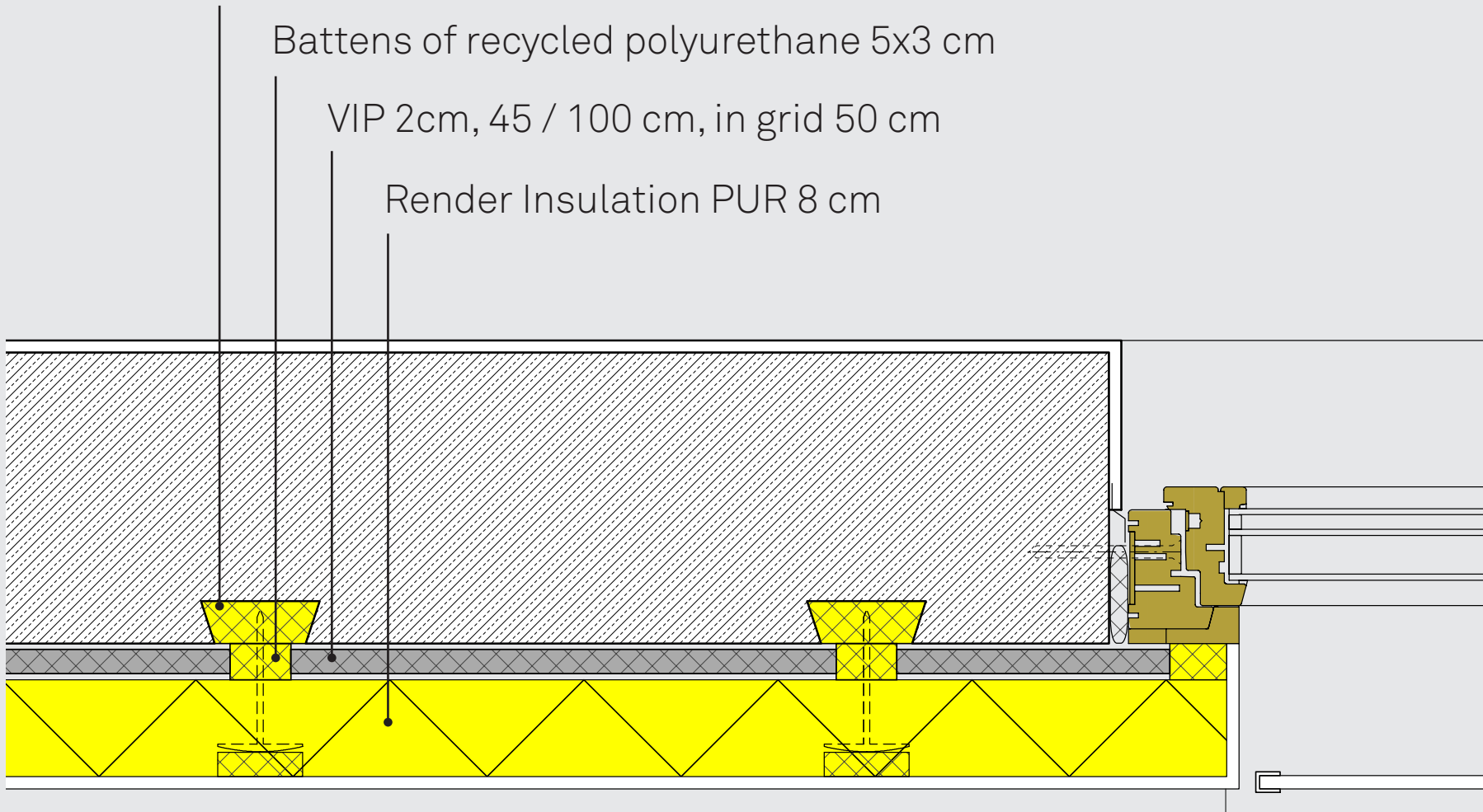
- Greater constraints for buildings > 3 storeys
- Time and cost constraints
- Tests for structure and fire
- Heat coefficient set at 0,008 W/mK (up from 0,0045 W/mK)

Dovetail battens laid into concrete

Battens of recycled polyurethane 5x3 cm

VIP 2cm, 45 / 100 cm, in grid 50 cm

Render Insulation PUR 8 cm







Building the System

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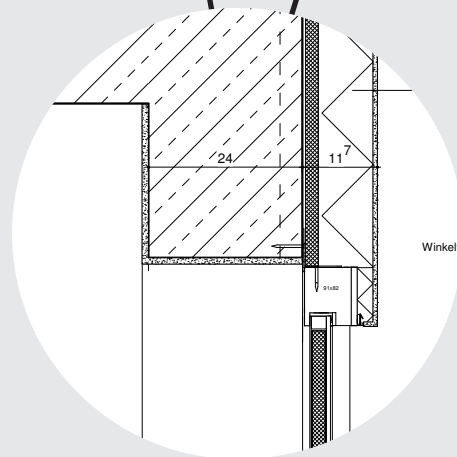
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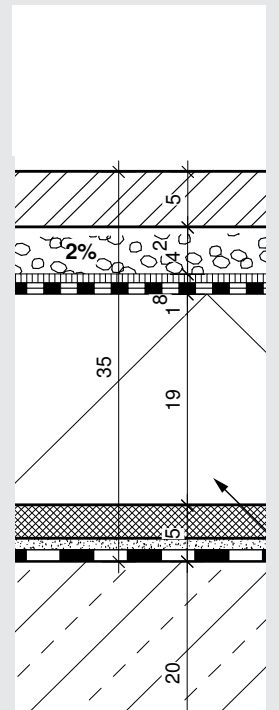
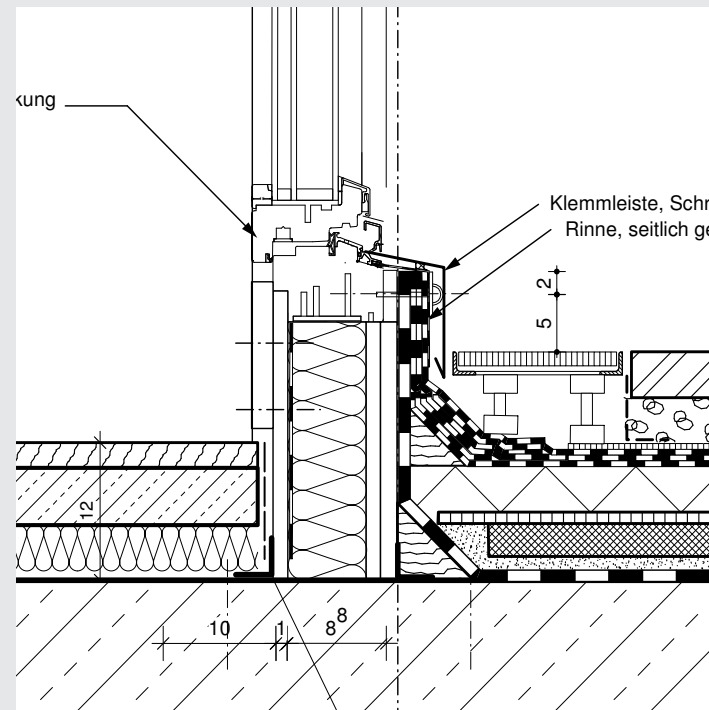


## VIP as Sandwich Panel

Facade thickness 3 cm

- Integration into timber sandwich Panels
- Integration into window frames between enamelled glass panes
- covering over structural elements for aesthetic reasons.





Building the System

For VIP to reach a larger market:

## Provision of „Work-Free“ Construction Systems

Designed

Approved

with technical support

provision of individual planning services by the supplier

Fool-proof, suitable for a wide range of building firms



For VIP to reach a larger market:

## Provision of „Risk-Free“ Construction Systems

Clear construction guidelines from supplier

Clear division of liability

For VIP to reach a larger market:

Increased Awareness

Most architects have not yet heard of VIP



## Future Directions

### 1) Robust Systems for General Building Firms

Planning and detailing taken on by the suppliers

Fool-proof systems (eg sandwich panels)

Facade is independent of structure

### 2) Specialist Use with Specialist Firms

Building on existing surfaces (Masonry, Concrete)

Renovation

Problem solving

## Future Possibilities for VIP

Tighter Regulation, Thicker Insulation

Falling Costs

Variety of Systems

Greater Awareness

Kick-Start Pilot Projects



The Finished Building





## Acknowledgements

Site Supervision: Absenger + Kögl Ingenieure, D-München

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Contractor (Facade): Energie-tib, D-Stuttgart

Supplier (Facade): Hasit, D-Freising