Innovative Vacuum-Insulation-Panels (VIPs) for the use in the building sector - INNOVIP

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Specific Problems and Challenges…

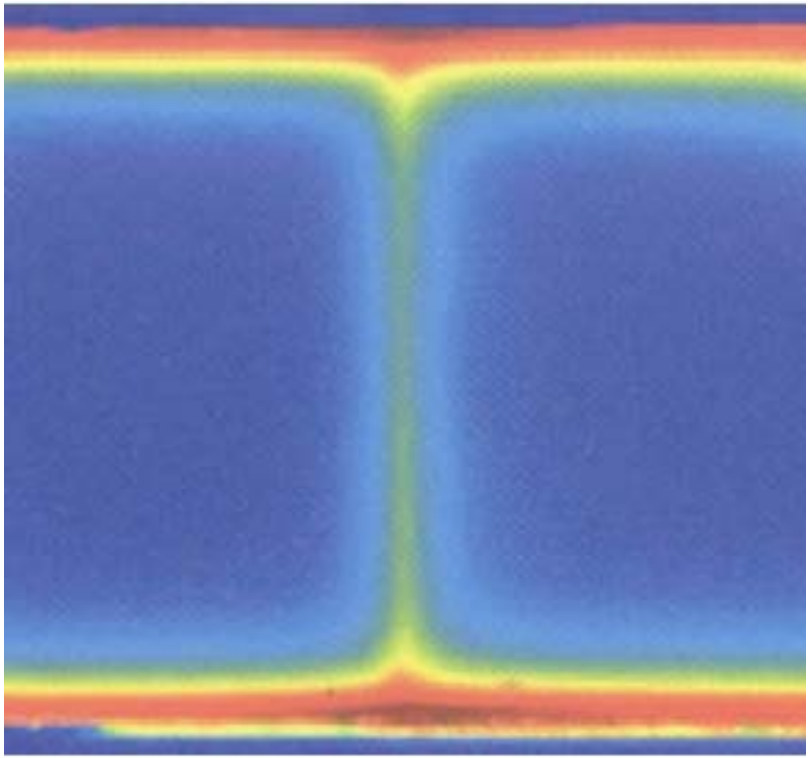
When building with VIPs

Problems and Challenges

- Absolutely no damage to the envelope
  - No cutting and machineing possible
  - → Exact planning of panel size and position on site
  - → No penetration possible for fasteners (locate in joint area)
  - Handle with care in a rough building environment…

Foto: FIW München

Overall performance vs. Center-of-Panel



http://qasa-vakuumdaemmung.de/hp432/Bauphysikalische-Betrachtungen.htm

Foto: variotec

Comparision of SoA

Fumed silica VIP

- Small pores =
- expensive core material =
- Metallized Foil =
- low edge heat-losses =
- better overall performance and better durability =
- VIP for buildings

Glass fiber VIP

- Bigger pores =
- cheaper core material =
- aluminium foil =
- high edge heat-losses =
- worse overall performance and worse durability (but better initial performance in COP) =
- VIP for household appliances

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Ideas

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- Improve thermal performance
  - Silica core
  - Edge development
  - Fastener solutions
- Better LCA and LCC due to raw material reduction and alternative core material
- Improve durability and service life
  - Envelope developments
    - EVOH coextrusion
    - Barrier lacquers
    - Aluminium patches
    - Hybrid envelopes
  - Protective layers
  - Secured mounting

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- Dramatic cost reduction
  - Core material density reduction
  - enhanced production process
  - Use of cheaper core material
  - Cheaper envelopes
- Easier use and multifunctionality
  - Fastening concept
  - Cover layers incorporating additional functions
  - Functional coatings


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