

NANOINSULATE

Summary achievements to date & objectives

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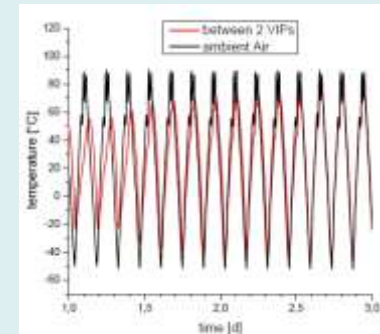
Non-confidential Project Results - New Materials

- ✓ Novel nano-structured translucent silica aerogel composites with polymer PDMS(OH) synthesized by a new deposition technique [Partner: KOÇ University]
- ✓ Novel silica based aerogels synthesized (500 x 500 cm x 15 mm) for transparent VIP production [Partner: AIRGLASS].
- ✓ New open porous monolithic materials developed: VIP thermal conductivity reached → 3.6 mW/m.K [Partner: BASF]
- ✓ High-barrier films: Gas vapor transmission $< 5 \times 10^{-3} \text{ cm}^3/(\text{m}^2 \cdot \text{d} \cdot \text{bar})$ (at 23 °C, 85% RH) [Partners: Fraunhofer IVV & Hanita Coatings]
- ✓ Laminate of the structure PETMET/lacquer/Al/Adhesive/LDPE with water vapor transmission rate $< 0.001 \text{ g}/(\text{m}^2 \cdot \text{day})$ [Partners: Hanita and Fraunhofer-IVV]

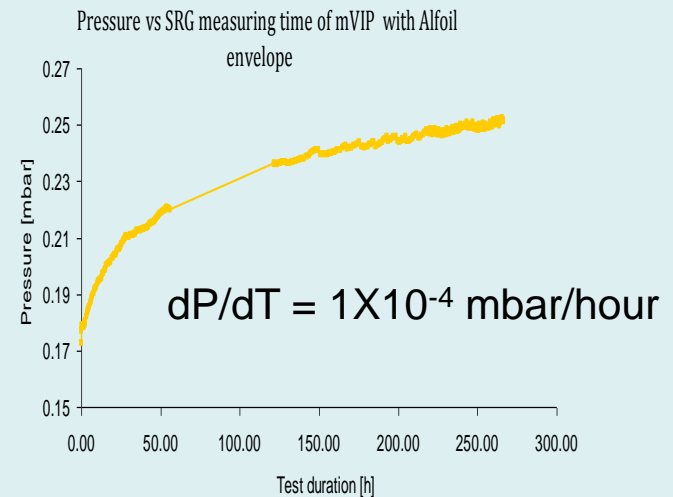


Non-confidential Project Results - Novel Test Procedures, LCA

✓ VIP lifetime test procedures for VIP type approval and durability testing for the first time [Partner: Va-Q-Tec]



✓ mVIP: New technology for measuring permeation [Partner: Hanita]



✓ Life cycle and end-of-life assessments of novel materials [Partner: GAIKER in cooperation with all the partners]

Non-confidential Project Results - VIP Production, Integration, Demonstration

- ✓ Initial designs of VIP integration for the insulation of rainscreen cladding systems, floors, roofs, cavity and external wall insulation [Partner: KINGSPAN]



- ✓ Design and specification of VIP production line for a continuous cost-effective VIP manufacturing route [Partner: KINGSPAN]
- ✓ Demonstration sites → as Algete in Spain and Warszawa in Poland → demonstration of commercial and market applicability [Partner: ACCIONA]

Project Completion Objectives (Month 48):

- Super low barrier (to H₂O and O₂/N₂) films enabling low long term thermal conductivity (lifetime ≥60 years) of ≤0.006 W/m.K for OVIPs for building applications
- Nanofoam core that achieves same λ value as fumed silica based core with lower long term cost and improved LCA values
- Aerogel-based core for TVIPs with improved handle-ability and good transparency suitable for building applications
- Application technology to enable widespread use of VIPs in building applications for flooring, walls (interior, cavity, framing and exterior) and roofs (flat and pitched) without losses due to mishandling and puncturing
- Overall lower cost production per unit R-value (m².K/W) to enable non-niche, more widespread use of VIPs in construction