

Building skins as open border between building and territory

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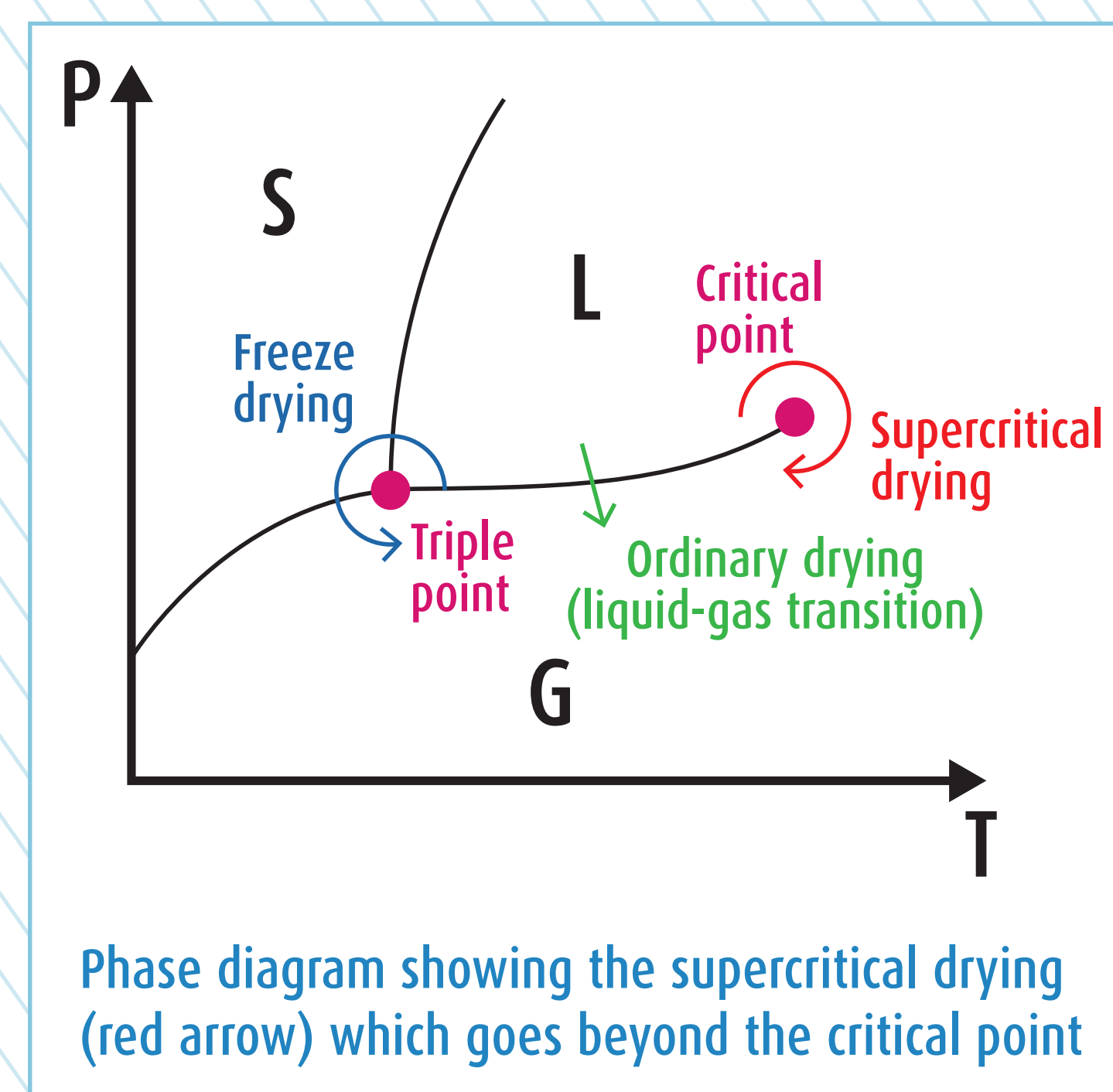
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# THE BUILDING SKINS AS OPEN BORDER BETWEEN BUILDING AND TERRITORY

## The concept

HIPIN (High Performance Insulation Based on Nanostructured Encapsulation of Air) project aims to develop a **sustainable and affordable technology to produce a nanostructured thermal insulating layer** to improve thermal efficiency in new buildings and retrofitting of existing buildings.

## HIPIN aerogel



Starting from **TEOS** ( $R=CH_3-CH_2-$ ), **IMS**, **DI water** and **HCl**:

- 1) Sol gel route: hydrolysis and condensation reactions;
- 2) Heating to promote **first level of hydrolysis/ condensation**;
- 3) Second hydrolysis/condensation step to **give an alcogel**;
- 4) Supercritical drying to **give an Aerogel**.



HIGH THERMAL INSULATING EFFECT



AFFORDABLE



HIGH ROBUSTNESS



EASY TO MIX



FIRE RETARDANT



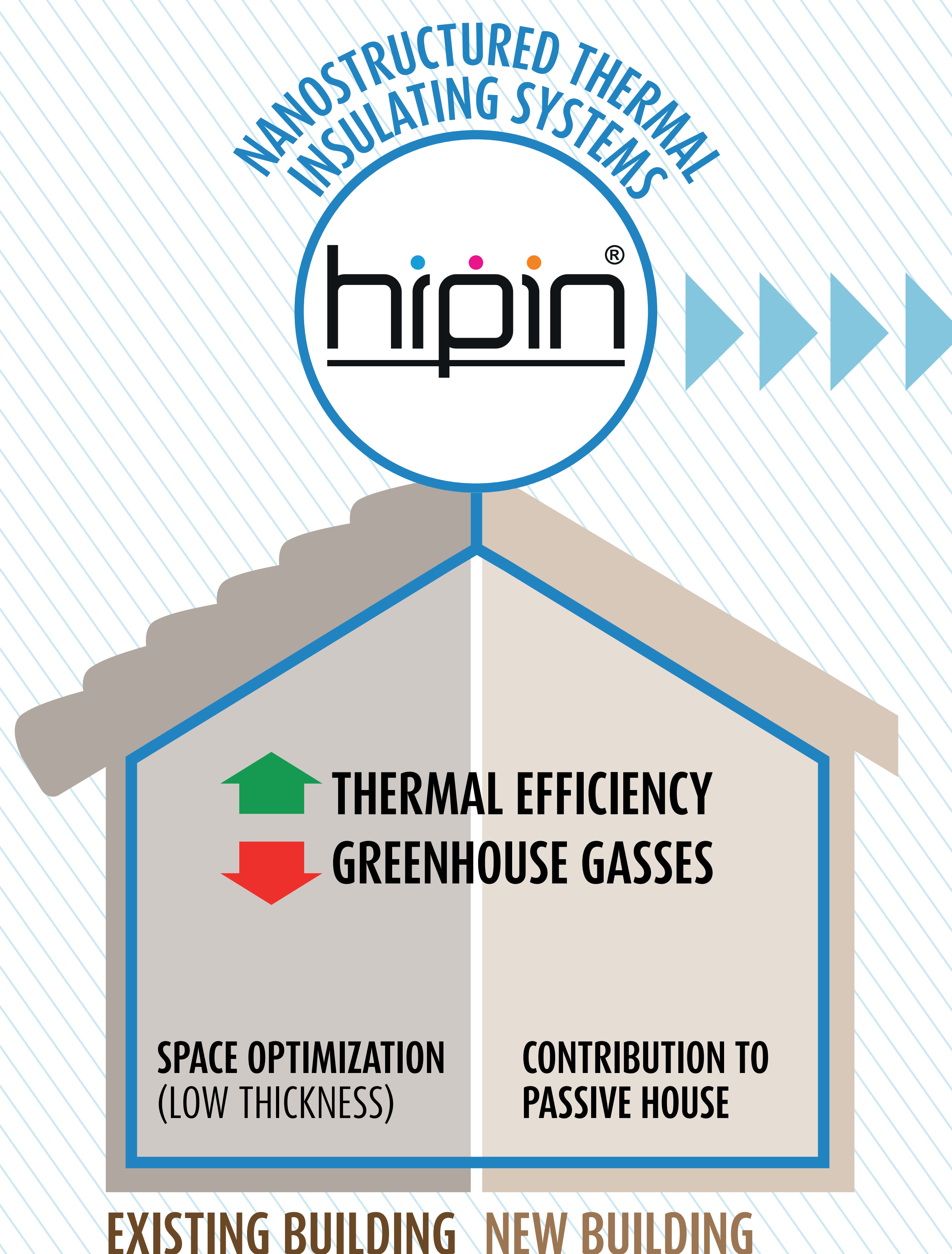
LONG TERM PERFORMANCE



### PARTNERS



## Incorporation into building materials



### 3 THERMAL INSULATING SYSTEMS



#### THERMAL PAINT

**Solventless** (VOC regulation)  
Stable for **2 years/wet** and **5 years/dry**  
**Colour and gloss** are stable over time  
**Thickness 20-50µm** (dry-film)  
Thermal Conductivity < **0.7 W/mK**



#### THERMAL PLASTER

**Pre-mixed** (fast application)  
**Finishing and paintable**  
**Breathable**  
Thickness < **45 mm**  
Dry bulk density < **250 kg/sqm**  
Thermal Conductivity < **0.03 W/mK**



#### THERMAL PANELS

**Fast application**  
Vapour **diffusion**  
Thickness < **30 mm**  
Thermal Conductivity < **0.013 W/mK**

### ACKNOWLEDGEMENTS

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