

## External Thermal Insulation Composite System for the Refurbishment of a House in Germany

A BASF case study



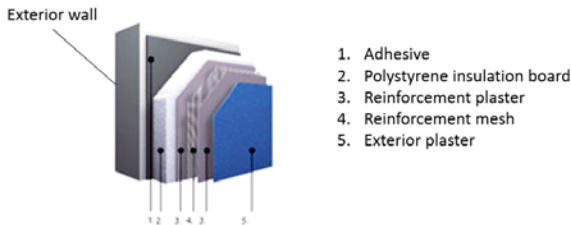
**Chemical insulation products such as expanded polystyrene (EPS) have excellent thermal insulation properties. They are used as part of an External Thermal Insulation Composite System to improve the thermal insulation of outer walls, thereby reducing energy consumption and GHG emissions.**

Insulation materials play a vital role in combating climate change by saving heating and cooling energy in buildings. The study compares two alternatives for an existing detached house in Germany: one in which the house is left as is representing the weighted average of non-refurbished and already refurbished houses, and one in which the façade is refurbished to current German standards using an External Thermal Insulation

Composite System based on expanded polystyrene (EPS). EPS is a lightweight, rigid, plastic foam insulation material produced from solid beads of polystyrene. The difference between the cradle-to-grave GHG emissions of the house left as is and the house newly-insulated with the ETIC System amount to 141 tons of avoided emissions over a service life of 40 years. The result is largely dominated by the use phase, that is the combustion of heating fuel with associated GHG emissions. The impact of the manufacture and disposal of the ETIC System is very small and hence not visible in the result figure below.

Full study available at: [https://www.icca-chem.org/wp-content/uploads/2017/12/ICCA\\_17-Case-Studies\\_Technical-Reports\\_WEB.pdf](https://www.icca-chem.org/wp-content/uploads/2017/12/ICCA_17-Case-Studies_Technical-Reports_WEB.pdf)

### External Thermal Insulation Composite System based on expanded polystyrene



### Cradle-to-grave GHG emissions of the detached house in Germany over 40 years left as is in comparison to the house with modern façade insulation

