

# Worldwide Patent on Cargoshell's side panels granted

(Also applicable in other industries)

**Cargoshell extends her patent portfolio with a ground-breaking invention. The invention offers a method to manufacture better and lighter walls and to use thereof as a container wall, with an outstanding performance based on the latest sustainable concepts.**

## The core of the patent

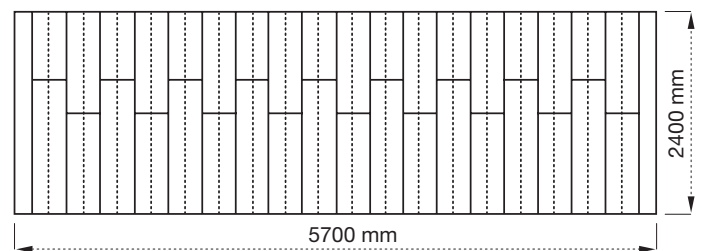
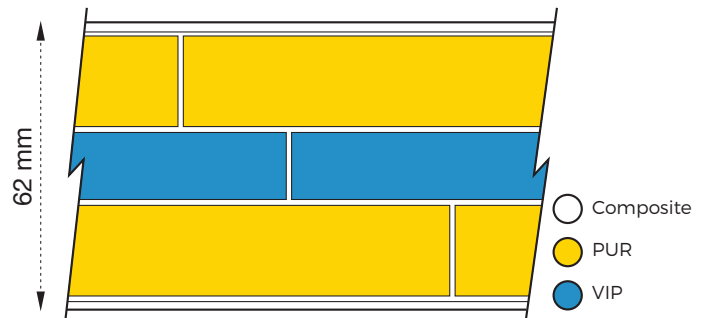
The patent relates to a hybrid thermal insulation wall panel comprising a central core layer of so called VIP (Vacuum Insulation Panel) which is a panel filled with an isolater packed in aluminium foil and evacuated. The  $\lambda$  of this VIP panel is  $< 0,007 \text{ W/m}\cdot\text{K}$ .

This VIP panel is on both sides adjoined with panels of recyclable and sustainable PUR foam. With the aid of vacuum injection technology, a thin layer (1 mm) of reinforcement material is arranged between and around the 3 insulation layers, simultaneously forming an outer layer (3 mm) to close the insulation system and form a monolithic structured wall. The composite wall thus formed is strong, light and performed a  $\lambda(10)$  value of  $0,010 \text{ W/m}\cdot\text{K}$ . The corresponding R-value of the wall is 6,341 which leads to a k-value of  $0,158 \text{ W}/(\text{m}^2\cdot\text{K})$ .



## As strong as steel

To prove the strength of the walls in a real life situation, Cargoshell manufactured with this technology an ISO Dry Container and a so called Reefer. Both containers passed the CSC test. Official test reports from the certified body's DNV/GL and Kiwa/BDA Testing are available.



Conclusion: With the patented technology and the use of the aforementioned materials it will be possible to manufacture composite products like panels of any kind, or even sea-containers, against the highest technical standards. But there are more advantages when using these composite materials. The monolithically structure overcomes the problem of delaminating of the insulation, a well-known problem in the container industry.

Furthermore the composite wall is transparent for radio and radar waves, important for security reasons. Naturally the materials can't rust and are very easy to clean and less costly in maintenance.

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