



# A game-changer in ship cladding

A new lightweight, fire-resistant cladding that can withstand temperatures of more than 1,000 degrees Celsius is set to change the face of ships around the world and create advanced manufacturing jobs in Tasmania.

## The challenge

Ship fires are an infrequent phenomenon but are costly when they occur. Shipping regulations therefore require ships to have active fire protection systems (such as sprinklers) and passive fire protection systems (such as profile-wrap blankets and panels).

Most new ships being constructed are steel ships. To meet stringent and onerous fire safety standards, steel ships to date have been fitted with heavy, costly-to-install blanket passive fire protection systems within their walls. However, increasing commercial pressure has prompted owners of conventional steel ships to become interested in alternatives.

## The response

We have created a game-changing patented polymer technology called HIPS2, the second version of our Hybrid Inorganic Polymer System. The technology was employed as part of a collaboration with CBG Systems,

a Hobart-based manufacturer, which allowed CBG Systems to create its next generation fire-retardant panel Rapid Access Composite (RAC) Plus, appropriate for conventional steel ships and aluminium high-speed crafts.

Prior to its association with CSIRO, CBG's fire-retardant panel (the original RAC) expanded when subjected to fire due to an intumescent layer that expands as part of its fire retardancy mechanism, making it unsuitable for conventional steel ships. CBG's original RAC product was therefore limited to selling into non-steel ship markets.

Our HIPS2 technology offered CBG significant scale up opportunities. The RAC Plus panels offer improved ship performance, and more cost-effective compliance with mandatory fire safety standards. One of our Senior Experimental Scientists spent four months at CBG in Hobart, training and upskilling employees in advanced manufacturing techniques and assisting with the commercialisation process.

The panelling is the first of its kind in the world and uses a thermal protective coating that can withstand temperatures of over 1,000 degrees Celsius and remain structurally stronger than conventional fire protection coatings. The innovative panels are also reversible and can repel water, potentially doubling their service life.

## The impact

Weighing about half as much as traditional metal cladding, the key benefit is the improvement in the performance and profitability of the ships where these panels are installed. With three ships ordered, and two ships complete, CBG Systems has hired six new roles, with partners and suppliers also increasing their staff as a result. There are also potential applications in aerospace such as for battery enclosures, and the civil construction industry, enabling CBG to expand into new markets. In independent impact assessment conservatively estimates the value we created at a benefit-cost ratio of 2:0.<sup>1</sup>

<sup>1</sup> CIE (2020). Evaluation of CSIRO's collaboration with CBG Systems. [www.csiro.au](http://www.csiro.au)