Whether an innovative concept sinks or swims depends on customer acceptance, among other things. Moving into uncharted waters can be unnerving. An EU-funded project dedicated to innovation in shipbuilding has devised new business models in a bid to build client confidence. It has also developed new products and techniques.

The sundeck demonstrator of the ThroughLife project

Self-healing paint, abrasion-resistant coatings, lighter structures — innovation can enable shipyards to build vessels that consume less fuel, are easier to maintain and last longer than conventional ships.

The ThroughLife project developed and identified a number of promising technologies. “In addition, we looked for new business models to optimally support the introduction of these technologies,” says project coordinator Markus Elfgen of Meyer Werft in Germany.

More specifically, the project has developed a new type of paint that is currently being patented, as well as an advanced condition monitoring system. It has identified a particularly robust coating product, found solutions to reduce the weight and consequently the draught of river cruisers, and devised ways to foster trust in the manageability of innovative features.

Prudence at the helm

Innovation has to pay for itself very quickly, says Elfgen. In Europe, ships tend to be sold on after about 15 years, by which time extensive refitting is likely to be needed, he explains. If the investment in new technology cannot be expected to pay for itself within three to five years, it will be less attractive.

Return on investment is, however, not the only consideration for customers weighing up the pros and
Vessels are typically built and repaired by different shipyards, and clients commissioning new ships may have concerns about the repair yards’ ability to deal with unfamiliar cutting-edge features.

“Owners need to be sure that the new technology is suitable for their vessels, that it is well implemented and that they can handle it,” says Elfgen. “They also need to be confident that any problems can be solved easily.”

In the same boat

Partnership and risk sharing emerged as key concepts for potential business models to stimulate the uptake of innovation. ThroughLife identified potential approaches shaped by these criteria, which notably included the possibility of offering fixed-cost service contracts for the first 10 years of a ship’s operation.

While such a service contract would obviously add to the ship’s running costs, this expense would quickly be offset by savings on maintenance and fuel deriving from the various innovations, says Elfgen. The arrangement would also mean that part of the risk is shouldered by the building yard, reflecting its confidence that the maintenance of the innovative features will not require more effort than the service contract covers.

While supportive business models emerged as a key enabler for innovation in shipbuilding, they were merely one of several streams of activity deployed by ThroughLife. The partners notably produced a self-healing paint. This coating repairs itself by means of microcapsules that break if the surface is damaged, releasing small amounts of paint.

As a further innovation, ThroughLife experimented with composite materials as a lighter alternative to steel in the construction of ship superstructures. As one possible application, the team built a 121 square meter sundeck designed for use on river cruisers. Weight savings are particularly crucial for vessels sailing in shallow waters, Elfgen explain, as they help to reduce their draught — in addition to slashing their fuel bill.

The ThroughLife team also identified especially promising innovations that are already on the market and might be of interest to the partners’ customers, such as a highly effective abrasion-resistant coating. In addition, the consortium combined existing techniques for ship condition monitoring into a comprehensive integrated system that keeps track of environmental conditions and detects stresses in the structure.

The collaborative approach developed by the ThroughLife partners could help to set ship owners’ minds at rest when commissioning vessels with innovative features. And this development, in turn, could help shipyards to build particularly energy-efficient and low-maintenance ships with a longer service life.

See also:
CORDIS [3]
Project:
Development and proof of new approaches for through-life asset management based on next generation of materials and production technology
Project Acronym:
THROUGHLIFE
Project website: