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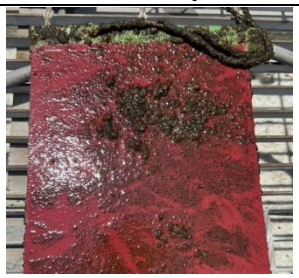
MEDIA RELEASE

CDW announces technological breakthrough with potential to enhance performance of anti-fouling ship hull bottom paint

- **Developing new additive to pioneer sustainable innovation in marine protection**
- **Confirmed favourable results in static immersion test in seawater**
- **Seeking strategic partnerships to advance the development of coating additive using next-generation graphene**

Singapore, 24 November 2025 – SGX Mainboard listed CDW Holding Limited ("CDW", the "Company", and, together with its subsidiaries, the "Group"), today announced the progress of its ongoing development of an additive for anti-fouling ship hull bottom paint. This innovation supports the Group's commitment to environmental sustainability and business diversification, and is a testament to CDW's mission to transform traditional industries to be more environmentally friendly and improve the quality of life.

Today, efforts to reduce carbon dioxide emissions and combat global warming are made across various industries. This includes the shipping sector, where sea-going vessels are undergoing various decarbonisation initiatives promoted by IMO (International Maritime Organization)-. However, these environmental initiatives can be undermined by a persistent challenge: vessels exposed to seawater for extended periods of time are vulnerable to the attachment of marine organisms such as barnacles and algae to their hull bottoms (Figure 1).

Figure 1. **Biofilm attached on FRP plate**	**Barnacles attached on FRP plate**
	

Heavy fouling by marine organisms increases hull friction, leading to greater fuel consumption, higher operating costs and carbon dioxide emissions as more engine power is needed, not to mention increased maintenance costs for removal work and cleaning.

The severity of fouling and the roughness of anti-fouling coatings directly impacts vessel resistance and energy requirements. Research by Bayraktar and Yüksel (2023) demonstrates that biofouling on ship hulls and propellers increases frictional resistance, which causes vessels to use more fuel to maintain speed. Under moderate fouling, fuel consumption can increase by as much as 20%, and in some documented cases, the rise can be as high as 40% depending on vessel speed and fouling severity. This higher fuel use results in greater greenhouse gas emissions and challenges in meeting international energy efficiency standards, raising both environmental and operational costs.[1] In addition, invasive species can be transported on hulls to new environments, harming local marine ecosystems. This presents a serious and growing challenge for the maritime industry.

To address this, anti-fouling coatings containing bio-repellent agents are applied to ship hulls. When exposed to seawater, these agents migrate to the surface and leach into the water, deterring the attachment of marine life. As regulations and environmental concerns escalate, demand is increasing for more efficient, less harmful anti-fouling solutions.[2]

[1] https://dergipark.org.tr/en/download/article-file/3056849
[2] https://www.finsulate.com/en/news/new-antifouling-regulations-what-shipyards-need-to-know-in-2025-finsulate/

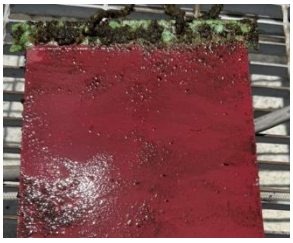
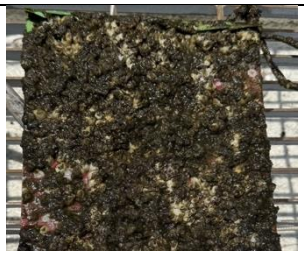
Conventional anti-fouling coatings work by hydrolysis, causing the internal anti-fouling agents to migrate to the surface of the coating thereby inhibiting the attachment of marine organisms. These agents are then subsequently released into the water. This release, however, needs to be better controlled to limit its environmental impact.

In recent years, the need to inhibit the leaching of anti-fouling agents has become a crucial environmental consideration. As a result, marine coatings with higher efficiency and reduced environmental impact are urgently sought.

To meet this need, CDW is harnessing its unique organic synthesis technologies to add new functionality to functionalised **graphene,** owned by a partner research institution, in order to develop an additive for anti-fouling ship hull bottom paints. The goal is an additive that strengthens conventional anti-fouling ship hull bottom paints, and enhances the durability of marine protection by reducing the accumulation of marine organisms like barnacles and algae.

Recent underwater immersion tests conducted by the Group at Osaka Sakai Old Port involved three sets of Fibre Reinforced Polymer (FRP) plates: one painted with commercially available conventional anti-fouling ship hull paint, one with the same paint mixed with CDW's additive that is under development, and one left unpainted. Over a period of five months, the plates with CDW's additive showed no barnacle attachment (Figure 2).

Figure 2	**1. Commercially available anti-fouling ship hull bottom paint only**	**2. Mixture of commercially available paint and additive under development**	**3. Unpainted**
End of April 2025			

Beginning of July 2025			
Beginning of September 2025			

This improved outcome is due to the additive's ability to deliver a steady release of the bio-repellent, which maintains anti-fouling protection for longer periods compared to conventional products. CDW's aim for the additive is to further enhance material functionality and broaden its compatibility with commercial coatings. Accordingly, the Group is looking for a strategic partner for the next product development phase and future commercialisation.

Mr. Kato Tomonori, Chairman and Chief Executive Officer of the Group, said: *"Our access to cutting-edge R&D through our research network enables us to develop product innovations that are both sustainable and have significant commercial potential. We believe a partnership approach is the best way to bring innovations like this new additive to market. We are now seeking strategic industry partners with whom to collaborate on further product development, facilitate commercialisation, and reduce risks and time to market. We are also exploring the applications of next-generation* ***graphene*** *and CDW's proprietary organic synthesis technology in other industry sectors."*

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About CDW Holding Limited (www.cdw-holding.com.hk)

CDW Holding Limited (the "Company" and together with its subsidiaries, the "Group") is a Japanese-managed precision components specialist serving the global market focusing on the production and supply of niche precision components for digital instrument panels in the automobile industry, notebook computers, consumer and information technology equipment, office equipment and electrical appliances, and an original equipment manufacturer. The Group is headquartered in Hong Kong and has operations in Japan, China, South Korea, Thailand and the Philippines. The Company has been identifying new businesses to invest in with the potential for growth and entered as part of its diversification strategy and has made forays into the Life Sciences sector since 2016. The Company's aim for its Life Sciences business is to identify research-driven yet commercialisable projects that can have a positive impact on the quality of human life.

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