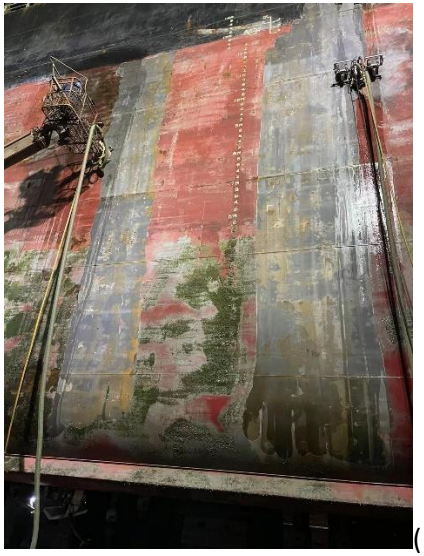
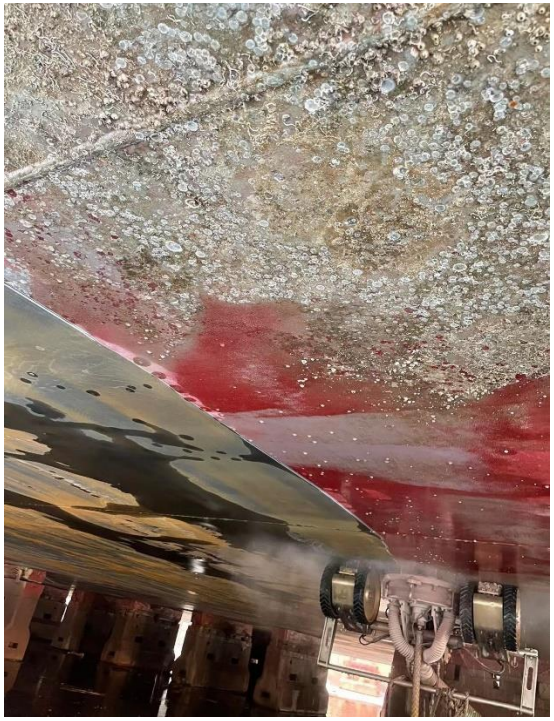
Hydroblasting Project in Brief

Yard info	Shanhaiguan Shipbuilding Industry, one of the largest ship repair yards in China. Yard now has seven ROBOT++ V30 hydroblasting robots.
Time frame	6 - 7 August 2022
Vessel info	

	<table><tr><td>Name of the ship</td><td>TAI SHINE</td></tr><tr><td>Vessel type</td><td>Bulk carrier</td></tr><tr><td>Operating status</td><td>Active</td></tr><tr><td>Flag</td><td>Panama</td></tr><tr><td>Gross tonnage</td><td>34775 tons</td></tr><tr><td>Deadweight</td><td>61473 tons</td></tr><tr><td>Length</td><td>199 m</td></tr><tr><td>Breadth</td><td>32 m</td></tr><tr><td>Year of build</td><td>2012</td></tr><tr><td>Builder</td><td>SHIN KASADO DOCKYARD - KUDAMATSU, JAPAN</td></tr><tr><td>Classification society</td><td>BUREAU VERITAS</td></tr><tr><td>Home port</td><td>Panama</td></tr><tr><td>Owner</td><td>TAIWAN NAVIGATION - TAIPEI, TAIWAN</td></tr></table>
UHP Pump used	• 2600 bar • 28 l/m • Property of the shipyard
Vacuum Recovery Pump	• Power: 18. 5 kW / Property of the shipyard • Negative pressure / Vacuum degree: up to 0.4 bars (0.04 Mpa)
Hydroblasting Robots	• ROBOT++ **V30** x 6 robots operated by the shipyard operators
Areas to blast	• Total area: 11,000 sqm • Areas to blast: bow, stern, vertical hulls, and flat bottom areas
Duration	• 32 hours
Feedback from the yard	**Coating supervisor from the yard, Mr. CAO Guang-lu commented:** • The blasting area of this bulker carrier is 11,000 sqm.

	・ In the past, it took us 50 hours, and 32 cherry pickers with cleaning domes. ・ Now with 6 robots and 2 cherry pickers, the blasting job can be done within 32 hours. ・ We have seven V30 robots and intend to buy more. ((A cherry picker and a ROBOT++ robot started blasting at the same time. One hour later, the area cleaned by the robot is much larger than the cherry picker)

	 Against heavy marine growth (barnacles) and high weld beam on flat bottom, V30 cleaned the area effortlessly.
Feedback from Operator 1 (night shift)	Have been a blaster for 5 years and tried many robots. ROBOT++ robot is the best I have used. Kudos to them.

	
Feedback from Operator 2 (day shift)	I'm Mrs. Lee, 55 years old. Initially, I had thought it'd be hard for me to operate a robot. But two months into using it, I've mastered it. Easy to use. And reliable.

	
Summary of questions	**What is the speed?** - 20-50 m2/hr depending on where the robots operate, the paint specification and the water flow **Can the robot navigate from bottom to vertical side?** Yes it can if the curvature and feature of the ships are such that the robots can cross it, and that the fall arresters/pulley need to be attached/detached to go in between. **How many robots per UHP pump?** One robot, one UHP Pump **How clean is the area?** The area will be clean at WA2 / WJ2 equivalent to SA25 **What is the maintenance? How often the magnets are replaced?** There is a detail maintenance schedule provided and the magnets are replaced when they are damaged, so

	this will depend on how the robots are handled. **What are the common issues?** – The brushes to keep the seal, need regular replacement – The oring to keep the seals (part of regular maintenance) **Can the robots work 24/7?** Yes, however as part of the maintenance some parts might need to be replace during the course of an operation for optimal performance. If the maintenance is done prior to the start of the operation and under 50h, there is no need to stop at any time. **Why is there water being sprayed and not recovered for the robot working on the flat bottom?** The robot brushes on this particular one was not replaced on time.