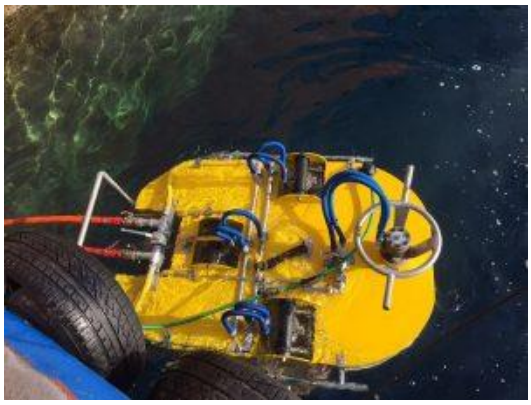
Subject: Underwater hull cleaning machine Brush Kart



One of the biggest problems facing the world shipping is **fouled ships hulls**. 1746 different species of marine organisms have been counted up, which are attached to submerged surfaces. Like shellfish, seaweed, sea moss and hydroids, which **clog the underwater intakes**, covering antifouling paint and creating a thick layer on the ship's hull which in time destroys and affects its "good" function.

The outcome of fouled hulls **is the increase of abrasion resistance of the ship. The increased abrasion leads to speed reduction. Coating with 1mm thickness increases the abrasion by 80% thereby reducing the speed by 15% (Townsin 1987; Lui et al, 1977).** So in order to maintain the same speed **greater fuel consumption** is required, thereby **increasing the cost** and the emission of **gaseous pollutants**. Depending on the type of vessel, fuel can make up about 50% of the operating cost of a ship. It is estimated that the fuel consumption increases 6% for each 100mm increase of speed. The increase in weight of the hull from the fouling has the effect of reducing the hydrodynamic behavior of the vessel, since it lowers the center of gravity of the vessel, therefore affecting its maneuverability.

The hull cleaning machine Brush Kart BEVALDIA, comprises of three units of brushes that retract fully from the hull with a clearance to prevent damage on the paint coating. The brushes used for the underwater hull cleaning are from wire, INOX or nylon. The nylon brushes are appropriate for the
protection of the hull paint for soft fouling but are not used in the cases that the hull has shellfish.

The machinery for underwater hull cleaning of BEVALDIA, ensure high productivity, speed and low cost.

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	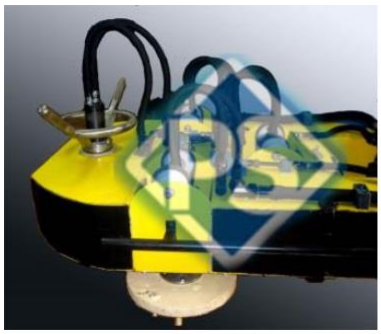	
	Mini Brush Kart	**Brush Kart**
Width of brushed area per sweep	Up to 1 m	1.25 m
Speed	Up to 60 m /mn	Up to 60 m /mn
Weight in the air	100 Kg	160 Kg
Suction force	400 Kg	600 Kg
Stripes (able to move along the hull curvatures)	1 m	1.25m
Brush rotation	Adjusted from valve in the power pack	Adjusted from valve in the power pack
Cleaning capacity	Up to 1.803 m2 / h (depending of the fouling)	Up to 2.600 m2 / h (depending of the fouling)
Motion	front and rear wheel drive	front and rear wheel drive