

INFORMATION ON INNOVATIVE PRODUCT / SERVICE

1. Company name / contact person (phone number, e-mail)
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2. Name of the product / service
Hebel's Rudder Blade for all types of vessels
3. Description of product / service functionality
<p>The main task of the rudder blade is to ensure the manoeuvrability of the vessel. Manoeuvrability can be divided into two ranges, one is to enable you to make turns and change the direction of movement when changing course or avoiding an obstacle. The second functionality of the rudder is to maintain the set course by constantly correcting its deflection so as to maintain the set direction of movement. Thanks to our innovative solution, it is possible to improve these two functionalities by using two symmetrical narrowed profiles in the rear part, creating a recoil force like a Venturi tube. The additional rudder area and additional composite forces significantly improve the manoeuvrability of the unit. Empirical research and numerical models have shown that at small rudder deflection angles, the forces acting on the rudder are twice as high as the standard solution. The results were confirmed by the circulation tests performed on real units, where the time needed to make a full turn for the Hebel's rudder blade is twice as short as for the standard solution, with a deflection angle of 5 degrees. The company Mapalu Ltd. it also performed tests related to another advantage of the presented solution, i.e. the yaw stability test from the set course. Research has shown that the Hebel's rudder increases course stability, thus reducing the drag of the unit and shortening the distance travelled by reducing yawing, which resulted in fuel savings of several percent.</p> <p>In summary, the solution of the Hebe's profile rudder blade improves the functionality in relation to the conventional rudder in terms of steering, safety and economy, and thus ecology. Which makes our solution an innovation on a global scale.</p>
4. Type of meeting the needs of the target group and its definition.
<p>Hebel's rudder solution meets the needs of the target group as follows:</p> <ul style="list-style-type: none"> ○ increasing the safety of navigation (better manoeuvrability) - all units ○ improvement of ecology (by reducing fuel consumption, reducing the emission of pollutants into the atmosphere) - all units with mechanical drive
5. Indication of the innovative features of a product / service solution
<p>A. Proprietary design - it is a transit box narrowing towards the stern. This makes it possible to generate an active outlet hydrodynamic stream on the principle of a Venturi tube, making the rudder active without additional thrusters or rotating elements.</p> <p>B. Ability to generate an active thrust force (Venturi recoil) at any speed and at any rudder angle (even minimal), this improves the vessel's course stability regardless of speed, resulting in lower fuel consumption.</p> <p>C. High thrust forces even with minimal rudder angle.</p> <ul style="list-style-type: none"> ➤ <u>Safety in emergency situations</u> - evasive maneuver, faster reaction to the rudder. ➤ <u>Rescue operations</u> - Reach people overboard faster thanks to reduced circulation. ➤ <u>Navigational safety</u> - better maneuverability. ➤ <u>Safer maneuvering operations during port operations.</u>