

ENERGY SAVING TECHNOLOGIES

IMO remains committed to reducing GHG emissions from international shipping, which aim to reduce CO₂ emissions per transport work, as an average across international shipping, by at least 40% by 2030, compared to 2008.

CSDC provides total solutions for green shipping, which can reduce vessel's fuel consumption and improve EEDI, EEXI, CII ratings, reduce GHG emissions.

The main product and service includes:

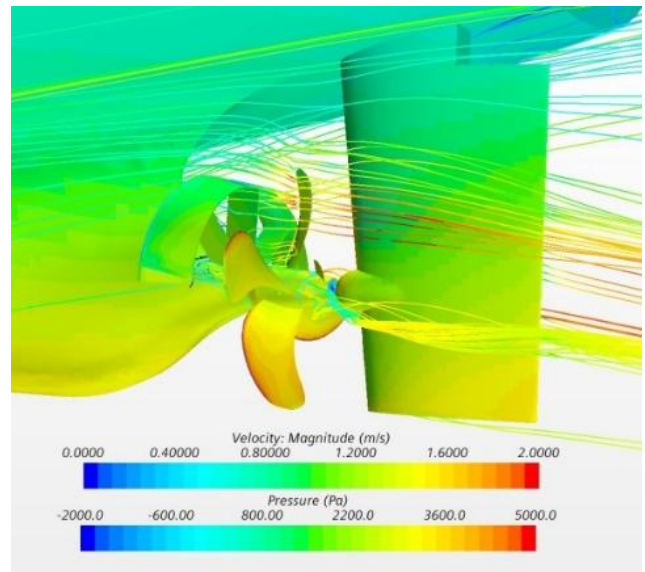
- Pre-shrouded Vanes (PSV)
- Hub Vortex Absorbed Fins (HVAF)
- Rudder Bulb (RB)
- Windshield



1 ESDs Solution

- ESDs combine the PSV, the HVAF and the RB together into the aft part of the vessel, to achieve the best hydrodynamic effect on the propeller and rudder system.
- Accurate designing for the ESDs before producing is achieved by the Computational Fluid Dynamics (CFD), and towing tank model test will be carried out to verify the energy saving effect of ESDs.
- ESDs without any movement component, without any service during function.
- ESDs can save fuel consumption by 8%~10% as operating at the same speed.

Items	PSV	HVAF	RB
Fuel Saving Effect (Base on same sail speed)	3%~8%	2%~4%	1%~2%



➤ The Stream Line Model with ESDs



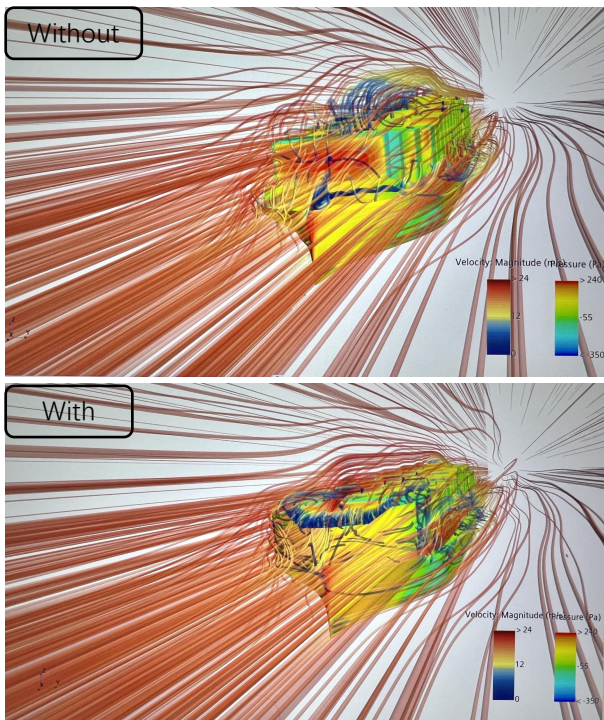
2 Windshield for Container Vessel

- The container ship windshield is an innovative ship energy-saving technology, which aims to reduce energy consumption by improving the aerodynamic performance of the ship during navigation.
- Windshield is usually installed on the bow, Its design can guide and utilize natural wind forces to effectively reduce the pressure of the airflow hitting the main windward surface of the hull, improve the uniformity of the airflow above the deck of the ship, and reduce wind resistance during ship navigation.

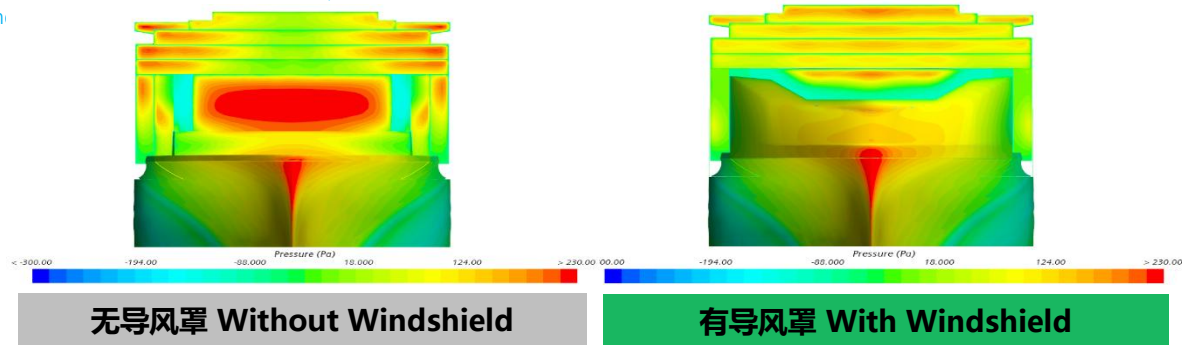


➤ The final View of Windshield

- Windshield can reduce the wind resistance during sailing and reach the energy saving effect about 1.5%~ 4% ;
- Short designing, manufacture and installation period;
- No effect on the original ship structure.



➤ The Stream Difference with and without Windshield, the pressure in the front containers is decrease, and the wind resistance



Windshield Performance list

No.	Ship type	Class	Qua.	Installation time	Remarks
1	7000TEU	ABS	1	May-23	New building
2	11500TEU	ABS/DNV/LR	10	May-24	New building
3	10300TEU	ABS/DNV/LR	10	Oct-24	New building
4	15100TEU	LR	2	Oct-23	Retrofit
5	5040TEU	DNV	1	Jan-24	Retrofit
6	5060TEU	LR	1	Jan-24	Retrofit
7	7000TEU	DNV	1	Mar-24	Retrofit
8	8100TEU	DNV	4	May-24	Retrofit
9	6200TEU	LR	1	Jun-24	Retrofit