

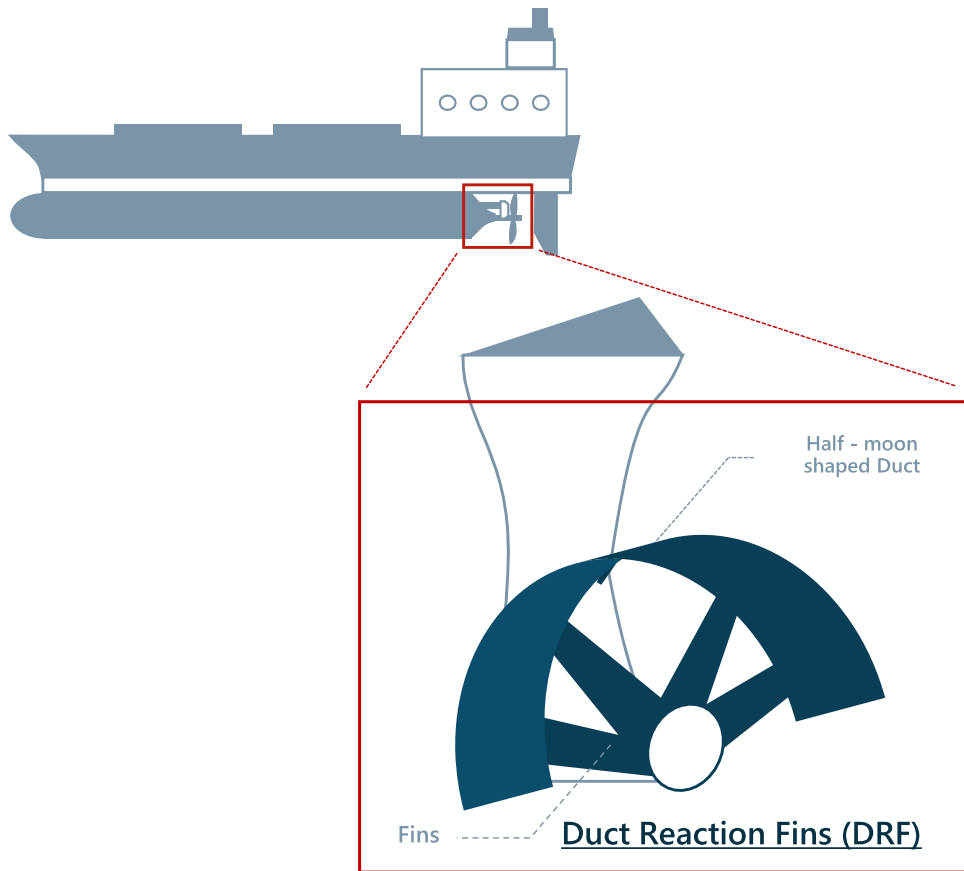
MOVE THE WORLD FORWARD

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- Confidential -

Ducted Reaction Fin(DRF) by MHI

1. What is Ducted Reaction Fin (DRF)

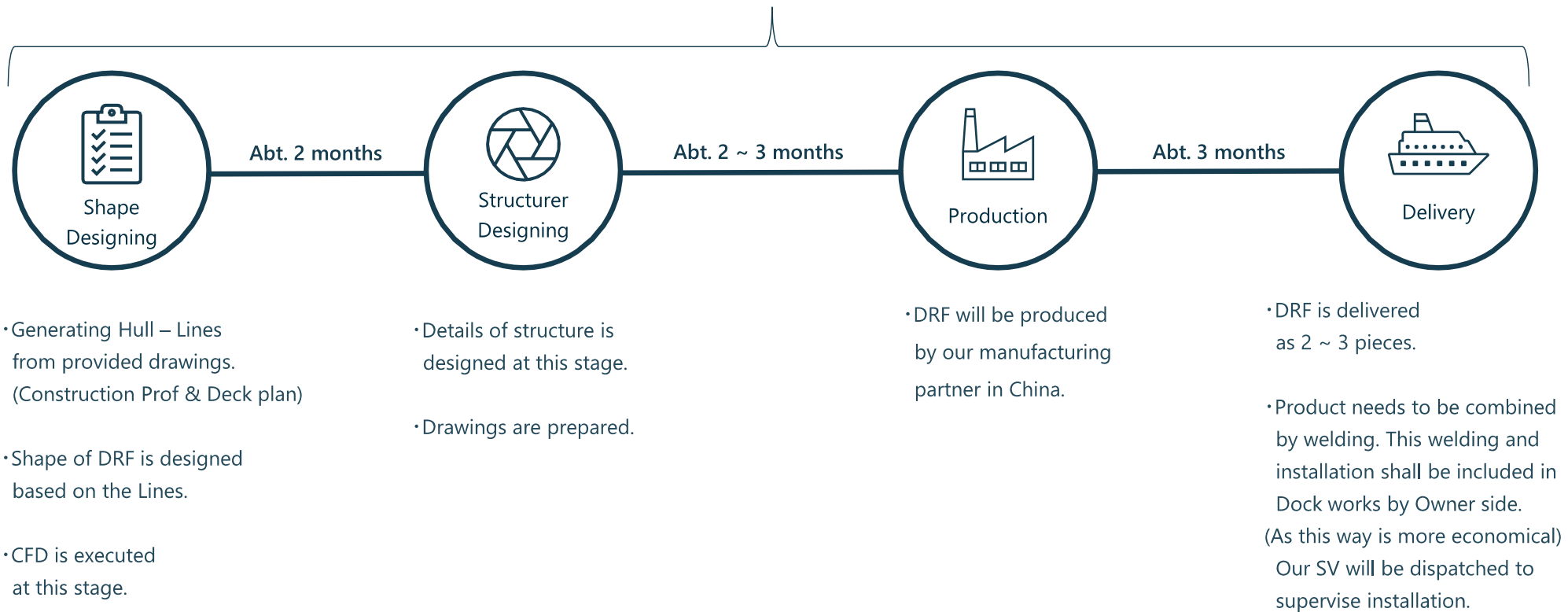


- Product Features -

- DRF is a product which consists of a half moon shaped duct with fins installed in front of propeller.
- DRF generates a flow whose direction is opposite to the rotational direction of propeller and it improves efficiency of propeller by retrieving rotating flow which is to be lost without the device and producing net forward thrust by the duct.
- DRF works efficiently when it is installed to low-speed and heavy ship such as Bulk Carrier and Tanker. Assumed performance improvement in energy saving is 5% ~ 8%.

2. Ducted Reaction Fin – Production Schedule

Overall, abt 8 months to complete



3. Payback Period simulation (sample)



<A case of 25,000MT Chemical Tanker>

Total Fuel Oil Per Year : 3,982 mt

Energy Saving Effect : 13% DRF + 5% (Propeller + 5%, HVFC + 3%)

Saving Fuel Oil Per Year : 518 mt (3,982 mt * 13%)

Price of Fuel Oil (USD/mt) : \$ 650.- / mt

Fuel Cost Saving : \$337,000.- / year (518 mt * \$ 650.- /mt)

Rough CAPEX : \$519,000.- /set

Payback Period : 1.5 years

*The Above calculation is an example of the relationship between Energy Saving Effect and Payback Period. This is NOT results of an actual project.