

Ferry Description (SolarJet)

Innovation

The ferry that our team have designed, SolarJet, is a mono hull, modern and affordable yet innovative one that utilises some of the latest cutting-edge technologies. The construction of the ferry starts with the hull, where we plan to use a **tri-mono hybrid aluminium, super steel (aluminium steel alloy) for maximum stability**. Hull selection was done after a feasibility study of the environment along the Straits of Singapore, Malaysia and Indonesia where currents are generally less aggressive. This increased stability will allow the ferry to **operate ballast free**, reducing the lifecycle cost and maintenance fees for ferry. A **three-waterjet propulsion system aided by individual azipods** will also allow the ferry to travel more silently compared to conventional methods as well as increasing the manoeuvrability of the ferries. A **giant augmented reality screen which doubles as solar panel** on top of the ferry will also allow commuters on the upper deck to enjoy beautiful man-made sceneries, at the same time help to **reduce diesel power consumption**. The OLED flexible glass screen placed at the front of the wheel house will also allow drivers to have an unparalleled experience navigating the ferry as areas maps can be flashed on the screens signalling location of other vessels in the region **detected via IOT sensors** to optimise safety and prevent unwanted collisions. The ferry also has **viewing galleries at the aft of both decks** to facilitate ventilation as the ferry moves forward and to provide the best views for tourist. Windows are also shaped in a way to optimise viewing pleasure. As observed from the main deck, **strollers and luggage can also be placed at the aft** on the main deck beside the viewing galleries. There will also be **a handicap toilet and a regular one on the main deck** as seen beside the staircases. For emergency cases, smoke detectors will go off and lifejackets under each passenger's seat can be deployed. Lifebuoys will be stored at the side of the hulls. The staircase is also made in a **"two by two" stairway formation** as seen on the left, such that speedy evacuation can occur.



Figure 1: Aerial View



Figure 2: Side View

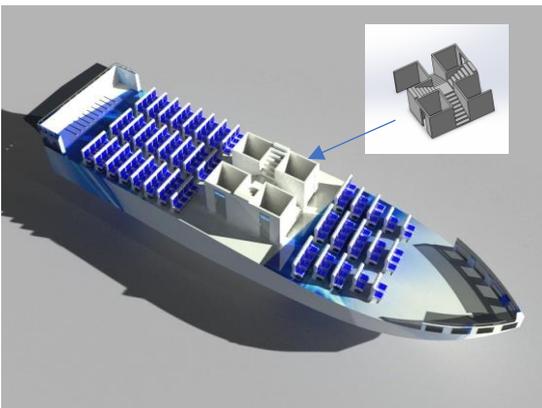


Figure 3: Main Deck

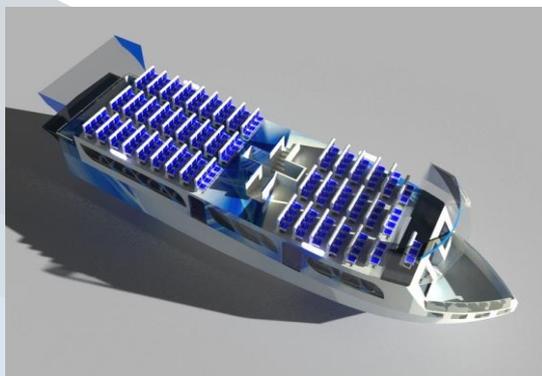


Figure 4: Upper Deck

Affordability

Hard chine will be used for the hull form with a developable geometrical structure to simplify the process and allow for the production in less sophisticated shipyards. **Triple propulsion waterjet** arrangement also helps to increase efficiency and provide wider power operating range. The azipods will also ease the manoeuvring process saving fuel cost. Moreover, the ferry's structure is also designed with **aluminium-steel alloy to minimize material assembly cost** yet provide a strong and lightweight skeletal core. Medium speed diesel engines will be used to reduce operating cost with can be further reduced with the help of **the huge malleable solar screen** at the top of the boat. **Tri-mono hull provides excellent stability**, at the same time reducing ballast cost as these are no longer needed as much. Hence, this will help to reduce lifecycle costs and maintenance. **The hybrid framing system** is also designed to reduce manpower and man-hours cost. **LED lights** will be used inside the ferries which can save up to 30% of energy costs compare to fluorescent lightings. **Aerodynamic design of ferry** will also aid in the wind drag and resistance that it will face allowing it to travel at faster speeds without consuming more fuel.

