



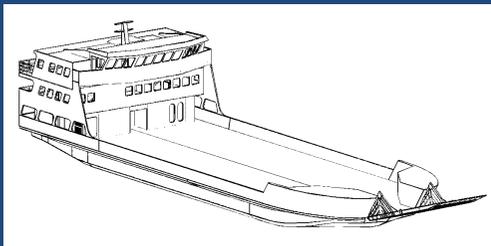
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It's been a busy last half of 2018 for MID with work on superyachts, work boats, barges, project cargos, gangways, fishing boats, Naval support, cargo vessels.

We expanded the team in the Whangarei office with Ed Firth joining as a Design Engineer with design experience in yacht new-build and refits.

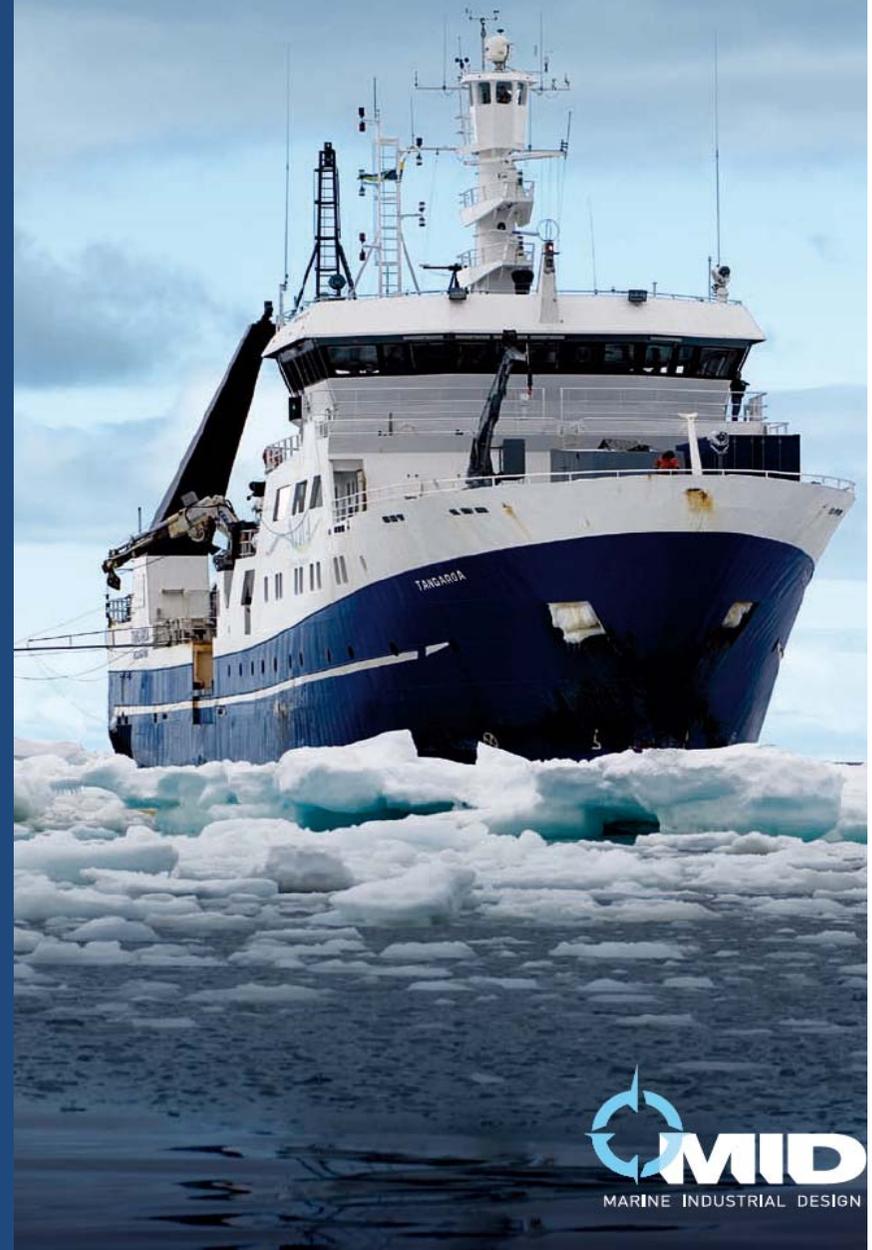
MID have been active providing project management services to vessel operators for planning and budgeting capital projects and maintenance packages during docking periods. This is a service that MID have offered in the past and we are pleased to be able to offer this again.

It's the summer break for University students and MID continue to support our parent group - Babcock - Intern programme with two Naval Architect students placed in the MID team until end of Feb when they return to their studies. They are gaining invaluable experience working in the commercial and naval areas and this will benefit them in their career development. MID have one permanent Naval Architect employed now as a direct result of an internship placement and we plan to continue to provide those opportunities to the young emerging talent.



- Naval Architects
- Marine Engineers
- Marine Consultants

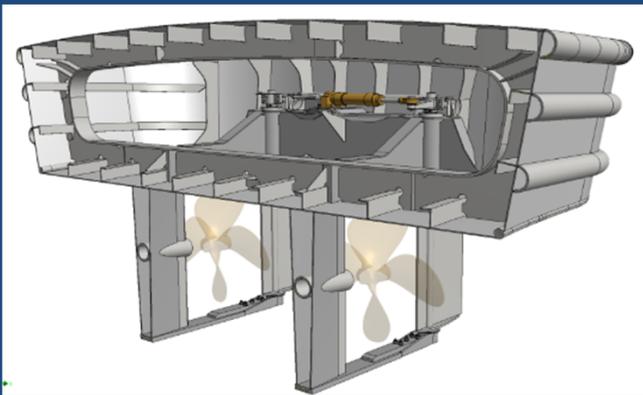
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10.4m River tug

MID completed design on a newbuild vessel in the latter half of 2018 and this is currently under construction at a shipyard in Auckland with completion expected early in 2019. This is a 10.4m river tug, developed by MID in conjunction with the operator and derived from a previous vessel that will be retired. This tug will be used to move 24m x 150tonne sand barges, as used in a river dredging operation. It has a 2.5t bollard pull, shallow draft, full MNZ compliance, rugged construction /durability and is optimised for fast turn-around of the barges



Superyacht updates

MID continue to provide extensive design support for superyacht refit projects in the region. One vessel required re-configuring external deck accesses and layout, with the provision of new stairways in the style to suit to the yacht. New custom stainless steel and teak stairways were designed, with structural capacity to suit the statutory requirements



Gangways

Due, in part, to the recent NZ Health and Safety legislation changes, we have seen an increasing demand for compliant vessel gangways and we have been active in several gangway projects recently. We now have a wide portfolio of designs, these are all compliant with international standards (which include maximum slope angles for gangways). A gangway project in late 2018 was to provide passenger gangway access from a passenger vessel to a wharf. This resulted in a design with a scissor lift platform to adjust for tidal variation and a hinged gangway to land on the vessel.

Another gangway design is for a modular gangway that can be adjusted for various angles and lengths to clear wharf obstructions and to account for differing access levels on vessels.

All gangways are designed to ISO standard ISO 7061



Stability Calculator

Capacity	Qty	Unit	No.	Total	Net	Gross	Total	Volume	CG	FCG	MCU	FSM
Deck	1000	m ²	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hold	500	m ³	500	500	500	500	500	500	500	500	500	500
Superstructure	200	m ³	200	200	200	200	200	200	200	200	200	200
Light	100	m ³	100	100	100	100	100	100	100	100	100	100
Water	1000	m ³	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Wet Deck	1000	m ²	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Wet Hold	500	m ³	500	500	500	500	500	500	500	500	500	500
Wet Superstructure	200	m ³	200	200	200	200	200	200	200	200	200	200
Wet Light	100	m ³	100	100	100	100	100	100	100	100	100	100
Wet Water	1000	m ³	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Wet Wet Deck	1000	m ²	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Wet Wet Hold	500	m ³	500	500	500	500	500	500	500	500	500	500
Wet Wet Superstructure	200	m ³	200	200	200	200	200	200	200	200	200	200
Wet Wet Light	100	m ³	100	100	100	100	100	100	100	100	100	100
Wet Wet Water	1000	m ³	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

MID have developed a stability calculator to aid vessels in performing stability calculations onboard, this improves safety of operation allowing the operators to ensure the most up to date stability information is generated. The calculator can be applied across all range of vessels and allows operators to enter specific loading data for the vessel condition on the day. The calculator mimics the approved stability book and assesses stability for compliance against the applicable rules.

Complex tank layouts can be accommodated and the calculator will plot the waterline for visual reference. The calculator can also be used for damage scenarios providing fast information to the master on stability compliance and survivability from damage caused by collision or grounding. The calculator is not intended to replace the approved vessel stability book though.

Project Cargo Lashing Pans

MID have been supporting a long term project to upgrade wharf facilities in the Chatham Islands (500 miles east of NZ). Shipment of plant (including a 50t excavator and a 130tonne crawler crane), machinery and wharf materials (up to 1000 tonnes) from mainland NZ to the Chatham's was by towed barge on multiple voyages. Lashing and stability calculations were required to ensure the safety of the barge and cargo on the voyages. MID carried out lashing design and calculations for each voyage using recognised standards and also determined appropriate weather limits to guide the operators. Details of lashings to use including deck tie downs and dunnage arrangements were supplied. Stability calculations for each voyage were also carried out and special stability assessment was carried out for crane lifting operations on the barge. Lashing design is a speciality of MID and we have experience in many different project cargo load outs.

Superyacht Jacking Cradle



A cradle structure was designed with shaped beams on moving legs contained within fixed uprights and a jacking structure provided for hydraulic jacks. The shaped beams were fitted to the hull shape using a laser scan of the hull (from an earlier haul out). The vessel was successfully jacked (by Rich Rigging) using 14 synchronised single acting jacks.

At the request of Titan Marine Engineering MID provided the design and engineering of a cradle system to support and lift a 600tonne 62m sailing super yacht. The unique challenge for this project was to design a cradle that could allow the yacht to be jacked 1.5m in the air after the yacht was hauled out of the water. This was to allow for removal of the yacht's lifting centreboard keel, which in itself was a 60tonne, 10m x 3m blade (MID provided the removal design for the keel as well).

