TRAnsverse Tug

Transforming maritime operations through innovation



White Paper

SVITZER

A note to readers: where you see the ‘play’ button ▶, the digital version of this document includes a video illustrating either the manoeuvre or item being discussed in that section. The QR code takes you to an online digital flipbook.

Watch video: Showing dynamic positions of the TRAnsverse tug in operation by visting the digital flipbook link.

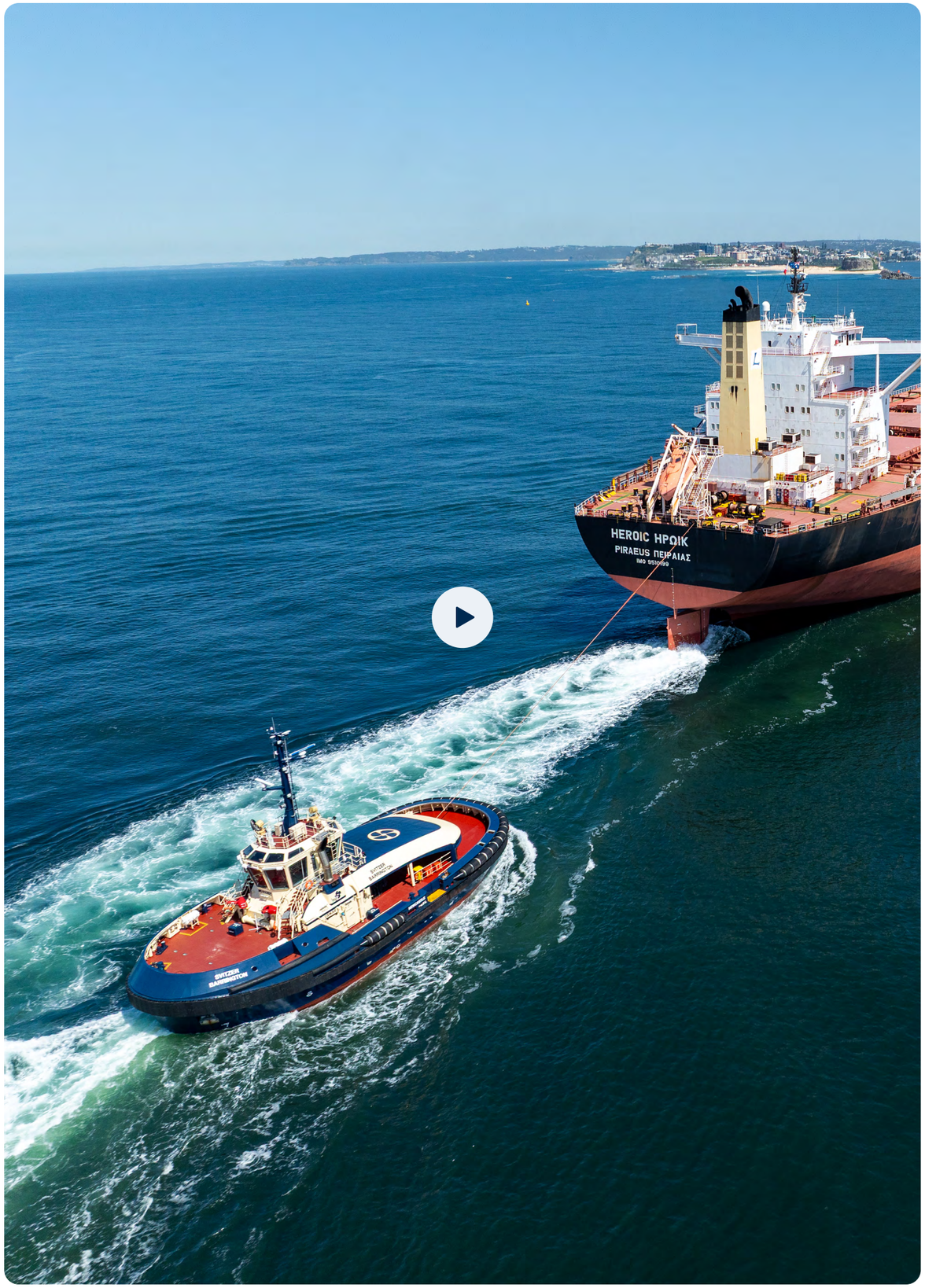


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Executive Summary

Strengthening the maritime link in port and terminal supply chains.

Unlocking value in maritime operations

Port and terminal operators have a growing set of challenges. They need to move bigger vessels through more constrained and less predictable operating environments, while cutting emissions and improving efficiency.

Recognising these challenges, Svitzer has designed the TRAnsverse tug to strengthen the essential link between landside and marine side operations through a more manoeuvrable, fuel-efficient, wider-envelope tug – without compromising on power or risk management.

Towage is central to supporting higher traffic volumes and more complex vessel movements, while maintaining clear safety margins and protecting berth schedules and approach channels.

However, improving port and terminal capacity and efficiency has traditionally focused on landside infrastructure and maritime infrastructure investment has often focused on channel capacity, depth and dredging. This ignores the opportunity to enhance the efficiency of vessel arrival, departure, manoeuvring and berthing times through more efficient maritime operations, and in particular, via pilotage and towage.

Through the TRAnsverse tug, Svitzer has designed a tug to operate in ways not possible with existing tug designs, and that enables customers to unlock greater value in their port and terminal operations.

The TRAnsverse tug's unique capabilities offer port and terminal operators the chance to challenge norms, and rethink and strengthen maritime operations now and for the future.

»In one terminal simulation using live AIS as a baseline, the TRAnsverse reduced a 398m vessel arrival segment by 14 minutes.«

The original TRAnsverse tug White Paper released by Svitzer in 2024 explored the design innovation, tank testing and sea trial performance of the vessel. This white paper is a progression of that initial document, to illustrate the benefits and capabilities of the vessel in real-world operations across two complex, and decidedly different port contexts of IJmuiden, Amsterdam and Newcastle, Australia.

In this paper you will read the TRAnsverse tug is demonstrating:

- Improved operational efficiency and productivity
- Risk reduction through better performance
- Greater flexibility to meet shipping and vessel demands
- Energy transition and decarbonisation acceleration.

As of 2026, more than 5000 commercial towage jobs have been completed with the new class of tug. Its performance has underscored Svitzer's commitment to a forward newbuild pipeline of 26m, 29m, 32m and 35m variants.

Svitzer is committed to finding and creating value for our customers, and we are pleased to see the TRAnsverse innovation deliver on this promise.

We hope you enjoy the updated White Paper.

Kasper Friis Nilaus
CEO, Svitzer



Versatility for all operations

The TRAnsverse tug **provides significant flexibility** as it can be positioned at any location around the vessel.



The TRAnsverse tug has high seakeeping ability and high speed astern. The 32m TRAnsverse tug, Svitzer Barrington, is shown here sailing at 14.5kts

While the TRAnsverse tug features a high bow for seakeeping during mobilisation, the aft working end is much lower and suitable for the typical range of hull shapes, sizes and drafts encountered across ports (see tug general arrangement on page 18).

The TRAnsverse tug's ability to side-step combined with the increased distance between the work end and wheelhouse alleviate many concerns that an ASD tug might have working under pronounced flares, quarters and counters.

Given the design, the TRAnsverse (26m, 29m and 32m) can gently handle smaller vessels, span the full range of jobs in port and outmanoeuvre even small 24 metre ASDs, supported by fender height, freeboard and manoeuvrability.



One tug operating across all modes
In addition to being able to assist a wide range of vessel classes, the TRAnsverse tug provides significant flexibility for harbour towage operations, as it can be positioned at any location around the vessel.

Not all modes shown are safe or achievable with a standard ASD/ATD tug across the full speed range offered by the TRAnsverse tug.

The figure below shows the four basic operational modes in harbour and terminal towage.

These are:
1. "Push – Pull" on ship's side
2. Centre-lead forward; direct pull
3. Centre-lead aft; direct pull at speeds up to 6 knots
4. Centre-lead aft; indirect 'escort' pull at speeds between 6 - 10 knots (escort) and
5. Quick transition between push and pull modes

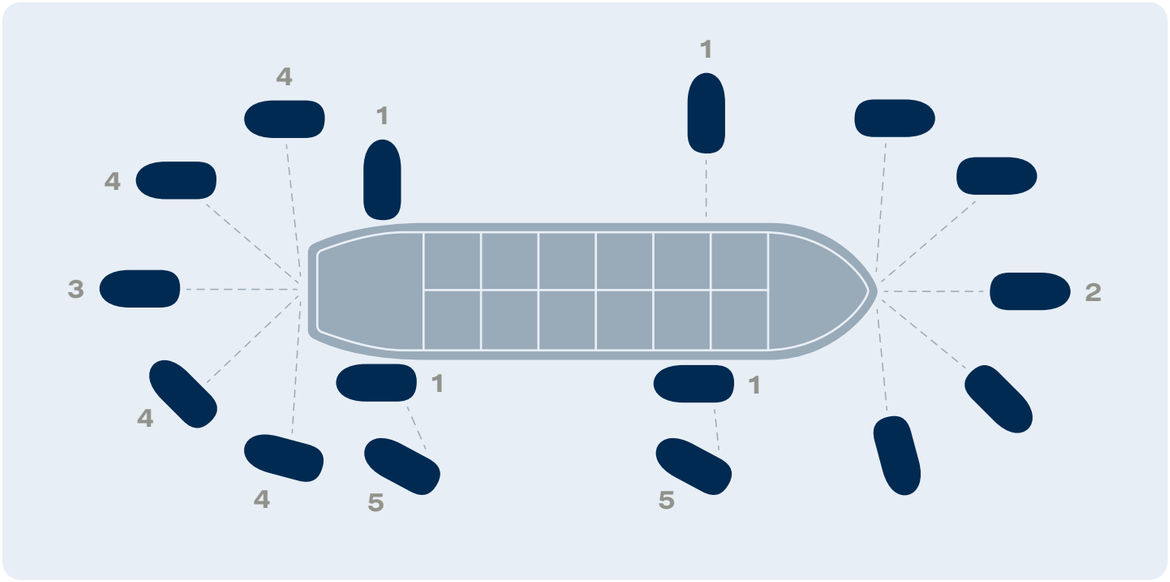


Figure 1: One platform, multiple operating modes: push/pull, centre-lead forward, centre-lead aft direct pull and centre-lead aft indirect escort.

Interactive technical drawing 1

Approaching or departing berth, tug connection to the vessel's stern.

Step 1

TRAnsverse 3200 utilises its hull across the full speed range (0-10kts) to generate greater force when operating in the braking position. The TRAnsverse outperforms an ASD tug of the same size (32m).

Watch video

Step 2

For an ASD tug of 32m, transitioning to this position at speeds above 3 knots is almost impossible. Even if achieved, the vessel's approach would be adversely affected due to towline tension, as this manoeuvre is not feasible with a 32m ASD tug.

Watch video

Step 3

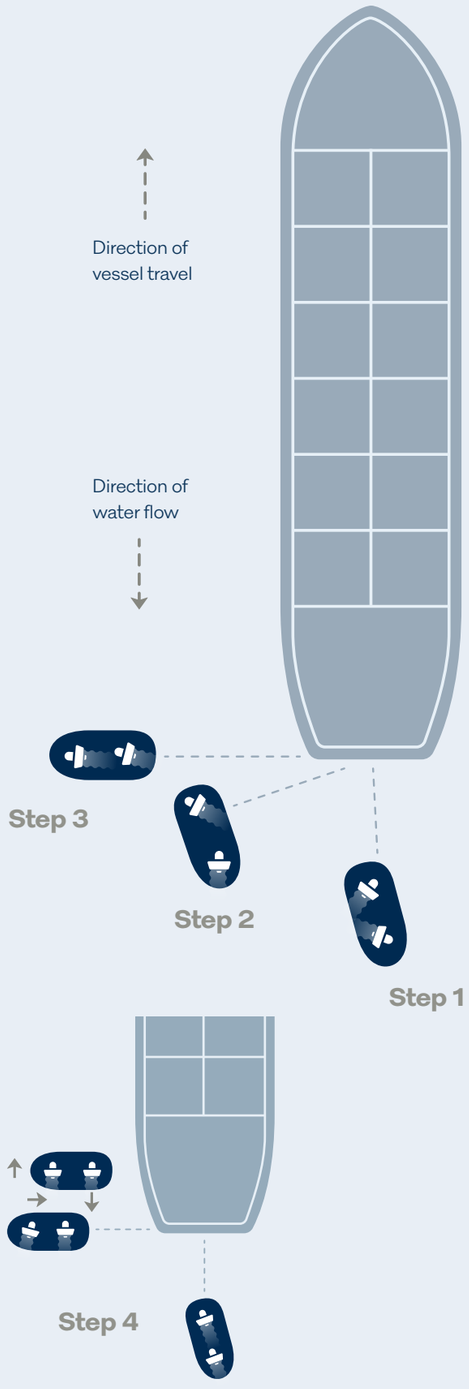
Transition from indirect to direct (steps 2-3) pulling is not possible with a 32m ASD tug at higher speeds through the water (STW). In both positions, the TRAnsverse tug outperforms, as it can simply produce more force when operating in either direct or indirect mode.

Watch video

Step 4

The TRAnsverse tug can maintain side-stepping and approach to push under the flare when required. This manoeuvre is not possible with a 32m ASD tug at higher speeds, around 3 knots. (TRA3200 can sidestep 7kts+ safely)

Watch video





Saving time

Capability to provide **arrival, departure and berthing time reductions**.



To understand the time saving opportunity with the new design, Svitzer conducted a modelled simulation at a large Mediterranean container port with annual throughput of several million TEU (see table below). The port's characteristics are reasonably standard operations, with limited complexity and minimal manoeuvring required for vessel arrivals and departures through the port's channel.

Even for this standard operating context, the study found an average of 5 – 14 minutes saved when under towage from arrival through to berthing location. This is equal to a 26% to 42% time reduction depending on the vessel size and berth. The study demonstrated stronger time savings with larger vessels and that more complex port operations may produce greater time saving potential (see table below).

The time saving potential reflects the fact that TRAnsverse tugs in side position can also provide braking forces, not only in centre-lead-aft position. The study was validated through live AIS comparison, full-mission simulations and sea trials. The arrival segment was measured from port entrance to the turning bay prior to berthing.

The ability to provide towing forces at higher speeds means the job can be completed quicker than standard tugboats.

In a constrained port schedule, minutes saved per vessel movement compound quickly across daily, weekly and annual vessel calls.

Expanded Operational Envelope
In general, in dynamic towage modes, the TRAnsverse tug design has a wider operating envelope to other similar and larger ASD tugs - by up to 50%. This is especially prominent at speeds higher than 3kts where the forces are maintained and increasing.

As such, connection, operation and berthing can be delivered under a broader range of conditions, such as a higher wind speeds, stronger currents and rougher seas.



Time savings shown in modelled study (or 5-14 minutes per movement)

Table 1: Vessel time savings in modelled simulation study at large Mediterranean port

Vessel size (LOA)	Time reduction (% / mins saved)
294m (TC3)	21 down to 13 mins (39% reduction)
347m (TC3)	22 → 14 mins (37%)
398m (TC3)	33 → 19 mins (42%)
347m (TC4)	20 → 15 mins (26%)
398m (TC4)	23 → 14 mins (40%)

Greater flexibility in port operations

The TRAnsverse tug can **generate high forces** over a wide speed range and has **superior sideways 'walking' capability**.



The sideways 'walking' capability of the TRAnsverse design represents a significant increase in agility compared to traditional ASD or ATD tug designs.

Rethinking operations

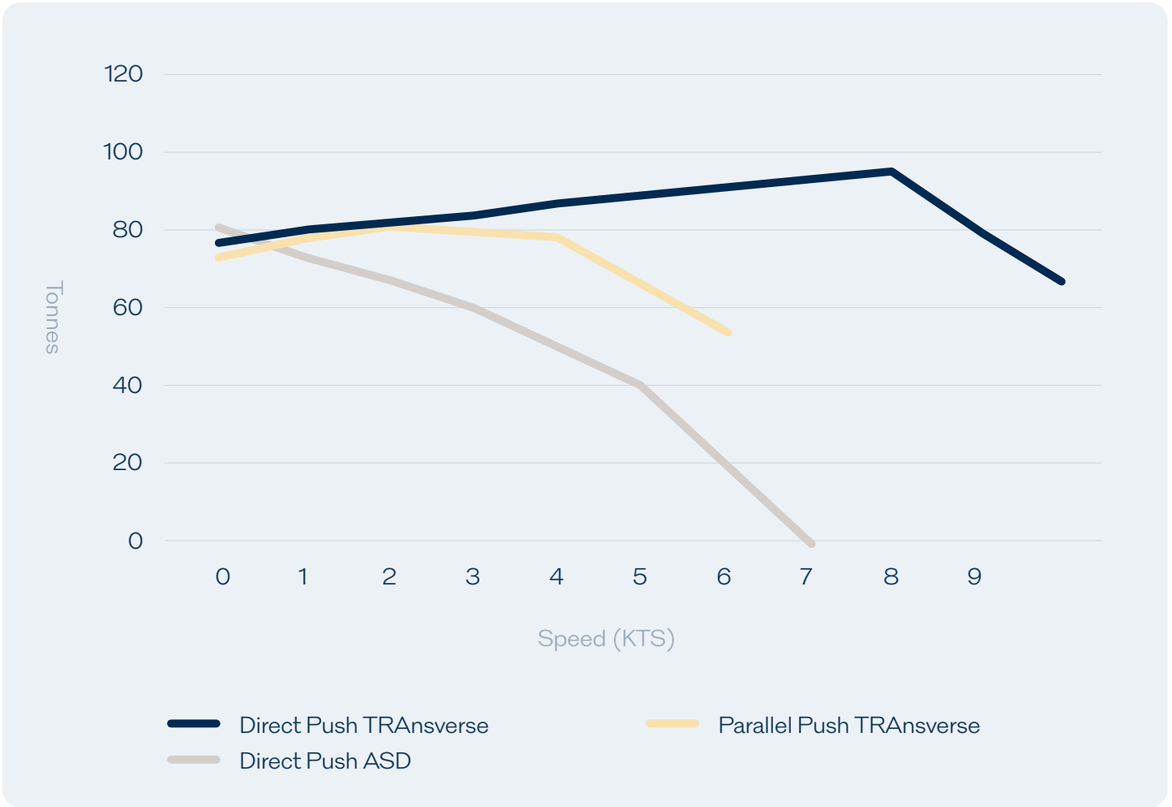
The TRAnsverse can achieve 7.5+ knots of lateral movement on a 32 metre tug, all while remaining in control of position. That means more choice of available leads with less need to reposition.

The tug can even achieve full bollard pull force when pushing parallel side-on. Fore and aft thrusters reduce the amount of power expended on vectoring forces to hold the tug's position.

The TRAnsverse tug can generate high forces over a wide speed range when pushing a vessel. In these operations, the performance of predominant ASD/ATD tug designs can deteriorate quite dramatically when the speed exceeds 4 knots; this is not the case for the TRAnsverse tug.

This means that more power can be exerted on the pushing aspect of the operation as opposed to maintaining forward speed.

Figure 2: Tonnes of force exerted at speed in push mode



This benefit is shown in Figure 2 which shows the magnitude of the pushing force at varying speeds for the TRAnsverse tug and traditional ASD designs.

When the TRAnsverse tug is in a parallel position alongside the vessel and due to parallel push and pulling capabilities, the tug is ready to provide an immediate response to the Pilot order in pushing and pulling mode.

The size of the pushing force is maintained over a much wider speed range in both parallel and direct pushing operations.

Watch video →

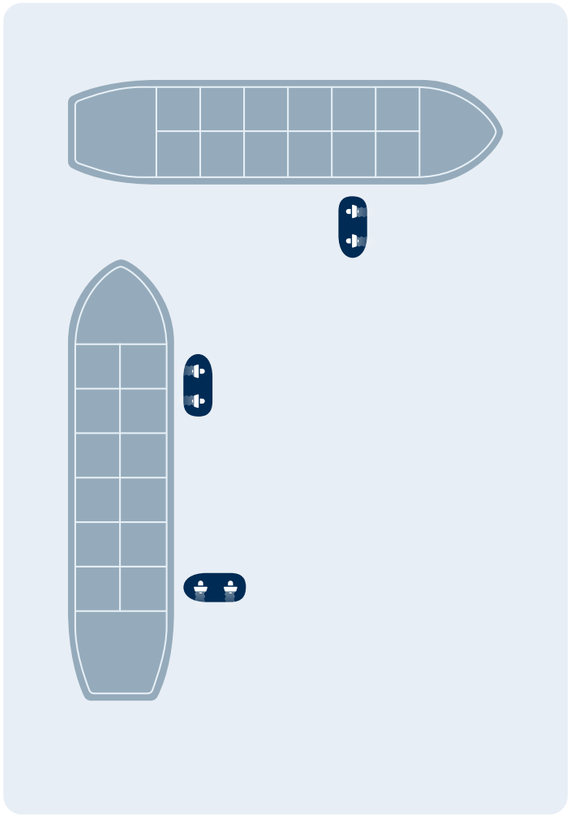
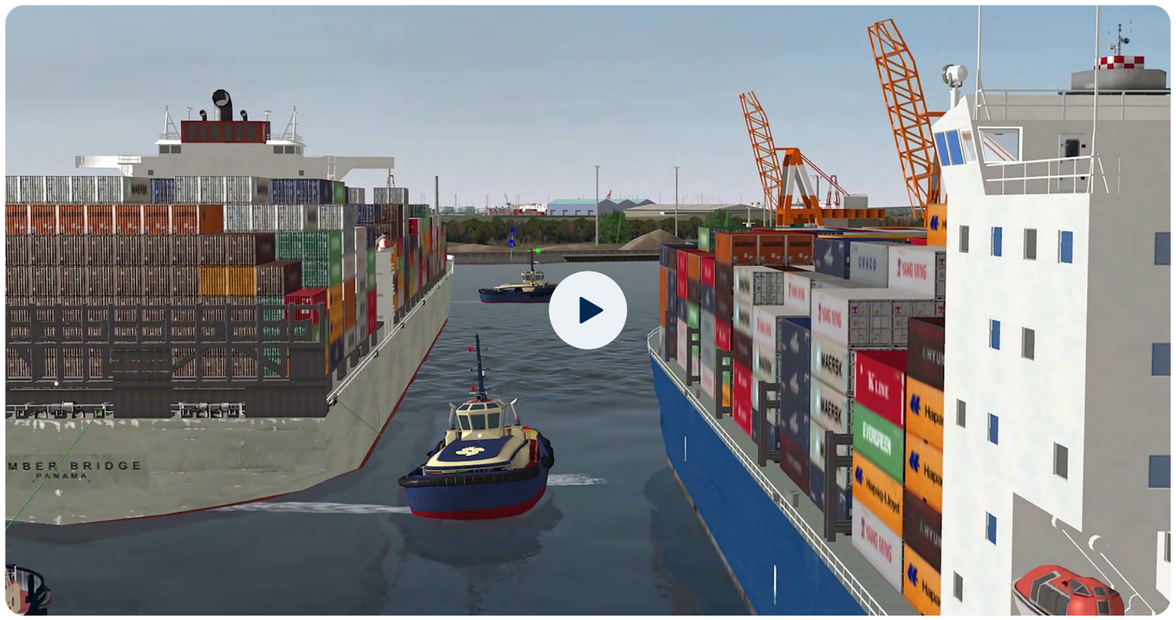


Figure 3

Watch video: The TRAnsverse is a highly versatile vessel, that is able to deploy power and forces in ways not possible with other tug types. This includes its ability to side-push as well as generate higher forces over a wider speed range.

The below video shows one example of exploration of new ways to utilise these capabilities.





TRAnsverse general arrangement schematic (32m)

General Particulars (TRA3200)

Lenght overall	31,8 m
Beam, Moulded	31,1 m
Depth, Moulded	5,0 m
Full Load Draft – 160T DWT	6,3 m (Approx.)
Operational Draft – 85T DWT	6,0 m (Approx.)
Installed Power	2 x 2400 kW (Approx.)
Bollard Pull	81 Tonnes (Approx.)
Speed	14 (Approx.)
Gross Tonnage	<500 GT

Capacities (TRA3200)

Fuel Oil	138 m2
Fresh Water	14 m2
Foam (Optional)	10 m2

BV Notation

Escort tug, Fire-fighting 1, Water spraying and foam, Unrestricted navigation.

Note the half-circle staple, separated in-line thrusters, low working end, high bow, tow point location and slender working profile.

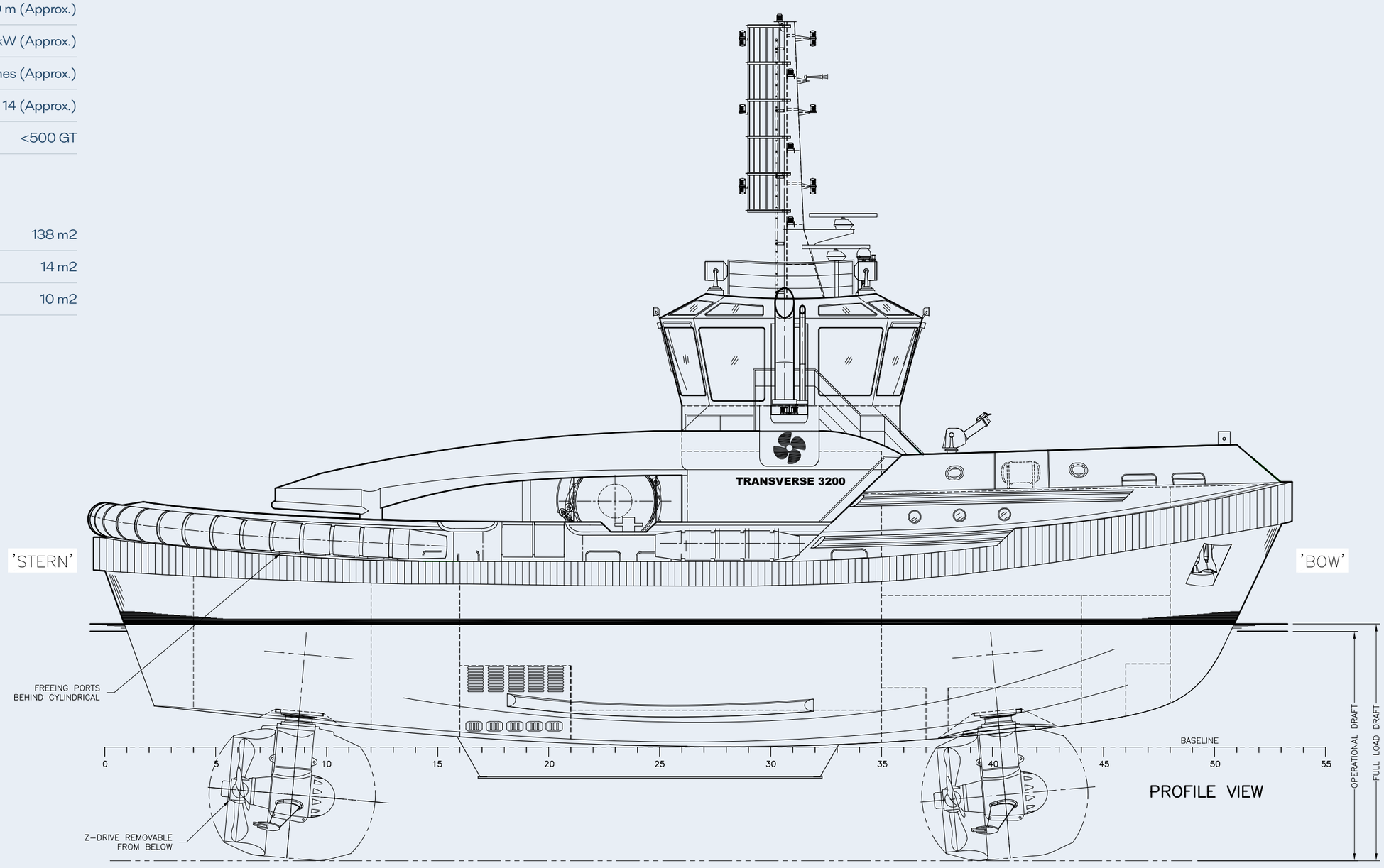
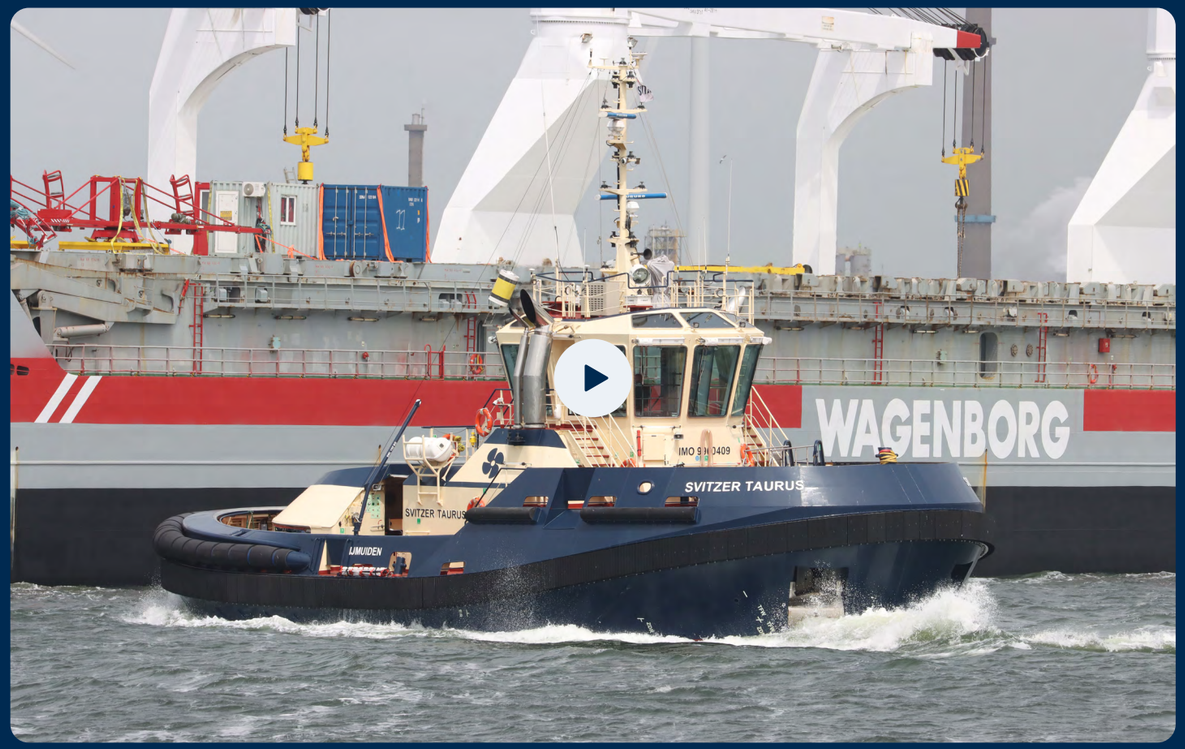


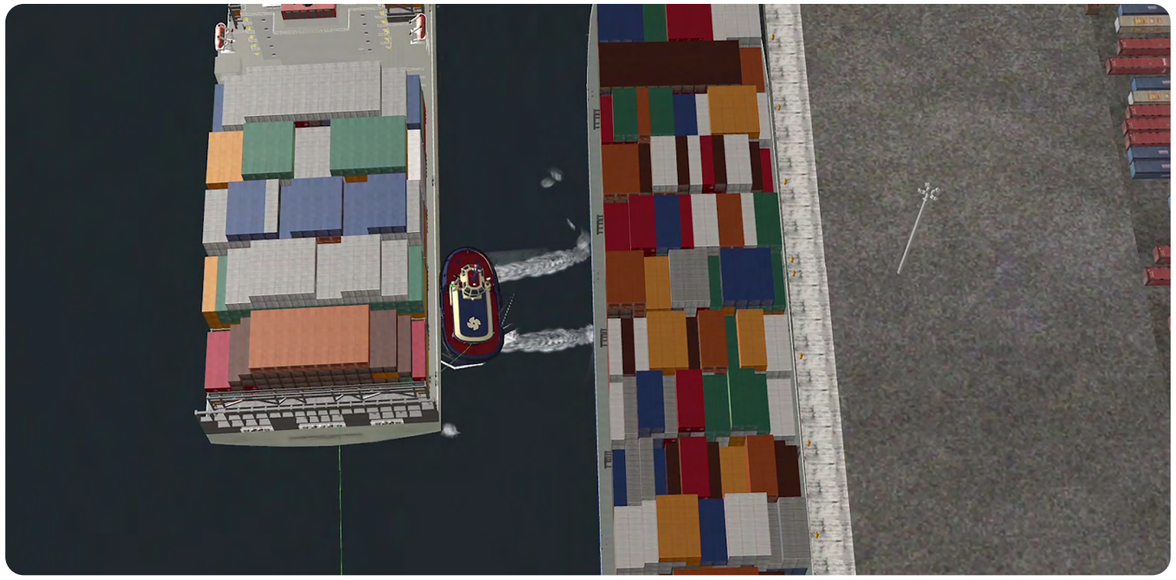
Figure 4

Confined operations

The TRAnsverse helps ports **extract greater performance** from constrained water space.

Watch video: Svitzer Taurus CLA of tanker into confined waterways of Port of IJmuiden





The TRAnsverse helps ports extract more performance from constrained water space.

In shallow-draft berths, berth pockets, oil terminals, lock-style berth chambers or confined approaches, the tug can maintain effective push and pull on short lines and in tighter geometries.

Given its manoeuvrability, when working at close range the TRAnsverse tug can escape the suction forces that form between two vessels when sailing.

A vessel able to work in confined environments and close proximity

For pushing operations, the general geometric layout of the tug with the superstructure far away from the working end provides a slender profile that makes work close to pronounced flares safer and the likelihood of collision with the superstructure is reduced.

These key advantages of the TRAnsverse tug allow the Master to apply greater forces during dynamic towing across a broader range of speeds and greater flexibility over the working location of the tug against the assisted ship's hull – thus maximising the turning lever and turning moment that can be achieved. This dramatically changes the pilot's capability for safe, efficient manoeuvring of the assisted vessel.

The same principle applies when the tug is working alongside or at the 3 o'clock and 9 o'clock positions. In current and tide-affected approaches, the TRAnsverse can maintain a short towline, remain close to or within the assisted vessel's beam, and continue delivering effective pulling or side-pushing force while the vessel is still moving through the water.

This means the TRAnsverse tug can be valuable when in proximity to shallow water and confined-space operations. It can maintain force without exposing thrusters unnecessarily, and its ability to lengthen the towline or manoeuvre across a wider footprint gives a Pilots a wider safety margin to work within.

Rethinking operational parameters

It can also provide steering force on the bow at low speed and there is no need to sail around the bow/stern for pushing.

These capabilities of the TRAnsverse tug (including 26m, 29m and 32m versions) are leading to a rethink of operational parameters.

For example, where channel limitations may limit ASD tug utilisation, the ability of the TRAnsverse to maintain force in sideways position – opens operating parameters for port operations, without compromising risk or requiring additional infra-structure investment.

Hydrodynamic advantage

The tug **maintains high dynamic force** in braking, steering, side-push and reverse-indirect modes.



In ports affected by strong currents, the vessel's speed over ground may be low, but the speed through the water can remain high. That is the speed the tug, hull, towline and thrusters actually experience.

Turning current from constraint into controlled force

In traditional tug designs, this can be an impediment. However, the TRAnsverse tug is designed for this reality.

Its patented half-circle staple, double-ended hull, separated fore-and-aft thrusters and optimised tow point allow it to generate usable hydrodynamic force while the assisted vessel is still moving through the water.

Instead of relying only on static bollard pull, the tug maintains high dynamic force in braking, steering, side-push and reverse-indirect modes.

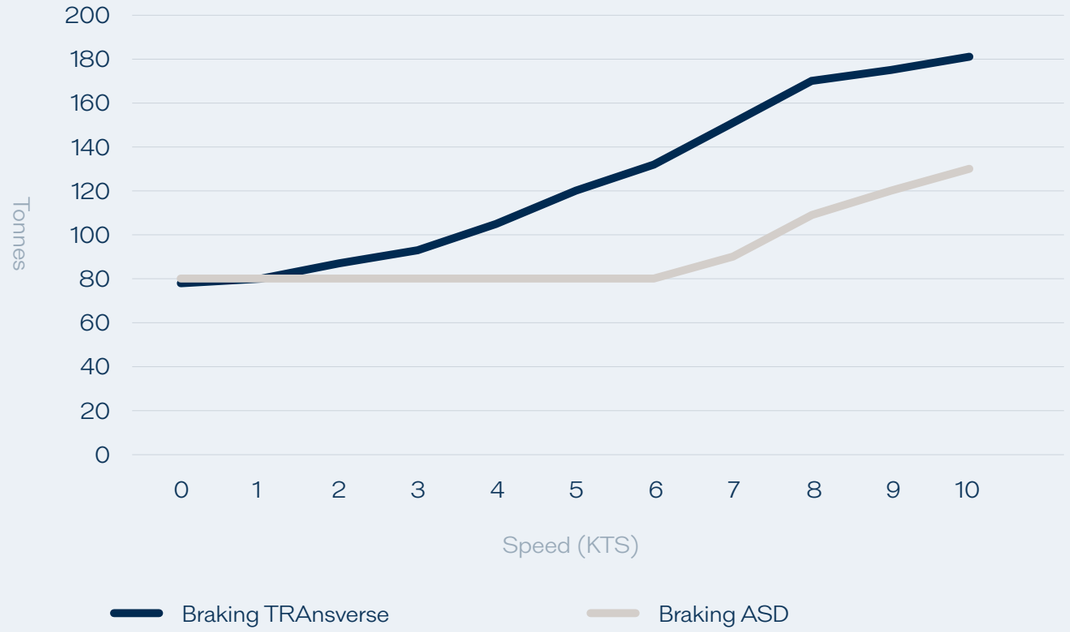
For Pilots, this means greater control margin in tidal streams, river currents and shallow or confined approaches. For ports and terminals, it means more predictable movements, reduced repositioning time, better use of tidal windows and improved operational confidence without defaulting to larger tugs or additional infrastructure.

In summary, where current or tidal flows create high speed-through-water even at low speed-over-ground, the TRAnsverse keeps working effectively. The tug maintains usable force as water flow increases.

Figure 5: Direct and indirect Steering comparison between TRAnsverse 32m and ASD 32m



Figure 6: Direct and indirect Braking comparison between TRAnsverse 32m and ASD 32m

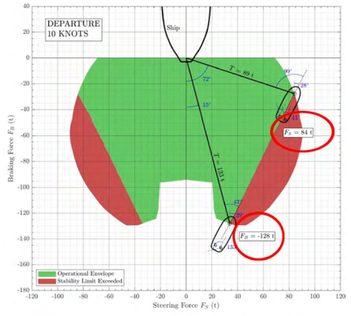


The below butterfly diagram demonstrates the expanded operating envelope of the TRAnsverse tug in comparison to a 32m ASD tug.

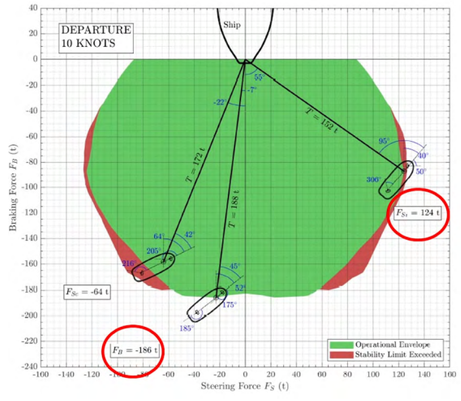
Note, the ability to exert higher forces at higher speed, and across a wider range of movement and location.

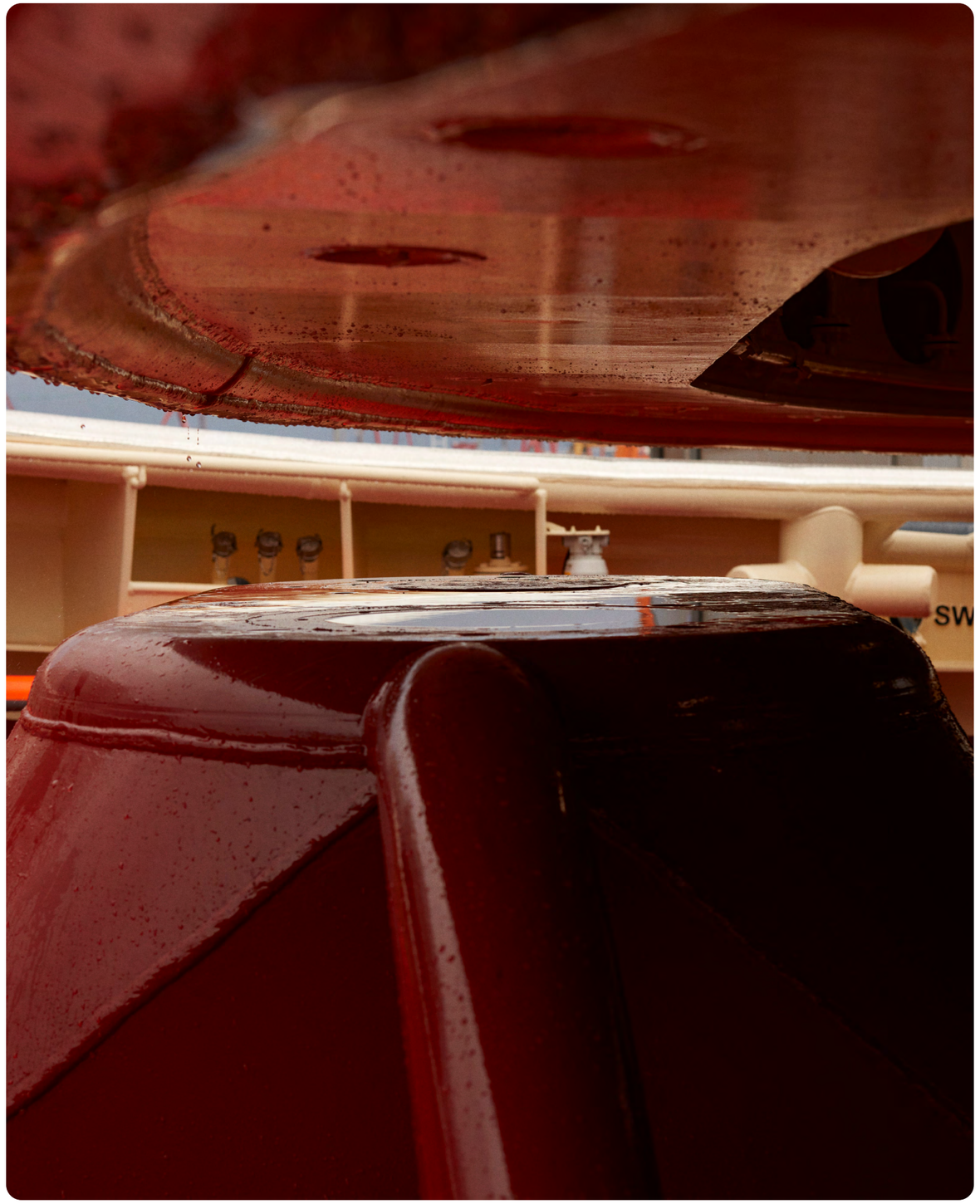
Figure 7: Butterfly Diagram

32m ASD (80 TBP)



TRAnsverse 3200 (80 TBP)





»At the forefront of the TRAnsverse design is the patented half-circle staple (shown in photo above). Combined with inline propulsion and a double-ended hull, it enables responsive hydrodynamic force generation at higher speeds through the water.«

Escort towage

Usable force while under towline load and moving at speed.



The TRAnsverse tug's ability to exert forces beyond static bollard pull really comes to the fore in escort towage scenarios. In escort towage, the assisted vessel is still moving, towline forces are dynamic, and the tug is operating in the combined effects of vessel speed, current, wind, wave action and wash.

Escort capability and seakeeping performance
The true measure of escort capability is therefore not simply how much force a tug can generate when stationary, but how much usable steering and braking force it can deliver, sustain and transition while under towline load and moving at speed through the water.

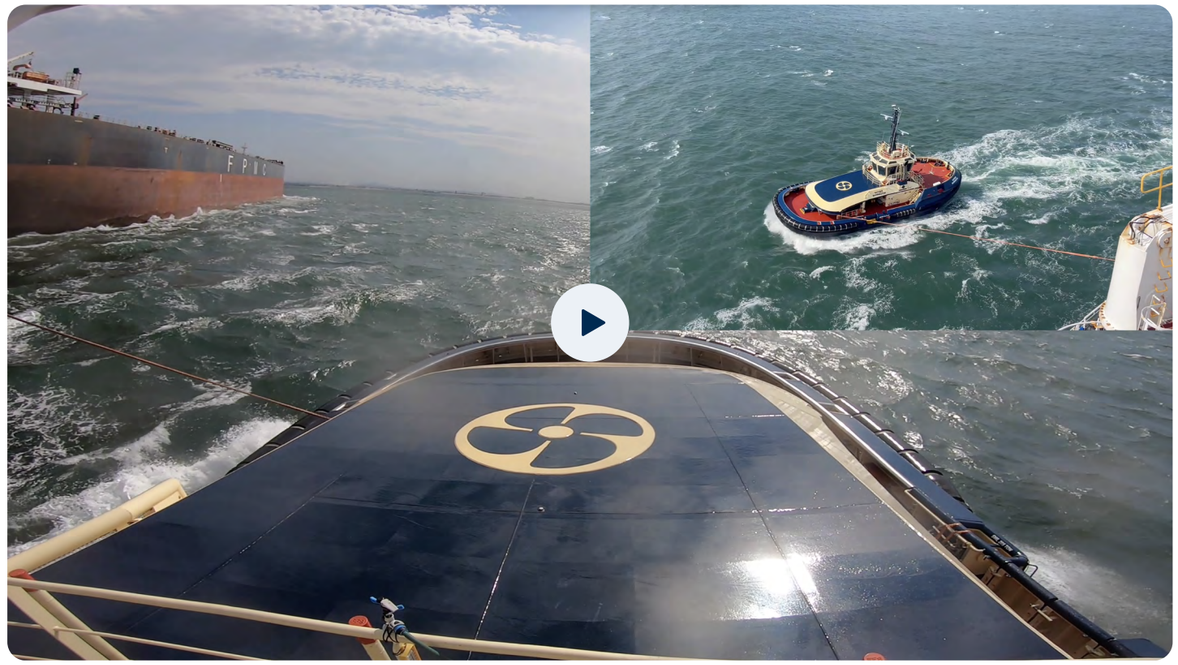
This matters most during the higher-risk phases of an arrival or departure, when a large vessel is still making way and the Pilot needs meaningful intervention capability without first slowing the entire operation to keep the tug effective. It also reduces the operational penalty of slowing down purely to bring a conventional tug back inside its effective working envelope.

In centre-lead-aft escort and braking, the TRAnsverse can position itself transverse to the assisted vessel's direction of travel, using the combined effect of hull hydrodynamics and thruster control to generate strong braking and steering forces. The TRAnsverse tug provides greater confidence in operations by being able to respond to changing demands and marine pilot requests effectively and without compromising performance. It applies more usable forces when and where it matters most, on demand.

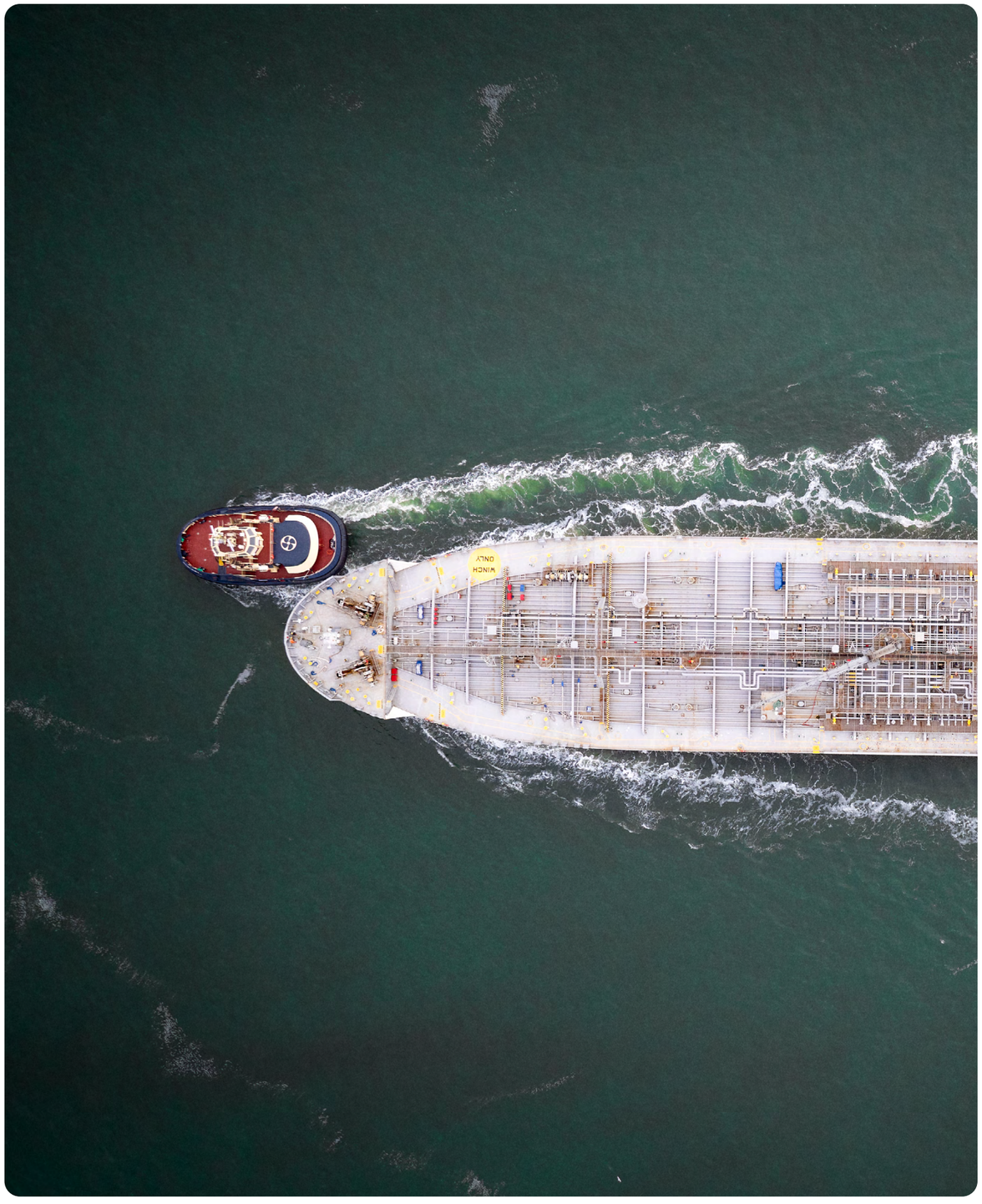
This means fewer interruptions and delays, faster correction of vessel movement and more predictable response to pilot orders. This is particularly valuable in providing confidence when escorting large container vessels, LNG carriers, tankers, bulkers and other high-windage ships.

The TRAnsverse tug has been demonstrating strong performance in commercial escort towage operations.

Watch video: 32m TRAnsverse using hydrodynamic forces in adverse weather conditions to safely control an aborted port entry due to high wind speeds (training exercise)



»The TRAnsverse 3200 vessels in the Port of Newcastle, Australia, have recorded 124 tonnes escort steering force and 186 tonnes escort braking force at 10 knots.«



The TRAnsverse tug is built to sail effectively in both directions. The tug's controllability and performance in the Centre-lead forward position is excellent, thereby increasing safe speed through the water (STW) window for connection and increased performance in operation.

As demonstrated by the butterfly diagrams above, the TRAnsverse tug offers a wider operating envelope and greater stability at speed. The patented half-circle staple is central to this capability.

Stability in Escort and Braking
Unlike conventional escort staples, the geometry works with the double-ended hull to maintain controlled force application across wider speed ranges and improves stability under towline load.

It:

- Optimises towline lead angles
- Enhances indirect force generation
- Reduces peak structural loads
- Improves stability in high-speed escort

During escort:

- Hull generates controlled hydrodynamic lift
- Towline geometry remains stable across wider yaw range
- Propulsion alignment supports heel control
- Predictable braking response

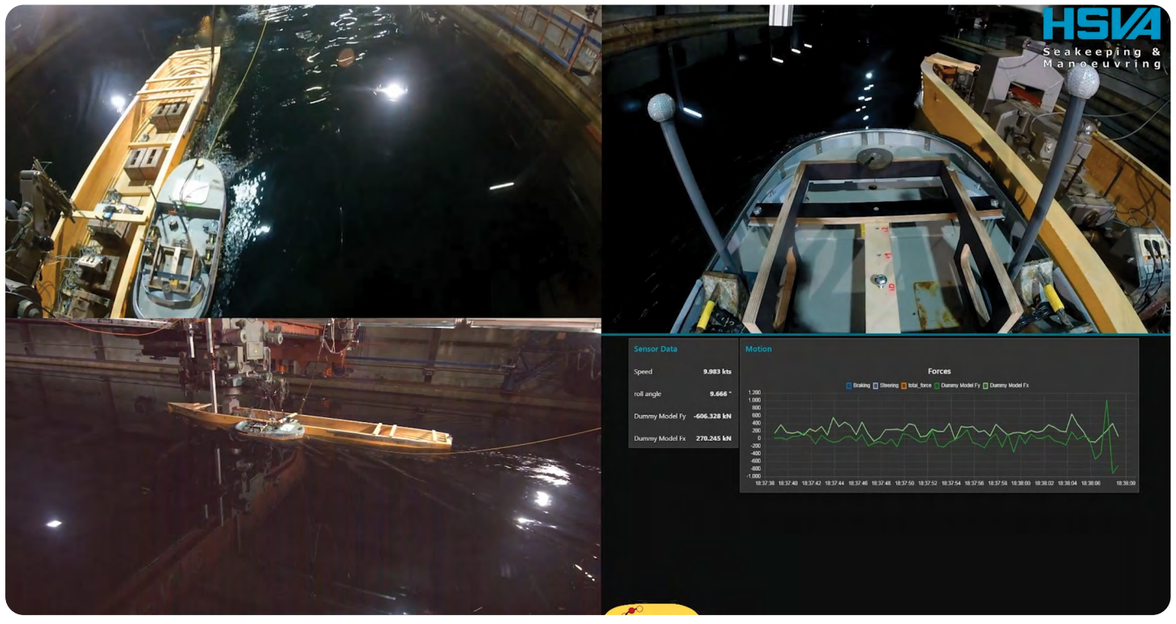
Operational impact:

- Improved arrest capability
- Predictable force build-up
- Reduced oscillatory behaviour

In addition to the staple configuration, the symmetrical hull reduces oscillatory behaviour under load and the propulsion geometry supports controlled thrust counteraction to stabilise heel.

In stern-connected operations, the TRAnsverse can be positioned transversely to the assisted vessel's direction of travel, allowing the hull and thrusters to work together to deliver high braking force.

TRA3200 Svitzer Barrington was awarded **Best Escort Tug**, by Baird Maritime in its annual Work Boat World awards, 2025.



The image shows tank testing of the TRAnsverse's hydrodynamic design at HSVA's towing tank in Hamburg, Germany. HSVA provides a multi-purpose test facility for hydrodynamic model testing. Image shows modelling of side push movement and forces.

Seakeeping performance

Patented staple **creates additional stability** in wave action and swell.



Seakeeping is the ability to operate safely and effectively in varying sea conditions while maintaining operational performance. Hull form, displacement, stability characteristics, freeboard and vessel length are key contributors in a tug's design to support improved seakeeping ability.

Seakeeping is also a direct extension of escort performance. In exposed ports and terminal approaches, the tug must not only generate force once connected; it must also mobilise quickly, establish the connection, hold station, manage towline load, maintain crew confidence and continue operating safely as sea state changes.

The patented staple creates an additional righting moment under towline load, supporting stability in wave action and swell.

For exposed ports and terminals, the benefit is continuity of service and confidence in marginal conditions. Svitzer has built a body of evidence on the TRAnsverse tug's seakeeping ability via operational experience in Amsterdam and Newcastle, feedback from Masters, as well as the delivery crews that have sailed the respective vessels from yard to Svitzer, including for Svitzer Australia - a three-month ocean passage that circumnavigated the Cape of Good Hope.

The image below shows the TRAnsverse tug operating in three metre swell. In addition to the staple and tow pin configuration of the TRAnsverse tug, the vessel is complimented by high quality render recovery winches as an option on all vessels.

In the TRAnsverse design we have a platform that covers the full range of towage operations from nimble and delicate ship handling all the way up to top-of-the-line escort performance. The larger TRAnsverse classes sits at the top of the range making it a very strong combination of escort performance as well as a high degree of manoeuvrability.

Watch video: TRAnsverse operating in 3m of swell



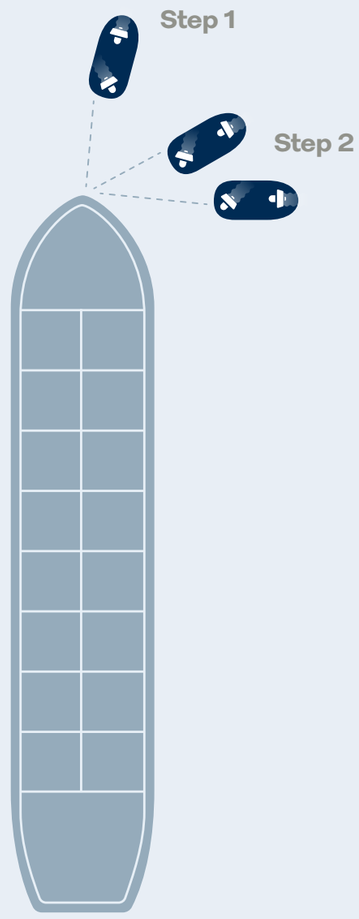


Interactive technical drawing 2

Approaching or departure from/to berth, tug connect Centre Lead Forward (CLF)

Step 1
Connecting the TRAnsverse tug to the CLF is much easier and more reliable than with a 32 m ASD tug, particularly in offshore environments and challenging weather conditions.

Watch video



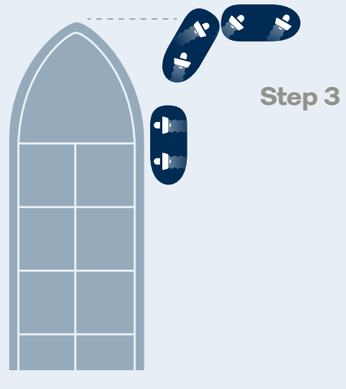
Step 2
Changing position from the 12 o'clock to the 3 o'clock position is possible at higher speeds with the TRAnsverse tug.
In comparison, this manoeuvre is not possible and is unsafe for a 32 m ASD tug at speeds above approximately 2 knots.

It is important to emphasize that the TRAnsverse tug can deliver direct pull at higher speeds, close to its bollard pull, which is not the case for a 32 m ASD tug. In this position, the tug remains capable of returning to the 12 o'clock position, transitioning to indirect towing, or performing side pushing or square pushing if required.

Watch video

Step 3
Dropping down at higher speed for indirect towing, side pushing, or square pushing is possible with the TRAnsverse tug. This is not possible with a 32 m ASD tug.

Watch video



Improve maritime productivity

Move, position and berth vessels more efficiently.



Those who manoeuvre large vessels through narrow channels in strong winds or tidal streams understand the difference between theoretical bollard pull and real-world performance. It's not about official bollard pull or size of the tug, but how a tug utilises that power – at speed, under tension and in dynamic conditions, that defines its true value to marine pilots and maritime operations.

The TRAnsverse tug's speed and control, responsiveness and ability to operate in all positions effectively alongside the vessel (including under the flare), means you can move, position and berth vessels more efficiently, and with greater control than with other tug types.

The thruster location on the hull in relation to the towing point allows for quick, easy manoeuvring into position and can provide steering forces on either side of the towed vessel quickly and, most importantly, safely due to effective vessel positioning.

The design ensures that under loss of power, the tug is pulled safely through the water due to the location of the towing point, naturally shifting to a 'bow forward' attitude in the water when the tow line is under tension.

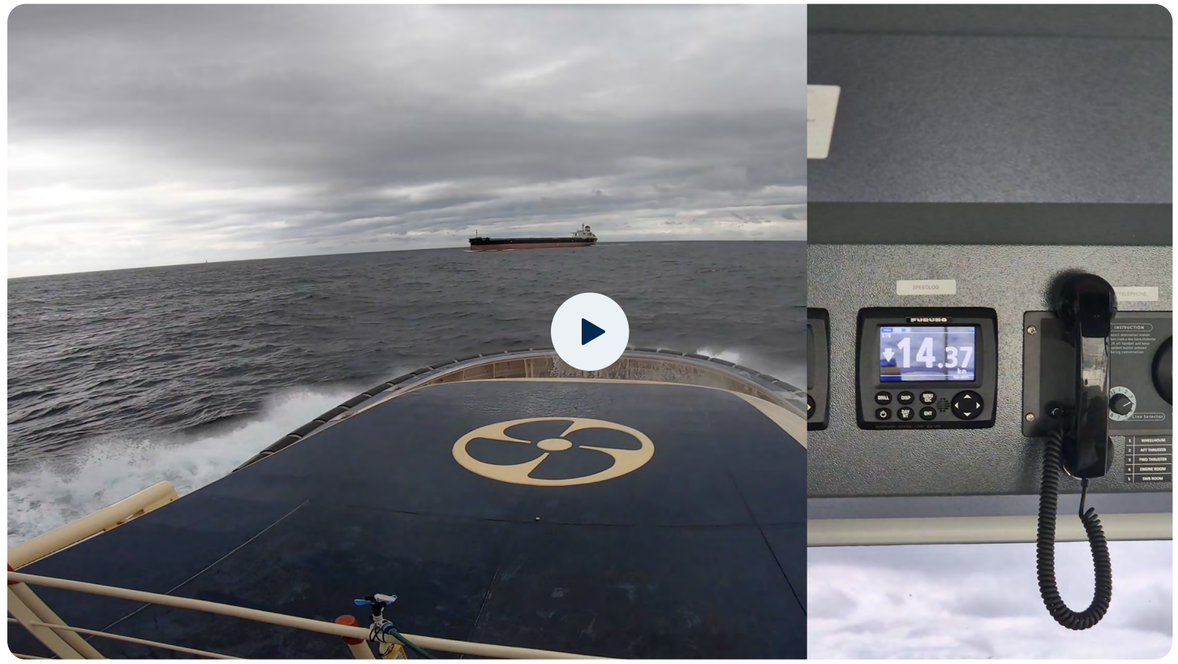
The commercial value is greater risk management and more controlled vessel movement without relying solely on dredging, berth expansion or larger turning basins.

Top line speed
While not the primary focus of the vessel design, the top-end speed of the vessel at 14.3kts (+) astern and seakeeping ability provides quick responsiveness to vessel assist requirements and job turnaround requirements quickly.

14.3kts astern

(TRAnsverse 3200)

Watch video: Below video showing 32m TRAnsverse at 14.3kts



Meeting decarbonisation demands

The TRAnsverse tug is **up to 15 per cent more fuel efficient** than comparable tugs.



The TRAnsverse tug is able to be built to varying power configurations including conventional diesel (biofuel drop-in ready), battery-electric, and hybrid.

The design of the vessel reduces fuel burn by minimising repositioning and using hydrodynamic force more effectively (i.e. non-thrust braking force using the vessel's hydrodynamic design).
The TRAnsverse tug is up to 15 per cent more fuel efficient than comparable tugs.

Analysis of Svitzer Taurus (image below) operating at the Port of IJmuiden, Amsterdam in the Netherlands has illustrated significant fuel efficiency advantages.

Simulation studies across different port operating environments demonstrate further decarbonisation benefits via potential reductions in tug working time of up to 40%, reducing both operational time and fuel consumption.

In December 2025, Svitzer committed to build four advanced, battery-electric TRAnsverse tugs (render image, top right). These 26-meter vessels will feature a 70-tonne bollard pull and are targeted for delivery beginning in late 2027 to early 2028.

The 35m battery-electric escort notated TRAnsverse tug, Svitzer Balder, will be operating commercially in Sweden from H2 2026 (see innovation case study in this White Paper).

»Tracking comparable operations over the same period, Svitzer Taurus achieved up to 30–35 jobs on 4,000 litres (approx. 114–133 L per job), making it among the most fuel efficient tugs operating in its Port.«



Image above shows render of 26m electric TRAnsverse tug class (2600e)



Fleet advantages

The TRAnsverse can perform escort, headline centre-lead, forward, harbour and terminal towage.



Reducing complexity and creating tug fleet uniformity is often a target of port and terminal operators, as it brings fleet and scale advantages for dockings, maintenance, spares and parts, training and overall redundancy and resilience.

The challenge, particularly for multi-freight ports, or locations that experience greater complexity in operations or differing size and class of vessels calling, is a single tug type that can adjust to this variability.

The TRAnsverse tug versatility is demonstrating that it can perform escort, headline centre-lead forward, harbour and terminal towage, as well as meet a wide variety of smaller and larger vessel classes with the right level of dynamism, power and finesse.

The TRAnsverse tug's can assist a wider range of vessels and perform individual shipping movements more efficiently. Its versatile design means it is also able to go from job-to-job without needing to wait for a specialised tug to support.

This assists with scheduling and reduces delays waiting for the right towage assets to become available and also reduces complexity and decision time on port and terminal workers such as Pilots, VTS operators and shipping planners.

TRAnsverse fleet benefits

- Reduced downtime impact through interchangeable assets
- Simpler maintenance and dockings
- Less parts/spares complexity through fleet and equipment standardisation
- Better crew interchangeability
- More flexible dispatch
- Training and support benefits

Designed with the mariner in mind

The ergonomic, human-factor designed wheelhouse **offers superior visibility and decision-making** from the Bridge.



The design of the vessel eases cognitive load and fatigue for tug masters when performing challenging operations and in difficult conditions. It provides more immediate response times to Pilot orders.

The ergonomic, human-factor designed wheel-house offers superior visibility and decision-making from the Bridge, providing enhanced situational awareness for tug crew.

Key features of the vessel and associated training includes:

- The ability to maintain position and stand by without needing to apply force. This removes stress of constant throttle adjustments and allows for immediate, precise responsiveness the moment a Pilot requests it.
- Fatigue mitigation: the ability to hold position in strong tidal currents without constant intensive manoeuvring can reduce tug master workload compared with conventional tugs.
- Intuitive Master training processes, intuitive vessel with only two control levers.
- Easy to control tug heading and position; less master fatigue.



In support of the design, Svitzer has developed a comprehensive training program, invested in world class training facilities and a pool of experienced TRAnsverse training masters globally.

The above image shows one of Svitzer's specialist TRAnsverse Masters utilising a training package at Svitzer's Newcastle maritime training facility in NSW, Australia.

Interactive technical drawing 3

Reverse indirect on the Centre-lead forward or Centre-lead aft

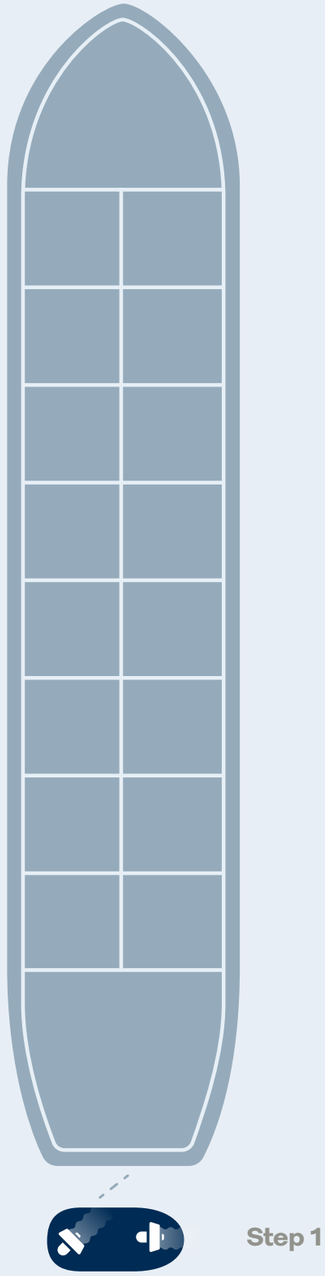
Step 1
This manoeuvre is equally possible at both the stern and the bow.

With the stern thruster, the tug can hold its stern steady to avoid being drawn under the ship's bow or stern.

With the forward thruster, the tug can maintain and position its bow while also providing additional force on the towline.

Step 2
TRAnsverse tugs are equipped with pins located above the stern thruster. This manoeuvre is unique and not possible with a 32m ASD.

In other words, this capability allows us to avoid pushing against the hull when operationally required (most likely due to challenging weather conditions).





Innovation case study: **Svitzer Balder**

Battery-electric propulsion **can deliver heavy-duty escort capability** for large tanker operations.



Svitzer Balder is a 34.9m, 85-tonne bollard pull TRAnsverse 3500 escort tug configured as a battery-electric, methanol-ready hybrid vessel, designed to deliver near-zero-emission towage in one of Europe's busiest and most safety-critical port environments.

High Power Battery-Electric Propulsion
It is the first tug designed to demonstrate that battery-electric propulsion can deliver heavy-duty escort capability for large tanker operations. Most electric tugs to date have been limited to lower-load, shorter-turnaround harbour tasks. Balder challenges that limitation.

The innovation lies in the integration of three advanced but never-before combined systems into a single, class-assessable operational platform.

As Svitzer Balder is enabled by the next-generation TRAnsverse tug design its configuration expands the dynamic operating envelope while improving efficiency and control. The hull, staple and propulsion arrangement ensures decarbonisation is delivered without compromising escort performance.

Svitzer Balder has been fundamentally designed as an electrically driven vessel, with propulsion primarily powered by battery energy and generator sets used only when required.

This high-power battery configuration is engineered to meet the energy demands of heavy escort towage, demonstrating that modern battery systems can support high-load, high-consequence tug operations.

Battery particulars

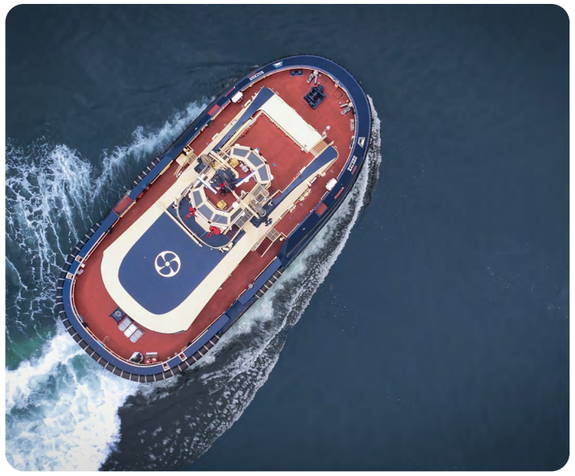
- AYK AriesA series
- Lithium Iron Phosphate (LFP)

Improved safety:

- In-module Smoke & Heat Detectors
- In-module Active Fire Suppression
- LFP more resistant to thermal runaway
- 5, 914 kWh split into two battery compartments
- Each with 4 battery strings
- Sized for >90% of jobs powered by only batteries.



Figure 8: Internal battery placement and storage system, Svitzer Balder.





Key battery propulsion characteristics

- 6 MWh installed battery capacity
- Two independent battery rooms for redundancy and safety
- Up to 6 MW discharge capability for at least 30 minutes in pure battery mode
- Sustained discharge capability of approximately 3 MW
- Shore-power-first AC charging philosophy

Methanol-Ready Hybrid Resilience

To ensure operational resilience and future scalability, Svitzer Balder:

- Is enabled for methanol-fuelled generator sets for low-carbon range extension
- A diesel/HVO generator set with future methanol dual-fuel conversion capability
- A compliance pathway aligned with ABS hybrid vessel rules, methanol fuel requirements, lithium-ion battery standards, and IMO low-flashpoint fuel guidelines.

Watch video: 35m Svitzer Balder in sea trials, Turkey.



Svitzer Balder: Principal particulars	
Length	34.9m
Draft	6.1m
Bollard Pull	87t (max) ~52 tonnes (cont.)
Steering Force	155 tonnes @ 10 kts
Braking Force	199 tonnes @ 10 kts
Battery	6,000 kWh (AYK)
Diesel/HVO genset	1 x 2,000 kW (MAN Everlence)
Thrusters	2 x 2,680 kW (Kongsberg)
HVO	122 m3
Ice Class	1C
Escort notation	Yes: A1

Svitzer Balder was the winner of the coveted **"Tug of the Year"** at the prestigious International Towage and Salvage Awards, 2026.





TRAnsverse tug specifications

In 2025, the TRAnsverse tug was awarded **winner of the Supply Chain Innovation award** at the DCN Shipping & Maritime Industry Awards, Australia.



Model	BP	LOA	Beam	Displacement Summer water line draft
3500	85+	35	15.5	1337
3200	80+	32	13.1	833
2900	80	29	13.1	788
2600	70/80	26	13.1	700
2600e	70+	26	13.1	740

	Indirect forces 8knots		Indirect forces 10knots	
Model	**Steering**	**Braking**	**Steering**	**Braking**
3500	117	168	155	199
3200	102	145	124	186
2900	97	142	112	181
2600	91	140		

Vessel specifications

Particular	TRAnsverse (all models)
Escort notated	A1
Forward Winch	Split drum
IMO Tier III	Yes, built Tier III ready
Firefighting	FiFi1 (water spray & foam available)
Station keeping during firefighting	High
Towline and winch protection	Yes
Course stability in propellor wash	Very high
Propulsion confirguration options	Conventional diesel (biofuel); electric; hybrid

Unlock your maritime performance today

→ Contact Svitzer Commercial Team
→ Request Meeting, Workshop or Simulation

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