# TugeZine

all about tugs

## *All about Kotug...*


vol. 6 **nr. 32**
2025

## To boldly go . . .

is the well-known catch phrase at the start of every film about the daring SciFi adventures of the Starship Enterprise during its voyages across the universe. Startrek was the series title.
In fact it was a voyage into the unknow with hi-tech equipment. The series was created by a lot of out-of-the-box thinking.

There are parallels with the situation on mother Earth where the occasional daring entrepreneur crafts a path no-one has done before.

This is what came to mind when notified of the passing away **of mr Antonie Marius Kooren**, known to all in the tugboat market as **Ton Kooren**. He is probably best known for his invention of the Rotor Tug as well as his bold moves into the shiphandling markets in Rotterdam and other European ports where he broke cartel-like operations and / brought the price of shiphandling down. The Kotug business is continuously evolving, since 2002 under command of his son Ard-Jan.

Ton Kooren has won several awards, culminating in 2023 in the **ITS Lifetime Achievement Award** for which he was elected by the international tug and towage community. Others included the **Rotterdam Port Personality 1999** for which he was elected by the Rotterdam Maritime Press Club 'Kyoto' (his son, incidentally, received the same award in 2012), the KNVTS (Royal Netherlands Society of Shipping Technicians) **Ship of the year Award** for the Rotor Tug *RT Magic* in 2000, the **Freight Selection Innovation Award** in 1999 and the **Rotterdam Entrepreneur of the year 2000 Award**. Ton also was named **Officer in the Order of Oranje-Nassau** by the then Dutch Queen.

**Job van Eijk (editor)**

*front page: RT PIONEER on of the first batch of Ton Kooren's invention, the Rotor Tug* *photo Hans Hoffmann*

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# ‘A dream come true . . .”

by Hans Hoffmann

*Note: this article was earlier published in Lekko International 115 (January – February 1999) and is repeated here in a slightly abridged version taking us back to where Ton Kooren’s Rotor Tug idea came to life.*

Wednesday 20 January, 1999, was a milestone for proud tug owner Ton Kooren. The first two of his patented Rotor Tugs had just arrived at Europoort, Rotterdam on their delivery voyage from Spain, when an order came in to assist the *Sealand Atlantic* into her berth at the ECT Sealand terminal. This was their first chance to test the radical change in ‘tugnology’ for real.

In 1995 when the contract for ship assistance at Milford Haven came up, Ton Kooren started toying with an idea of getting more power into a relatively small, shallow draft tug hull in order not to impose too many restrictions on the operational usability. The idea was to come up with tugs that would be able to pull about 75 tonnes. It has always been Kotug’s philosophy to use high powered tugs in order to be able to assist the ships with less units, thus reducing costs for the customer. The idea came to divide the desired power over three propellers, which would have to be azimuthing thrusters.

The first thought was to put them in line, but this would mean that the flow to the centre thruster would be disturbed too much. Says Ton Kooren: ‘I was thinking about the problem for a while when one night, at 2 am, I woke up and thought about putting one aft and two forward. After all, the idea we had was to be able to escort over the stern, like a Voith tractor, but without the disadvantages of the wash against the large skeg found on Voith tugs. This configuration would make it possible, with the third unit then acting as an active skeg’.

The next morning he got his people together to start working on the idea. The design was made in-house, with Padmos Shipyard, Stellendam, The Netherlands, optimizing the engine room configuration and Bureau Wubbolts translating the design into workable drawings. When Ton Kooren announced his expansion to the port of Hamburg on 21, December 1995, the first plans of the Rotor Tug were also presented.


*Wheelhouse with navigation mast photo: Job van Eijk*

**Rotor Tugs for Bremerhaven**

The ‘Americans’ in the Kotug fleet, the former Faust tugs that Kotug started their offensive with in 1988, served as an example for the hull shape for the new Rotor Tugs, as they would soon be called. Their wide beam provides for a large stability, making it possible to operate beyond larger limits when operating in indirect or combination mode when escorting. The lines of the hull needed some adjusting to ensure a proper flow of water to the Schottel propulsion units. The idea of the Rotor Tug was offered for the Milford Haven contract, but the decision-makers were not yet ready for this. The disadvantage was, of course, that no one had ever seen or experienced the workings of the Rotor Tug and the authorities decided to


*Pioneer Ton Kooren on board his Innovation - he smiled a lot that day photo: Hans Hoffmann*

play it safe, so the contract went to Cory again. Nevertheless the genie was out of the bottle now.

The successful operations at the port of Rotterdam, and the good relationships with the clients there, prompted the move to Hamburg on 1 January 1996. This resulted in a mayor price breakthrough on the German market, which caused quite a stir with the well-established companies there. However the customers, like Sealand and Maersk, were quite pleased. Not only with the cost reduction, but also with the high level of service and modern equipment and they soon requested services at Bremerhaven too. Market research was done and with the advantages of the Rotor Tug the move to Bremerhaven could be a profitable one. In June 1998 Kotug sat down with Bremen's senator for ports, Herr Beckmeyer, to discuss the plans and possibilities.

*RT PIONEER arriving at Pasajes* *photo: Kotug*

**Testing the design**

The design still needed some fine-tuning so the help of the Maritime Research lnstitute at Wageningen, The Netherlands was called ln. Towing tank tests made it possible to optimize the hull form and determine the right position of the propulsion units. At Marine Safety International, Rotterdam, real-time simulation trials were performed in co-operation with the Harbor Master of Bremerhaven, several tug masters, Bremerhaven pilots and representatives of the major car carrier companies like Wallenius, Wilhelmsen, HUAL and NYK, some of the prospective clients at Bremerhaven. The port of Bremerhaven, includes the locks and swing bridge leading to the narrow basins of the Kaisershafen. The car carriers at Bremerhaven were until then handled by four, or even up to six tugs in view of the strong currents and high wind speeds. Kotug's plans called for less tugs, but this would necessitate more power per available unit. The three-day tests at Marine Safety proved that it was possible to handle the car carriers with just two Rotor Tugs under most circumstances. The pilots tested all possible scenarios and all parties involved were very enthusiastic with the results. In August 1998 Kotug started advertising to recruit personnel for the Bremerhaven fleet and in November a local office was set up. It was clear that there was no turning back.

The fleets of Unterweser, Transport & Service (former Hapag) and the smaller operator Midgard so far handled the ships at the German port. Of course the plans of their new competitor were soon known, which allowed the managers the take appropriate measures to be ready. They had seen the damage done in Hamburg two years earlier. Several cost-reducing measures were taken, such as change of the shift system and reduction of the number of tugs, but time will tell if this will be enough to survive the battle.

*With RT INNOVATION in the background RT PIONEER sails for her second job while Ton Kooren (left) is interviewed by maritime reporter Jack Gaston* *photo: Hans Hoffmann*

The order for the first two units was given to Astilleros Balenciaga S.A. at Zumaia, Spain, early in 1998. *RT Pioneer* was launched on 6 October,1998, her sister *RT Innovation* the next day. Sea trials were conducted in December and early.January with Belconed of Best, Holland recording the manoeuvring characteristics. The third unit, *RT Spirit* is currently under construction at Construcciones Navales P. Freire S.A. at Vigo, Spain, with delivery slated for mid-February. The same yard also constructed the hull of *RT Magic*. The hull of this unit arrived at the Padmos Shipyard at Stellendam, Netherlands in tow of former Kooren flagship *Antonie Junior* on 30 September, 1998. She will be completed in April, 1999.

*RT INNOVATION at speed* *photo: Jan Plug*

The rumours about the Rotor Tugs had been around for a few years now, and it was sure that they would be every bit as spectacular as Eric Hvide's Ship Docking Modules, another revolutionary departure from the traditional tug designs, that was presented a year ago. The American SDM's, or 'floating saucers' as they are nicknamed, are designed for pure harbour assistance and are no more than indeed a ship docking module. The Rotor Tugs however are designed with a much broader range of activities in mind. Apart from the usual shiphandling duties, they are very well equipped for escort duties, rig moves and other sea voyages. They are described by Kooren as oceangoing harbour and escort Rotor Tugs. Whatever restrictions there might have been to other propulsion configurations, they seem to have disappeared with the Rotor Tug.

As with the SDM's the Rotor Tugs are capable of exerting a high bollard pull sideways (Hvide claims in every direction) and with a speed of up to six knots. During trials a bollard pull of 68 tonnes was achieved. However, Schottel will make an adjustment to the propellers soon and this will increase the pull to about 80 tonnes. In escort mode the Rotor Tugs are expected to be able to exert some 150 tonnes on the towline. This will require some adjustments to the assisted vessels, as is done with the tankers that are escorted in Alaska and the Puget Sound. Special kinds of fairleads and bollards are installed on these tankers to ensure that they can withstand these huge forces.

One of the main advantages of the three propulsion units is the reliability. Even if one propulsion unit or engine was to fail, the tug would still be able to fulfil its duties with a minimum bollard pull of 50 tonnes. This enables the operator to postpone the necessary repairs until a later stage when time allows for it. This would also mean that terminal operators wishing to use the services of the Rotor Tugs would have to worry less about having a standby tug available in case one of the other tugs would fail. Apart from being revolutionary, the tugs are also pretty smart to look at. Ton Kooren says he loves lines and it shows. The slanted superstructure and stylish funnels will have made the design a bit more costly, but they sure make a difference from some of the 'functional' newbuilds we have seen recently. Also the Spanish style interiors with lots of woodwork make for a warm atmosphere instead of the cold formica and steel wall panelling commonly used.

**Bremerhaven - the start**

On the 1st of January, 1999, Schleppreederei KOTUG GmbH started at Bremerhaven. As the Rotor's weren't ready yet, part of the Rotterdam fleet was sent over for the time being. Only *ZP Montelena* was left at Rotterdam, the remainder of the red fleet was put to work in Hamburg and Bremerhaven. In order to fill in the gaps at Rotterdam Svitzer's *Skuld* and Cory's *Maria Luisa II* were chartered, complemented by the Voith Tractor *Pollux* (Iskes) and the 31 tonne bollard pull *Viking* (Koerts). Part of the USd 30 million expansion programme was the acquisition of Atlantic Marine's *Atlantic Fir*. This new stern drive tug, designed by Robert Allan Ltd. of Vancouver, was renamed *SD Jacoba* and like the Voith Traclor *Tramontane* and some of the more conventional units in the fleet, painted with a black hull. Until the delivery of the Rotor Tugs, *Felix*, a sister to the 52 tonne bollard pull *SD Jacoba*, was also chartered for service at Hamburg.


*The hull of RT MAGIC arriving in Holland in tow of ANTONIE JUNIOR, the former flagship of Sleepdienst Adriaan Kooren* *photo: Ferry van Rijsbergen*


*RT SPIRIT on 1 March, 1999* *photo: Hans Hoffmann*

**Trial tows**

*RT Pioneer* and *RT Innovation* arrived in the port of Rotterdam on 20 January, 1999. The next few days the masters and crews were given ample opportunity to practice their skills with their new toys in the Europoort area. The day after their arrival some members of the press were given the opportunity to see the tugs in action. After a tour around the tugs the engines were started on *RT Pioneer* for a job at the ECT Sealand terminal. The lines were let go, and instead of the expected backing out, we went sideways with a dazzling speed and soon all sense of direction was lost. It was clear that this was unlike anything else we had seen so far. The control of the tug with three propulsion units requires some new skills from the masters.

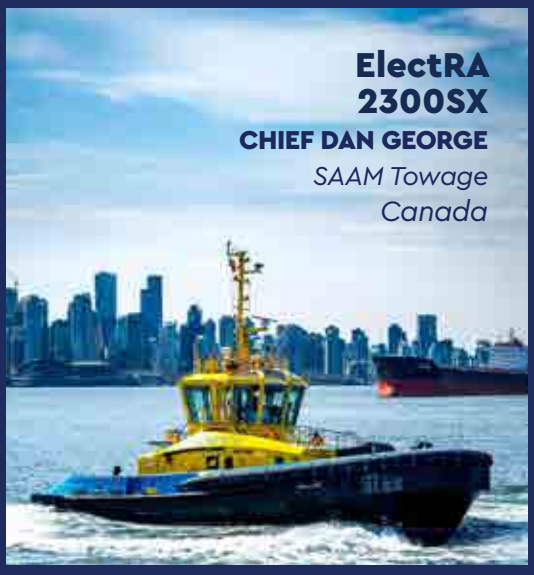
*RT PIONEER at speed* *photo: Frans van Wilgenburgh*

The three Schottel units each have separate controls. In order to compensate for the deficiencies in the design of the human body, having just two arms instead of three, there are several options to combine the control of the units. All three units can be coupled and controlled by one Master-control. In the 'towing mode', the two forward units are linked, with the stern unit controlled independently.

The job of towing the containership off the berth at the ECT terminal was no effort for *RT Pioneer*. The masters on the Rotor Tugs are impressed and convinced about the new possibilities they have to offer. Surely the pilots will soon follow and get used to these powerful vessels.

The services at Bremerhaven went off to a flying start. According to Kotug, in the first month alone the tugs assisted some 380 ships, thus taking about 50 percent of the business. Unterweser, T&S and Midgard suffered a severe blow and had to react by laying up several of their units. Time will tell if they will be able to recover. Meanwhile, Kotug is looking at the next European port to expand to. No doubt more Rotor Tugs will be there to win the battle.

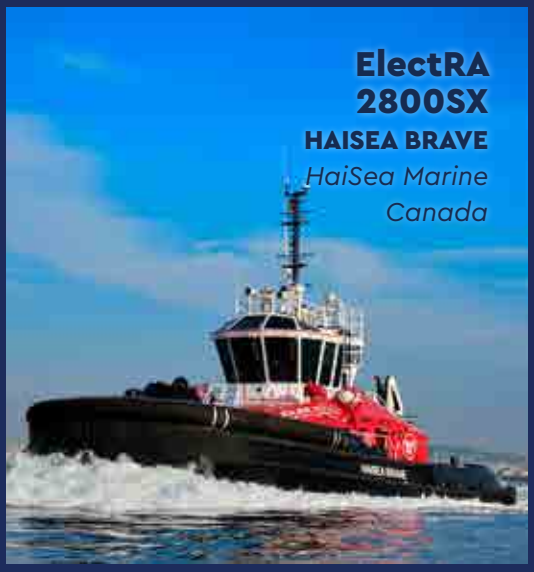
# NOW 9 ElectRA's IN OPERATION











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*RT PIONEER and RT INNOVATION floating out at Astilleros Balenciaga*
*photo: coll. Ferry van Rijsbergen*

**The tugs**
*RT Pioneer* and *RT Innovation* were completed by Astilleros Balenciaga, Spain, in January 1999. Two sisterships will be delivered later in 1999. *RT Spirit* will be completed by Construcciones Navales P. Freire, Vigo which also built the hull of *RT Magic*. This tug will be completed by Shipyard Padmos of Stellendam, The Netherlands. All tugs are registered at Rotterdam and fly the Dutch flag. Main dimensions are: 31,63 m (oa) / 29,08 m (bp) x 12 m x 4,4O m / 5,4O m depth. Hull draught is 3,86 m, with an average (total) draught of 5,90 m. Gross tonnage is 449, with a corresponding nett tonnage of 134. Total main output is 6.300 bhp. The tugs are classed Germanischer Lloyd + 100 A5 "E TUG" +MC. E. AUT.

The **hull** is divided into six watertight compartments. From forward to aft these are the fore peak, accommodation on top of the ballast and fuel tanks, forward thruster room, engine room with aft thruster, tank space and aft peak. Frame spacing is 50 mm. Aft of the fore peak bulkhead are the chain lockers. Here, also, **accommodation** is arranged for four crew in two cabins. The accommodation area also includes the laundry (to starboard) and the shower. In the corridor against the front bulkhead are toilet facilities. To port and starboard of the accommodation are ballast / waste water tanks each of 23,4 cubm. The two fuel tanks below the accommodation have a capacity of 36,3 cubm each.

The **forward thruster room** houses two Schottel SRP 1212-FP azimuthing thrusters. The propellers have a diameter of 2.150 mm and are rotating within Kort nozzles. Here, also, a workshop was installed. The forward thruster room also houses a sewage plant and the bilge-water separator. Below the thruster room is a dirty-oil tank with a capacity of 9,3 cubm.

The **engine room** houses the three 16-cylinder Caterpillar 3516-B DI-TA turbocharged aftercooled main engines developing 1.566 kW / 2.100 bhp at 1.600 rpm each. The engines are fitted with electronic fuel injection systems. The centre engine drives the aft propeller. Clutches are Twin Disc MCD type 3000-2LD. The port main engine drives a 600 cubm/hr fÍre pump through an Airflex coupling. The centre and starboard engines drive the hydraulic pumps serving the winches through an Airflex coupling. Two air compressor, make ERVOR, were installed. Each has a 500-litre air tank. Two Caterpillar 3306-B DIT gen sets were fitted aft of the main engines. They supply 150 kVA with the engines running at 1.500 rpm. The engine room is fitted with a CO2 fire-fighting system. All spaces on the tug are fitted with Autronica fire detection and alarm gear. Air conditioning of the tug was supplied by Heinen & Hopman. Below the engine room a fuel tank of 32,9 cubm was constructed. To port and starboard are two 5,4 cubm lube-oil tanks and two 8,5 cubm settling tanks. Forward of the port side settling tank is the central heater.

**Aft of the engine room** are a fuel tank (40,2 cubm) and, to port and starboard, two fresh water tanks, each 12,8 cubm, and two ballast / waste water tanks, each 21,8 cubm. The **aft peak** also is fitted as tank space, with two 7,5 cubm and one 8,6 cubm ballast / waste water tanks.

**Main deck**
The main deck forward of the towing deck is slightly raised. Forward sits the Ridderinkhof AMW-H-236 towing / anchor winch. The winch is fitted with a towing drum with 200 m x 56 mm wire shackled to 10 m x 100 mm synthetic hawser and 20 m x 48 mm pennant wire. Two anchor-chain wheels for 24 mm studlink chain are fitted on the winch, as well as two warp heads.
The **superstructure** forward is quite unlike current tug design, with rounded forward bulkheads. The messroom is situated forward port side, adjacent to the galley. At this level, the 1st Officer and the Chief Engineer have their cabins to starboard. Both cabins are fitted with single berths, two cupboards and a desk.

*RT MAGIC under construction at the Padmos yard* *photo: R. & F. van der Hoek*

The Chief Engineer's accommodation is provided with a settee as well. The cabins share a bathroom with shower, wash basin and toilet facilities. Another toilet room was constructed along the central corridor. Aft of the galley is the switchboard room which also provides access down into the engine room as well as to the towing deck. To port and starboard are the air inlets and engine casing. To port the battery room opens up to the deck. Entrance to the accommodation is to starboard, while there is another entrance aft. Furthermore, the harbour gen set (Perkins, 26 kVA) is fitted to starboard as well as a store room and a deck store opening up to the towing deck. To port are the CO2 room and the paint store.

On the **towing deck** is the massive Ridderinkhof TW-H-300 towing winch, which is fitted with three drums and a warp head in the waterfall mode. The top drum is intended for sea towing and fitted with 600 m x 56 mm wire shackled to 10 m x 100 mm synthetic hawser and 20 m x 48 mm pennant wire. The lower (shlphandling) drums each have 200 m x 56 mm wire shackled to 10 m x 100 mm synthetic hawser and 20 m x 48 mm pennant wire. Pull is 30 tonnes at 15 m/min and 13 tonnes at 30 m/min at first layer. Maximum brake load is 200 tonnes at first layer.

Fitted against the winch is the Van der Graaf GSH-100 towing hook, swl 100 tonnes. Aft of the winch is the towing bollard. Bulwarks of the tug are set well inboard. To protect the hull, a combination of fendering systems are used.

*Captain Aalbers steering RT PIONEER with the two forward controls. The aft control is in the centre position*
*photo: Hans Hoffmann*

The **second level of the superstructure** is taken up by the airco room and a store room. Forward is the Master's cabin which consists of a day room with settee and desk, and a separate bedroom and private toilet, wash basin and shower. The **third tier** of the superstructure is the **wheelhouse**. Two control desks were fitted longitudinally, with a third control desk port side forward. The latter controls the forward winch and also house a radar set. The tugs are fitted with a Sestrel magnetic compass linked to an Alphatron Pilot type SR3 with repeater and an Anschütz Pilotstar-D autopilot. Two JRC / Raytheon JMA-6000/TM21 daylight radars were installed, as well as two echosounders, one Alphanav and one Simrad Skipper ED-162. Communications equipment is fairly extensive, with the tug being equipped for GMDSS area A2. A Skanti TRP-1250 with a DSC unit type TCU 1000 was fitted, along with two VHF sets from SP Radio (type 2048). For navigational purposes, a JRC differential GPS unit was installed. JRC also manufactured the Navtex receiver, which is their type NCR-300A. Rate-of-turn indicators are of the Alphatron Alphaturn model.

On the **top deck** two searchlights were fitted, one forward, one aft, as well as the standard compass. *RT Innovation* and *RT Pioneer* were fitted with fire-fighting gear, jokingly described as FiFi ½ standard. Actually, one monitor was fitted with a capacity of 600 cubm/hr, with the fifi pump being driven from the port main engine. The tugs are, however, prepared for FiFi-1, with the piping already in place, so only the second monitor will have to be put on board as well as a bigger fifi-pump the foundation plates for which were already put into place.

*RT PIONEER stern view* *photo: Job van Eijk*


*Bow fendering and forward winch* *photo: Job van Eijk*

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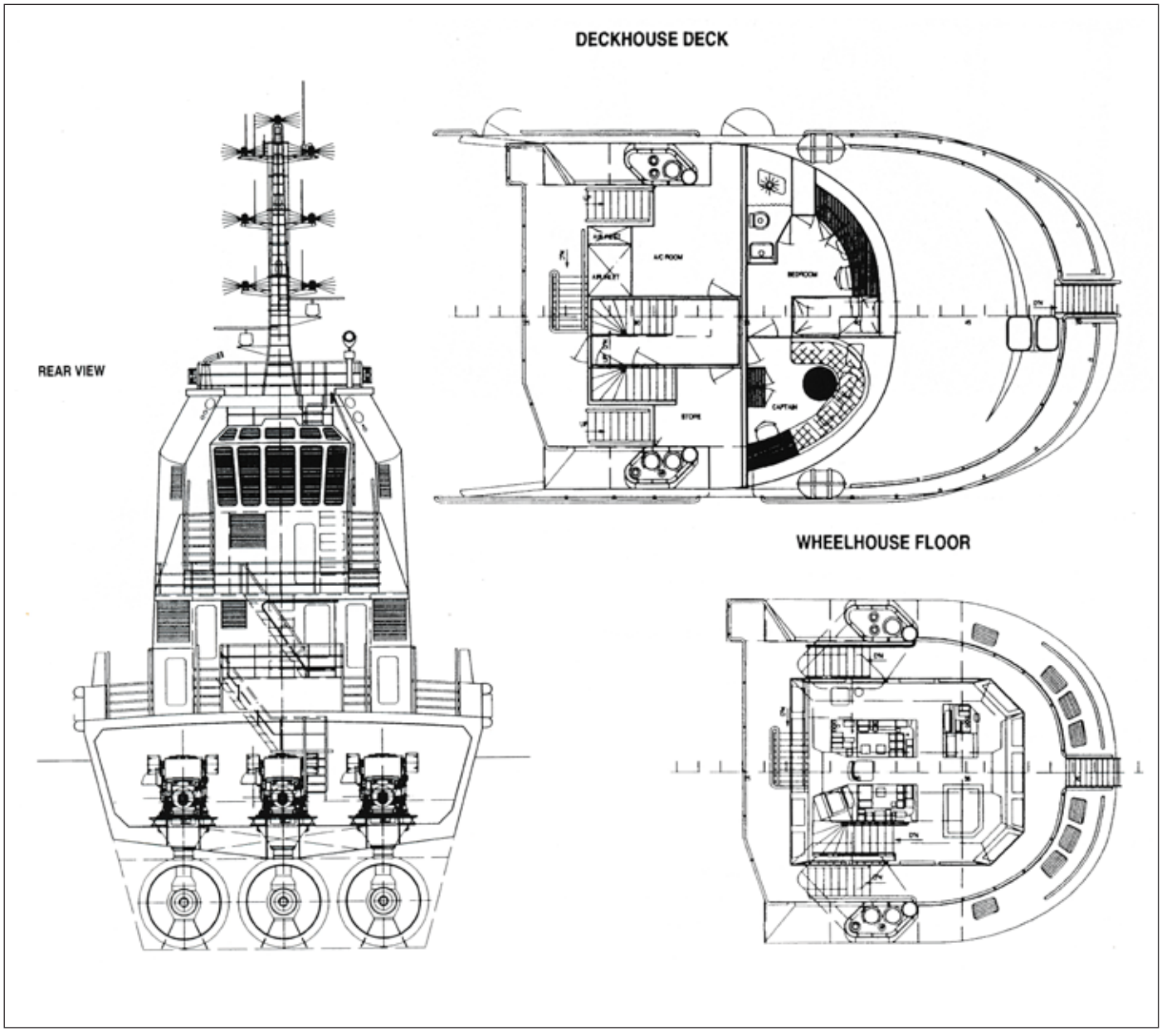
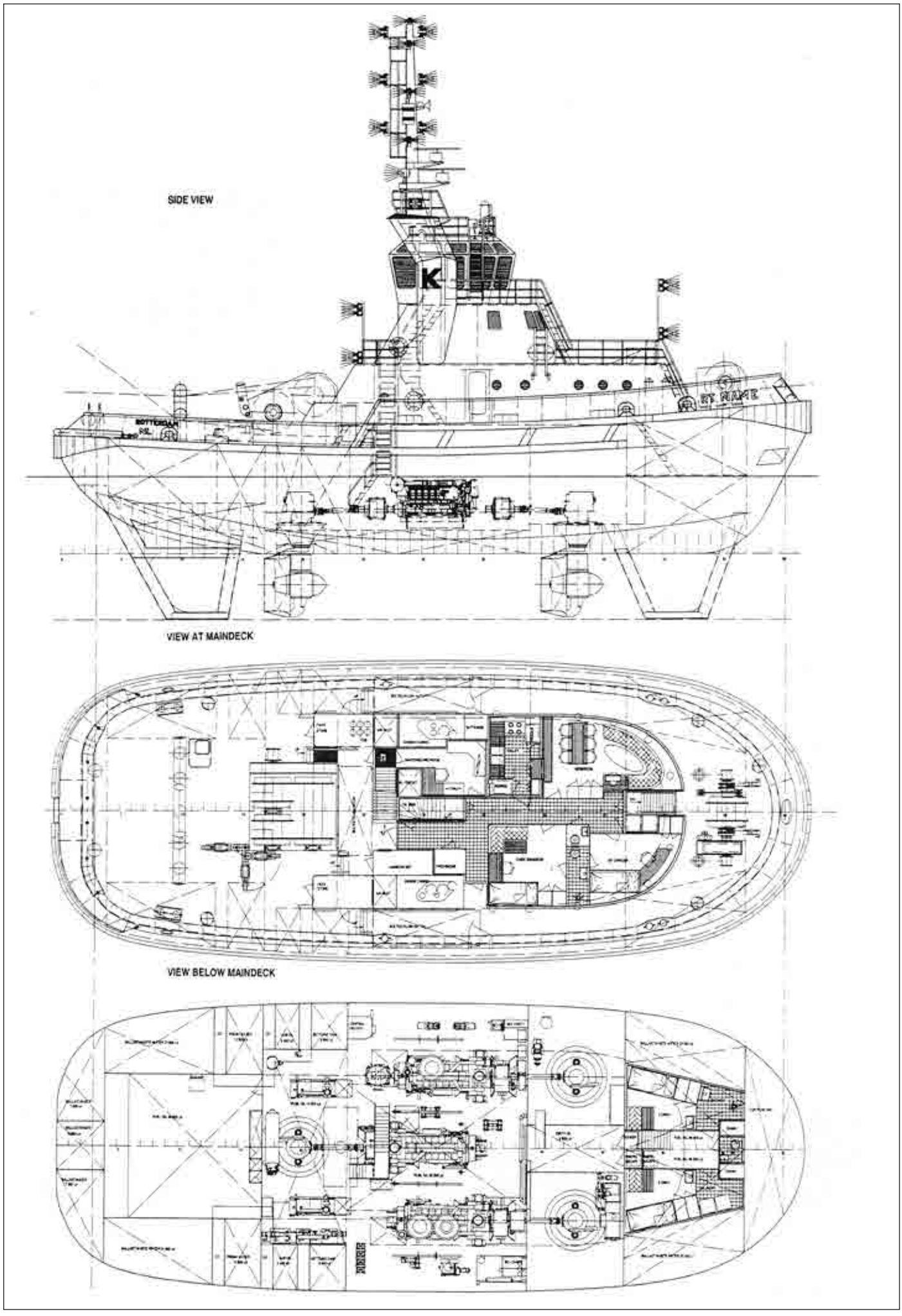
*RT PIONEER moving sideways at high speed* *photo: Job van Eijk*

*Aft towing winch* *photo: Job van Eijk*

*Thanks are due to Kotug for their help in providing facts and figures about the new Rotor Tugs; the Captain and crew of R.T. PIONEER' for demonstrating their tug, and Captain and crew of POLLUX for their assistance in the photo-shoot.*




*General arrangement RT MAGIC* *drawing: courtesy Kotug*


SIDE VIEW
VIEW AT MAINDECK
VIEW BELOW MAINDECK

*SMIT KIWI was built in 2011 at the ASL yard as RT SAMBA for operations in Belgium. Later SMIT KIWI and currently VB KIWI photo: Nico Ouwehand*

*HERMES is owned by Seabulk*
*photo: courtesy Robert Allan Ltd*

*The Rotor Tug BUGSIER 4 was built in 2008 by ASL. 6.529 bhp - 86 tbp*
*photo: Sjaak van der Meer*

*BUGSIER 6 sailed as ACCURAT (Lütgens & Reimers), MIDLUM (URAG), and today VB HUNTE*
*photo: R.& F. van der Hoek*

# Ton Kooren

**30-7-1936 - 13-11-2025**

27 May 1989: Kotug-Lekko tug parade

Rotterdam Port Personality of 1999

1999 Freight Selection Innovation Award

2017: naming the training tug RT BORKUM

Tugnology 2017

2014: opening Kotug expo at the NSM

2023 ITS Llifetime Achievement Award

# Kotug

With a new structure in place - now under the banner of Kooren International -Ton Kooren started to execute the plans made for the future. New opportunities arrived.

by TDI Tugboat Publications

**Ton Kooren started at a young age working on his father Adriaan Kooren's tugs. Having an interest in the technical aspects of tugs and towing in due course he joined his father and his brothers in the office as the Technical Director.**

In 1977 due to a difference of opinion over the future direction of the company he left and set up his own business, Ton Kooren International. He operated purely as a deepsea towage-, transport- and shipbroker. By the end of 1985 the Adriaan Kooren operation needed a boost and his father – getting on in years - asked Ton to return and take over the business. His brothers agreed and both businesses were merged with Ton becoming President of the Kooren Group.

**With a new structure in place - now under the banner of Kooren International -Ton Kooren started to execute the plans made for the future. New opportunities arrived.**

### Shiphandling

In July 1987 it was announced that Sleepdienst Adriaan Kooren had decided tom start shiphandling in the Rotterdam and Europort areas as a means of survival. Beforehand the possibilities had been scouted with the shipping companies using the Port of Rotterdam. They reacted in a positive way provided tariffs were reasonable and that only excellent equipment would be used.

Ton Kooren wanted to reduce the costs of shiphandling by using highly automated and powerful vessels thereby reducing the manning-level and at the same time to provide assistance with less tugs than would be possible with lower powered vessels. As the towage tariff is **per tug** the total savings (reckoned by Kooren to range between 20 - 50%) would be in the entire handling costs.

Dutch newspapers reported about the possibility of a forthcoming tugboat-war between Kooren and the main operator in Rotterdam, Smit International. The latter had over the years gained an almost monopoly. This of course was denied by both parties as they considered this bad for business. At that stage it was not known what tugs would be acquired so the papers guessed on boats as far apart as Saudi-Arabia and Japan although they agreed on 3.500 hp, 34 tbp and the number of tugs would be four. It turned out to be not the best guess....

### Kooren International

The first week of August 1987 ended all speculation. Six tugs had been purchased in the USA, each with a bollard pull of about 50 tonnes. A real catch – it is hardly likely that you have the opportunity to acquire a fleet of state-of-the-art hi-spec tugs in one buy. The tugs in question were the former Faustug-boats repossessed by MARAD when Faust defaulted on the loan.

### The Faustug story

To start in shiphandling in Rotterdam and convincing potential customers required hi-spec powerful modern tugs in quantity. As luck would have it a man by the name of Thomas Faust in the U.S. had developed such tugs. Faust in 1976 got interested in the tractor tug concept. He was at that time Director of Planning and Budgets for a major Pacific tug owner. Having seen the operational specs he realized as he put it that "the American tugboat fleet had become technologically obsolete". Convincing his employers of the advantages of a tractor tug ran into a brick wall because "as these were such superior tugs surely someone else in the U.S. had built them".

He then decided to go at it alone and in mid-1977 he started Faustug Marine Corp. based in San Francisco.. Extensive research all over the world resulted in tendering with U.S. shipyards. The next hurdle was financing with the bankers refusing on the same grounds as his former employers. When finally able to contract for newbuildings it was Q2 1980. The yard gave favourable delivery times with the first boat ready


*ZP CHANDON owned by Faustug seen at Port Arthur, TX photo: coll. Job van Eijk*

*ZP CHALONE inspection of thrusters and bottom photo: coll. Job van Eijk*

*ZP CHANDON towing ZP CONDON arriving from the U.S. in Rotterdam with an escort of protesting Smit tugs, December 1987* *photo: coll. Job van Eijk*

in December 1981. Not so. The yard went bankrupt in September 1981 with the first boat 80% complete but with sections and parts for the remaining 7 boats scattered all over the yard. So Faust purchased the yard to become a shipbuilder of necessity. Next the new owners were locked out by the former management in an attempt to negotiate a new contract. Some of the lock-outs were at gunpoint. Six court cases were necessary to finally startup the **Valley Shipbuilding Inc**., Brownsville TX. Faust compared this to "the shoot-out at the OK corral".

In the end the first of the '**TracTugs**' was completed in December 1981 with the second boat following in February 1982. More boats followed. Faustug used the tugs successful in the offshore industry in the Gulf of Mexico. Unfortunately that market crashed and with an overcapacity in tugs Faustug was pushed out. They switched to harbour work. As the Faust tugs were officially licensed to work with a 2-man crew in port this was not liked by the competitors. They used every possible means to keep Faust out of the ports, in which they were aided by the Unions that organized a.o. picket lines and strikes harassing the crews and operations. Politics were also mobilized. The banks became worried and kept a tight rein.

**Tractug Associates** - the parent of Faustug - filed for protection under the so-called Chapter 11. in 1983. MARAD - the government institute that guaranteed a part of the loans - tried to recoup some USD 25 million from Tractug Associates. On 21 November the U.S. district Court in San Francisco issued an order that allowed MARAD to circumvent the bankruptcy court to seize the tugs outside of Chapter 11. An appeal by Faust was denied so late December the three tugs in Seattle were seized by U.S. Marshalls. The other tugs at San Francisco and at Brownsville followed. This included the two hulls still under construction (*ZP Acacia* and *ZP Carneros*, at the time about 75% and 45% ready with all remaining parts and equipment already in the yard). MARAD was to auction the boats with the condition being they were never allowed to operate in the U.S. This brought in foreign interest. Rotterdam-based Smit appears to have inspected the vessels as well but reportedly found them not good enough for Rotterdam, and not good enough for a contract they just had obtained in Panama.

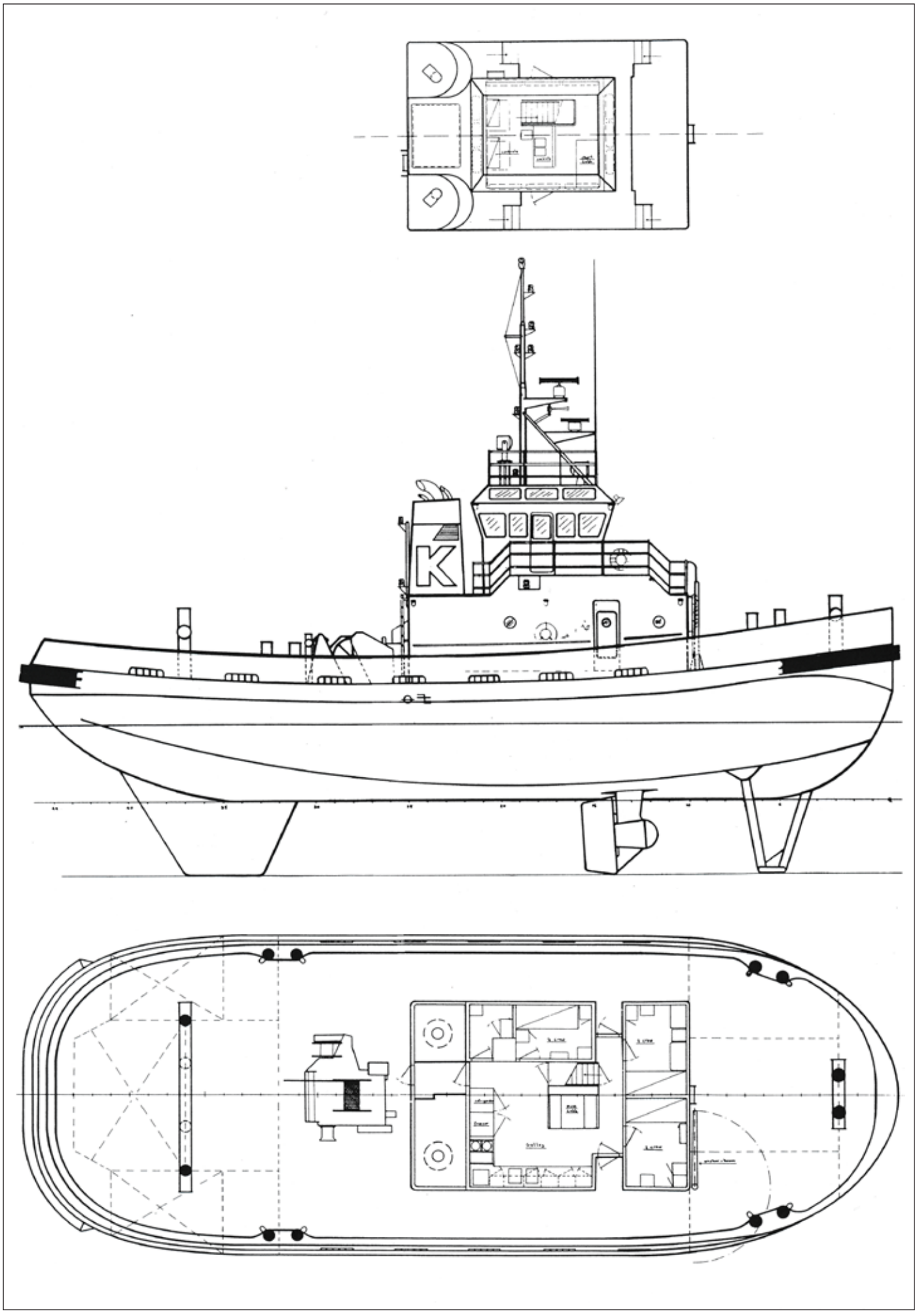
**Ton Kooren thought otherwise**

He and some of his employees had inspected the tugs and found them to be 'spartan' but excellent in design and fit for the purpose of hi-tech efficient shiphandling. He bought the six tugs and brought them over to Holland. Later, he also made an offer for the two incomplete boats but these were eventually sold within the U.S. for approximately the same price Kooren had paid but in this case the tugs would be finished in an American yard.

**Smit refuses agreement**

While this was going on Kooren tried to reach an agreement with Smit.


*Adriaan Kooren's MARLENE - 570 bhp 8 tbp - was used as a shiphandling tug during the start-up period*
*photo: coll. Job van Eijk*



*General Arrangement of Kooren's Faust tugs*

*drawing: courtesy Kotug*

Smit, itself also in financial difficulties, declined to co-operate. Ton Kooren explained his motives: "There is some overcapacity regarding tugs in the port of Rotterdam but we have to do this. Nowadays we operate 25 tugs in the civil engineering sector; that used to be much more, at one time even over a 100 tugs were thus employed. We tried to battle this decline by operating on different projects. We have operated the *Antonie Junior*, *Borkum*, two chartered pontoons and the tug *Lies* for a Dutch contractor in Algeria for a few years. Some time ago our *Seatruck I* worked for three months on a West-African contract. But it's not enough."

Legal battles followed as the Union on behalf of the Smit crews challenged Kooren's vessels, personnel, tariffs, etc. An attempt to declare the Smit collective employment agreement and working agreements obligatory for all shiphandling operations was thrown out in court. At the time the Smit tugs operated with a crew of four and sometimes five while the 'Americans' could be run by three, due to their high degree of automation. Also the working schedules for the Smit crews – essentially day-crews requiring extra crews to stick to a 24/7service were more costly than the schedules proposed to the Kooren crews which were on board week on / week off.

The new tugs sailed the Kooren flag but were registered in the Bahamas. They sported the white 'K' on a blue funnel instead of a black one. When the first tugs arrived in Rotterdam a demonstration was staged by worried Smit-crews. Although the Kooren tugs flew the Bahamas flag the vessels were equipped and adapted to Dutch standards though they could operate with a three man crew because of the high grade of automation. After some months two of the tugs changed flag and were homeported at Rotterdam.

**The start at Rotterdam**

On 1 January, 1988, Kotug officially started its shiphandling business in Rotterdam. The company obviously had chased for contracts but the biggest catch at that moment was a multi-year contract with the container giant Sea-Land. The contract held by Smit had come up for renewal. Sea-Land offered this contract on a 50/50 basis to both Smit and Kotug. Smit, however, declined cooperation with Kotug. This resulted in Sealand awarding a 100% contract to Kotug. The first Sealand assist was on 13 January when *Sealand Atlantic* arrived in the port of Rotterdam.


*For lower-powered shiphandling STELLA was acquired from Germany by Kotug* *photo: Job van Eijk*

Things developed rapidly and by April 1989 two further tugs were chartered through a co-operating agreement with the French Chambon company. The 3.000 hp Voith-Schneider Tractor *Tramontane* was employed by the harbour department while the oceangoing Voith Tractor *Mistral* was used for distance-towing and offshore work with shiphandling duties in Rotterdam / Europort in between contracts. Faster than projected the Kotug share in Rotterdam shiphandling arrived at some 20%.

A blow to the company was the loss of Ton's brother and co-director Adrianus Jacobus (Aad) Kooren. The well-known and respected Aad suddenly passed away on 13 March, 1992. A few months later Ton's father Adriaan Kooren passed away on 13 December, 1992.

In 1993 Kooren acquired two additional - conventional - shiphandling tugs from Germany. The 1.500 hp *Stella* and *Triton* were used to assist smaller vessels freeing up time for the big powerful units in the fleet. Kooren also remained active in deepsea towing with chartered and managed tugs. From 1996 to 1999, for instance, they were the contracting agent / manager of the 7.370 hp *Zeus* and the 3.500 hp *Kraft* form the Finnish operator Alfons Hakans. Some of the other tugs contracted for single or multiple tows or managed for sea tows were *Viking* which


*ZP CHALONE* *photo: Hans Hoffmann*

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**ASD Tug 1810**

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*Kotugs RT SPIRIT and RT MAGIC towing the former HAL flagship ROTTERDAM from Bremerhaven to Rotterdam where the liner will be used as a hotel annex congress centre. On 4 August, 2008, thousands of people watched this 'homecoming' event - including the media* *photo: Job van Eijk*

for some five years was already under Kooren's operational management on behalf of her captain / owner Jan Koerts, *Vlieland, Elizabeth*, *Boxer*, *Atrek*, *Towing Witch* and *Dea Captain.* Apart from that rig moves were carried out by one or more of the "Americans'. *ZP Montali* also was occasionally employed on distance towing.

**To foreign ports**

In the early 90s it became known that Kotug was looking for expansion abroad. Research had shown that the situation in the ports of Felixstowe, Southampton, Antwerp, Antwerp, Bremerhaven, Hamburg and Le Havre were more or less identical with Rotterdam prior to the arrival of Kotug. Hamburg appeared to be the most promising of these – a busy but fairly compact port without any locks.

**Pioneering spirit innovating magic**

At about the same time Ton Kooren started thinking about more powerful shiphandling tugs in his drive for less but more powerful tugs per assist. As mentioned elsewhere in this issue he toyed with the idea of triple azimuthing thrusters forward. This would put more power in the tugs but the distance between the thrusters would cause interference in the water flow to the props.

Discarding this idea he finally came up with the idea of two thrusters forward with a third on the centerline aft thus omitting the necessity of a skeg. This would do away with the interference while at the same time acting like an active skeg improving manoeuvrability and allowing for towing over the bow as well as over the stern as well as escort towing in indirect or direct mode. The **Rotor Tug** was born.

After developing the concept and towing tank tests Kooren ordered four 6.350 bhp 78 tbp tugs of this design. Construction was by Spanish yards Balenciaga (2 units) and Freire (1 unit plus one hull, the


*Press clippings showing the consternation about the arrival of Kotug in Hamburg* *collection: Kotug*

*SD SEINE was one of three ordered from Turkey in connection with the operations in Le Havre (9-12-2005)*

*photo: Frits van der Hoek*

latter to be finished by Padmos in The Netherlands).
*A full report on the Rotor Tug can be found elsewhere in this issue in an article titled 'A dream come true'.*

**To Hamburg**

Although the first attempt abroad seemed to have been for Antwerp this was later swapped for Hamburg. On 21 December, 1995, Ton Kooren announced Kotug was coming to Hamburg per 1 January 1996. Schleppreederei Kotug Hamburg GmbH started with four of the 'Americans': *ZP Montali* (53 tbp), *ZP Caymus* 53 tbp), *ZP Condon* (45 tbp) and *ZP Chalone* (45 tbp). All were manned 24/7 by a full German crew. The crews were recruited in former East Germany where they had worked for the bankrupt BBB (Bergung, Bagger und Bugsier Reederei, homeported at Rostock. Prior to coming to Hamburg the crews had been extensively trained on the tugs at Rotterdam.

The new operation went off to a flying start as – compared to the Rotterdam start – Kotug already had 20 signed contracts from its Rotterdam customers that also visited Hamburg. Kotug estimated the costs for its Hamburg clients would come down by 40% which included the discount for a single Rotterdam – Hamburg package for the Rotterdam customers. Prior to March that year they also accomplished their first salvage operation. The 16.000 dwt bulker *Jennifer Jane* carrying 15.000 tonnes of wheat had run aground between Cuxhaven and Brunsbüttel and was refloated and towed to Hamburg by *ZP Caymus* and *ZP Condon*.

**Hamburg prior to Kotug**

Like in Rotterdam the local German tugs and their Unions resisted Kotug and tried to disrupt the start of operations. In Hamburg shiphandling operations were carried out by several tug operators that worked under a single operational banner which in effect created a monopoly by a cartel of operators. This **'Arbeitsgemeinschaft'** was set up by the occupying forces immediately after WW2 ended. Its purpose was to ensure adequate shiphandling capacity at all times and the avoidance of cut-throat competition which would disrupt port activities. **Fairplay**, **Petersen & Alpers**, **Lütgens & Reimers** and **Louis Meyer** were the major players in Hamburg. **Bugsier** later established an independent shiphandling presence at Hamburg but immediately went into competition with the Arbeitsgemeinschaft. In 1958 in a twist of fate **Lütgens & Reimers**' shiphandling business was forced to sell to Bugsier and in addition prohibited from entering shiphandling for a period of 10 years. Anyway, the Arbeitsgemeinschaft remained active thus effectively deciding on tug tariffs. With Kotug arriving they were forced to reduce tariffs as well which in turn had an effect on operations, manning and number of operational tugs.

The four tugs operating at Hamburg caused a gap in Rotterdam that was filled by the acquisition of three 3.100 hp / 45 tbp 3-man operated former Italian


*ZP BEAR*

*photo: Frits van der Hoek*

tugs. Former owner of the 1987-built tugs is Rimorchiatori Riuniti. *ZP Svezia*, *ZP Danimarca* and *ZP Tumak* were designed by Finnish Hollming Engineering. Kooren was well-acquainted with Rimorchiatori Riuniti as they managed their offshore tug / supply vessels *AH Italia* and *AH Paraggi* when they were active in the North Sea offshore industry.

It is of interest to note that as a reaction to Kotug coming to Hamburg, Hamburg-based Fairplay decided to set up shop at Rotterdam.

**To Bremerhaven**

On 1 January, 1999, Kotug started operations at Bremerhaven. This coincided with the introduction of Ton Kooren's Rotor Tugs. These highly manoeuvrable and very powerful tugs were instrumental for the Bremerhaven operations as they significant reduced the number of tugs to handle ships from the river through the locks.
*Further information on this move and the Rotor Tugs can be found in the article titles 'A dream come true' elsewhere in this issue.*

The move to Hamburg had required an investment of some 21 million Dutch Guilders to, amongst others, acquire replacement tugs for the gaps left in the Rotterdam fleet. The move to Bremerhaven required an investment of some USD 30 million. This also included the acquisition of a stern drive tug for Rotterdam. *Atlantic Fir* was a 52 tbp shiphandling tug that was built for account of the Canadian operator Atlantic Towing. Renamed *SD Jacoba* the tug was initially employed at Hamburg to fill a gap caused by the transfer of tugs to Bremerhaven but was soon to return to Rotterdam.

For a short period of time – the Rotor Tugs had not yet been delivered to the owners when the move into Bremerhaven was made – additional tugs were chartered for operations at Rotterdam and Europoort. These were the Danish tug *Skuld* (Svitzer – 1995 – 3.996 bhp – 51 tbp), the British tug *Maria Luisa II* (Cory Towage - 1987 – 4.340 bhp – 60 tbp), *Viking* (Koerts, managed by Kooren – 1957 / 1938 reconstructed as seagoing / coastal tug - 2.450 hp – 30 tbp) and *Pollux* (Iskes – 1963 – 1.600 bhp – 20 tbp).

The operations at Bremerhaven were successful: in the first 15 months over 5.600 assists were carried out.

*RT TASMAN, RT CHAMPION and RT LEADER shipped out to Brunei on board HAPPY BUCCANEER*

*photo: Ruud Zegwaard*

The first two Rotor Tugs when delivered at Rotterdam were transferred to Bremerhaven. To market the Rotor Tug a subsidiary was created: **Kooren Shipbuilding & Trading** with Ton Kooren as President. The company developed the Rotor Tug concept into a range of tugs with bollard pull ranging from 45 to 100 tonnes.

**Ton Kooren hands over tp Ard-Jan**

By 2002 Ton Kooren had been 44 years active in the world of towage. On 2 August, 2002, he celebrated his 25th anniversary as an independent entrepreneur. The same day his son, Ard-Jan Kooren, was appointed CEO and his successor and de-facto the next President of the Kotug Group. Long-time employee and CFO mrs Margo Kok-van der Wal was named Vice-President of the Kotug Group. Ton Kooren stepped back and took on a role as Commissioner of the Kotug Group while he also remained actively involved as an Adviser to Kooren Shipbuilding and Trading BV. That company researched, the construction and the sale of, amongst others, the patented Rotor Tug.

At the time of the change-over the Rotterdam shiphandling fleet consisted of *RT Magic* (76 tbp), *SD Jacoba* (52 tbp), *ZP Montelena* (53 tbp), *ZP Chandon* (53 tbp), *VS Rotterdam* (25 tbp), *VS Hamburg* (25 tbp), *Pollux* (charter – 20 tbp) and *Stella* (21 tbp). At Hamburg / Bremerhaven the shiphandling fleet consisted of *RT Innovation* (71 tbp), *RT Spirit* (78 tbp), *RT*

*RT BEAGLE BAY*

*photo: coll. Job van Eijk*


*RT ADRIAAN was reconstructed as an E-KOTUG* *photo: Ruud Zegwaard*

*Pioneer* (72 tbp), *ZP Montali* (53 tbp), *ZP Caymus* (53 tbp), *ZP Svezia* (45 tbp), *ZP Tumak* (45 tbp), *ZP Danimarca* (45 tbp), *ZP Chalone* (45 tbp), *ZP Condon* (45 tbp) and *VS Tramontane* (32 tbp).

**To Le Havre**

In 2005 Kotug announced the start of a new operation in France – in Le Havre to be precise – starting 1 January, 2006. The operation would be run by a new subsidiary, the **Societé Nouvelle de Remorquage du Havre** (SNRH). The fleet consisted of three newbuild stern drive tugs: *SD Loire* (builders name *Med Meric*), *SD Seine* (builders name *Med Firat*) and *SD Gironde* (builders name *Med Circle*). The trio each had an output of 3.600 kW / 60 tbp. In addition two newbuild Rotor Tugs design RT-60 were added: *RT Claire* and *RT Stephanie*. The final member of the fleet was one of the first four Rotor Tugs ever built, *RT Pioneer*.

The powerful French Unions representing the local operator Les Abeilles objected to this. Many court cases followed. French courts repeatedly found SNRH to be operating legally in Le Havre. But local port workers and – more serious - local administrations continued to hinder operations. So on 13 December, 2010, Kotug closed down its operations at Le Havre. The three stern drive tugs and the Rotor Tug *RT Antonie* were sold to the Spanish Boluda Group that had meanwhile acquired Les Abeilles.


*RT EVOLUTION at speed - purpose-built as an E-KOTUG* *photo: Hans Hoffmann*

**The pace quickens**

From 2007 onwards Kotug ramped up its fleet renewal / expansion. That year four 5.200 hp stern drive tugs were acquired from Turkey: These were built according to **Robert Allan**'s RAmpart 3200 design. Orders were placed for another 14 Rotor Tugs. Two – *RT Samba* (renamed *Smit Kiwi*) and *RT Tango* (renamed *Smit Emoe*) – were acquired by Smit for their Zeebrugge contract In 2012 three Damen ASD Tugs 2810 were added: *SD Rebel*, *SD Ranger*, *SD Rover*.

The same year Kooren Shipbuilding & Trading changed its name to **Rotortug BV**. They teamed up with Canadian Naval Architects **Robert Allan** which now produces the exclusive designs for the **ART – Advanced Rotor Tug.**

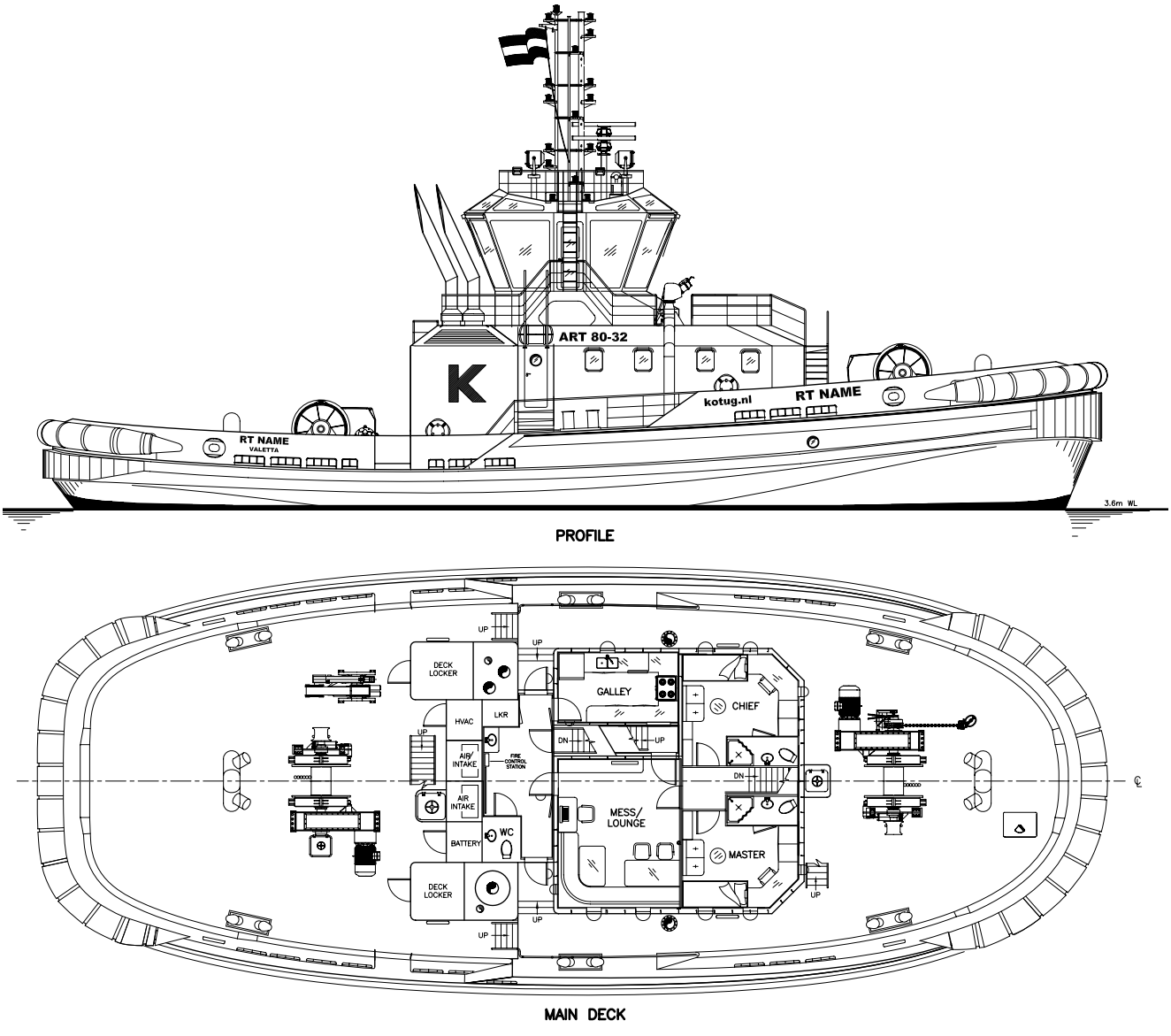
In **Australia** Kotug offers towage at Port Hedland and at Hay Point. This started as a project with Teekay Shipping Australia but **KT Marine Services Australia Pty. Ltd**. has since become a 100% subsidiary of Kotug. Other Rotor Tugs operating out of Port Hedland for the mining giant Broken Hill are *RT Tough* and *RT Atlantis*. Port Hedland is an iron ore export harbour for the BHP (Broken Hill Proprietory) mines.

A contract won in **2012** concerned the operation of shiphandling tugs at the newly constructed Jade Weser Port Terminal at **Wilhelmshaven**. On the back of this contract two 5.700 hp tugs – *ZP Boxer* and *ZP Bulldog* – were ordered from Damen Shipyards. Two tugs are available 24/7 at the terminal and when necessary extra tugs are brought in from Bremerhaven. Also in 2012 a contract was won for terminal towage in **Cameroon**, West-Africa. Per 1-1-2013 *RT Margo* operated on location.

Per July, **2013**, Kotug started shiphandling services in the Thames. Two tugs were 24/7 available for work at the terminals of Shell Haven, Coryton, etc. To bring the fleet into balance the same year three tugs were added to the fleet: two of these were RAmparts 3200 design: *SD Salvor* was acquired

*Visible are the sponsons, lack of docking struts, the position of the 3 schottel thrusters* *photo: Kotug*

*RT MAGIC - the first Rotor Tug* *photo: Jan Rutten*




*General Arrangement RT EVOLUTION* *drawing: Robert Allan Ltd*

in Norway while *SD Sparta* came from Turkey. Damen Shipyards delivered *SD Dolphin* – an ASD Tug 3212.

In **2014** Kotug was awarded a contract for terminal towage at Shell Brunei. *RT Tasman*, *RT Leader* and *RT Champion* were shipped out from Rotterdam to location aboard the project cargo vessel *Happy Buccaneer*. An additional contract with Shell was for in-field operations for the Prelude FLNG. For this contract three Rotor Tugs - *RT Kuri Bay*, *RT Roebuck Bay* and *RT Beagle Bay* - were built at a Singapore shipyard.

**Greening**

Kotug took an active interest in the 'greening' of tugs and towage operations. This followed in the wake of the greening of two Foss shiphandling tugs – Carolyn Dorothy and Campbell Foss - in 2010. In these tugs the drive train was modified to diesel-electric driven by either main engines or a battery bank. Effectively this was a hybrid drive train. Based on this idea Kotug in 2011 reconstructed the 2010-built *RT Adriaan* as a **hybrid**, only the third in the world. As a shiphandling tug overall she uses maximum power for just 2% of the operational time so the hybridisation reduced the fossil-fuel consumption for the 7.200 hp main engines by some 35%. Inspired by this Kotug started researching other possibilities that could add to fuel efficiency and, no less important, the reduction of greenhouse gasses. For instance an easy win were shore-power connections to cut out the use of the harbour gen set. Waste heat re-use has also been implemented. Kotug's new "**Zero-Emission Heat Recycling System**" has won the Maritime Innovation Award 2017. This new system stores heat and redistributes the heat when required, cutting CO2 emissions by half. Kotug since classed this tug as an **e-KOTUG.** Design policy of the later Rotor Tugs was to facilitate a quick change-over to hybrid if required. This based on the expectation that future operators may be forced to deliver 'greener' tugs to for instance port operators.

*The Alphabridge Tugboat Console on RT EVOLUTION - also note the almost unobstructed all-round view*

*photo: Kotug*

The **second-generation hybrid** was introduced in 2014 with *RT Evolution* and *RT Emotion*. They were two of a batch of four – the others being non/hybrid – of the ART80-32 design. While the e-tugs were constructed by Damen the non-hybrid *RT Discovery* and *RT Endeavour* – destined for service at Port Hedland, West-Australia, were delivered by the Cheoy Lee yard in China.

The new tugs were completely re-designed in cooperation between Robert Allan, Kotug, Rotortug, Damen Shipyards, Schottel and Cheoy Lee Shipyards. Every aspect of the Rotor Tug was put under a magnifying glass. Hull, wheelhouse, deck-lay-out as well as the hybrid system was more or less changed. Sponsons above the waterline were added in the sides to improve stability when in escort mode. In escort mode this lowers the possibility of so-called deck immersion. Another difference is that the docking supports were omitted which minimised drag. The design of the ART-80 is, however, such that docking supports can be fitted if required by customers. Also, the wheelhouse was re-designed and fitted with **Alphatron**'s Alphabridge consoles ergonomically designed and adapted for tugboat use. *(Note: an extensive report on these two tugs was published in Lekko International 212 of March / April 2015)*

*SD JACOBA in Kotug-Smit colours*

*photo: Ruud Zegwaard*

**Competition in Rotterdam**

On 30 May, **2014**, the big Danish tug operator **Svitzer** entered Rotterdam with a fleet of five tugs to start shiphandling operations. Three of the tugs were Svitzer's the additional

*SMIT HUDSON and SD REBEL kissing 15 June, 2016* *photo: R. & F. van der Hoek*

two were chartered from Iskes Tugs, a company with which Svitzer operated in the Amsterdam Ymuiden area. The start-up apparently was aimed at the increasingly closer operating container companies in their 'conferences' and 'alliances' networks across the globe. Mergers and JV's in this business were expected and Svitzer, associated with one of the biggest – A.P. Moller Maersk - saw an opportunity to eventually clinch contracts with the three biggest container carriers in the world. Thus, Rotterdam now had four operators: **Smit**, **Kotug**, **Fairplay** and **Svitzer**. Probably in the wake of discontinued forming of the expected container alliance Svitzer left port after a year with their contracts now sub-contracted to Fairplay – approximately some 10% of the total value of the Rotterdam contracts. Fairplay – which held some 15% could not handle this even though Svitzer had left one Iskes tug behind so they brought in their associated **Multraship** - Fairplay had a 50% stake in the Multraship Group. Smit and Kotug together held some 75% of the Rotterdam business.

**Training**

In **2015** Kotug established a subsidiary dedicated to training of tug crews. Obviously on-board training is one way of doing it but has disadvantages. A fully competent tug master may not have the qualities to transfer knowledge, or the training happens at intervals when the situation allows. From driving a conventional tug to hi-tech propulsion systems is a big step as the way of handling such a tug differs greatly from the single / twin screw tug. **Tug Training & Consultancy** training rested on three pillars: classroom education followed by training on dedicated tug simulators and finally aboard a tug.
Over the years **TTC** developed training and strategic partnerships such as with the Maritime Training Institute Karachi, the Seamen's Church Institute (USA), Abu Dhabi Maritime Academy and the Faculty of Maritime Studies at King Abdulaziz University (Saudi Arabia).

**Kotug-Smit**

The problems experienced in 2014 with Svitzer and the ongoing forming of alliances were the reason that Smit – since 2010 owned by **Boskalis** - researched the options. This resulted in **2016** in the formation of a joint company. They reached an agreement to pool their North-Western Europe operations in a 50 / 50 Joint Venture. **Kotug-Smit** started operations on 1 January, 2016, pooling Kotug's German,


*RT EMOTION at Bremerhaven in Kotug-Smit colours, 10 July, 2017* *photo: Ko Rusman*

Netherlands and UK operations with Smit's Belgium, Netherlands and UK operations. A total of 11 ports were served by a fleet of 65 tugs. On 15 June, 2016, at 19.00 hours this marriage was publicly consumed when Kotug's *SD Rebel* and Smit's *Smit Hudson* 'kissed and made up' - association that had been 173 years in the making on the Smit side and 105 years on the Kooren side. **As Ard-Jan Kooren mentioned to his father Ton: "who would have believed this back in 1987?"**

On 1 April, **2017**, Kotug-Smit entered the Southampton towage market by clinching a contract with one of the container alliances. Four tugs started operating at Southampton.

The JV was, however short-lived. In 2019, **Boluda Towage** successfully closed the acquisition of Kotug-Smit Towage. The transaction strengthened Boluda's position as leading operator in Europe, with new presence in the Netherlands, Belgium, Germany and the United Kingdom. The purchase came as part of Boluda Towage's international expansion plan, following on from the acquisition in 2017 of German enterprise **URAG**. This was a strategic goal put in motion in the 2000s to acquire companies operating in the Americas, France, the west coast of Africa and the Indian Ocean.

The 100% stock acquisition of Kotug-Smit was valued at 300 million euros and obtained the corresponding regulatory approvals in all countries. Attended by the Spanish multinational's chairman Vicente Boluda and representatives of Kotug-Smit Towage, the agreement was signed on 24 July in Rotterdam with effect from **31 July, 2019**.

By acquiring the Dutch company, Boluda Towage added 67 tugs to its fleet, increasing its presence in major European ports Rotterdam, Terneuzen and Flushing (Netherlands); Liverpool, London Gateway and Southampton (United Kingdom), and Zeebrugge, Ghent and Antwerp (Belgium). In Hamburg and Bremerhaven Boluda Towage strengthened its position in the towage sector in Germany, where it had been operating since 2017. These 67 vessels expanded the Boluda Towage fleet to over 300 tugboats, operating in 90 ports in 15 countries of Europe, the


*SD JUNKANOO* *photo: Jacco van Nieuwenhuizen*

west coast of Africa, America and the Indian Ocean. Like in Rotterdam three years earlier the kissing routine was now performed in Hamburg this time by *ZP Bear* and *VB Resolut*.

**2017**

Kotug entered into an agreement with Seabulk, Fort Lauderdale, which operated in the Bahamas. The Rotor Tugs *RT Blackbeard* and *RT Raptor* as well as the *SD Calypso* and *SD Junkanoo* were built for this project. On 29 February, **2024**, it was announced that Kotug acquired full ownership of **Kotug Seabulk Maritime LLC** by taking over the 50% share held by Seacor Holdings subsidiary KS Maritime Holdings Inc. KSM acts as the exclusive provider of maritime terminal support services for **Buckeye Partners' Bahamas Hub**, which includes launch and line handling services. Buckeye Partners is one of the largest independent operators of liquid petroleum products pipelines and terminals in the United States and currently holds the sole operating license for all bunkering operations in Freeport harbour.

The local fleet consists of the ART 80-2 80 tbp Rotor tugs *RT Raptor* and *RT Blackbird*, the RAmparts 3200 70 tbp *SD Calypso* and *SD Junkanoo*, the 8 tbp line


*RT BORKUM - Kooren's training / demonstration Rotor Tug* *photo: R.& F. van der Hoek*

*RT BORKUM towing the KOOREN TERMINAL, a barge fitted with rooms for training, presentations and lectures. Above deck equipped for use as a reception or festivities area. Up to 300 guests can be accommodated* *photo: Nico Giltay*

handlers *Capt. Kerry* and *Capt. Jack*, the catamaran crew tender *KSM Speedy* and the barge *KSM Inestia*.

**Training tug**

In **2017** another newbuild tug joining the fleet was a dedicated **Rotor Training Tug**. *RT Borkum* named after Ton Kooren's first seagoing tug *Borkum* is used in the training of Rotor Tug officers from all over the world as well as a demonstration vessel for potential clients. The small tug is fitted with three Veth Thrusters for a bollard pull of 10 tonnes. The tug is finished in yacht-like fashion. It is also the first-ever tug fitted with Kooren's Azimuthing Friction-Free Towing Point (**AFTP** for short).

**2018**

saw another record for Kotug when introducing the ART100-46 design *RT Raven*. The 100+ tbp tug – an Infield Support Vessel built by Damen Albwardy - was added to the fleet of KT Maritime Services, Australia, for operations with ConocoPhillips in the **Baya Undan Field**, in the Timor Sea north of Australia.

**Remote to autonomous**

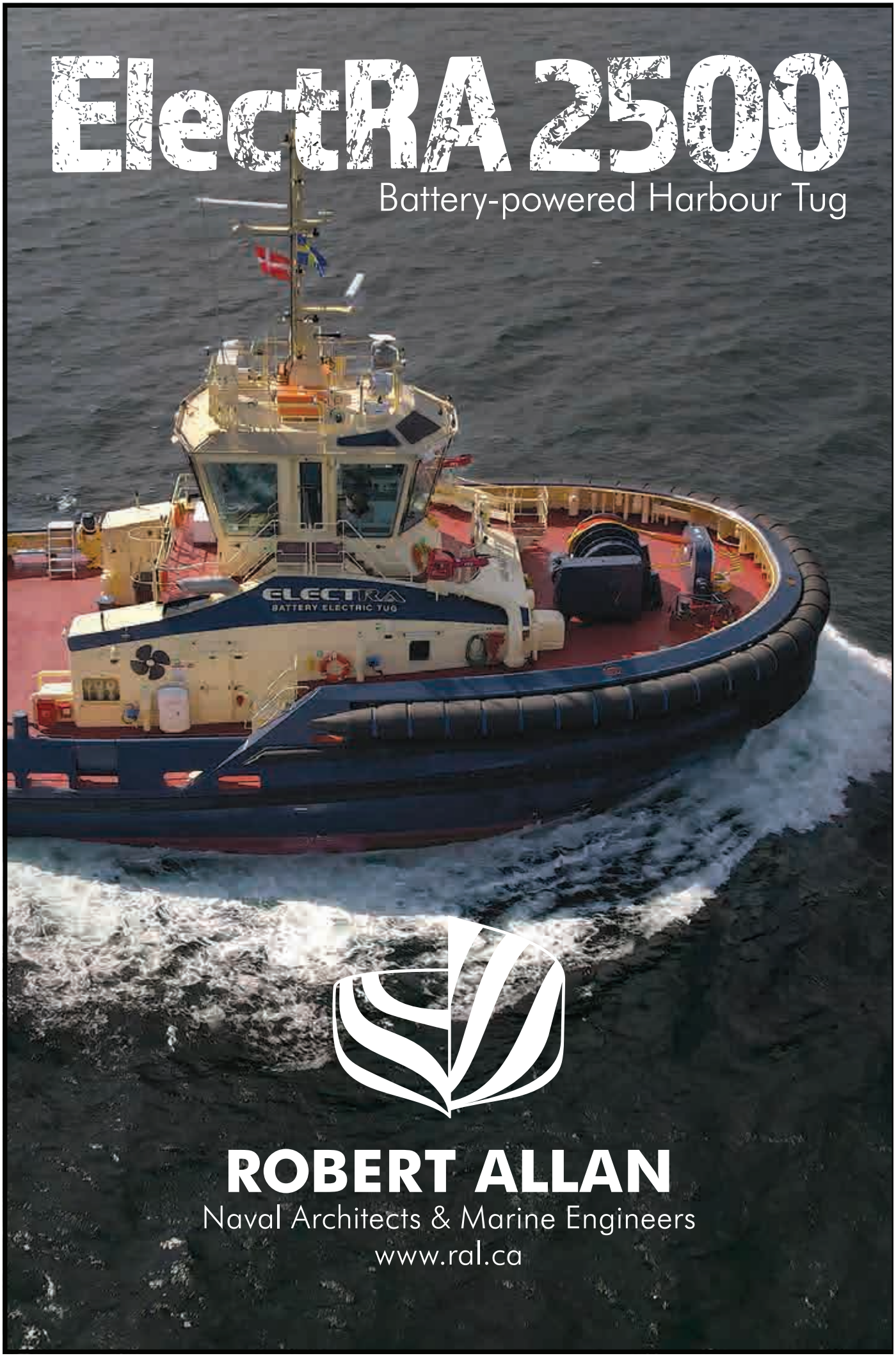
In the summer of 2018, **Kotug** and **Rotortug** demonstrated that it is possible to operate a tugboat in the port of Rotterdam, the Netherlands, **remotely** from Marseille, France. This demonstration was staged for the benefit of the delegates at ITS-2018 – the 25th International Tug, Salvage & OSV Convention and Exhibition. That was the first step on the roadmap towards fully autonomous sailing. In September, 2020, Kotug International, Rotortug and tech start-up **Captain AI** demonstrated the first vessel in the world that autonomously sails the most optimal route without human intervention at the Smart Shipping event of the Netherlands Forum for Smart Shipping. In collaboration with Captain AI, it was possible to safely sail the Rotortug *RT Borkum* autonomously on the river Nieuwe Maas in Rotterdam using the Captain AI Route Planner and Autopilot. To define the route as efficiently as possible, Captain AI's software was connected to the **Kotug Optiport** dispatch planning software. Kotug International and Captain AI entered into a partnership to further develop and commercialize the software.

**2019**

In January that year **Kotug Petro Marine** started operations in the Red Sea at the Aim Sukha Terminal for account of the Egypt-based Arab Petroleum Pipelines Company. Kotug Petro Marine is 80% owned by Kotug. Two Rotor Tugs are deployed: *Sumed RT 1* and *Sumed RT 2*.

*At ITS 2018 Capt. Daan Merkelbach was remotely from Marseilles driving RT BORKUM in the Port of Rotterdam* *photo: courtesy ABR*

Also in **2019** Kotug started operations at Port Hedland, Australia. The contract involved the reshaping of the towage services for **Pilbara Marine Pty Ltd**, a subsidiary of **Fortescue Metals Group**. For this contract Kotug teamed up with Westug Pty Ltd. The service included the operation of nine state-of-the-art Rotortugs at Port Hedland. On 1 August, **2021**, Westug and Kotug mutually agreed to exit their agreement. The boards of both companies agreed that Fortescue's **Port Hedland** towage business would benefit from having a single party managing operations. Kotug retained its existing agreement with Pilbara Marine, requiring the company to supply tugs and have overall responsibility for the delivery of Port Hedland towage services. The Port Hedland fleet at the


ElectRA 2500
Battery-powered Harbour Tug
ELECTRA
BATTERY ELECTRIC TUG
ROBERT ALLAN
Naval Architects & Marine Engineers
www.ral.ca

time consisted of eight newbuild ART 85-32W and one RT80-32 Rotor Tugs. Six of these – *FMG Dusky*, *FMG Spinner*, *FMG Blacktip*, *FMG Tawny*, *FMG Hammerhead* and *FMG Mako* - are Fortescue owned but were managed by **Kotug Port Hedland Towage Pty**, two are owned by Kotug: *FMG Sandfish*, *FMG Sandtiger* which are chartered to Fortescue. Today a number of Rotor Tugs are operated by BHP, the other big mining company. The Rotor Tugs *RT Discovery*, *RT Endeavour*, *RT Atlantis*, *RT Enterprise*, *RT Clerke* and *RT Imperieuse* are sailing in the BHP colours.

**2020: to Guyana**

On 14 October Kotug announced it had won a long-term contract in South America, the first time Kotug entered that sub-continent. The contract was with Esso Exploration and Production Guyana Limited for the delivery of terminal support to the floating offshore production facilities at the **Liza Field in Guyana**. The first vessel earmarked for the job was the recently acquired DP2 ASD anchor-handling tug *SD Power* (a former Bukser og Berging vessel). The local subsidiary **Kotug Guyana Inc.** handles operations. The 130 tbp *SD Power* is to provide support to the existing and upcoming Floating Production and Storage Offloading units (FPSO's) at the Liza Field, offshore Guyana, by providing towage assistance to export tankers, infield support duties and cargo duties.

In August, 2022, it was announced that under a second contract with Esso Exploration the 120 tbp *SD Honour* had joined *SD Power* providing static tow, push-pull duties and general offshore support to very large crude carriers (VLCC's) taking offload cargo from the two FPSO's. 14 November 2023 followed the announcement of a further three Kotug vessels having joined on the Esso Exploration contract for the Stabroek Field. The vessels concerned were *SD Grace*, *Seaways 20* and *Seaways 22. SD Grace* was built in 2015 at Batam for own account of the yard as *Tai Kong*. 2017 registered with Go Offshore as *Golden Grace*. 2018 renamed *Go Ko I*. 2022 acquired by SD Pride Pty Ltd , Perth, renamed *SD Grace*. 2023 registered with Sea Pride BV with Kotug International as managers (89.932 hp – 50,00 x 16,02 m). *Seaways 20* (100 tbp) (later renamed *SD Breeze*) and *Seaways 22* (81 tbp) are part of Seaways International which company was taken over by Kotug in 2022. All three are near identical vessels of the RAmpage design,


*RT CLERKE* *photo: coll. Job van Eijk*

**2020**

In May, 2020, Kotug announced it had completed the 100% acquisition of **Marsol International Ltd**., a leading offshore and marine terminal service centre, specialized in offshore single point mooring (SPM) buoy terminals and its related infrastructure. Over the years Marsol's management has operated on 32 offshore marine terminals in more than 20 countries. Marsol's operational headquarters are based in Dubai.

The same year (**2020**) the situation in **Brunei** changed. Brunei-based SPHI Marine had been awarded a 10+5 year LNG terminal support contract for the provision of marine services for Brunei LNG Sdn Bhd. The marine support consists of three Rotortugs and one hybrid RAmpage 4500 anchorhandling tug / supply vessel. The vessels replaced the three Kotug Rotortugs then operating the terminal contract. **Kotug**, however, will retain a technical partnership agreement with **SPHI**


*SD POWER, seen here 4 June, 2121, was acquired from Norwegian BB for the Guyana project*

*photo: Maasmond Maritime / Piet Sinke*

*Kotug's CITY BARGE PUSHER at work in the city canals* *photo: coll. Job van Eijk*

**Marine**. Under this contract Kotug will technically manage the vessels. Based on a transition plan Kotug will hand the management over to SPHI Marine for the second period of the contract.
The three 80-tbp Brunei-owned tugs were built by Cheoy Lee and delivered in 2023 (*May Rose* and *Sofea*) and 2024 (*Maryam*).

**Kotug goes inland**
Innovative thinking led – in **2020** – to a revolutionary way of improving urban logistics. The idea behind it was how to make cities more liveable by using existing canals for the collection, transport and delivery of waste, building materials, supplies, etc. The idea by itself was not new since in the past a lot of transport happened over the canals into the cities. Over the years this way transport was pushed out by the invention of the motor cars and lorries that were able to go door-to-door. With increasing environmental concerns the canals are once again looked at.

In September, 2020, **City Barge** was presented for modern urban logistics. The CityBarge project was established by the Province of South Holland, the Municipality of Delft, CityBarge, City Hub, **Kotug International**, FYNLY, and Skoon and supported by partners Nokia, Dell EMC, SPIE, Innotractor. By combining an electric push boat with a system of push barges and mini-hubs on the canals, logistics flows in the historic city centres can be moved from the road to the water, thereby reducing road congestions and CO2 emissions. On 21 September *CityBarge One* was presented to the world. CityBarge is the link between river transport through a system of transshipment areas on the outskirts of cities coupled to green logistics within the cities facilitated by electric trucks. The City Barge pushers are equipped with hightech applications such as GPS sensors and detection cameras. For the long-term a traffic control system is thought of to control an optimal flow of traffic. In the perhaps not so distant future remote controlled or autonomous City Barges could be the final solution. The City Barge pushers are easy to assemble being of modular construction.


*The Kotug E-PUSHER 1* *photo: Ferry van Rijsbergen*

The City Barge was first used in the municipality of Utrecht by a contractor to remove demolition waste and to supply construction materials while renovating historic buildings in the city centre. It was also found to be an excellent means of transport for project cargo such as scaffolding and other large objects. Kotug's *City Barge 2* was used by Blom, Amsterdam, for emission-free transport of construction materials on their barges in the centre of Amsterdam. A wet contractor used a City Barge pusherin Rotterdam to carry out an inspection of the Piekbrug. Due to the very stable position of the boat, inspections can even be carried out without a pontoon.

Taking things a step further on 25 May, 2021, **Kotug International** announced it was establishing an **inland shipping division**. This was to provide electric powered pusher tugs and smart AI-driven dispatch and route planning applications for the inland water transportation industry. The set-up of the inland shipping activities results from developing a range of modular and scalable electric pusher tugs, the **E-Pusher Series**, powered by swappable energy containers. The E-pusher is of modular construction and easy to assemble. Together with partners, Kotug

*Artist's impression of the dual fuel methanol-diesel stern drive for Canada artwork: courtesy Robert Allan Lrd*

*Signing the contract for the Canadian dual-fuel tugs are Ard-Jan Kooren (left) and Ali Gurun (Sanmar Shipyards) supported by respectively Osman Munir (CCO and VP of Kotug) and Ipek Gurun (Director Corporate Strategy Sanmar) photo: Kotug*

developed various energy containers ranging from Stage V diesel, (Bio)gas and Hydrogen to battery solutions. For smart operations Kotug will use OptiPort, its advanced dispatching, route and reporting tool.

Since June 2023, the *E-Pusher 1* has been at work for launching customer Cargill transporting cocoa beans from Amsterdam to Zaandam. The fully electric push boat, with its barges, has reduced $CO_2$ emissions by 190.000 kg per year, equivalent to 15.000 single truck trips covering the same distance. The Kotug E-Pusher 1 was nominated for the '*Ship of the year award*' 2023.

From December 2024, a second E-Pusher and four push barges was operating in the same area for a different customer. In 2025 Kotug delivered an E-Pusher to power emission free sand transport for **Rotterdam-based ROS**. The E-Pusher, model M, is deployed in combination with barges provided by Jansma Shipping to establish an emission-free sand transport chain between the Maasvlakte and Rotterdam. For onward distribution electric trucks are used. ROS previously had invested in electric cranes for sand handling and the creation of a dedicated charging hub for electric trucks in Schiedam. A 1-MW fast-charging station for pusher tug was also to be constructed. The E-Pusher M is equipped with the containerised solution from **EST-Floattech** which uses **Octopus Series Lite** power banks.
*An extensive report on the first Kotug E-Pusher delivered was published in TugeZine 20 (October 2023).*

On 18 June, **2021**, it was announced that the first Rotortug to operate on the East Coast of Australia - *RT Force* (80 tbp) – had set sail for the Port of Bell Bay on charter to **TasPorts**, Tasmania. All training, both for the tug crews and marine pilots, had been conducted in Tasmania at the Australian Maritime College under the guidance of Kotug's dedicated Training & Consultancy division. She was later followed by *RT Sensation*.

**To Gabon**

In October 2021 the same year it was announced that Kotug had been awarded a long-term contract by **Perenco Oil & Gas Gabon S.A.** to provide towage support for their operations off Port Gentil, Gabon. The contract includes the chartering, operation and manning of three vessels, two of which are Kotug's first-ever Rotor Tugs, the *RT Magic* and *RT Spirit*. In addition, Kotugs' *SD Honour* was temporarily deployed to support the operations in Gabon but eventually was replaced by a third Rotortug. **Kotug Gabon S.A.** was established as the local office. The company wants to align with the local community and provide knowledge and work experience for local people.

**Kotug to Canada**

In 2021 after a competitive process, Trans Mountain, on behalf of shippers for the Trans Mountain Expansion Project, awarded **Kotug Canada Inc**. a long-term contract to provide enhanced escort towage services for tankers that load crude oil at Trans Mountain's Westridge Marine Terminal. Trans Mountain operates Canada's only oil pipeline servicing the West Coast of Canada providing access to foreign markets for Canada's petroleum resources.

Under the agreement, Kotug Canada - which is a partnership between Kotug International B.V. and Canada's **Horizon Maritime Services Ltd -** will escort tankers from the harbour limits of the Port of Vancouver to the Pacific Ocean, through the commercial shipping lanes of the Salish Sea. To provide this service, Kotug Canada has partnered with Sc'ianew First Nation from Beecher Bay, strategically located along the shipping route.

*The environmental / pollution control vessel K.J. GARDNER* *photo: coll. Job van Eijk*

Two revolutionary newbuild dual-fuel - methanol and diesel - escort tugs were designed by **Robert Allan Ltd**. These are the first vessels of this kind for Canada's West Coast. The tugs were to be built by **Sanmar Shipyards** in Turkey. The design for these tugs provides significant environmental benefits to further reduce greenhouse gas (GHG) emissions and underwater noise. The escort tugs are equipped with fire-fighting and spill-response capabilities.

The new build vessels will replace the existing tugs selected for TMEP. A third Kotug Canada vessel on long term contract to **Western Canada Marine Response Corporation** operates out of the Cheanuh Marina in Beecher Bay on the south coast of Vancouver Island. Together, the three Kotug Canada vessels will improve the overall safety of the marine network in the region. As part of the partnership there will be career and training opportunities for members of the Sc'ianew First Nation including emergency response and mariner positions.

Innovations for the new build tugs include a revolutionary hybrid propulsion configuration enabling the escort tugs to operate using both methanol and diesel as marine fuels. Both tugs will be equipped with a mechanical cross link system – **Schottel SyDrive** azimuthing thrusters - to enable a single engine to drive both propellers. Additionally, the hulls of the two tugs will have a graphene paint applied to reduce biofouling and enhance hull-smoothness of the vessels which reduces underwater radiant noise and makes the vessels more fuel efficient.

The two innovative tugs *SD Aisemaht* and *SD Qwii-Aan'C Sarah* are the world's first large purpose-built high bollard pull methanol fuelled tugs. The **RAsalvor 4400-DFM** escort tugs are 44 metres in length and are an evolution of Robert Allan Ltd.'s escort tugs which operate in some of the harshest environments in the world. With over 115 tonnes of bollard pull they are Canada's most powerful escort tugs. The forward escort system has been customized to suit the requirements of the local pilots for tankers utilizing the TMEP. The aft towing system with a dual drum winch with 2x 1.000 m of steel wire is among the largest fit to an escort. In the accommodation extra berths are available for spill response technicians. On 13 February, 2024, Kotug Canada Inc. held the steel cutting ceremony for the two RAsalvor 4400-DFM escort tugs at the Sanmar Shipyard. On 8 May the keel laying followed. On 28 February, 2024, Kotug Canada celebrated the arrival of *K.J. Gardner*, the largest **spill response vessel** in Canada, to its permanent home at the new base in Beecher Bay, Vancouver Island. The vessel is equipped for continuous 24/7 oil spill response services to protect the Salish Sea including Haro Strait and Juan de Fuca Strait. The 75 metres vessel has a 1.000 tonnes oil storage capacity.

*SEAWAYS 22 arriving at Amsterdam for repairs* *photo: Willem Koper*

**Kotug acquires Seaways**

On 1 September, **2022**, Kotug International B.V. announced the successful closure of the intended acquisition of **Seaways International**. As a result, Seaways became a 100% owned subsidiary of the Kotug Group of Companies. The acquisition of Seaways brought together the assets, expertise and people of two leading companies that support the worldwide floating facility business such as FSO, FPSO, FLNG, FSRU and SPM Terminals. Kotug focusses on the integration of Seaways and strengthening its leading presence in the floating offshore market.

The founder and former owner of the family-owned Seaways, Captain Ashish Nijhawan, stepped down from his role as Managing Director. Under his

leadership the company was built from scratch to become the thriving business it has become, owning and operating an impressive fleet of DPS-2 capability AHT's, Fast Crew Suppliers and cargo barges while Seaways International also provided terminal management services.

**2024: The Tug Drone**

In 2024, Kotug International, in collaboration with **Skeye**, successfully executed a pilot for the revolutionary Tug Drone. The line transfer was conducted over 400 meters from a tug to the helideck of Heerema's *Thialf* crane vessel and vice versa. This demonstration marks a decisive step for Kotug to actively integrate drone capabilities in daily tug operations for the delivery of a messenger line to a predetermined location. Currently tugboat crews have to position themselves in front of and close to the assisted vessel to grab the heaving line by hand, placing them in the danger zone near the (flared) bow of the vessel. This method poses significant risks, including potential injuries to the deck crew and damage to both the tug and the assisted vessel. With the new technology the Tug Drone delivers the messenger line directly to the assisted ship, allowing the tug to sail safely alongside rather than in front of the vessel.

**2024: Kotug to Congo**

Kotug International in 2024 was awarded – via a partnership with the exclusive concessionaire for offshore towing services in Pointe Noire, Republic of Congo - a contract for ENI Congo to deliver marine services for the Congo LNG project. This is offshore the Republic of Congo and includes the Tango FLNG and the Excalibur Floating Storage Unit (FSU), with a second FLNG under construction.

Under the terms of the contract, Kotug deploys three 80 tbp Rotortugs to support a range of operations, including mooring and unmooring of vessels, handling mooring equipment, providing stand-by services, transporting pilots, and offering antipollution, oilfield goods, and passenger transport services. Kotug is maximising local content by collaborating closely with local suppliers and utilising local goods and services. This initiative will promote the employment and training of Congolese nationals, contributing to the sustainable development of the local economy. Currently *RT Darwin*, *RT Tasman*, *RT Tough*, *RT Force* and *SD Wonder* are operating in the area.


*SD WAALO about to be named* *photo: coll. Job van Eijk*

In **2024** Kotug announced it had expanded its portfolio by acquisition of the Rotterdam based supplier and procurement company Cleaning Technology and Consultancy B.V. **CTC** is a family-owned business founded in 1996. Started as a supplier of tank cleaning- and gas freeing equipment the company now supplies a wide range of technical maritime needs and general technical supplies which can be delivered to any port by any means. This includes deck, engine, cabin, and galley stores for tugs, general cargo ships and chemical/LNG tankers. CTC will remain an independent brand.

In 2025 **Kotug OptiPort** and the **Metropolitan Hub System** have signed a agreement to develop an innovative logistics concept whereby smart scheduling of electric pushers and barges aim to enable cleaner, more efficient, and scalable freight transport in urban regions. As MHS puts it: an optimal balance between road and water transport: over water as long as it is possible, via the road only when this cannot be avoided. This concept ties in neatly with the use of **City Barge** and **E-Pusher**.

Another development is **Smart Tug Power**. This deals with smart maintenance strategies in the maritime sector, which in the end delivers reduced risks and a lower environmental footprint. **Predict Marine**, **Kotug**, and **ProAnalytics** are working on the development of intelligent, data-driven maintenance strategies for tugboats equipped with Azimuth thrusters and other critical systems. This will lower operational costs, improve reliability and therefore a future-proof, efficient fleet.


*RT CHAMPION assisting GRANDE GHANA* *photo: Leen van der Meijden*


*Salvage of MSC NIKITA in sinking condition following a collision off Hoek van Holland, 2 September 2009* *photo: Ruud Zegwaard*

The Smart Tug Power project is supported by Netherlands Maritime Land and the Ministry of Economic Affairs.

**To Senegal and Congo**

Kotug International and its Senegalese partner Maritalia S.A. in 2024 secured a long-term fixed-term major marine services contract for BP's Greater Tortue Ahmeyim gas project. Project partner for BP in this project are Kosmos Energy and the national oil companies Société des Pétroles du Sénégal and Société Mauritanienne Des Hydrocarbures. The Greater Tortue Ahmeyim gas project will produce gas from an ultra-deepwater subsea system and FPSO, which will process the gas. The gas will be exported through a 35km pipeline to an FLNG facility, where it will be transferred to LNG carriers.

Kotug deploys four RAstar 32m azimuthing stern drive, IMO Tier-III compliant tugs to support the offshore Hub Terminal, FLNG and FPSO operations, while Maritalia S.A. will fulfil local content requirements. **Kotug Senegal** is committed to developing and optimising local content, contributing to the employment and training of Mauritanian and Senegalese nationals. This initiative includes collaboration with local suppliers and the utilisation of local goods and services.

On 1 September, 2025, a celebration at the Uzmar Shipyard in Turkey marked the delivery of no less than five stern drive tugs of the RAstar 3200W design for account of Kotug. The 6.866 bhp 82,9 tbp tugs *SD Wonder*, *SD Djoudj*, *SD Chatboul*, *SD Rosso* and *SD Waalo* are fitted to FiFi-1 with waterspray standard and a second-line oil recovery system. Four of the tugs are deployed in **Mauritania** and **Senegal**. The tugs support LNG tanker berthing at BP's Greater Tortue Ahmeyim hub offshore St. Louis. The fifth unit – *SD Wonder* - operates in **Congo**. Included in the deal is a training programme for local nationals with the ultimate aim of having 100% local crews, including officers.

*RT EVOLUTION towing Heerema's stinger storage barge BUMBLEBEE on 5 August, 2016*

*photo: Leen van der Meijden*

**ETV design**

In 2025 Kotug and partners IHC Defence B.V. and Bluewater Energy Services B.V., together as the Kustkracht ( Coastal Force) Consortium – were one of 3 selected by Rijkswaterstaat (Dutch Ministry of Infrastructure and Waterways) to participate in the next phase of their Power2Tow tender. This project concerns the realisation of three almost-emission-free Emergency Response Towing Vessels (ERTVs) for the North Sea - vessels that can operate electrically, and switch to sustainable (green) methanol - produced form biomass or captured CO2 combined with green hydrogen - when higher power is required.

For the next phase of the project the three consortia are expected to present proposals for the ERTV's, the necessary electrical infrastructure to charge the batteries in port as well as at sea and the proposals for 25 years of service in the Norh Sea area.

*Sources:*
*Archives: J. van Eijk, Kooren International. Registers: Tugs, 3000 hp and over, 1986 and 1990 edition; various editions of Lloyds register. Periodicals: Lekko International, Lekko NL and TugeZine, Marine Digest. Newspapers: Het Vrije Volk, Algemeen Dagblad, Scheepvaartkrant, Lloyds List. Press releases: Kotug, Schottel, Uzmar Shipyard, Sanmar Shipyard, Ministry of Infrastructure, Smit, FNV (workers union), etc. Historic and technical literature: Proceedings of the 7th International Tug Convention, Proceedings of the 8th International Tug Convention, Sleepvaart in Stroomversnelling – 40 jaar Nationaal Sleepvaart Museum (N.J. Ouwehand).*

*Adriaan Kooren's ANTONIE JUNIOR under construction. The 2.600 hp deepsea tug was delivered in 1971 by shipyard Kramer & Booy, Kootstertille, The Netherlands. Diemnsions were 27,00 / 23,70 x 7,45 / 7,20 x 3,80 m with a draught of 3,80 m.Main engines are two Stork-Werkspoor-Ricardo's. Service speed is 13 knots, bollard pull 21 tonnes. The engines are coupled to a Lohmann & Stolterfoht double hydraulic reverse-reduction gear(3:1). The 2.400 mm single propeller rotates in a nozzle rudder. The reduction gear was designed in such a way that it is possible to use any of the two main engines for main propulsion while the other can, for example, drive the fire / salvage pump. The hydraulic double-drum towing winch has a pull of 10 tonnes with a brake of 60 tonnes. The drums can operate independently. One drum was fitted with 650 m x 4 3/4" wire while the other drum holds 400 m x 4" wire. A towing hook with a brake load of 80 tonnes has been fitted as is a 2-tonne capstan*
*photo: coll. Job van Eijk*