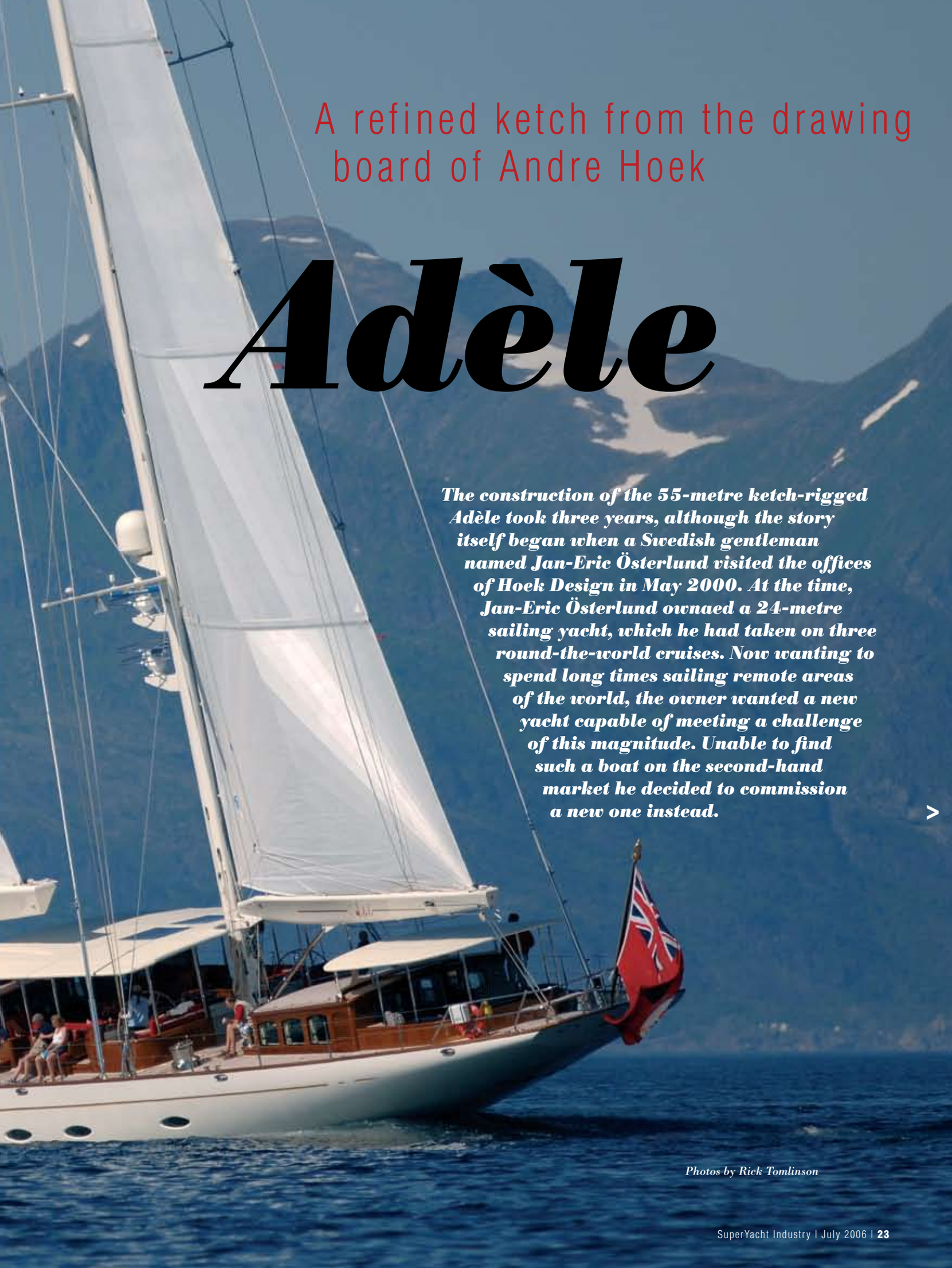

A refined ketch from the drawing board of Andre Hoek

Adèle

The construction of the 55-metre ketch-rigged Adèle took three years, although the story itself began when a Swedish gentleman named Jan-Eric Österlund visited the offices of Hoek Design in May 2000. At the time, Jan-Eric Österlund ownaed a 24-metre sailing yacht, which he had taken on three round-the-world cruises. Now wanting to spend long times sailing remote areas of the world, the owner wanted a new yacht capable of meeting a challenge of this magnitude. Unable to find such a boat on the second-hand market he decided to commission a new one instead.

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Photos by Rick Tomlinson

The design that caught his eye at Hoek Design's premises was a 164' sloop-rigged yacht with classic lines, which had been designed by Hoek Design in the past, however, never built. The classic yacht included a number of unique design details, such as an owner's cabin with deckhouse and an owner's cockpit offering an optimum of privacy due to its position on the boat in relation to the helm. Hoek Design's philosophy was extremely appealing to the owner, especially given the fact that the company had already designed more than fifty boats in the Truly Classic and Spirit of Tradition style.

Adèle's sheer size made her special, as the largest sailing yacht of this type that Hoek Design had designed at this point was 45 metres long. Moreover, no other designer had designed and constructed a classic sailing yacht with a modern underwater configuration in these dimensions. This ability had become a Hoek Design trademark and was partly responsible for the office's international fame.

The design process for Adèle began with a 164' concept, and was eventually extended to 180' once all the requirements had been incorporated. There was a clear desire on the part of the owner to build a large yacht, especially for the purpose of being able to make quick crossings even during long voyages. Sailing performance, however, was the most important aspect: Adèle needed to be a good, fast sailing yacht even in light airs.

Hydrodynamic Research

Set to be the largest classical yacht ever built with a modern underwater section, Adèle required thorough research. Wind tunnel tests were carried out at the Wolfson Unit of the University of Southampton in England, while extensive model tests took place at the Delft University of Technology. The latter were carried out using a 1:20 scale model of the hull with separate tests for five different types of keel and two different types of rudder.

Hoek Design had already studied a number of models at the Delft University of Technology, which employs a method that allows the forces affecting the keel, rudder and hull to be measured separately. This method was created in a partnership between Piet van Oossanen, Delft University and Hoek Design. Through the years, a large number of vessels have been tested in this manner, from 40 ft IMS racers up to a 200 ft superyacht.

By separately measuring the forces on the hull, the keel and the rudder, and carrying out model tests with just the keel, just the rudder and with neither keel nor rudder, it is possible to measure the interaction between keel and rudder, keel and hull, and rudder and hull. Over the years, this data has been incorporated in a Velocity Prediction Programme designed jointly by Van Oossanen and Hoek Design and used exclusively by these two offices. Its unique capabilities allow the programme to calculate the rudder angles, for instance, already during the design phase.

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ADÈLE

DESIGN	Hoek Design Naval Architects, Edam, the Netherlands
BUILDERS	Vitters Shipyard, Zwartsluis, the Netherlands
NAVAL ARCHITECT	Hoek Design Naval Architects, Edam, the Netherlands
INTERIOR DESIGNER	Hoek Design Naval Architects, Edam, the Netherlands

Five different keels were tested in the towing tank: Deep, shallow, with and without wings, and with an extremely wide bulb. Rudders of two different dimensions were also tested with various rudder angles. Various sail configurations, as well as the efficiency of the running sails, were tested in the wind tunnel. All the information gained from the wind and tank tests was subsequently entered into the velocity prediction programme in order to further calibrate it for this size of yacht. The programme also allowed a large number of other aspects to be optimised.

A special reason for this extensive research was the owner's wish to be able to manually steer Adèle with cable steering, which again, was unprecedented on a yacht of this size. Adèle's rudder balance is, in practice, ideal in all conditions.

Arrangement

Built by Zwartsluis based Vitters Shipyard – a well-known builder of top quality yachts - Adèle is of all-aluminium and has watertight bulkheads forward (behind the forepeak) and aft (in front of the aft deckhouse), around the engine room and also immediately aft of the mast. This last bulkhead has a sliding watertight door, which can be closed hydraulically.

The main cockpit is spacious and has four corner sofas and two outboard ones that offer intimate areas for both smaller and larger groups. Between the forward and main deckhouses is another relaxing area protected by the two deckhouses and by the two large skylights at either side. The main tender is stored forward of the mast. When it is launched two hatches can hydraulically be hoisted flush with the deck to create a large deck area. The same table that is placed between the deck houses can also be placed in this forward area and the table can vary in size from a round one with a diameter of 120 cm to a maximum length of 300 cm. The aft or owner's cockpit has two armchairs and a U-shape sofa. Aft of that cockpit is another relaxing area with two seats on the pushpit.

Sail System

The yacht can sail upwind with full rigging perfect balance, and can be steered manually even in strong winds. Her sailing performance exceeds theoretical calculations, with the yacht sailing a knot above true wind speed in practically all wind conditions. Due to the large sail area to displacement ratio incorporated in her design, Adèle also sails smoothly in lighter airs.

The sail systems are designed with pushbutton trimming. The mizzen, mainsail, yankee and jib sheets all feature captive winches, which allow the yacht to be sailed with a relatively small crew. The reefing line of the first reef of the mainsail can be operated using a captive winch as well. Since Adèle was to spend most of her time in remote areas, taking the sails down on a regular basis would be extremely tricky, not least due to the sheer size and weight of her sails: The mainsail alone weights 750 kilos. For reliability reasons the boat was planned with a fairly standard slab reefing system and not in-boom furling.

Adèle is a powerful yacht and carries a large sail area both upwind and downwind, which, together with her narrow hull, will give her a lot of speed also in light weather. Adèle's mainmast is as tall as possible to allow passage underneath the Panama Canal bridge. Including antennas, she reaches 63.6 m above the waterline. The sailing yacht is ketch rigged (two masts, with the aft mast shorter than the mainmast forward) and is, through wind tunnel testing, designed to be sailed both upwind and downwind with both genoa and staysail, and both main and mizzen. The two masts provide an ability to carry a substantial sail area downwind without either exaggerating the risks or the size of the crew. A sloop-rigged yacht would also have had a mast that would be too tall to pass the Panama Canal bridge. This was an important consideration for having two masts.

All the captive hydraulic winches and other adjusters are controlled from the centre console in the main cockpit. The controls that surround the screen were either the radar or chart picture. They are displayed individually or both overlaid on top of each other. The foresails and mainsail

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can also be controlled from a panel at the forward deckhouse or alternatively from remotely controlled instruments that the crew can carry with them so that they can position themselves were they see the shape of the sails best.

Rig & Winches

The masts and booms are made of carbon fibre. All standing rigging is rod. A pole of carbon fibre is carried at the forward end of the main mast for hoisting and lowering the large tender.

The sailing yacht features a crow's nest with seating for two persons on the main mast, which can be hoisted and lowered via a hydraulic captive winch controlled from deck or from the crow's nest itself. It goes to a maximum height a little bit below the inner forestay (abt. 40 m above waterline).

The spreaders are angled backwards (16 degree for mizzen and 20 degree for main). That means that in normal conditions the crew don't have to set the running backstays, but always set them on ocean crossings, in rough conditions or when motoring.

All upwind sails are sheeted through captive Rondal winches. The mizzen staysail is sheeted through the mizzen boom and back to a winch at the mizzen mast. The spinnaker is sheeted to the big primary Lewmar 150 winches placed either side of the mizzen mast. The yacht carries twelve hydraulic captive Rondal winches (where the line automatically is rolled up on the winch drum) and ten hydraulic Lewmar normal winches plus a couple of snub winches. Adèle also has two anchor winches forward and one for the stern anchor aft.

At the main mast there are two hydraulically operated Lewmar 111 winches and two manual 111 (to work as snubbing winches). At the mizzen mast there are two hydraulic Lewmar 111 winches.

There are two primaries (Lewmar 150 SSHST) for sheeting the MPS and setting the runners. They can also be used for mooring lines. They are back winding for paying out the sheet (or running backstay) safely and can also be used as back up winches for the yankee, if the captive winches should fail. There are two hydraulic winches behind the aft cockpit for mooring lines and running backstays for the mizzen mast (when set). There are two hydraulic winches forward for mooring lines, for the downhaul line for the MPS and for control of the tender pole.

Interior & Exterior

The Hoek Design office was responsible for the interior and exterior styling, all naval architecture work including performance optimization and all structural work, tank and wind tunnel testing as well as the complete interior design work.

The interior is all mahogany with raised and fielded panels except for the crew area, where it is slightly simplified. The mahogany is varnished below wainscot level and painted white above. In the salon, library and owner's cabin, all bulkheads are varnished. Ceiling and ceiling beams are painted white. The accommodation is arranged with four guest cabins and one owner's suite. Forward are four crew cabins giving a full compliment of 20.

The main deck house is the major social area with the dining room table, low sofas, navigation and communication centre. Half a level below on the starboard side is the captain's office and beyond that the control room with all the electrical panels and the engineer's desk. This is also the entry to the engine room.

Going forward from the main deckhouse one enters the saloon and library. The main saloon has an old fireplace on the starboard side. On the port side one can watch a DVD on a modern plasma screen or the electronic chart following the yacht's sailing. The library, saloon and main deck house create the major social area on board, when living does not take place on deck. The superyacht, however, features more exciting areas. For instance, the forward deck house offers a cosy sitting area for guests that will withdraw a little, but still observe what is happening on deck or ashore.

The owner and his wife have their own suite with master stateroom, dressing room and bathroom and the aft deckhouse connecting these with

On board

After sea trials on the North Sea, Adèle's maiden voyage traced a route to Spitsbergen in the Svalbard archipelago via the mainland of Norway. The writer of this article joined the boat in Lofoten and sailed along to Svalbard.

"At the moment we came onboard in Lofoton, the temperature was between 20 and 25º C and shorts were de rigueur. It was beautiful sailing weather, and the fact that there was little wind was no problem for Adèle, despite her 300-ton water displacement: The boat is a fantastic sailor even at a true wind of five knots. The trip to Spitsbergen was covered in 72 hours, with the sails being used for part of the trip and the engine for periods with no wind.

Within the Svalbard archipelago, the voyage took us via Longyearbyen to Magdalenefjorden, Raudfjorden, Krossfjorden and the Seven Islands, the most northerly region of Svalbard. From this point we sailed out to the pack ice, which, in that season, began at 81° 40' north latitude. It was a special experience to see that four degrees above zero was, after all, four times as warm as zero degrees. It did snow during the day in the middle of July, but we also saw the midnight sun at its appointed hour.a The Svalbard region is a breathtaking archipelago with many species of birds, polar bears and whales, and a barren, rough nature. Here, too, Adèle was completely in her element, providing us with an extraordinarily comfortable means of transportation equipped with all the luxury and comfort one could possibly wish for. The large distances that can be covered in relatively short periods are one of the most exceptional qualities of such a large sailing yacht. Adèle also has an enormous range, is a spirited sailor and easily covers average daily distances of over 300 miles.

The Svalbard journey ended in Longyearbyen, where most of the passengers disembarked to take a flight home. The crew then sailed Adèle to Marstrand in Sweden, where the official christening was due to take place, along with a launch party to which the owner had invited some 280 people. The festivities ended with a huge fireworks display that the owner had taken over from the city government of Gothenburg, which had cancelled its fireworks due to the tsunami disaster earlier in the year.

Adèle has since covered huge distances and has continued her journey by way of the Netherlands, England, France and the Balearics. The first race in which Adèle took part was the Super Yacht Regatta in Palma de Mallorca, which is held annually and organised by the sailmaking company Elvström/Sobstad. Starting times were set according to time correction factors calculated in advance by the race commission according to unclear rating formulas.

As the largest yacht to take part, Adèle started last on the first day. She was nonetheless first over the finish line, and champagne corks were popped in celebration – prematurely, as it turned out. The owner spoke truer than he knew when triumphantly saying: "You can only win your first race once, and that day is today!" In fact, the handicap formula was immediately adjusted. On the second day, Adèle had to start one hour after the first boat – this in a race that lasts two hours in total – and duly crossed the finish line last. The final day provided a relatively exciting competition, with very light weather and changing conditions ensuring the competing yachts finished close together.

Adèle will continue her journey in the direction of Brazil, the Caribbean, the Panamá Canal and then the Pacific. Eventually, she is due to take part in the St Barth Bucket, a competition comparable to the Super Yacht Cup of Palma that pits large yachts against each other."

the owner's cockpit and aft deck. The aft deckhouse has two small sofas and between them a small drinks cabinet and a humidor for the owner's cigars. Opposite the sofas is another desk and a bar area. The combination of privacy and the views that this deckhouse offers makes it a very attractive place to relax.

The ketch features four guest cabins, two double and two twins (each with a third Pullman berth) and four crew cabins. Each cabin has its own head and shower room. The owner's bathroom features a Jacuzzi bath. But what makes Adèle's interior so amazing is the wonderful panelling and attention to detail by de Ruiters, which manufactured the interior, and Hoek Design who designed it and Polly Sturgess who selected the fabrics and loose furniture.

Navcom Package

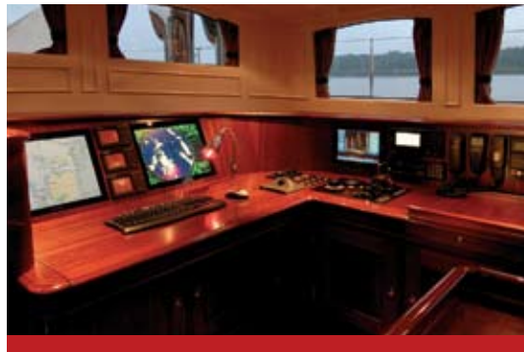
Adèle is equipped with a comprehensive range of navigation instruments and communications systems, supplied by Houten based Sailtron. The scope of supply includes the following main components:

- B&G Hydra 2000 depth/speed/wind package
- B&G Halycon gyro stabilised compass as backup for the fibre optic gyro compass
- Leica/MX Marine AIS and DGPS system
- C. Plath fibre optic gyro compass
- C. Plath Venus magnetic compasses
- Furuno dual frequency colour video with two displays
- Furuno black box radar system
- Transas/Furuno radar consisting of Transas NaviRadar software and Advantech computer
- Seabook 18-inch watertight outdoor monitor
- Mermaid indoor monitors
- Transas electronic chart systems, type NaviSailor 3000
- ICS Nav5 and Furuno NX-300 navtex receivers
- SP Radio Inmarsat Fleet 77 system
- SP Radio Iridium system
- SP Radio Inmarsat C system
- Skanti VHF radio telephones with handsets
- Simrad VHF radio telephone
- Skanti 250 Watt SSB transceiver

Special Details

Adèle is sailed by a permanent crew of eight. She can accommodate a total of 12 guests in four guest cabins and one master suite. The yacht features many special details, including a boarding platform to port that simplifies access to guests arriving with a tender, but also gives the possibility to easily reach diving bottles and comfortably come onboard using a boarding ladder. The yacht has three tenders, all of which work with diesel fuel in accordance with the British MCA safety regulations, which make it extremely difficult to keep petrol tanks onboard. Of course, it also makes much more sense to have the tenders run on diesel simply because 24,000 litres – more than the supply of an average refuelling station – are kept onboard for various purposes.

Each of the three tenders has a different propulsion system – a diesel outboard engine, a Z-drive and a water jet. This means that they can be used for different purposes: For instance, the water jet tender has the shallowest draught and can easily be landed on a beach. And just like the tenders, the yacht itself is versatile and appropriate for travelling in both hot and cold regions.



Technical Systems

Onboard diesel power consists of a 746 kW high-speed Caterpillar 3412E DITA marine diesel engine with Mekanord gearbox, driving a controllable pitch Korsor propeller. The gearbox features an integrated servo system for the cp-propeller. The servo system has an extra long servo stroke which allows the propeller to go into feathering position when Adèle is powered by sail. The gearbox features two individually clutchable PTOs with step-up. Johnson Pump supplied the shipboard centrifugal pumps, the side channel pumps and the gearwheel pumps. Power generation is with SIM-Holland supplied generator sets: Two 60 kW Onan MCGDA main generator sets and a 35 kW Onan MCGCA auxiliary generator set. Both 60 kW generator sets feature 73.5 kW (100 hp) power-take-offs for driving a hydraulic pump and are suitable for parallel operation.

The shipboard mains consist of a split bus system with parallel take over functions, installed by El-Tec Elektrotechnologie who also supplied the integrated monitoring system.

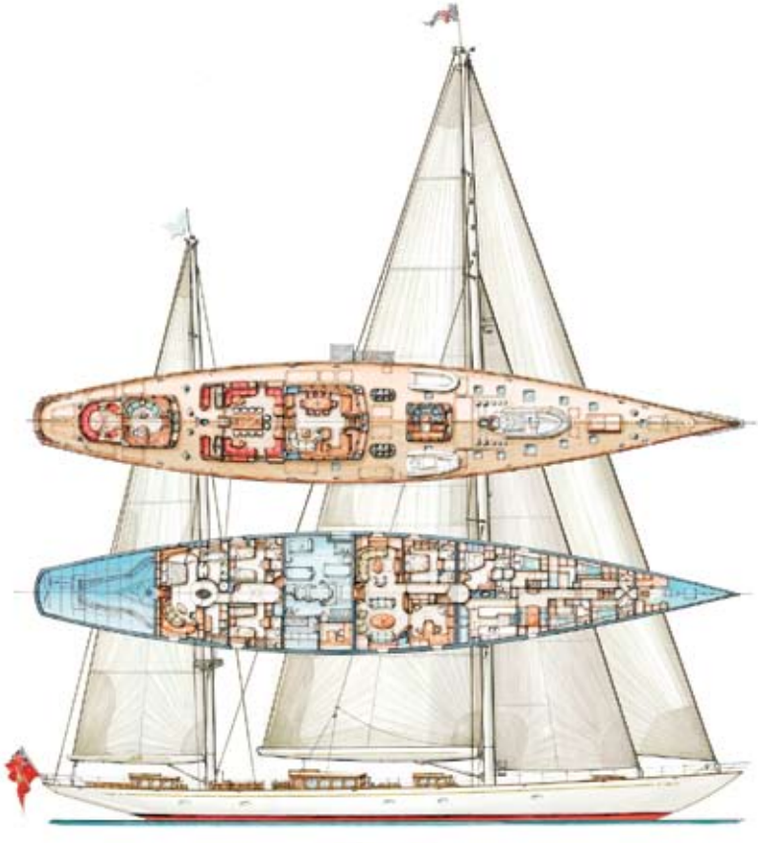
Bow and sternthrusters consist of 92 kW Swing Sider thruster units. Anchoring equipment includes two Staalart windlasses each handling a 300 kg CQR high-polished stainless steel anchor linked to a 150 m 19 mm diameter studlink anchor chain cable. Deck equipment further includes Lewmar deck winches and Rondal under deck winches. Air conditioning and heating is with Maine Air systems.

Load Sensing Hydraulics

In cooperation with the yard Zwartsluis based Hydrosta has engineered a novel hydraulic system for Adèle. Hydrosta designed a Load Sensing central tube circuit from where 49 hydraulic functions are controlled. This circuit combines the tubes Pressure (P), Tank/return (T) and the draining. Hydraulic feed pumps are driven by the main engine and by two generator sets. There is also an electrical back up system of 2 x 230/400 VAC, 5 kW. All the pumps are combined by means of a "central divider valve block" manifold. This manifold is computer controlled via Programmable Logic Controllers (PLCs).

The Hydrosta retractable 92 kW (125 bhp) bow- and stern thrusters are the largest hydraulic power consumers. The other 47 functions are divided at eleven valve blocks. When manoeuvring at harbour the fore/aft-mode is used which means that both SB and PS pressure tubes are used for bow and stern thrusters. When sailing the SB/PS mode is used. Each side has its own pump and pressure tube. In port mode also the emergency mode can be used. This allows to combine each pump to each hydraulic function. In order to increase the system's intelligence and reaction speed and to lower the costs (less tubes), Hydrosta has started working with electronic controlled Load Sensing. Electronic controlled Load Sensing provides the possibility to program priorities between the several hydraulic functions.

i. **www.hoekdesign.com**



Datema Delfzijl Safety-, medical- and fire-fighting equipment | el-Tec Electrical installation | Gouwerok Shipyard Hull | Hatenboer-Water Freshwater treatment system | Hydrosta Bow- and stern thrusters; hydraulic system | Johnson Pump Pumps | JVS Sound & vibration measurements; consultancy | Korsor Propeller Propeller | Kroon Ship's hardware | MAN Rollo Racor filters | Mekanord Gearbox | Nicoverken Hamann sewage treatment plant | Rolls Royce Marine Benelux Tenfjord steering gear | Rondal Deck- and sailing hardware; hatches; doors; windows; reel winches; hydrofurls | Ruiter Quality Interiors Interior | Spraybest Europe Mist eliminators | Sailtron Navcom package | SIM Holland Onan generator sets | Snijtechniek Brabant Steel cutting | Wortelboer Anchor chains | Yachtglass windows | North Sails Sails | Pon Power Caterpillar generator sets | Yec Awlgrip paints (exterior) | International Paint Coating (interior) | Marten Spars Slab reefing system

Facts & Figures of Adèle

Dimensions	
Length overall	54.86 m
Length waterline	38.40 m
Beam overall	9.50 m
Draft	4.80 m
Tanks	
Displacement (half load)	298 tons
Water capacity	8,000 litres
Fuel oil capacity	24,000 litres
Ballast water	85 tons
Performance under power	
Maximum speed	16 knots
Cruising speed	14 knots
Spars	
Marten Spars	slab reefing systems
Mainmast above waterline	62 m
Mizzenmast above waterline	46 m
Sails	Carbon/Spectra
Sail maker	North Sails
Mainsail	508 m^2
Mizzen	214 m^2
Yankee	635 m^2
Staysail	225 m^2
MPS	1,500 m^2
Mizzen staysail	500 m^2
Classification:	ABS A1 Yachting Service & MCA Cayman Islands