

Scania and the sea.



The Scania diesel for propulsion.

Today, you'll find the Scania diesel in many different types of ships throughout the world.

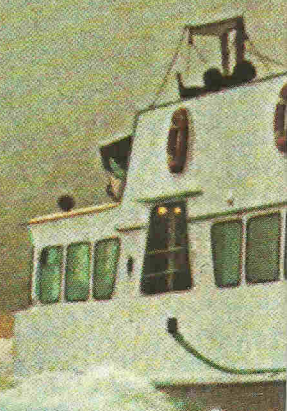
As the power source in auxiliary and emergency units, bow thrusters, and in propulsion machinery.

The basic engine is of course the same rugged and fuel-mean engine as in the heavy Scania trucks, but entirely adapted to marine operation. Scania marine diesels are space savers, vibration-free in operation and low in weight.

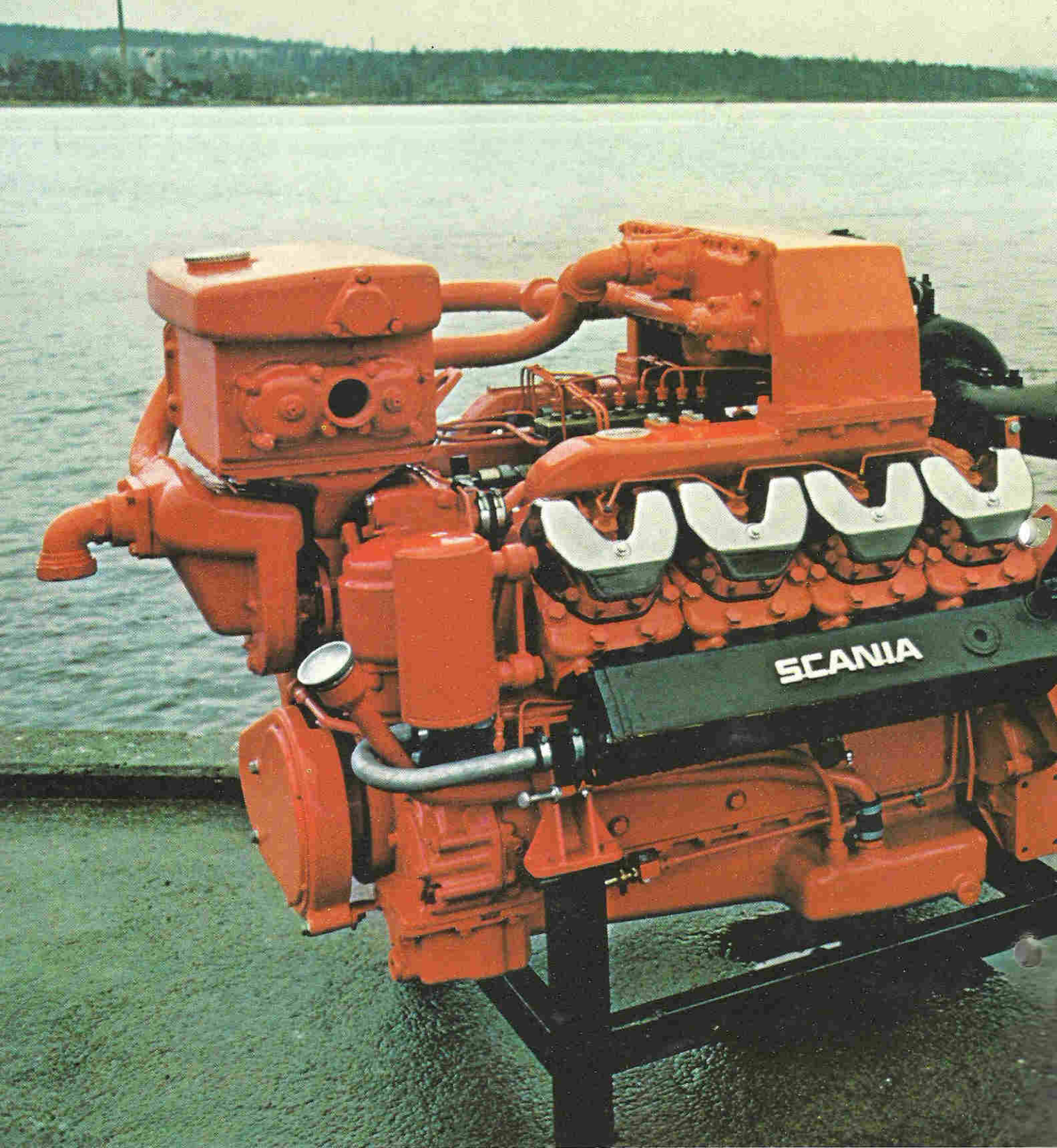
They are offered in power ranges from 107 to 292 kW (145-397 hp DIN). The smallest is a six-in-line engine, the biggest is a space-saving V8.

The "Nordan", owned by the Waxholmsbolaget, uses 4 Scania DSI II engines for propulsion. The engines power 2 variable-pitch, Seffle propellers, via V-belt transmissions.

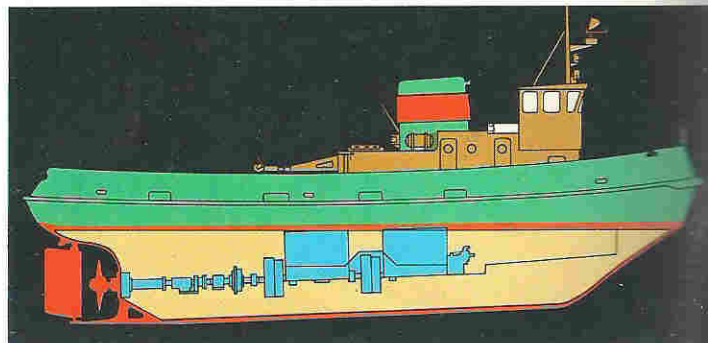
Nordan is just one of the many ships operating in the Stockholm archipelago during the summer. A great number of them powered by reliable Scania diesels.





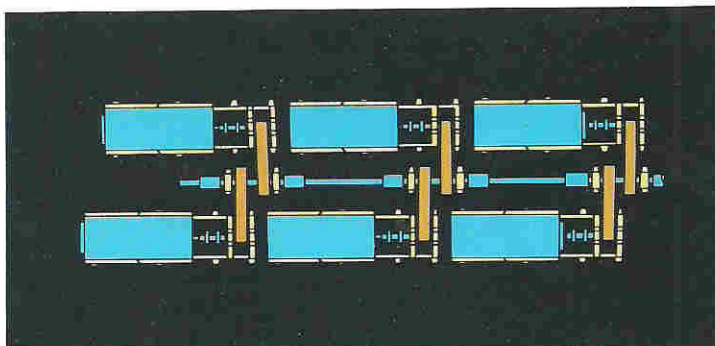


Reliability in performance, rapid access to spare parts and a well-established service network. To mention a few of the advantages with standard engines produced in large series. The tugboat "Dan" of Kristinehamn (large picture), is equipped with two Scania DSI 14 engines driving the propeller shaft, via a Fjellhamar gear. Reduction ratio 5.45:1. KaMeVa variable pitch propeller. The strongest Scania marine diesel is the DSI 14, a V8 with an impressive output of 262 kW (357 hp DIN), at heavy continuous service. The V8 is ideal for use in installations, where operations demand a continuous max. power output. Like in tugboat assignments.





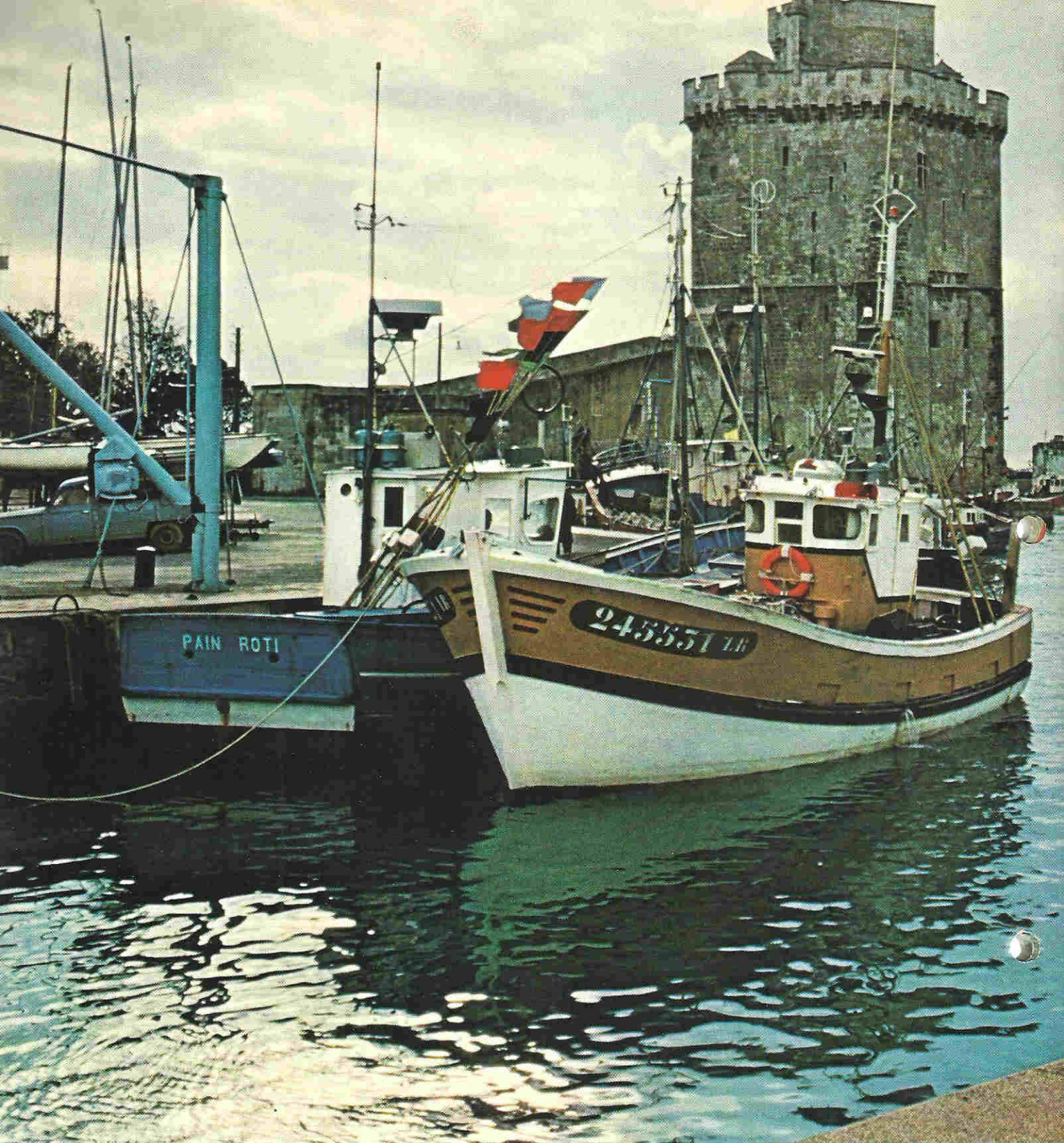
The four Scania engines in the Röda Bolaget's tugboat "Balder" are individually sound insulated. Fast-running diesels are much easier to insulate than slow-running, that's because the vibrations are less and the sound frequency higher. Apart from that, it's simply much easier to equip a small engine with an effective sound insulation.



The Swedish Highway Commission owns many ferries with 2, 3, 4 or 6 engine in-

stallations. The picture shows the engine arrangement in a ferry with six Scania D 11

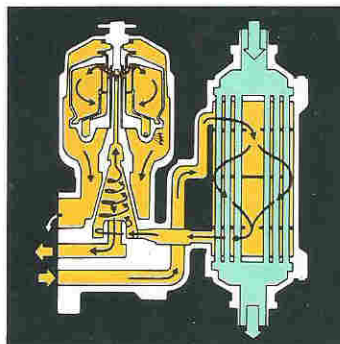
engines. The engines are installed pairwise and drive the propeller shaft, via V-belts. Variable-pitch propellers at both ends of the propeller shaft. This arrangement allows a power output up to maximum, at either end. All six engines are contained in sound-insulated boxes. These make it possible to utilize and lead the air up under deck, keeping it free from ice during winter. The low headroom required by the engine installation provides possibilities for a low, unbroken deck.



In "Cardinal Richelieu's town" La Rochelle, on the French west coast, the fishing boat "Les Frangins" (245531) has its home port. Below deck, you'll find a Scania D 11 rated at 149 kW (203 hp DIN), which gives the 40 foot boat a full speed ahead of 9.5 knots.

Les Frangins, which is mainly engaged in fishing shellfish along the French coast, is merely one of many fishing boats around the world using Scania diesels for propulsion.

The engine on the quayside is another version of the Scania 11-litre engine, DSI 11, with an exhaust powered, turbo-charger and a seawater cooled, inter-cooler. DSI 11 rates 202 kW (275 hp DIN) at 1.800 rpm, in heavy continuous operation. At light continuous service it has an output of 223 kW (303 hp DIN).

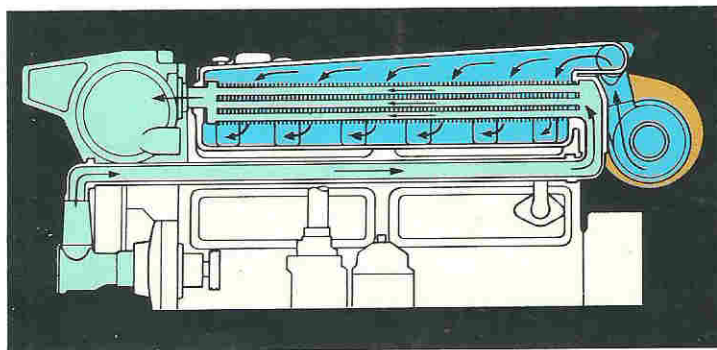


The oil cooler, which is standard on all Scania marine diesels is directly connected to the oil cleaner, without hoses.

The oil is cooled by utilizing the seawater system. The entire flow in the seawater circuit passes the oil cooler. The oil is fed into the cooler after having passed the oil pump and, consequently, it is cooled before it reaches the lubrication points. In this way, high temperature peaks are cut, even at a maximum engine load. The lube oil is doubly cleaned in Scania's combined cyclone/centrifuge oil cleaner. In the cyclone part, the oil is forced to swirl, causing the clean oil to collect in the centre of the cone. This oil is then led to the pilot



channel. The polluted oil is forced out to the centrifuge, which comprises a rotor housing with two jets fitted in the bottom. Here, the oil is forced out causing the rotor to rotate at approx. 7,000 rpm. The pollution is deposited on the inner walls of the rotor, due to the centrifugal force, and the clean oil is fed back to the oil sump. The cleaner has no cartridges that have to be changed. It needs only to be cleaned, and no special tools are required.



The inlet manifold is designed and dimensioned to ensure that each cylinder receives an equal volume of air. An inter-cooler is located inside

the inlet manifold on the DSI 11. All water from the seawater circuit passes through this cooler and cools the induction air.

This means that more air can be forced into the cylinders – cold air needs less room than warm.

The inlet ducts in the cylinder head are shaped in the form of a spiral, and this leads to a strong air turbulence, which results in a rapid and effective mixing of fuel and air. The configuration of the piston crown greatly accelerates the swirl while the piston moves to top dead centre. The special design of the inlet ducts, cylinder heads and piston crowns, are some of the factors that give Scania its good fuel economy.



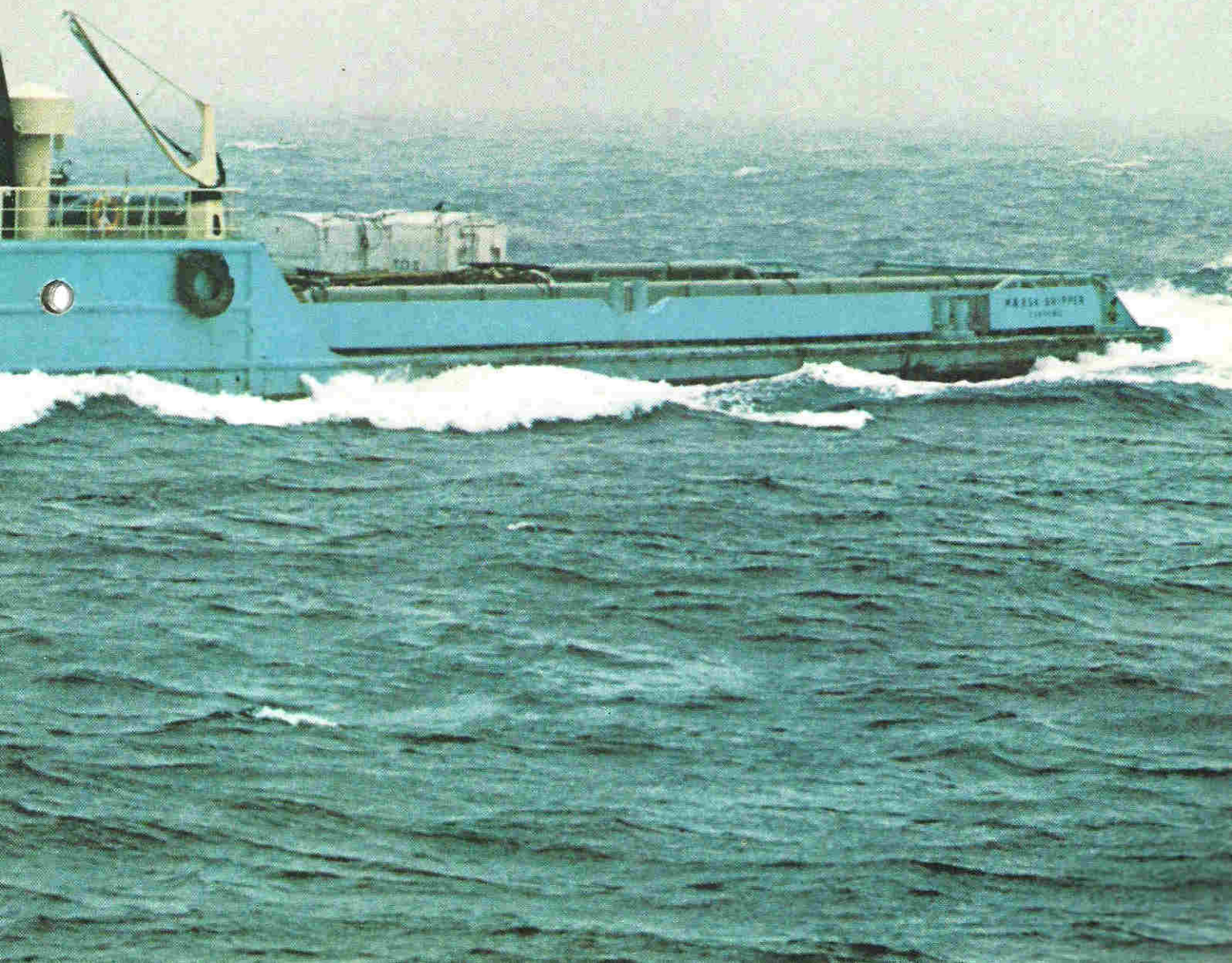
MÆRSK SHIPPER

The Scania diesel for auxiliary.

The Scania marine gen-sets cover a power range of 80–290 kVA. Seawater cooled or fan cooled. If you need more power, a multiple installation helps you to make better use of the available space in the engine room, reduces the weight, increases reliability, and lowers the outlay for reserve sets.

Maersk Shipper is one of a series of 23 Danish built supply ships, all using Scania diesels in their gen-sets. Each ship has three sets comprised of a Scania DSI 11 and a Danish DAE-generator – rating 170 kVA. In addition to the gen-sets, some of the ships have a Scania DS 11 engine to operate a 100-ton winch.

Fifteen of the ships belong to the Shipping Co., A/S A P Möller of Copenhagen, and are in service at sea throughout the world. Eight of the ships have been delivered to the People's Republic of China.





The cement tanker "Cimbria" of Copenhagen has three gen-sets comprised of Scania DS 14 engines and Asea generators. Output 200 kVA. The gen-set in the foreground is built by the Maskinfabriken Nordhavn A/S in Aarhus, Denmark. The engine is a Scania DSI 14 with an ECC generator.

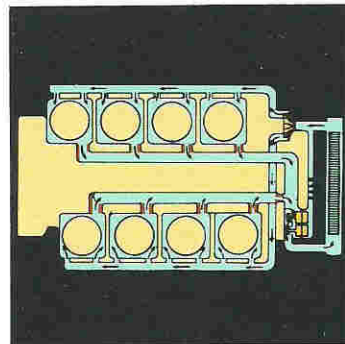


M/S Maasborg from Delfzijl in Holland is built to B.V.-class specifications, and carries cargos of cellulose, timber and salt between Holland and Scandinavia.

There are three gen-sets on board for lighting, bow-thrusters and the electric/hydraulic deck cranes. Each set comprises a Scania DS 11 with an Asea generator of type GAC 28. The gen-sets, which are entirely contained in sound insulated boxes, each have an output of 147 kVA.

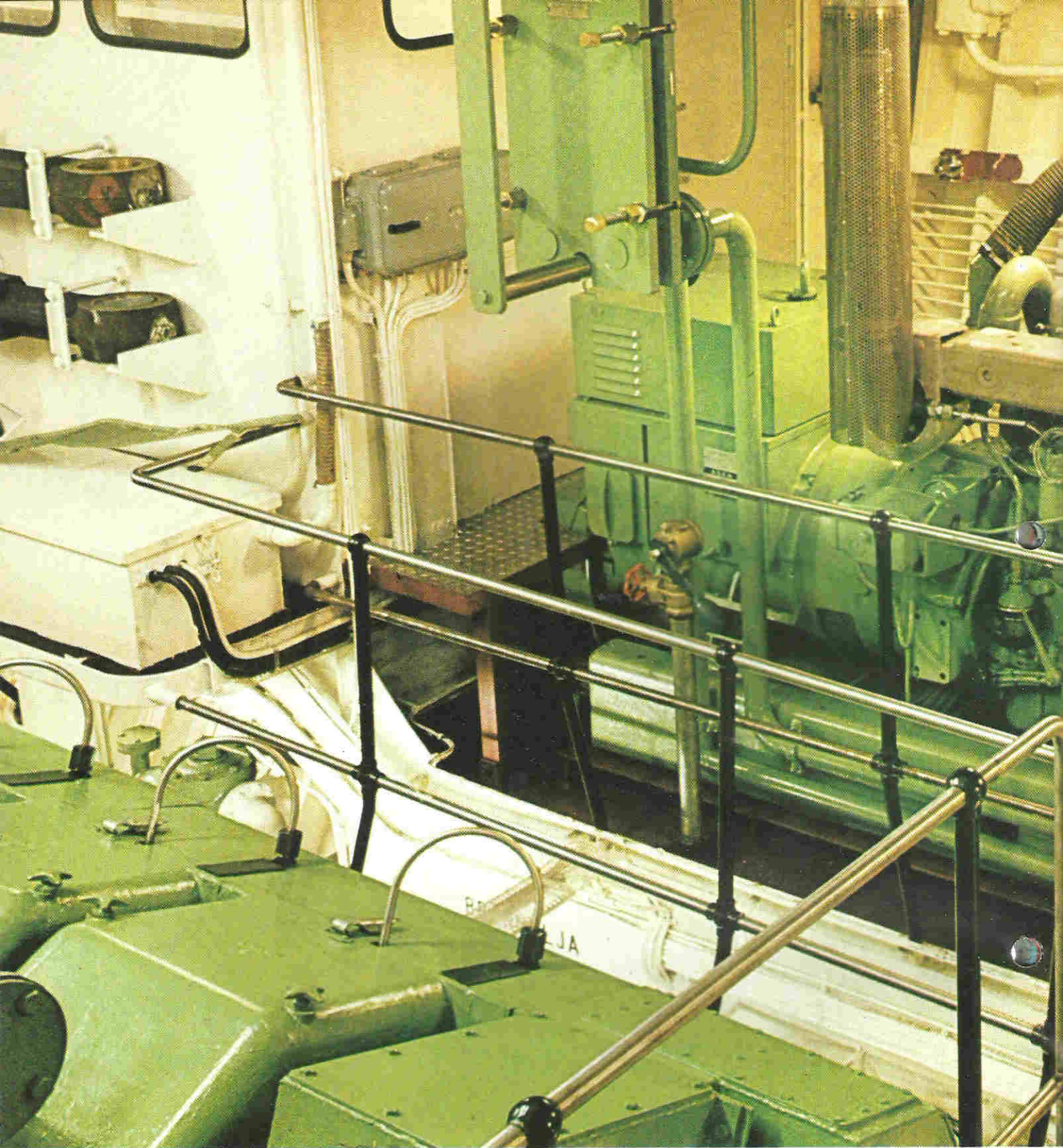


M/S Constructor hails from Haugesund, in Norway. It is a special ship employed in repair work on oil and gas pipelines in the North Sea. There are 5 Scania DSI 14 engines aboard in various types of units. Two of the engines drive gen-sets. Another two supply the necessary power to the hydraulic pumps for winches and the like. The fifth Scania diesel is installed in the bow-thruster machinery.



The picture shows the calibration of the cooling system in Scania DSI 14, i.e. how each cylinder is uniformly cooled.

The coolant flows from the direct-driven, freshwater pump in two longitudinal ducts and round each cylinder. Then, around the cylinder, up through the cylinder head and out to the return duct. The closer the cylinder is to the heat exchanger, the smaller the outlet to the return duct. The cylinders furthest away have the largest outlets. This "square-deal" type of cylinder cooling is especially important in heavy continual operation. Also the turbocharger is water cooled on the Scania DSI 14.

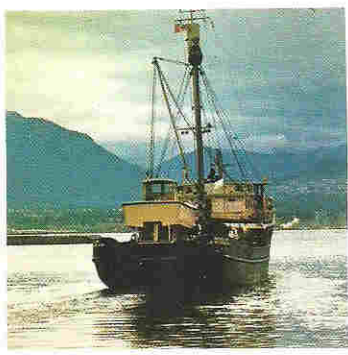
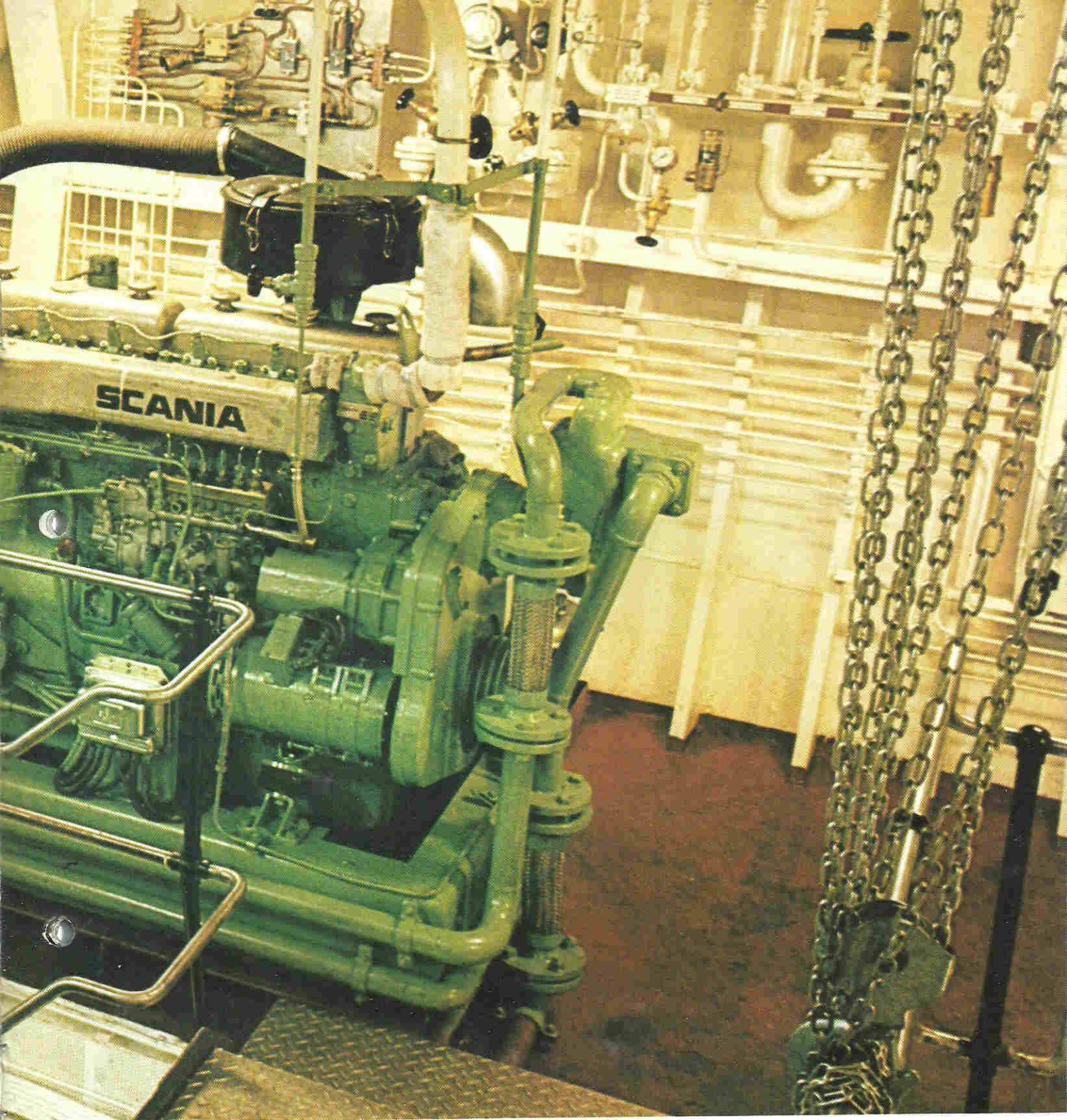


The Gothenburg Bogserings & Bärgnings AB (Röda Bolaget) which is a subsidiary of the Boström Group, is one of the biggest and better-known tug and salvage companies in Europe.

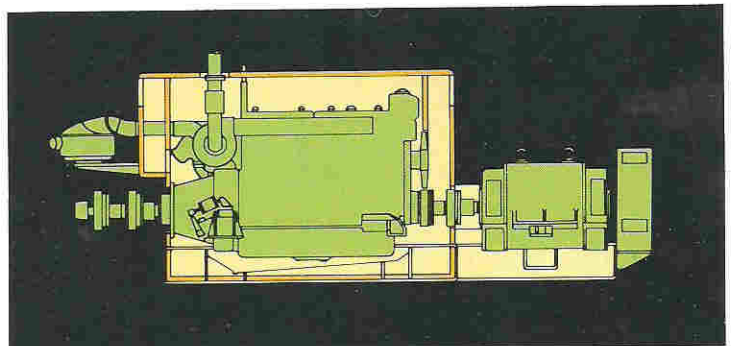
Dependable Scania gen-sets are to be found in many of the "Röda Bolagets" ocean-going tugs. The tug "Per" built in 1972 at ÅSI-verken, has two Scania gen-sets, and is equipped with tank cooling common to both the main engine and the sets. That's why there's no heat exchanger on the generator engine, which is a Scania DS 11.



The "Willem Barendz", which is owned by the Europese Waterweg Transporten NV (EWT) in Holland, has two Scania/Asea gen-sets – each rated at 154 kVA. EWT has another four "push boats" of this type with double Scania units.

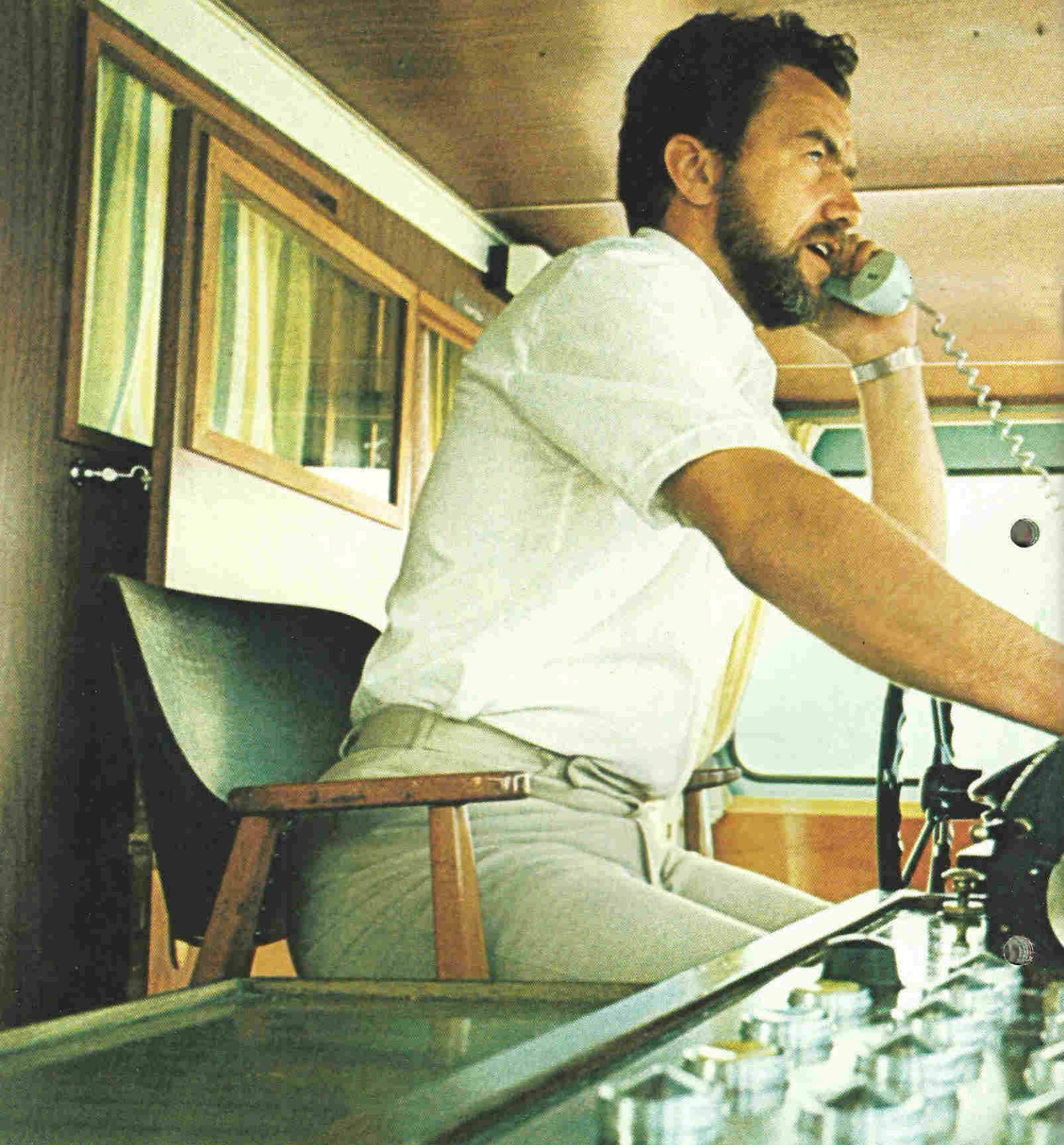


The "Royal Venture" from New Westminster in Canada fishes for tunny, turbot and other marine delicacies over a vast area extending from Alaska in the north to Mexico in the south. The ship also carries a small boat for laying nets. This boat is powered by a Scania D 11 engine.



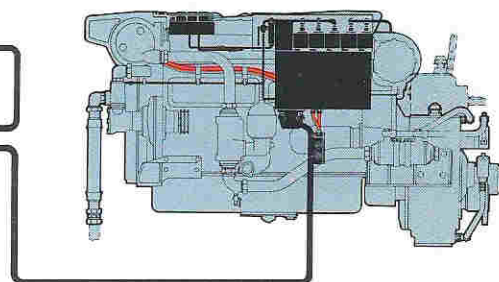
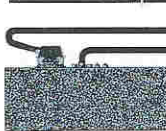
M/T "Esso Saimaa" has 2 Scania gen-sets, one of which has a 140 kVA generator at the front of the engine, and a cargo-oil pump at the rear end. The

"Saimaa" also has another Scania pump unit. All three of these Scania engines are sound insulated. There's also a Scania powered emergency unit.



Scania instrumentation.

Control and monitoring operations from the bridge demand advanced instrumentation, in order to relay the operating, measuring, checking and monitoring functions to and from the engine room. Scania has a complete instrumentation system based on improved standard components, and this system is so flexible that it can be tailored to most demands. Various types of instrumentation equipment are available – for emergency/auxiliary sets and for propulsion engines. The system also includes monitoring according to EO/UMS-class, and start automation.

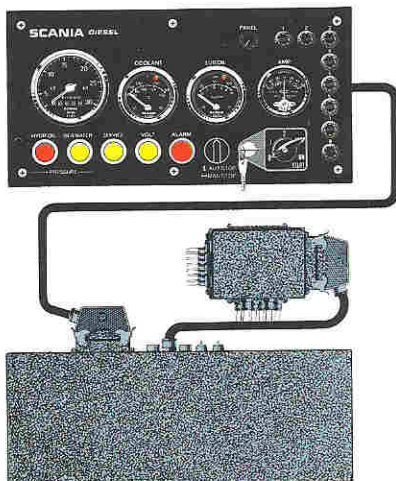


Scania's complete instrumentation sets start in the engine and end in the control panel. All instrument panels are of black-anodised, marine aluminium, and the retainers are

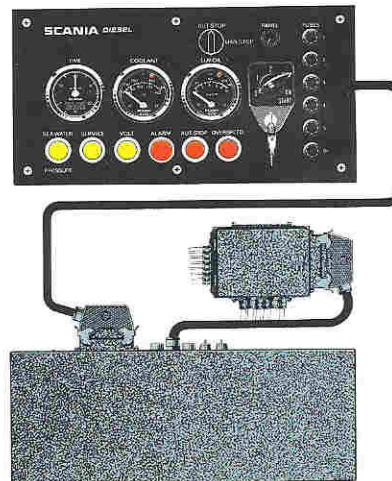
of chromium-plated brass. The engine is delivered with all wiring complete and connected to a junction box mounted on the engine.



The instrumentation for the propulsion engines comprises three units: the engine junction box (with watertight cable bushings), the automated unit (can be complemented by start automation), and the instrument panel itself. This panel houses a tachometer with a revolution counter, temperature gauge, oil pressure gauge, shunted ammeter and a lockable, rotary switch for start and stop etc. In addition, a knob allows the selection of either automatic or manual stop, in cases of malfunction.



This equipment is adapted to marine gen-sets. The instruments are an hour-meter, a temperature gauge and an oil-pressure gauge. This panel also has a lockable rotary switch for start and stop, as well as a knob for the selection of either automatic or manual stop, in cases of malfunction.





M/S "Lalandia" owned by A/S Østasiatiske Kompagni, Copenhagen was delivered in 1973 from Eriksbergs Mek. Verkstads AB. Like its sister ships in the ScanAustral fleet, M/S "Lalandia" is fitted with an emergency-set powered by a Scania D 11 engine. Output 105 kVA.

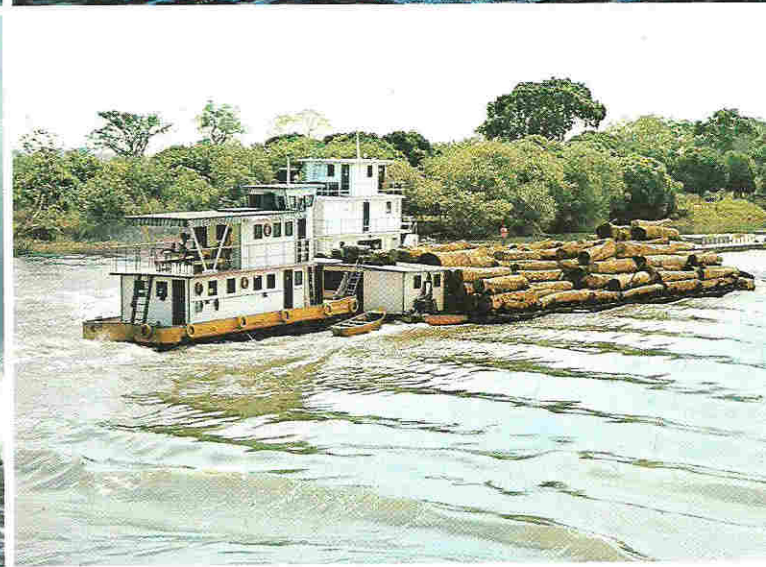
The Norwegian trawler "Havegga" hails from Andenes, far to the north of Lofoten and the arctic circle. The "Havegga" (23 gross tons) is 49 foot and does about 9 knots with its Scania D 11.

The tugboat "Ingrid" is a Finnish harbour tug based at Ingå. Three Scania D 11 engines drive a variable-pitch propeller, via compressed-air operated, Rockford clutches and V-belt transmissions.

Indian coastguard boat, type SM 45, carrying 2 Scania DSI 11 engines with Hydromat outboard drives. At present there are 20 of these coastguard boats on patrol duties along the Indian coast. All of them are equipped with Scania engines and Hydromat-drives. Max. speed just above 30 knots.

The Transport_Bolaget in Stockholm has many tugs in Stockholm's harbour. The "Bull" shown in the picture is fitted with two sound-insulated, Scania GAS 11-05 gen-sets, each rated at 150 kVA.

This is one of 4 special ships engaged in servicing pipelines and stationed in the Port of Bahrain. Each ship is driven by 2 Scania DSI 11 engines with Schottel propellers, which are electro-hydraulically operated. Reduction ratio 3:1.



The Icelandic fishing boat "Fagranes", with a displacement of 49 tons, is powered by a Scania DSI 11, rated 169 kW (230 hp DIN). SGG reverse gear, type MRF 700, with a reduction ratio of 4.78:1. Michigan propeller equipment. Speed 11.2 knots.

The Swedish Highway Commission's ferry No. 278 is driven by 6 Scania D 11 diesels. The engines are fitted with sound-insulated boxes. The heated air is led from the boxes up under the deck, to keep it free from ice during winter.

MRB 34, is a 32-ton rescue cruiser, based in Hvidé Sande on the west coast of Jylland, Denmark. The cruiser has two D 11 engines that drive a variable-pitch propeller, via V-belts. In most of the Danish rescue ships, Scania engines are employed either in single-engine or double-engine arrangements.

The "L'Intrepide" is a French tugboat of the "push-boat" type, with its home port in Lyon. The propulsion machinery comprises three Scania DSI 14, driving 2 fixed propellers, via V-belt drives (1:1) and 2 Masson reverse gears (5:1).

A 41-foot pilot boat built by Watercraft (Shoreham) Ltd. in England. Two Scania DS 11 engines, and a max. speed of 21.5 knots.

The river tugboat "Antonio Joaquim" plies along the Brazilian river Paraná, between the ports of Porto Izabel and Porto Epitácio. The Paraná river cuts the state of Matto Grosso and is one of the most important transport routes for timber and grain. The "Antonio Joaquim" is powered by two Scania DSI 11 engines.



The only qualities that count at sea are experience in seamanship, action range above normal and plenty of staying power. No less. A marine diesel often has to work at continually high power outputs. There are no downhill runs to give it respite. You can truly say that it's always uphill at sea. Therefore it's important for a marine diesel to be entirely adapted to seajobs.

A Scania diesel is tough and rugged. It's built for continual running, day after day. It has a low weight and vibrationless operation. It's compact.

Scania has a vast experience in diesels. Basically, Scania marine diesels are the same reliable engines that are used in Scania's world – famous heavy trucks – but all through adapted to marine use.

Demirhan Sadıkoğlu
2015

SCANIA