

**VOLVO
PENTA**

POWER

For Marine Professionals



Passenger
transport special



Volvo Penta @ Interferry

This year is the 40th anniversary of the annual Interferry Conference, and of course, Volvo Penta will be there as a gold sponsor.

It's being held in Copenhagen, Denmark, this year, and a wide range of industry professionals will be there. The conference brings together a wealth of experience in the ferry sector, which is one of the reasons why Volvo Penta returns year after year.

We see Interferry as a unique opportunity for Volvo Penta to strengthen its global network of operators, designers and yards – it's the most important place to be to stay up to date on the industry's latest trends and innovations, thanks to the conference's high quality.

Volvo Penta has a long history in the marine business, and we take a hands-on approach to putting those expertise to work for our customers. It's one of the reasons why Interferry is such an important event for us – attending the conference gives Volvo Penta the chance to contribute its valuable industry experience to conversations surrounding regulation and policy matters.

Our history as an engine supplier is extensive, but today that is no longer our only remit. Volvo Penta is a partner in design, helping boat builders create vessels that can go the distance. We're committed to innovation and to making life easier for customers – with our products, our services and our aftermarket care.

Innovation is in our DNA – Volvo Penta IPS was a game changer when it first launched back in 2005. A number of commercial applications use Volvo Penta IPS, including the Tjelden ferry in Norway, which was the first passenger ferry to be equipped with Volvo Penta IPS 900. And the Rygetroll catamaran, which also runs in Norway, was repowered with a double IPS installation last year, saving considerable time and fuel for its operators.

Interferry is the ideal place for Volvo Penta to showcase its wide range of innovative products and get involved in industry conversations. We hope to see you there.

Enjoy this special edition, Interferry-themed issue of POWER for Marine Professionals.

Best regards,

Andrea Piccione
Product Management Marine Commercial



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10 Business as usual in Amsterdam

Maximizing uptime is paramount to our customers

STANDARD WARRANTY

1

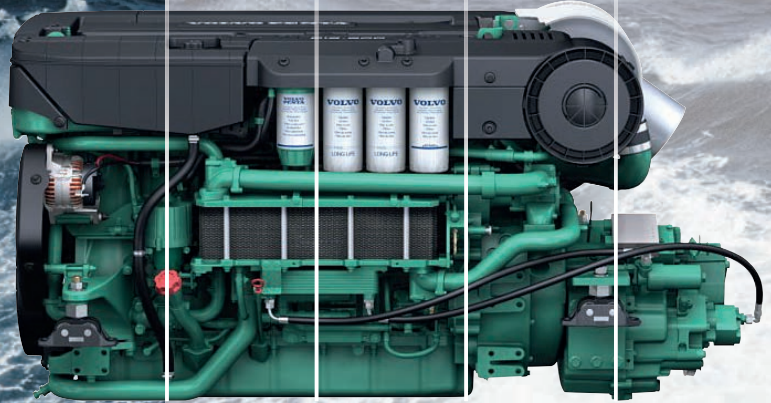
EXTENDED COVERAGE

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Extended coverage

Four years of Extended Coverage, on top of one year standard warranty, offers customers five years full warranty, ensuring maximized uptime and minimized unexpected repair costs.

In addition to Volvo Penta's standard warranty, which gives customers unlimited coverage for one year on unexpected breakdowns, the company is now also offering an Extended Coverage program. With unexpected breakdowns covered for up to 10,000 hours or the first five years, customers can have peace of mind by eliminating unforeseen costs.

With Extended Coverage, customers can enjoy all the benefits of the standard first-year warranty for an additional four years after purchasing their diesel propulsion or auxiliary engine.

After customers have taken out Extended

Coverage (available up to three months from the date of warranty registration), Volvo Penta will take care of all costs, excluding consumables, associated with unexpected breakdowns. Safe in this knowledge, customers can maximize uptime and minimize repair costs on their new Volvo Penta engine.

A risk-free investment

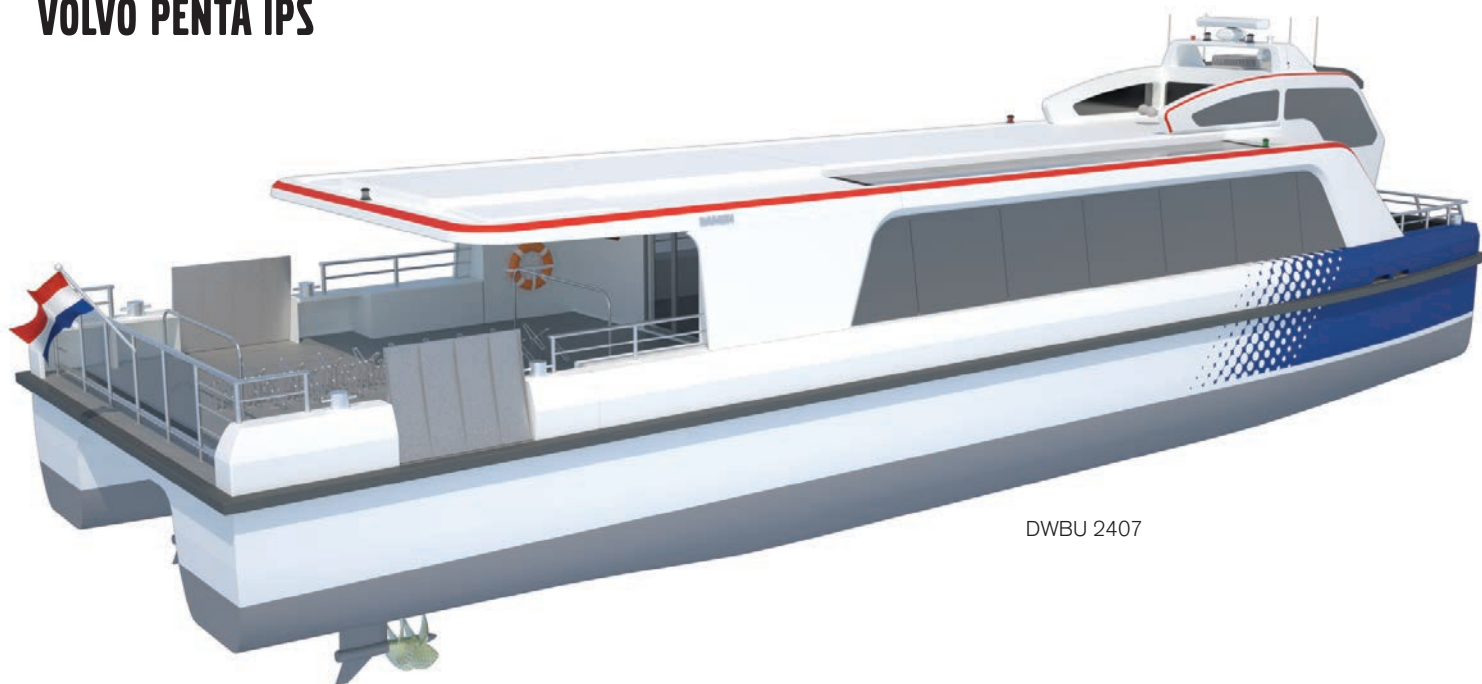
Additionally, Volvo Penta is offering customers in most European countries access to its Extended Coverage program free of charge for two years after the standard first year – for a total of three years' free warranty.

"If someone is undecided about whether to buy a Volvo Penta engine, the offer of free extended warranty can help convince them that it really is a risk-free investment," explains Jan-Willem Vissers, director of Marine Commercial Europe. "I want customers to feel secure and confident about their purchase – offering Extended Coverage is a way to reassure them that there will be no unexpected breakdown costs for three years." Terms and conditions apply.

If you think you are eligible for three free years of extended warranty, contact your local dealer today.

The extended coverage is available for all types of marine commercial applications





DWB 2407

Volvo Penta IPS: a comfortable ride

Damen's latest design, the Water Bus 2407/2007, delivers high quality and excellent return on investment. And, thanks to a Volvo Penta IPS650 propulsion package, customers can provide their passengers with a comfortable, vibration-free ride.

Offering customers the perfect balance between quality and price is often the biggest difficulty faced by boat builders. Remaining competitive while still providing a reliable, quality product is a skill, but one that Damen, international shipyard group, has honed.

In 2016 Damen will launch the Water Bus 2407/2007, developed for urban and coastal areas that are designated as extended, protected waters. The new Water Bus is a modular ferry that is standardized to a certain degree, while still allowing customers to tailor the boat to their specific needs. It is a revolutionary concept that Damen has never attempted before. One of the options available is a Volvo Penta IPS650 D11 engine — ideally suited to the water bus's potential applications, thanks to its low noise output and limited vibrations.

"A Volvo Penta IPS650 propulsion package is one of the propulsion packages offered in the new Water Bus and is, in Damen's opinion, the most attractive solution," says Henk Grunstra, product director of ferries at Damen. "We recommend Volvo Penta IPS to our customers for several reasons — not only does it have a great, tried-and-tested record, in Damen products and others, but it also offers customers excellent fuel efficiency and optimized uptime, which is ideal for keeping running costs low. Volvo Penta IPS helps us offer customer that perfect combination of good quality and a low total cost of ownership."

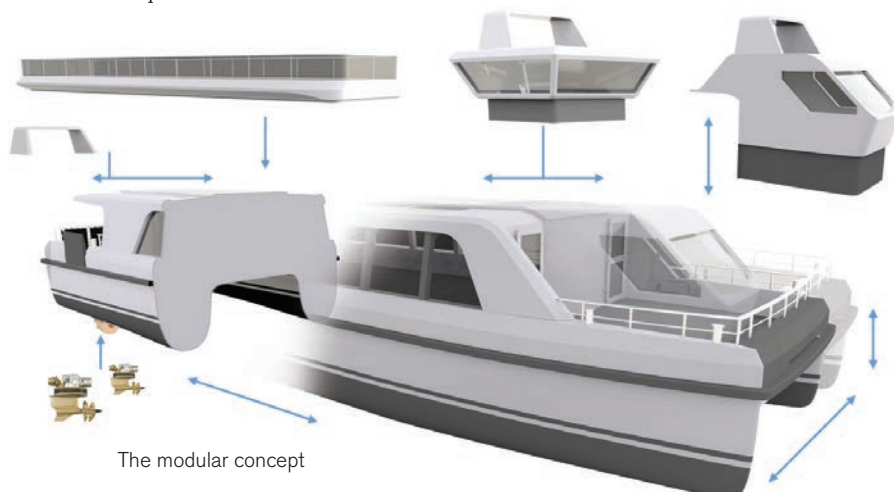
The standardized design allows Damen to produce the Water Bus on a shorter production schedule and with fewer costs, which ensures an economical purchase price for the customer and helps Damen stay competitive in the market.

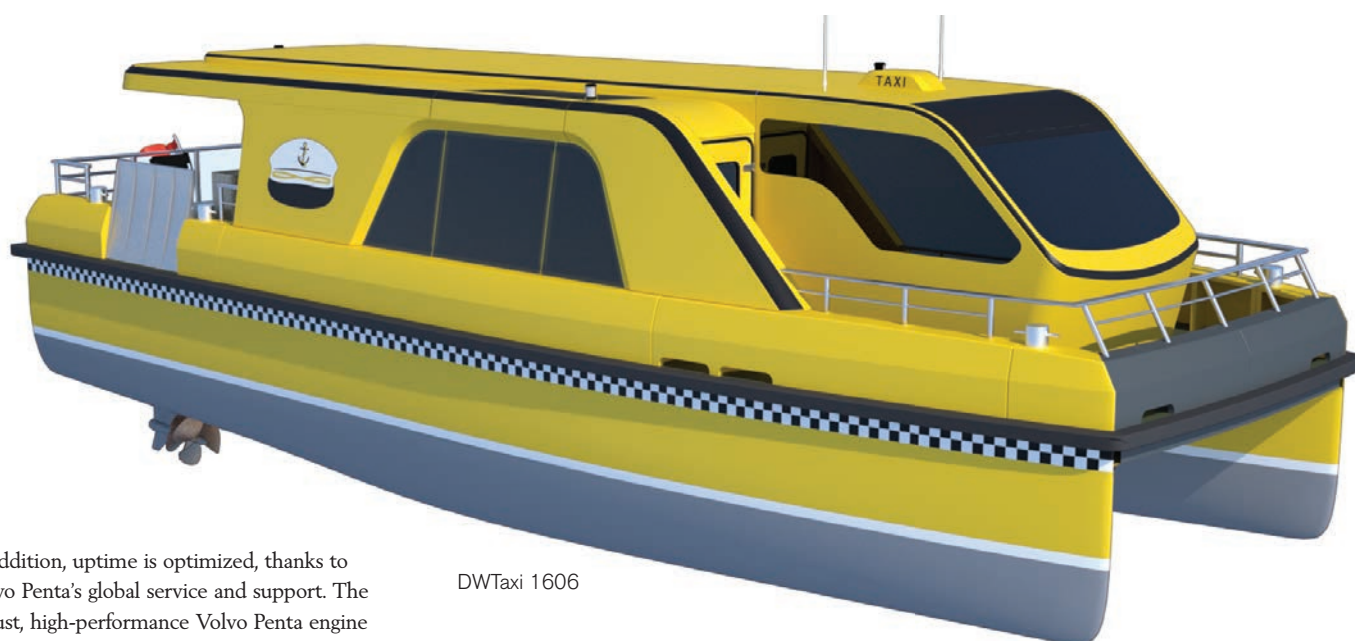
The ideal solution

The modular design of Damen's latest Water Bus is a completely new venture for the shipyard but can be used in a variety of applications — including water taxi, passenger ferry, commuter boat, sightseeing vessel, dinner cruiser and many others. Although several aspects of the boat have been made completely standard, there is flexibility in function, configuration, arrangement and interior set up.

Customizations make the Damen Water Bus suitable for many different applications and will allow Damen to expand its market scope when the product is launched in 2016. Nevertheless, the water bus's primary function is passenger transport — and it will benefit from Volvo Penta IPS's low noise and fewer vibrations.

Volvo Penta IPS features forward-facing, twin counter-rotating propellers, which greatly improve handling, onboard comfort and performance. One of the defining characteristics of the Inboard Performance System is its ability to increase propulsion efficiency by 35%, while also lowering fuel consumption by 30%.





In addition, uptime is optimized, thanks to Volvo Penta's global service and support. The robust, high-performance Volvo Penta engine and propulsion system in the Damen Water Bus are developed and manufactured by Volvo Penta and serviced by its global service network and worldwide logistics system. This service is vital to maximizing uptime. And for operational predictability, Volvo Penta has designed service agreements that cover the service and preventative maintenance needed to secure optimal uptime over the lifecycle of an installation.

"Volvo Penta IPS is an ideal propulsion solution for this kind of passenger ferry application," says Jan-Willem Visser, director of Volvo Penta Marine Commercial, Region Europe. "The maximized uptime, low fuel consumption and comfortable experience for passengers is exactly the kind of combination ferry owners look for. For passenger ferries, the first priority is passenger comfort, which the right engine will help to enhance."

The Damen Water Bus 2407/2007, which is equipped with a Volvo Penta IPS650 D11 engine, complies with EU directive regulations for passenger craft, and certificates can be provided by Lloyds Register of Shipping or Bureau Veritas.

DWTaxi 1606

TECHNICAL DATA:

General

Hull material	GRP
Superstructure	GRP

Dimensions:

	DWBU 2407	DWBU 2006
Lenght moulded	24,50 m	19,40 m
Beam moulded	7,00 m	6,50 m
Depth moulded	2,30 m	2,30 m
Draught	1,40 m	1,40 m

Performance:

Speed (max)	40 km/hr @ 50% deadweight
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Propulsion system:

Main engines	2x Volvo Penta IPS-650 / D11
Propulsion	Volvo Penta IPS-2-system

Accommodation

	DWBU 2407	DWBU 2006
Passengers:	100	54



Hybrid power sets sail in 'Green' ferries

Proof that hybrid technology is becoming increasingly mainstream, Caledonian MacBrayne (Cal-Mac) Ferries is now transporting passengers between the remote western isles of Scotland via a pair of 'green' ferries. Powered by Volvo Penta marine gensets, these ferries significantly reduce emissions and yield fuel efficiency savings of up to 38%.

The islands off Scotland's west coast are known for their castles, lochs and whiskey distilleries. But with Caledonian MacBrayne Ferries making some fuel-efficient upgrades to its fleet, environmentally friendly maritime transport can now be added to that list as well.

Caledonian MacBrayne (CalMac) operates 25 routes along the west coast of Scotland during peak season, shuttling more than 4.5 million passengers, 1.1 million cars and 93,000 commercial vehicles each year. Since 2013, CalMac has introduced two new hybrid ferries into its fleet of nearly 30 boats: the MV Hallaig and MV Lochinvar, which are believed to be the world's first roll-on roll-off ferries equipped with a low-carbon hybrid system.

Batteries included

Both ferries run on electric propulsion and 750 kWh lithium ion batteries, and are equipped with three Volvo Penta 13-liter diesel marine gensets — producing 330 kW each — that run the hybrid system. A fourth Volvo Penta five-liter genset is on board in case of emergency.

When the ferries depart on their runs between islands, all but one of the gensets turn off, and the propulsion system then runs in hybrid mode, or the genset can be switched off and the propulsion system will run on battery

power alone — drastically reducing fuel costs and carbon emissions. The batteries connect to shore power overnight to recharge.

The gensets were provided by the local Volvo Penta dealer Fettes and Rankine in Aberdeen and chosen by Calmac because of their excellent fuel efficiency.

"In our research we found Volvo Penta engines to be the best in their size range," says Caledonian Maritime Assets senior technical manager Jim Anderson. "We're very pleased with the fuel economy we're getting — through a combination of the hybrid propulsion system and the fuel efficient Volvo Penta diesel gensets."

The hybrid electric system has yielded an impressive 38% fuel savings for the Hallaig and 30% for the Lochinvar, as determined during three weeks of optimization trials for each ferry. Because Caledonian Maritime Assets

— which owns CalMac's ferries, as well as the ports and infrastructure necessary to run the ferries — is government-owned, the hybrid project is a part of the solution to reaching aggressive targets the Scottish government has set for reducing carbon emissions in shipping by 20% by the year 2020. Due to the success of the first two ferries, another ferry is also currently under construction.

CALMAC HYBRID FERRY

TECHNICAL DATA:

Length:	43,5 m
Width:	12,2 m
GRT:	499 DWT
Machinery:	Two permanent magnet motors (375 kW) coupled to two Voith 16 R5 EC/90-1 units (750 kW)
Passengers:	150
Vehicle capacity:	23 cars and up to four commercial vehicles
Speed:	9 knots
Routes:	Hallaig — Sconser to Raasay; Lochinvar — Portavadie to Tarbert

For more information on the MV Hallaig, please visit www.cmassets.co.uk



Cutting the costs for tourist catamaran company in Mallorca

After attending Volvo Penta's dealer day, tourist passenger ferry company Balearic Island Cruisers decided to order four Volvo Penta D16 engines, in the hope of lowering its overall fuel consumption. After the engines arrived at the beginning of 2015, Mallorca's popular catamaran company hasn't looked back since.

Earlier in 2015, Volvo Penta supplied returning customer Balearic Island Cruisers with two pairs of Volvo Penta D16-MH 750 HP 1900 rpm engines. Although Balearic Island Cruisers initially only wanted one pair of engines for use in a new tourist catamaran, after the engines' benefits became clear, a second pair of engines were ordered for use in an existing catamaran that needed repowering.

José-Luis Urresti, Volvo Penta Marine Commercial product specialist, says representatives from Balearic Island Cruisers first became interested in Volvo Penta's D16 engines when they attended Volvo Penta's dealer day, dedicated to the passenger segment. "The customer saw presentations about the D16 and was instantly intrigued. Designed specifically to meet the needs of heavy-duty displacement commercial vessels, a Volvo Penta D16 engine seemed like the perfect fit for a tourism passenger ferry," he says.

Operating on Mallorca's east coast, Balearic Island Cruisers transports around 100,000 tourists per year on its catamarans, which take passengers on a tour of the beaches and coves of Mallorca's Drach caves. With its services in such high demand, Balearic Island Cruisers knew it was time to invest in a new catamaran. But, after realizing the benefits of using Volvo Penta D16 engines, the company decided to replace its existing engines as well.

"We used Volvo Penta's Cost of Ownership

[TCO] calculator to help show the customer what kind of savings they could be making by switching to Volvo Penta," explains José-Luis. "It helped us to demonstrate how cost-effective and fuel-efficient a D16 engine is. By entering data about its existing engine, Balearic Island Cruisers could instantly see the benefits of converting from a MAN V8 540 hp engine to Volvo Penta."

Optimized design

In Q1, 2015, the repowered catamaran was equipped with two new Volvo Penta D16 engines and a twin disk gearbox and returned to the water. The brand new catamaran, also containing two Volvo Penta D16 engines and a ZF665 gearbox, followed soon after in Q2. Since then, Balearic Island Cruisers has already noticed impressive improvements to fuel consumption

"In a fairly short amount of time we've noticed a big difference in our fuel consumption, thanks to the Volvo Penta D16 engines," says Francisco Javier Collado Carlos, manager of Balearic Island Cruisers. "The old catamarans were worn-out and heavy, which increased the overall load and cost of ownership. Now, thanks to Volvo Penta, we can transport the same number of passengers with greatly increased fuel economy."

Francisco predicts that fuel consumption has been reduced by as much as 20%, simply by using Volvo Penta engines. But this is not the

only benefit — he says the fact that the engines are developed, manufactured and serviced by one company is also a big plus point.

"We've used Volvo Penta in the past but, as an innovative brand, it's evolved tremendously since those days," says Francisco. "Volvo Penta is no longer just an engine supplier; it is a fully-fledged partner in design. The support from Volvo Penta Spain, plus Camber Marine, Volvo Penta's VPC here in Mallorca, has been invaluable. And, it's reassuring to know that our new D16 engines are all designed, built and maintained by Volvo Penta. One point of contact for everything is extremely helpful — it'll reduce downtime in the future."

TECHNICAL DATA:

Ships name:	Costa Balear
Ships model:	Catamaran
Length:	26,05 m
Width:	8,04 m
Yard:	Construccions Navals Norfeu, SLU
Passengers:	250 pax
GRT:	148
Propulsion:	2x Volvo Penta D16-MH + ZF665



Diesel electric ferry in the Faroe islands

Teistin, a diesel electric ferry powered with five D16 marine genset engines has been in operation for more the 10.000 hours since her first trials in November 2013.

This 45m ferry operates on behalf of the governmental authority (Strandfaraskip Landsins), which is responsible for transportation in the 18 Faroe islands.

Capable of transporting about 300 passengers

Teistin manages the Skopun Gamlarætt line and belongs to a fleet of 12 ferries operating in the archipelago. She is a diesel electric ferry, initially fitted with two Azimut thrusters and equipped with three Deutz gensets, creating a total power output of, 1766 kW.

Volvo Penta's importer in the Faroe Islands, Batataneastan, found a public tender for repowering the Teistin ship and several of Volvo Penta's competitors, including Wärtsilä, Cummins,

Caterpillar and Mitsubishi, applied. Although Wärtsilä's solution offered better fuel consumer, the price and weight were not competitive, and unlike Volvo Penta, Caterpillar's proposal required a costly rebuild of the exhaust system. A meeting was organized with the customer and our Volvo Penta's supplier, Caldic Tecniek, which was beneficial for understanding the customer's expectations and requirements.

Volvo Penta on top

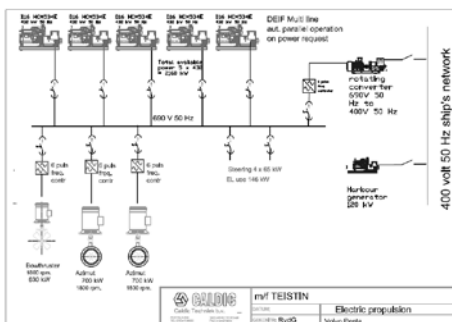
Volvo Penta proposed a cost-effective solution that was compatible with the existing exhaust system , which allowed for high back pressure. Five D16 1500rpm marine gensets with watercooled Stamford generators and 1xD7A TA engine, included for emergencies, were finally delivered at the end of the summer. The solution ensures higher redundancy and lower fuel consumption compared to previous installations. The configuration also offers more space and gives greater flexibility in the engine room.

Beyond these technical aspects, Volvo Penta was also the only supplier making a full quote thanks to close collaboration with its local VPC and the customer was very satisfied with the reliable application. During the 10.000 hours of operation, no downtime has been recorded and the registered fuel savings are more then 25%



compared to the previous installation. Convinced by the high potential of Volvo Penta's product range, two other ferries were also repowered with Volvo Penta marine gensets. And, there are also still plans for a new ferry based on the same proven diesel-electric concept.

The success of the project is due to the effective support and strong collaboration between the applications team, the local VPC, Caldic Tecniek and the yard in Torshamn, reflecting the added value of combined competences.



TECHNICAL DATA:

Length:	45 m
Width:	12.5 m
Engines:	5 x D16MG with watercooled Stamford generators 1 x D7A TA emergency/ harbour set



Another commercial IPS installation in operation

Norwegian shipbuilder Brødrene Aa delivered a high-speed catamaran ferry powered by Volvo Penta IPS, but it's not the first boat Brødrene Aa has built equipped with IPS — a series of carbon fiber catamarans and monohulls have been in operation for several years, working as ambulance boats, high-speed craft, interceptors, commercial vessels and yachts.

The MS Tjelden Ferry was the first passenger ferry equipped with the new Volvo Penta IPS 900 (D13, 700 Hp, 2250 rpm, Rating 3). The 25.7-meter-long catamaran is able to transport cargo, 48 passengers and two cars, with a 20-knot service speed and a top speed of 29 knots. Its design is based on the Solundir and Rygeroy catamarans — which are fitted with Volvo Penta IPS D13 — and merely lengthened to accommodate cars and cargo.

The vessel was built according to HSC 2000, with extra attention given to aspects such as fire safety. Extensive sea tests covering several load configurations have also been conducted. The Tjelden rounds out the fast ferry fleet of Norled AS, which, until recently, had only used boats equipped with waterjet and traditional shaft installations with controllable pitch propellers.

After listening to the positive feedback of some Norwegian ambulance boat operators, whose four vessels are equipped with Volvo Penta

IPS, Norled made the decision to also use the propulsion system.

MS Tjelden operates in Austevoll route on the west coast of Norway, on a route with many short passages and small harbors in a narrow archipelago. "The excellent maneuverability ensured by Volvo Penta IPS is a must," says Terje Fivelstad, project manager of Fast Ferries, Norled AS. "The system allows for easy handling, even in windy conditions.

"We hesitated slightly in choosing Volvo Penta because of our lack of experience with Volvo Penta's service network," he continues. "A ferry boat like the Tjelden has to be 100% operational at all times, so that people living on the island don't lose their connection to mainland. That requires reliable, responsive aftermarket support around the clock, but Volvo Penta hasn't disappointed. We've been very pleased with the product and the service."

TECHNICAL DATA:

Boat model:	Tjelden Ferry
Yard:	Brødrene Aa
Passengers:	48 passengers – two cars and cargo
Propulsion:	Two Volvo Penta D13B-L MP - 515kW / 2,250 rpm, IPS900
Length:	25,7 m
Width:	8 m
GRT:	93





Business as usual on Amsterdam's canals

Time to comply with new emissions output regulations has now expired for Amsterdam's famous Canal boats, but, thanks to Volvo Penta, it's still business as usual on the canals of the Dutch capital — and now NOx emissions are down by as much as 45%.

Amsterdam receives over 20 million tourist visitors per year, and with hundreds of thousands taking to the canals to enjoy the city by water, Canal boats ferries contribute considerably to the collective emissions output in the Dutch capital.

In 2005 Amsterdam's local governing body laid down an ultimatum for operators of the city's famous glass Canal boats — as of January 1 2015, all boats of this kind had to either be fitted with a repowered engine and aftertreatment system, or replaced by an electric alternative.

Terlouw Rotterdam, the Volvo Penta Center in the Netherlands, worked with Slot Jachtbouw, an Amsterdam shipyard, between 2012 and 2014 to systematically swap out many of the old engines and replace them with repowered new ones that are fitted with STT Emtec's marine DNOx® after-treatment system.

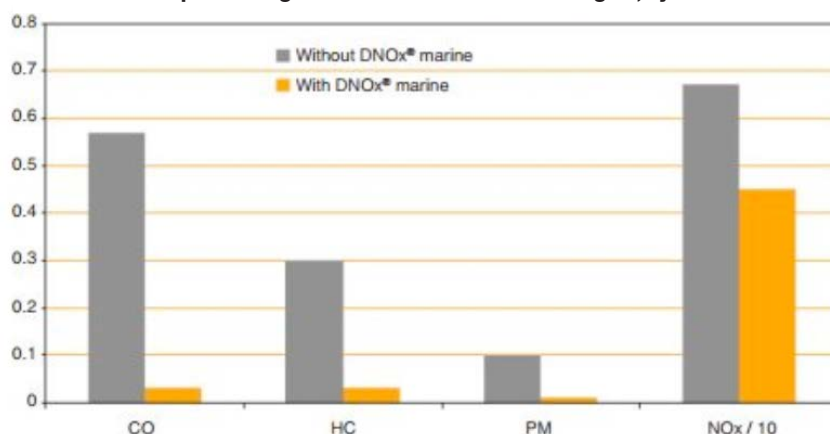
Since repowering ended at the beginning of this year, a total of 50 out of 150 canal boats operating on Amsterdam's waterways are powered by Volvo Penta D5A TA marine diesel engines.

Ferry companies now enjoying the benefits of a Volvo Penta engine include Canal Company, Blue Boat, Rederij Kooij and Rederij Lovers.

"Amsterdam is one of the most popular urban tourist destinations in Europe — thousands come every year to experience the magic of this city," explains Jeroen van Liefland, sales manager for

Terlouw Rotterdam. "The canal boat operators needed to find an engine and aftertreatment combination that met the requirements of the local authorities and didn't result in a long repowering process that would cause costly downtime. Volvo Penta and STT Emtec proved to be a winning combination."

Example of weighted emissions from diesel engine, cycle E3





Cleaning up Amsterdam

The Volvo Penta D5A TA engine is a highly reliable, type-approved marine diesel engine that boasts low exhaust emissions and excellent fuel efficiency. Because of the high level of tourist trade in the Dutch capital, canal boat operators required an engine that they could trust – and Volvo Penta offered just that.

“Volvo Penta is well known in the Netherlands for its dependability – the boats’ operators can’t afford to take their canal boats out of the water for lengthy repairs or maintenance, especially during peak times,” says Jeroen. “Maximizing uptime is paramount to our customers; they chose Volvo Penta because it’s a partner they know they can rely on.”

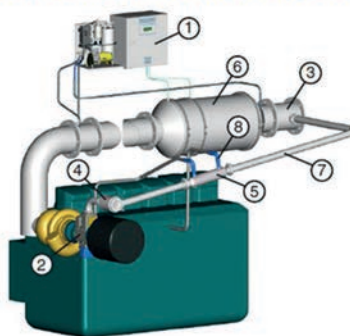
Prior to the repowering operation – which fitted the ferries with 4-cylinder engines – the ferries ran on 6-cylinder engines. This additional power was less of a help and more of a hindrance; because the speed limit on the Amsterdam canals is only 6 kph, the sightseeing vessels had a very low specific load profile. But, thanks to Volvo Penta’s engines, which are smaller with a lower maximum output, the ferries can now run at a higher load at low speed limits, resulting in higher exhaust temperatures. These high exhaust temperatures allowed for the use of the DNOx® aftertreatment system, developed by STT Emtec.

The aftertreatment system

The D5 engines were fitted with a marine DNOx® system, which reduces NOx by diluting the charge air with recirculated exhaust gas. The amount of NOx being produced since the repowering project has significantly declined – thanks to Volvo Penta and fellow Swedish company STT Emtec.

DNOx® marine

Marine EGR system for engines up to 350 kW
For particulate (PM) and NOx reduction



1. Control cabinet
2. EGR valve
3. EGR pick-up
4. Secondary filter
5. EGR cooler
6. Particulate filter
7. EGR return pipe
8. Cooling water connections

The exhaust gas recirculation (EGR) system operates with a patented EGR valve, which precisely controls the exhaust and inlet air mixture. In addition, the Catalytic Combustion Technology (CCT) active uses the on-board fuel as a reacting agent to help control the soot loading in the diesel particulate filter (DPF). Soot can be burned automatically when exhaust temperatures are high enough but, given the low speed limit in the city, which prevent the exhausts from consistently reaching high temperatures, the CCT active controls soot buildup at lower temperatures. Using the system, the engine’s carbon monoxide, hydro carbon and carbon particle emissions are all reduced by up to 90%, and NOx emissions are reduced by up to 45%.

Together, Volvo Penta and STT Emtec tested the D5 engine with and without the DNOx® system, and found the results to be exceptional. The D5 engine’s lower fuel consumption and

cleaner performance, coupled with STT Emtec’s advanced system, are helping Amsterdam work towards its goal of becoming a zero emission city by 2025.

TECHNICAL DATA:

Hull:	Steel
Length:	18,5-20 m
Width:	4-4,5 m
Passengers:	60-80
Propulsion:	1x D5A TA 103kW
After treatment:	STT EMTEC DNOx System Closed Particle filter
NOx reduction:	45%
Particle reduction:	>90%

An aerial photograph of a city harbor at dusk. The sky is filled with dramatic, dark clouds with some light breaking through near the horizon. The city skyline is visible in the background, with numerous buildings lit up. In the foreground, the harbor is filled with water, and several boats are visible, including a large cargo ship and several smaller vessels. The text "UPTIME ON TIME" is overlaid in large, white, bold, sans-serif capital letters on the right side of the image.

UPTIME ON TIME

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PACKAGED**

A Volvo Penta power package, including drive system, electronic control and on-board power, is a seamless solution that ensures unsurpassed maneuverability and maximum uptime.

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