



Upgraded Alpha propeller and nozzle give superior performance

26/11/2009

F/V Jette Kristine gained 23.5% more bollard pull

The propeller designers and PrimeServ staff at MAN Diesel Frederikshavn, Denmark could sit back satisfied on 12 October when a full-scale bollard-pull test on the Esbjerg-based fishing vessel 'Jette Kristine', showed an increase in bollard-pull performance of an impressive 23.5%.

MAN Diesel Group
Teglhølmegade 41
DK-2450 Copenhagen SV
DENMARK
www.mandiesel.com

Group Marketing
Further information:
Peter Dan Petersen
Tel.: +45 33 85 14 70
peterd.petersen@man.eu

The test thus verified a great propulsion upgrade advantage in relation to a 'pre-test' performed two weeks earlier based on the same vessel, exactly the same engine output and the original propeller and nozzle installation.

Graphics and images:
Mia Glarborg
Tel.: +45 33 85 15 90
mia.glarborg@man.eu

The preconditions for the test were the exact same position in Frederikshavn's harbour basin, same water depth below keel, same draft and trim of the vessel – ensuring the realistic and best possible conditions for relative and comparative bollard pull recordings.

The two bollard pull tests of Jette Kristine gave the following results:

Measured before:	19.1 metric tonnes
Measured after:	23.6 metric tonnes
Corresponding to an increase of:	23.5%

General potential for greater efficiency

Propellers designed more than 10 years ago normally offer great improvement potential in retrofit projects, where fuel consumption reductions of up to 12.5% for free running propeller upgrades have been reported – simply by exchanging the existing propeller blades to today's optimised and advanced designs.

A relatively small investment with short payback time and radical impact on the ships' future operational economy, fuel consumption and exhaust gas emissions. The green impact and environmental benefit of lower consumption is not to be neglected.

In this case with Jette Kristine and in similar cases with other fishing trawlers, offshore vessels, tugs and dredgers – bollard pull is the key performance parameter. MAN Diesel's upgrade solutions can include bollard pull optimised propeller blades alone – or bollard pull optimised blades in connection with a propeller nozzle upgrade.



Optimised propeller blade profiles applied together with the newly designed high-efficient AHT (Alpha High Thrust) nozzle is the ultimate solution.

Optimising for bollard pull

Advanced CFD tools (Computed Fluid Dynamics) were used to develop MAN Diesel's new AHT propeller nozzle series. The nozzle shows superior performance compared to the standard '19A' propeller nozzles, which are common standard in the marine industry today.

The increased bollard pull achieved when using the AHT nozzle is not only a result of the optimised nozzle profile, which is double-curved on both the inner and outer diameter. Other contributing factors are the nozzle length/diameter ratio, nozzle support, aft ship lines, and tilting and azimuthing of the nozzle, among others.

The addressing of all these topics has been refined by MAN Diesel into a new systematic method, whereby the bollard pull can be increased by more than 12% compared to solutions with 19A nozzles. The achievements have been demonstrated both in various model tests and in full scale.

Jette Kristine ship data:

Name	Jette Kristine, E 727, Esbjerg, Denmark
Owner	Niels Arne Hounisen
Yard	Johs. Kristensen Skibsbyggeri ApS
Yard number	178
Built year	1986
Gross tonnage	638
Length oa	43.3
Breadth	9.60
Engine type	MAN Diesel 8L23/30-D
Engine output	1080 kW (1470 BHP) at 825 rev min
Gearbox type	MAN Diesel 39KV11
Reduction ratio	825 to 214 rev min
Propeller type	MAN Diesel Alpha VB740
Propeller diam	2650 mm



Customer feedback from the ordinary fishery operations

Today, after two fishing trips – evaluating how the propeller and nozzle upgrade has performed in real life operational conditions – the owner of Jette Kristine, Mr. Niels Arne Hounisen, expressed his satisfaction: “MAN Diesel has fulfilled my request for more pulling power, and they have delivered more than promised. Plus 23.5% is remarkable, considering the fact that Jette Kristine was equipped with ordinary propeller equipment in good condition – nothing outdated!” Hounisen continues: “When steaming, it has given me approx. 0.5 knot extra top speed, and in trawling conditions, I have experienced a clear difference with better control of my fishing gear. Most important is a reduction in fuel consumption of more than 15% recorded at trawling speed.” “Regarding the onboard noise levels below deck and in the accommodation, my crew members have stated that they experience much better conditions now – and this is not something they say just to please me”, concludes Niels Arne Hounisen.

Service Center Task at MAN Diesel PrimeServ Frederikshavn

The physical replacement and upgrade operation was performed over 14 days at MAN Diesel’s slipway in Frederikshavn.

For more information please contact:

MAN Diesel

PrimeServ Frederikshavn

Att.: Christian Juul, Retrofit Manager

Tel.: +45 9620 4100

PrimeServ-frh@mandiesel.com



*F/V Jette Kristine upgraded on the slipway at MAN Diesel PrimeServ Frederikshavn;
Full pull – a full scale testing verifying the 23.5% bollard pull increase
Before and after - the propeller blade and nozzle upgrade installation;
Owner Niels Arne Hounisen - flanked by Christian Juul (left) and Kenneth Boesen(right), both
MAN Diesel;*

About MAN Diesel

MAN Diesel is the world's leading provider of large bore diesel engines for marine and power plant applications. The company designs two-stroke and four-stroke engines, generating sets, turbochargers, CP propellers and complete propulsion packages that are manufactured both by MAN Diesel and its licensees. The engines have power outputs ranging from 450 to 97,300 kW. MAN Diesel employs approx. 8,000 staff, primarily in Germany, Denmark, France, the Czech Republic, India and China. The global after-sales organisation, MAN Diesel PrimeServ, comprises a network of the company's own service centres, supported by authorised partners. MAN Diesel is a company of MAN SE, which is listed on the DAX share index of the 30 leading companies in Germany.

Ref no 6510-0153