WÄRTSILÄ 46 PERFORMANCE UPGRADE – TPL 73-A4X + SHORT OVERLAP MILLER TIMING – CUT OPERATIONAL COSTS AND REDUCE EMISSIONS

Upgrading your engines with modern turbocharger technology boosts engine performance and efficiency by increasing charge air pressure. To be able to take advantage of the increased charging capacity, the engine's valve timing also needs to be changed. The Wärtsilä 46 Performance upgrade – TPL 73-A4X + short overlap Miller timing incorporates the latest turbocharger technology combined with Miller inlet valve timing to reduce specific fuel oil consumption (SFOC), improve efficiency and reduce both OPEX and emissions.

The upgrade is EIAPP certified and suitable for Wärtsilä 46 engines with a 16:1 compression ratio that are equipped with TPL73 turbochargers.

Extend your maintenance interval

The upgrade involves replacing the performance-related parts of the engine's TPL 73-A turbocharger and adjusting the inlet valve timing as required. As part of the upgrade, the engine's camshaft pieces that operate the inlet and exhaust valves are also replaced to enable short overlap timing. This allows the engine to take full advantage of the increased charging pressure provided by the new turbocharger unit.

The Wärtsilä 46 Performance upgrade – TPL 73-A4X + short overlap Miller timing reduces operating costs by extending the maintenance interval for the turbocharger's rotating parts from 50,000 to 75,000 (SIKO) running hours and resetting the lifetime of the camshaft. With new components in place the risk of breakdown is also significantly lower, further reducing operational costs.

KEY BENEFITS

- Reduce SFOC by up to 3.5 g/kWh
- Increase turbocharger efficiency by 3–4%
- Reduce operational costs
- Cut carbon emissions

In addition to upgrading the turbocharger and adjusting the inlet and exhaust valve timing, the upgrade also includes an engine check, tuning to verify the current fuel injection timing and ensure that parameters that affect factors such as emissions are correct, and a new technical file with EIAPP certification.

Significantly increased turbocharger efficiency

The Wärtsilä 46 Performance upgrade – TPL 73-A4X + short overlap Miller timing increases turbocharger (TC) efficiency by up to 3 to 4%. SFOC is up to 3.5 g/kWh lower than with the standard turbocharger configuration (CV20) and up to 2.5g/kWh lower than with A32 upgraded engines*.

Load [%]	SFOC [g/kWh] A4X vs. A32	SFOC [g/kWh] A4X + new camshaft vs. CV20 (standard TC)
100	-2.5	-3.5
85	-2.5	-3.5
75	-2.5	-3.5
50	same	-0.5

*Laboratory results; site results may vary

Why choose Wärtsilä?

As an engine manufacturer, Wärtsilä has extensive experience and expertise in engine and turbocharger technology. We provide a full range of services including parts, services and upgrades. As an engine OEM we can also provide a fully updated technical file incorporating any changes made to critical components such as turbochargers.