



Updated 28/33D Tier-II Engine

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MAN Diesel Introduces 10 MW Engine at 1,032 rpm

The new 28/33D version boasts an improved design and is available in 12-, 16- and 20-cylinder versions, with respective power outputs of 5,460, 7,280 and 9,100 kW. With a 10% overload possible for one hour every six hours, these outputs rise to 6,000, 8,000 and 10,000 kW respectively, thereby making the 20-cylinder version the first 10 MW engine at 1,032 rpm.

The new V28/33D engine features state-of-the-art design and has the highest power density in its class while maintaining full compliance with IMO-II and EPA Tier-II legislation. Its compact design is tailored for three main segments: multiple propulsion applications, including all types of fast ferry, naval ships, super-yachts, an STC edition; and as GenSets for offshore applications.

Additional design features include the new, in-house-developed, engine-mounted SaCoS_{one} safety and control system, and the new, TCA33 turbocharger, which has been especially tuned for the V28/33D engine as it is a light, high-efficiency turbocharger with a compact design.

Other, major design optimisations include:

- a one-part air-manifold of symmetrical design
- an optimised crankshaft design with reduced stresses and improved lubrication
- an oil sump with increased volume to accommodate inclination requirement. A rolling dynamic of 22,5° and pitching static of 5° are allowed with an additional dynamic of +/- 7.5°
- an improved connection rod with a straight-cut design gives high reliability, better balance and lower engine vibrations

The challenge of meeting new emissions regulation (IMO II and EPA Tier II), while maintaining the excellent fuel-consumption and smoke-emission levels enjoyed by the 28/33D, has been achieved through the intensive development of an "Emission Tier II package" that includes:

- an optimised injection system

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- an optimised combustion chamber
- Miller cycling
- a high-efficiency charge-air cooler
- an improved NO_x/SFC/soot trade-off

STC version

The new engine is available in an STC (Sequential Turbocharging) version that offers optimal engine-turbocharger matching. For naval applications in particular, this gives the engine an extended torque envelope that offers economical operating modes and improved engine-acceleration characteristics. The MAN Diesel STC system consists of two identical, standard turbochargers, one providing copious charge-air at low- and medium-speed, with the second cutting in at higher speeds.

GenSet version

As mentioned previously, MAN Diesel is simultaneously introducing GenSet versions of the V28/33D engine to the market, tailor-made for the offshore segment, with the following, alternative characteristics:

- 405 kW/cyl @ 900 rpm (10% overload for regulation)
- 455 kW/cyl @ 1000 rpm (10% overload for regulation)
- Fast starting possibility
- High loading step
- Integrated design with reduced interface
- High dynamic load response
- Lightweight GenSet with compact foot print
- Low vibration / low structure-borne noise
- Inclination up to 25° – all directions
- EPA Tier-II compliant

Finally, the 28/33D GenSet version is, by nature, easy to install owing to several factors:

- prepared as one unit (common frame, attached pumps, valves, coolers etc)
- compact (high output, low weight)
- double, elastic-mounted engine
- simple customer connections (easy installation)



- integrated combi-cooler for fuel and LT/HT water with easy access and low weight
- closed and integrated, pressurised cooling water system (easy installation)
- integrated alternator cooling
- three-point, base-frame installation (easy installation)

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.

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