

References

1. Tugs "ANJAN / ANUP / ARGA / ATHAK / BALDEV / BALI"

Propulsion
2 x ZF AT 4111 FP
well mounted azimuth thrusters
525 kW each at 1,800 rpm

Bollard Pull
10 tonnes

Supplied to
Tebma Shipyards, India

Owner
Indian Government Navy, India

3. Tug "SAAM UXMAL"

Propulsion
2 x ZF AT 7311 FP
well mounted azimuth thrusters
1,566 kW each at 1,600 rpm

Bollard Pull
55 tonnes

Supplied to
Bonny Fair Development, Hong Kong

Owner
SAAM, Chile

5. Tugs "HERCULES / ORION / PHOENIX"

Prime Mover
2 x Wärtsila 4L20
720 kW each at 1,000 rpm

Reduction Gear Unit
2 x ZF W17000 NR, 3.958:1

Bollard Pull
20 tonnes

Supplied to
Nanjing East Star Shipbuilding, China

Owner
OMS Shipping LLP, Kazakhstan

2. Tugs "CORMORAN I / FARDELA"

Propulsion
2 x ZF AT 7111 FP
well mounted azimuth thrusters
1,650 kW each at 1,800 rpm

Bollard Pull
55 tonnes

Supplied to
Suyang Shipyard, China

Owner
SAAM, Chile

4. Tugs "C BRILHANTE / DIAMANTE"

Propulsion
2 x ZF AT 7111 FP
well mounted azimuth thrusters
1,650 kW each at 1,800 rpm

Bollard Pull
60 tonnes

Supplied to
Detroit Brazil LTDA, Brazil

Owner
Camarim Servicos Maritimos
LTDA, Brazil

6. Tug

Propeller
dia. 2,000mm x pitch 1,820mm x BAR
0.64, 4 blades, kaplan

Speed
12 knots

Owner
KHH Harbor, Taiwan



Tug Applications

Marine Propulsion Systems



ZF Asia Pacific Pte. Ltd.
20 Harbour Drive
#06-02 PSA Vista
117612 Singapore

Phone +65 6773 7551
Fax +65 6773 7537
info.zfmarine.sg@zf.com

www.zf.com/marine
www.zf.com/ap



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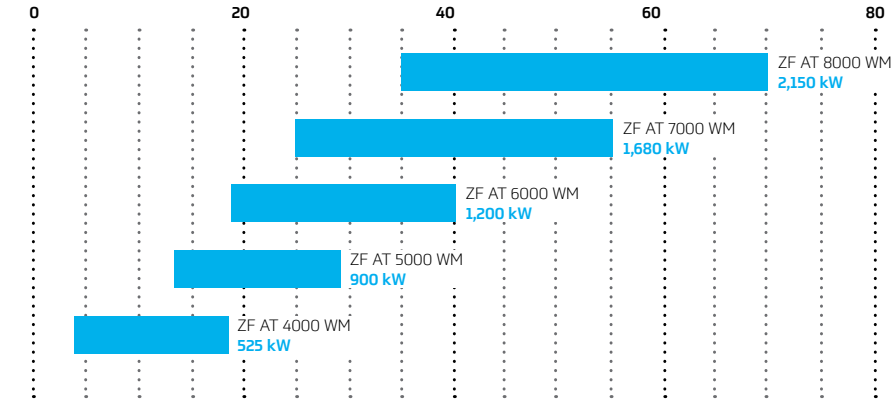


For Azimuth Stern Drive Tug

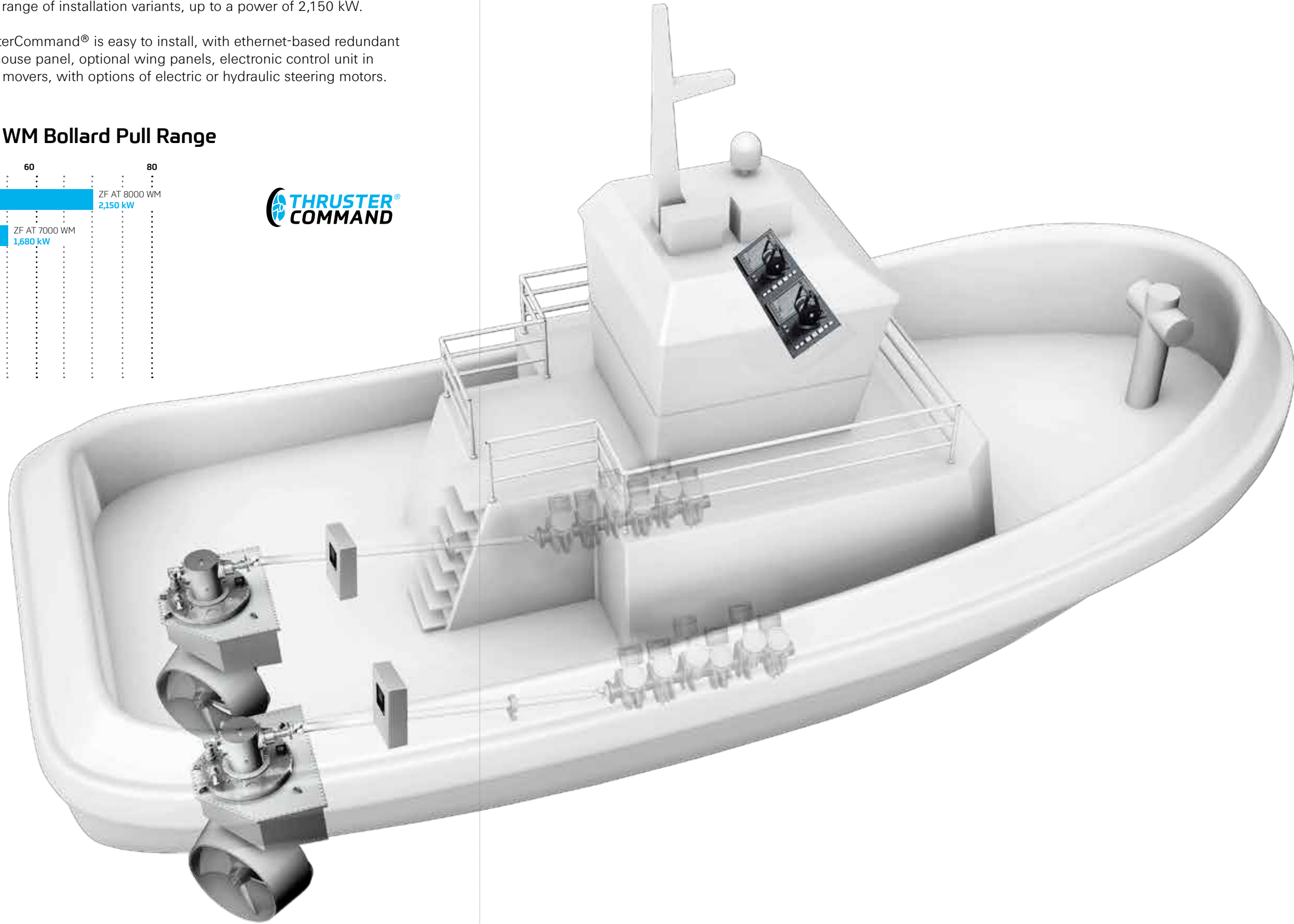
ZF Fixed Pitch Azimuth Thrusters offer excellent thrust and maneuverability, two thrusters deliver bollard pull up to 70 tonnes for tug applications. ZF Thrusters offer wide range of installation variants, up to a power of 2,150 kW.

Designed for excellent propulsion control, ZF ThrusterCommand® is easy to install, with ethernet-based redundant wiring. Our comprehensive system contains wheelhouse panel, optional wing panels, electronic control unit in machine room, and smooth interface with all prime movers, with options of electric or hydraulic steering motors.

ZF Azimuth Thruster 4000...8000 WM Bollard Pull Range



Bollard Pull in tonnes based on 2 Azimuth Thrusters depending on class and input speed



For Conventional Tug



ZF Propellers

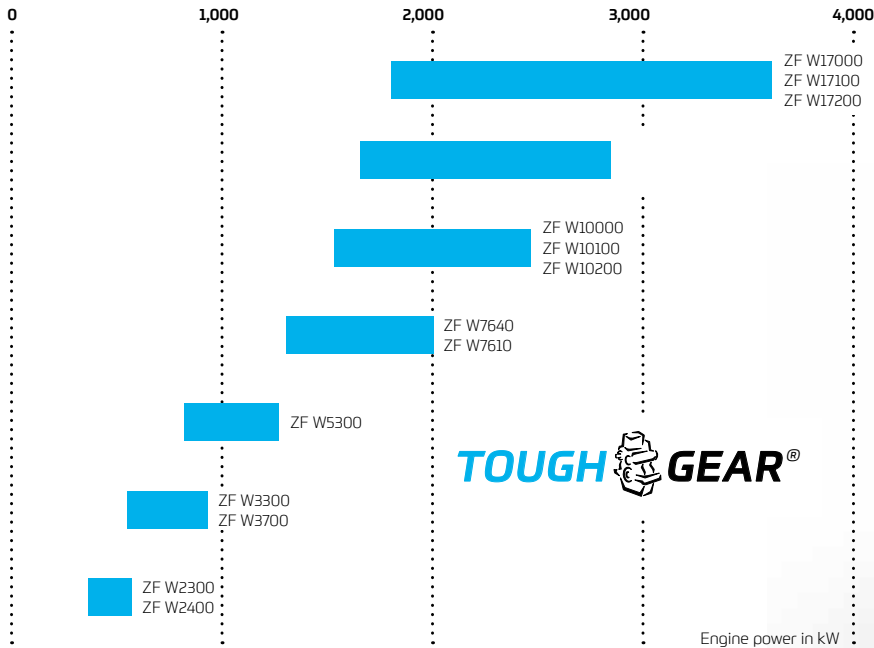
ZF Fixed Pitch Propellers are designed with optimal blade profiles for low speed applications, maximised bollard pull when operating in nozzle. Highly customizable and made-to-order, specific blade thickness can be manufactured for use in severe conditions while ensuring cavitation erosion is minimized. TowMaster series with standard profile or specific skew shape is especially suitable for harbour tug application.



ZF ToughGear® earned its name for our transmissions designed and built for the most rigorous duty cycles, ensuring maximum uptime. Highlights include:

- Modular design for each transmission family offering large ratio spread
- Reversing and non-reversing gears, non-clutch version available on request
- Amply sized integral thrust bearings transmitting total propeller thrust to the foundation
- Robust designed cast iron housings
- Latest design process, techniques and material specifications achieving high power density
- Variety of accessories and features such as shaft brake, PTOs, PTI, standby-pump and trolling
- Matching requirements of major classification societies, with existing type approvals

Together with our well established partners, ZF delivers a customized and complete shafting package. Our expertise from transmission to propeller includes and extends beyond design, selection and manufacturing, providing you a worry-free one-stop solution.



Engine power in kW

