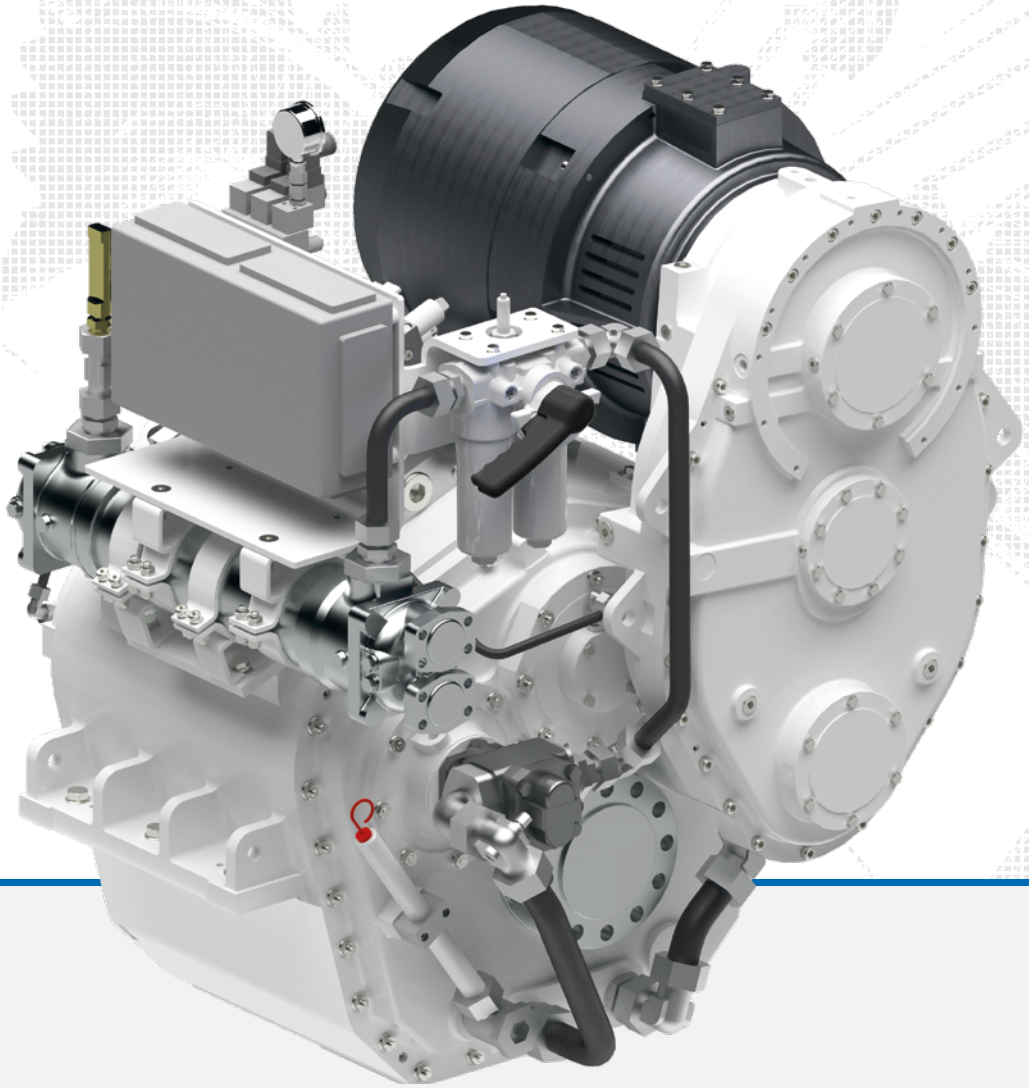
REINTJES
POWERTRAIN SOLUTIONS

TME Hybrid System

Compact, simple and proven



QUALITY
MADE IN
GERMANY

Hybrid made easy.



Hybrid Ship Propulsion – Steering the maritime industry toward a greener future

Hybrid ship propulsion is the future for all vessel types and a key driver in the global effort to cut CO_2 emissions. REINTJES leads this transition by delivering advanced hybrid propulsion solutions. Supporting hybrid systems reduces the maritime industry's carbon footprint, makes logistics more sustainable, and protects the environment while enhancing performance. We are at the forefront of this transformative movement.



PELICAN PEACE by Penguin Shipyard International
The world's first FULL-HYBRID oil and gas crewboat, equipped with 2 x WVS 440 Hybrid Gearbox Systems and 1 x WVS 430 Gearbox.

Easy and Seamlessly Integrated

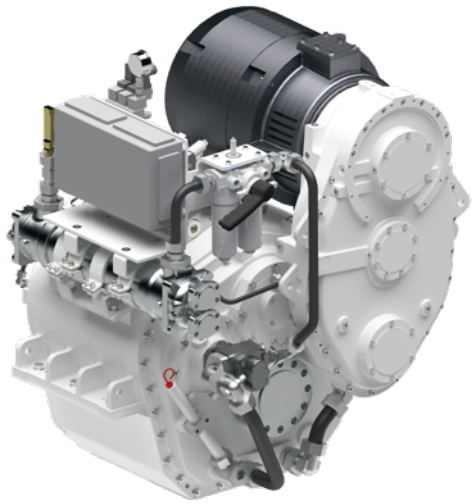
TME Hybrid System – Compact, simple and proven propulsion system for various vessel types

TME Hybrid System – a fully integrated hybrid-drive platform. The combination of its components deliver a high-performance hybrid drive that reduces system size and weight, improves efficiency and shortens time-to-market for customers requiring reliable, fully integrated propulsion solutions.

TME Hybrid System – Electric motor mounted on the top of REINTJES Hybrid Gearboxes

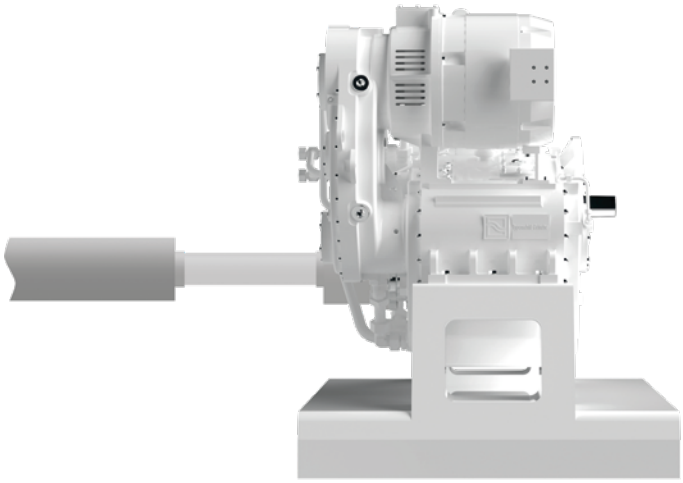
TME Hybrid System:

- Compact and space-saving design
- All-in-one, pre-engineered package; no further alignment needed
- Efficient PM motor, mounted on top of the gearbox
- Liquid cooling for hot, low-ventilated and dense spaces
- Suits commercial & high-speed vessels
- Electric propulsion power up to 260 ekW
- Shaft generating power up to 312 ekW
- Patent pending

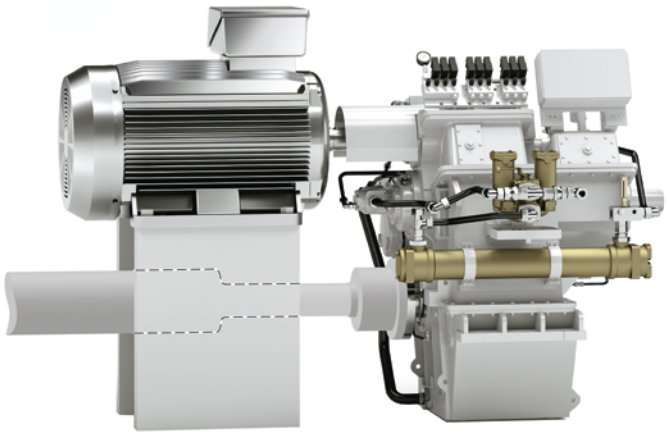


REINTJES TME Hybrid System

TME Hybrid System - One integrated system. More compact. Quicker installation into vessels



TME Hybrid System



Conventional Hybrid System with separate electric motor

TME Hybrid System requires no dedicated foundation for the electric motor, so there is no interference with the porpeller shaft or stern tube making shaft and stern tube maintenance straightforward. A separate precise alignment for the electric motor is not required thereby eliminating vibrations and preventing mechanical failures. All of this comes as a single, fully integrated, pre-engineered installation package.

Single-Source Supply

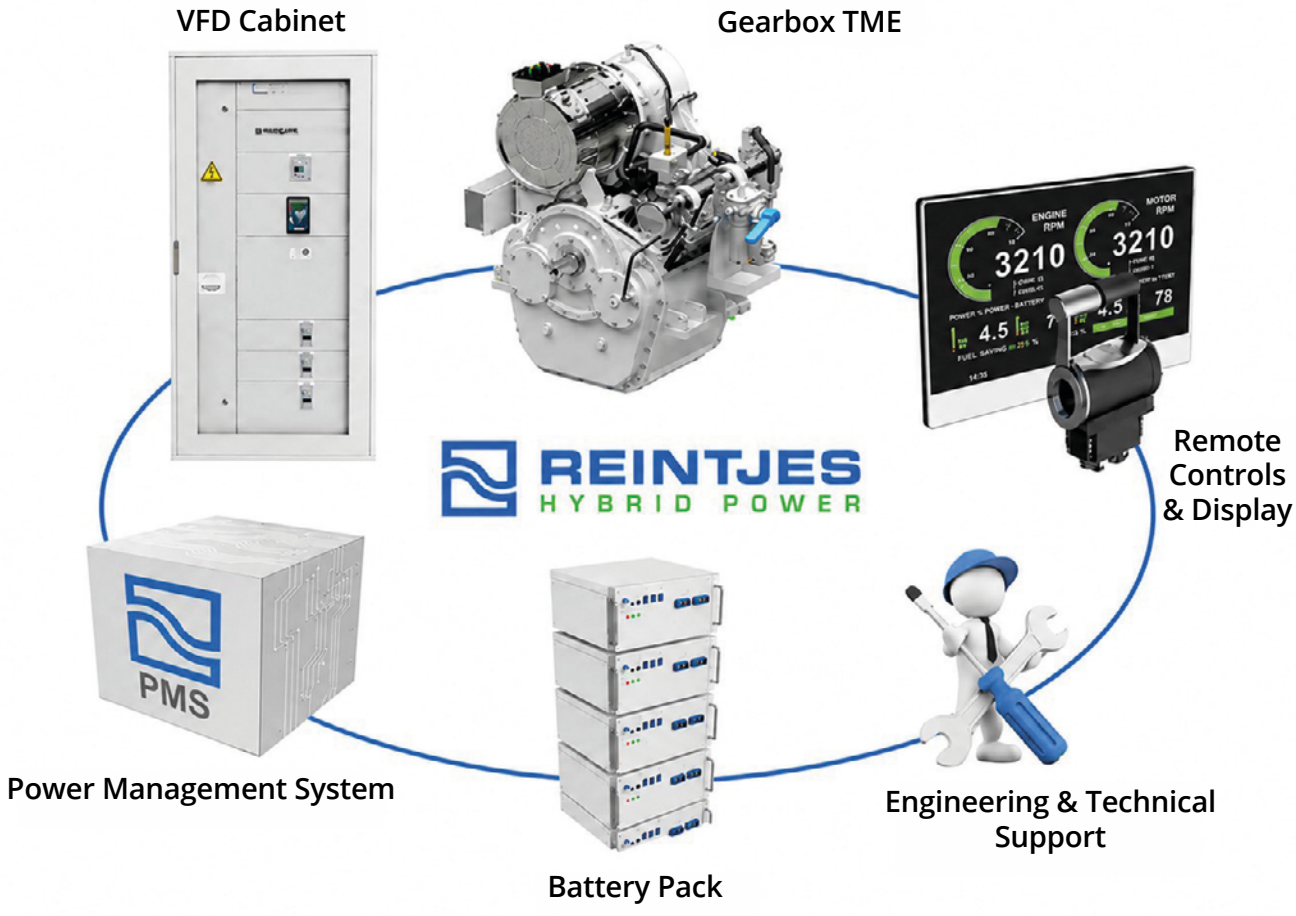
TME Hybrid System guarantees a seamless single source-supply, eliminating the need for multiple vendors and simplifying your procurement process. By engineering and integrating the gear and electric motor into one reliable package, it reduces lead times, inventory costs, and logistical complexity. This all-in-one solution ensures consistent quality and high performance while you benefit from a streamlined, single-point purchasing experience.

TME – Electric motor mounted on the top of REINTJES Hybrid Gearboxes

- RCS - Remote Control System with integrated propulsion mode selection
- Battery pack - liquid or air cooled
- DC or AC bus
- Cooling units
- Power Management System
- Human Machine Interface (HMI)
- RSM – Remote Support and Monitoring: connection for troubleshooting, fine-tuning and service
- Engineering & technical support, included hydrodynamic consulting for electric performance forecasting
- Assistance during commissioning (FAT, HAT, SAT)
- Proven REINTJES world wide product support

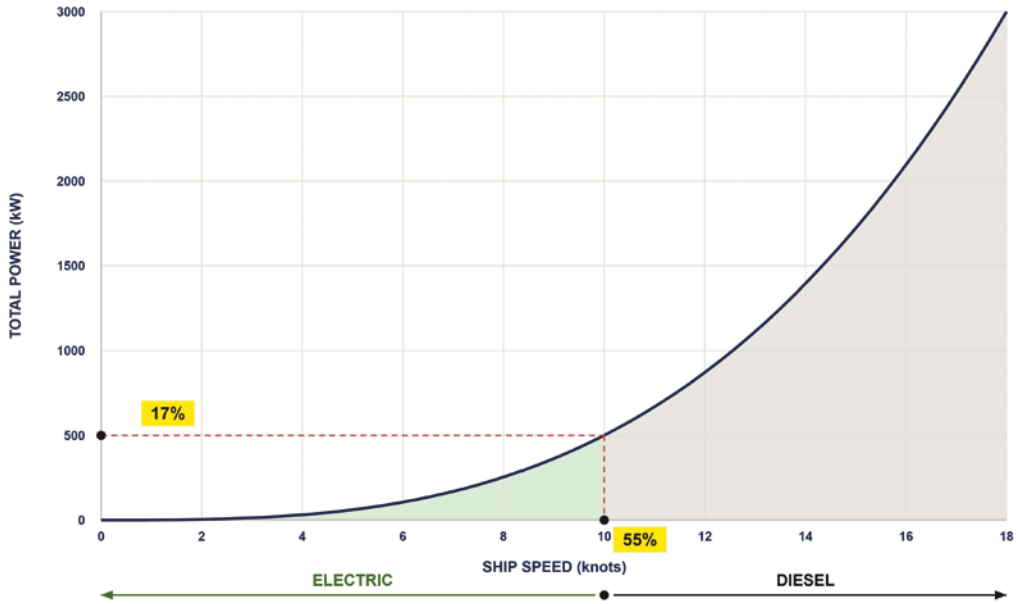
Special integrated shaft brake for faster manoeuvre ahead-astern available soon.

TME Hybrid System – All components linked by only one supplier with guaranteed single-source support

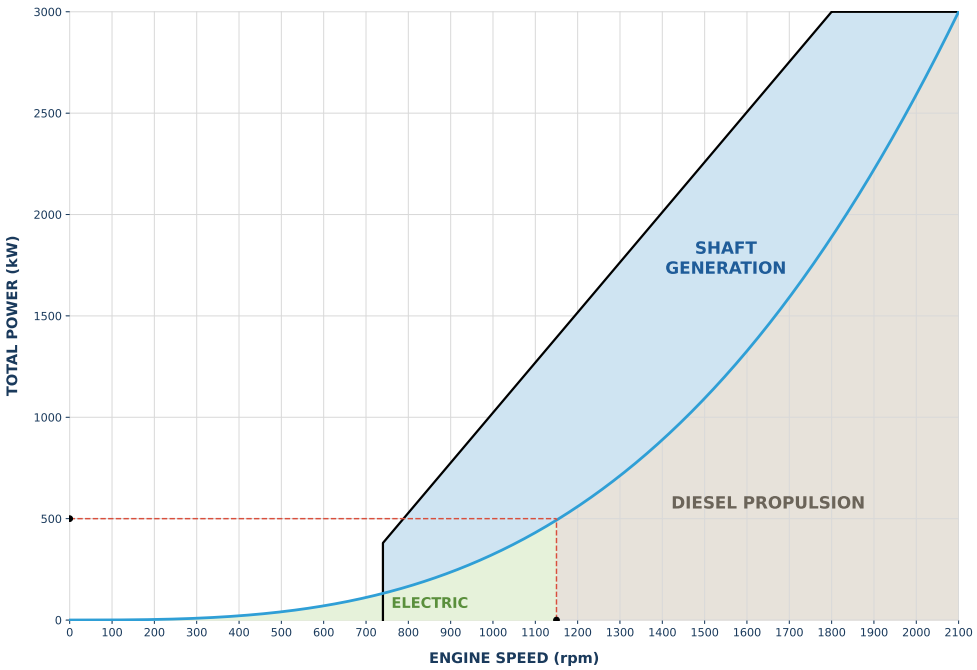


Power in Different Propulsion Modes

Different propulsion modes are most effective under different operating conditions. Based on the propeller characteristic curve, vessel speed and power demand can be matched to the most efficient propulsion mode, maximizing efficiency and reducing emissions.



Example of displacement hull. To reach 10 knots (55 % of the maximum speed), only 500 kW are required (17% of the maximum power).



Example of the operating areas of the diesel engine, electric motor and shaft generator, considering both the propeller characteristic curve and the diesel engine power curve.

Efficiency and Sustainability

Operation Modes

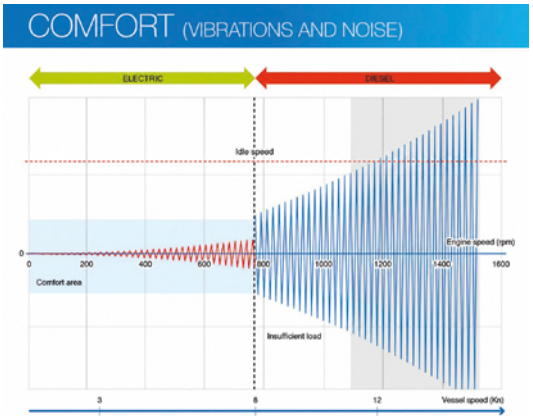
- PTI mode – electric motor only
- PTO mode – diesel engine for propulsion and shaft generator
- Zero-emission mode in harbour and emission controlled areas
- Mild hybrid mode – the electric motor improves Diesel engine efficency



High manoeuvrability in electric at low speed

Low Speed

- Easy dynamic positioning mode (DP) especially with FPP
- Operating the vessel at low and very low speed (below idle engine speed) with excellent fuel economy and without limitation in time
- Improved manoeuvrability



In electric mode vibration and noise are minimized

Emission

- Signifcant CO_2, SOx and NOx reduction due to high performance genset (IMO Tier III and IMO EPA Tier IV)
- Manoeuvring in harbours without emissions by energy from battery

Comfort

- Low noise and vibrations
- Night cruising in full comfort, energy from battery or noise optimised genset



Typical TME Hybrid System installation

Maintenance

- Optimised operation of the main engine as not used at low speeds and loads. This results in longer maintenance periods and up time
- Worldwide service

Selection Guide

TME Hybrid System – A hybrid solution for a wide range of hull forms and vessel types, from displacement vessels to high-speed crafts.

1. Input Data

- Diesel engine rated power (kW)
- Diesel engine speed (rpm)
- Reduction ratio

Example data:
Rated power: 850 kW
Engine speed: 1800 rpm
Reduction ratio: 5:1

2. Select Gearbox (without classification, see *** noted at the end of the selection charts):

a. Locate the diesel engine speed (rpm) in the blue rows of the WF or WVS tables.
In the example: 1800 rpm

b. Select the available max input power (kW) between the grey rows.
The available power is 864 kW which is ≥ 850 kW (see example data)

c. Based on reduction ratio input, select the correct WF/WVS model.
In the example: 5,0 is covered by 5,056 in the TME-WF450

SELECTED GEARBOX: TME-WF 450 (Grey cast iron housing)
Engine speed: 1800 rpm | Available power: 864 kW | Reduction ratio: 5.056

3. Choose your Hybrid System

a. Check available electric propulsion power (kW).
For the selected gearbox (WF450) at 1800 rpm → 147 kW or 244 kW

b. Chose the electric motor that matches or exceeds the required propulsion power.
For instance, assume 147 kW → REM 828

c. Select the cabinet dimension.
DL350A (PTI) dimensions 1000 x 600 x 2000 mm (LxWxH)

d. Check generator max power:
Considering the example max. generator power is 223 kW

4. TME Hybrid System ready for operation

TME	-	0	-	WF 450	-	828	-	DL350A
Product family		Product family		Gearbox series		Electric motor		Cabinet option

REINTJES delivers a complete, pre-engineered hybrid solution ready for installation and operation



Image courtesy of Golden Gate Ferry

Selection Chart

Grey cast iron housing — Diesel engine speed (rpm)

TME-WF 350 / WF 370 / WF 380	1600	1700	1800	1900	2000	2100	2200	2300	2400	2450	Generator max. power	VFD Cabinet LxWxH (mm)
Main input power (kW)	544	578	612	646	680	714	748	782	816	833		
REM 532 (kW)	116	113	109	106	104	101	99	97	95	94	166 kW	DL350A (PTI) or DL350B (PTO-PTI) (1000 x 600 x 2000)
Ship speed in Hybrid % *	60	58	56	55	53	52	51	50	49	48		
REM 828 (kW)	186	180	175	170	166	162	158	155	152	150	223 kW	DL350A (PTI) or DL350B (PTO-PTI) (1000 x 600 x 2000)
Ship speed in Hybrid % *	70	68	66	64	63	61	60	58	57	56		

Reduction Ratio:
TME-WF 350: 4,190; 4,737; 5,056 **TME-WF 370:** 5,381; 6.053; 6,444 **TME-WF 380:** 7,050; 7,526; 8,000

Grey cast iron housing — Diesel engine speed (rpm)

TME-WF 450 / WF 470 / WF 480	1600	1700	1800	1900	2000	2100	2200	2300	2400	2450	Generator max. power	VFD Cabinet LxWxH (mm)
Main input power (kW)	768	816	864	912	960	1008	1056	1104	1152	1176		
REM 828 (kW)	156	152	147	143	140	136	133	130	128	126	223 kW	DL350A (PTI) or DL350B (PTO-PTI) (1000 x 600 x 2000)
Ship speed in Hybrid % *	59	57	55	54	53	51	50	49	48	48		
REM 1129A (kW)	259	251	244	238	232	226	221	216	211	209	312 kW	DL425A (PTI) or DL425B (PTO-PTI) (1200 x 800 x 2200)
Ship speed in Hybrid % *	70	68	66	64	63	61	60	58	57	56		

Reduction Ratio:
TME-WF 450: 4,190; 4,737; 5,056 **TME-WF 470:** 5,381; 6.053; 6,444 **TME-WF 480:** 7,050; 7,526; 8,000

Grey cast iron housing — Diesel engine speed (rpm)

TME-WF 550 / WF 570 / WF 580	1600	1700	1800	1900	2000	2100	2200	2300	2400	2450	Generator max. power	VFD Cabinet LxWxH (mm)
Main input power (kW)	1008	1071	1134	1197	1260	1323	1386	1449	1512	1544		
REM 828 (kW)	136	132	129	125	122	119	116	114	111	110	223 kW	DL350A (PTI) or DL350B (PTO-PTI) (1000 x 600 x 2000)
Ship speed in Hybrid % *	51	50	48	47	46	45	44	43	42	41		
REM 1129A (kW)	226	219	213	207	202	197	193	189	185	183	312 kW	DL425A (PTI) or DL425B (PTO-PTI) (1200 x 800 x 2200)
Ship speed in Hybrid % *	61	59	57	56	54	53	52	51	50	49		
REM 1129B ** (kW)	263	263	263	263	263	263	263	263	258	255	312 kW	DL425A (PTI) or DL425B (PTO-PTI) (1200 x 800 x 2200)
Ship speed in Hybrid % *	64	63	61	60	59	58	57	57	55	55		

Reduction Ratio:
TME-WF 550: 4,190; 4,737; 5,056 **TME-WF 570:** 5,381; 6.053; 6,444 **TME-WF 580:** 7,050; 7,526; 8,000

Selection Chart

Aluminium alloy housing — Diesel engine speed (rpm)

TME-WVS 430	1600	1700	1800	1900	2000	2100	2200	2300	2400	2450	Generator max. power	VFD Cabinet LxWxH (mm)
Main input power (kW) [1)]	800	850	900	950	1000	1050	1100	1150	1200	1225		
Main input power (kW) [2)]	752	799	846	893	940	987	1034	1081	1128	1152		
REM 828 (kW)	153	149	144	141	137	134	131	128	125	124	223 kW	DL350A (PTI) or DL350B (PTO-PTI) (1000 x 600 x 2000)
REM 1129A (kW)	254	246	239	233	227	221	216	212	207	205	312 kW	DL425A (PTI) or DL425B (PTO-PTI) (1200 x 800 x 2200)

Reduction Ratio:

[1)] 1,485-2,037-2,458 [2)] 2,773-2,905-3,286;

Aluminium alloy housing alloy housing — Diesel engine speed (rpm)

TME-WVS 730-1129A/B	1600	1700	1800	1900	2000	2100	2200	2300	2400	2450	Generator max. power	VFD Cabinet LxWxH (mm)
Main input power (kW) [1)]	1360	1445	1530	1615	1700	1785	1870	1955	2040	2083		
Main input power (kW) [2)]	1312	1394	1476	1558	1640	1722	1804	1886	1968	2009		
Main input power (kW) [3)]	1216	1292	1368	1444	1520	1596	1672	1748	1824	1862		
REM 1129A (kW)	195	189	183	179	174	170	166	162	159	157	312 kW	DL425A (PTI) or DL425B (PTO-PTI) (1200 x 800 x 2200)
REM 1129B ** (kW)	263	263	256	250	243	237	232	227	222	220		

Reduction Ratio:

[1)] 2,036-2,269-2,542-2,864-3,048 [2)] 3,542 [3)] 3,954

All cabinets are liquid cooled

* *Ratio between vessel speed in electric and diesel only. Approximate, non-binding data, for displacement hulls only.*

** *Maximum generated voltage 750 V (N.B: all the other motors generate a maximum voltage of 600 V). Cabinet dimensions tbd*

*** *Selection without classification society. If classification will be requested, please reach out to your local REINTJES contact.*

REINTJES Principle

REINTJES is committed to quality, innovation and sustainability with all its products and services – ever has been. Offering robust and easy to integrate products with modular and customisable options, enabling designers, shipbuilders and operators to select the components best suited for their specific needs is a REINTJES core philosophy. This applies to gearbox condition monitoring solutions as well. If you would like to find out more about what we and our products can benefit, please contact us directly.

Scope of Supply & Technical Data

TME Hybrid System – Your supply package

Gearbox and Propulsion System
Gearbox and electric motor are integrated into the TME Hybrid System technology to ensure seamless and efficient operation.

Electric Motor
High-efficiency permanent magnet electric motor (PM) that provides green power to the propulsion system.

Drivers Cabinet
Advanced power electronics (frequency converters) that control efficiently the flow of electrical power to the motor.

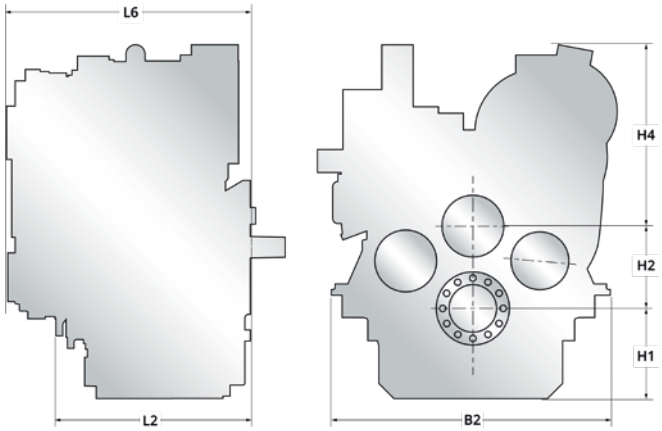
Options:

Power Management System (PMS)
Automation to manage power flow and energy distribution

Power Storage System
Storage system, such as batteries, that stores excess energy generated by the diesel engine or other power sources.

Control System
Advanced control system that manages the interaction between the diesel engine, electric motor, and energy storage system.

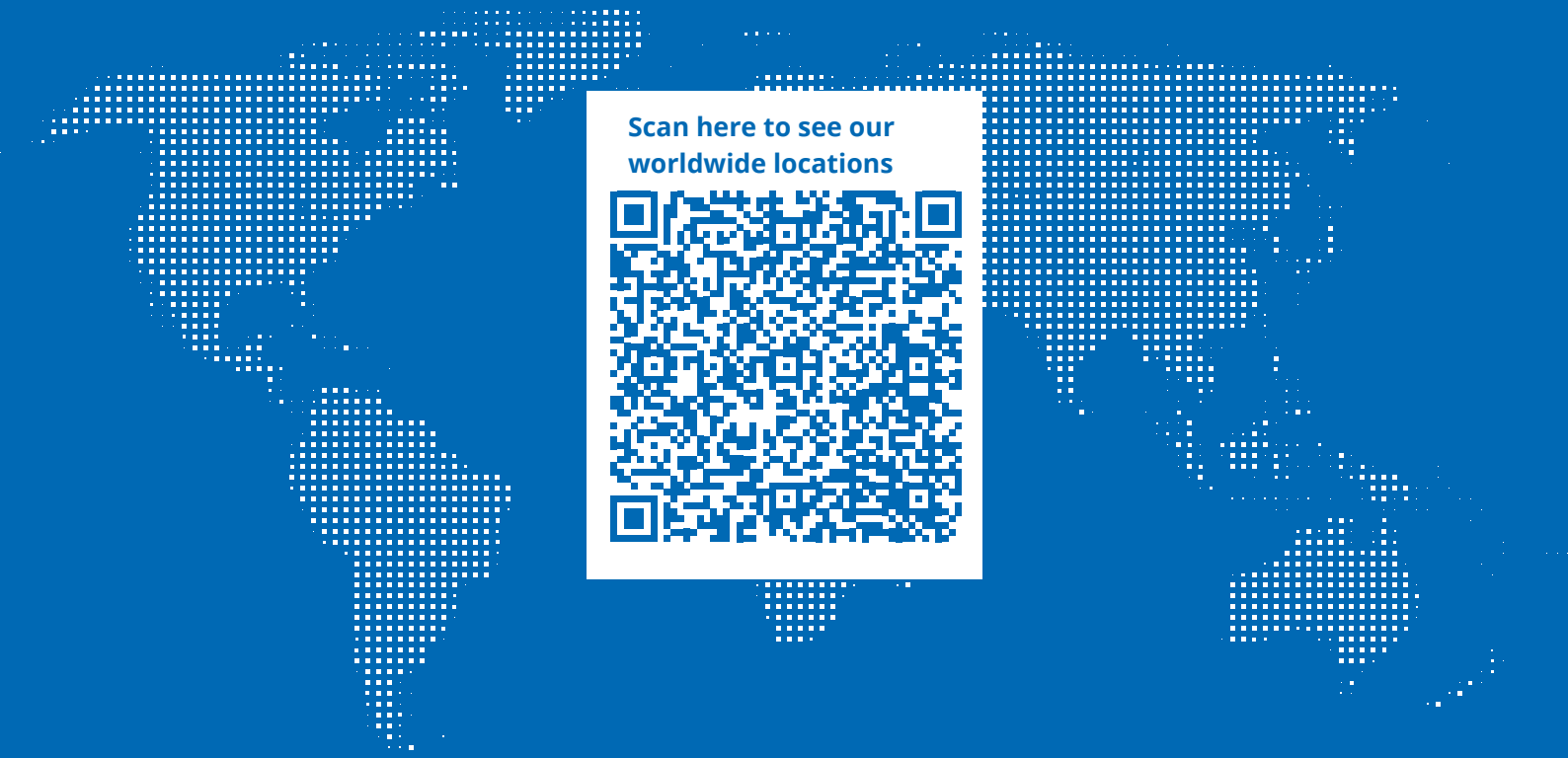
TME Hybrid System – Compact and space-saving



Size	L2	L6	B2	H1	H2	H4	Weight
TME-0-WF 350-532 / 828	601	725	910	365	282	640	995
TME-0-WF 370-532 / 828	587	725	930	380	346	640	1030
TME-0-WF 380-532 / 828	639	725	1216	470	418	640	1505
TME-0-WF 450-828 / 1129	634	805	1096	413	310	685	1235
TME-0-WF 470-828 / 1129	697	805	1096	423	380	685	1510
TME-0-WF 480-828 / 1129	713	805	1286	520	460	685	2290
TME-0-WF 550-828 / 1129	755	870	924	440	339	705	1605
TME-0-WF 570-828 / 1129	768	870	1188	385	415	705	1860
TME-0-WF 580-828 / 1129	773	870	1358	540	500	705	2640

Size	L2	L6	B2	H1	H2	H4	Weight
TME-0-WVS 430-828 / 1129	675	890	730	260	235	650	950
TME-0-WVS 730-1129	795	965	1036	323	310	850	1295

Dimensions (mm) and weights (kg) are only for reference



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Dimensions and dry weights are approximate and may vary with housing or by input and ratio. Specifications are subject to change without notice. Please contact your REINTJES distributor for current information and binding data.

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