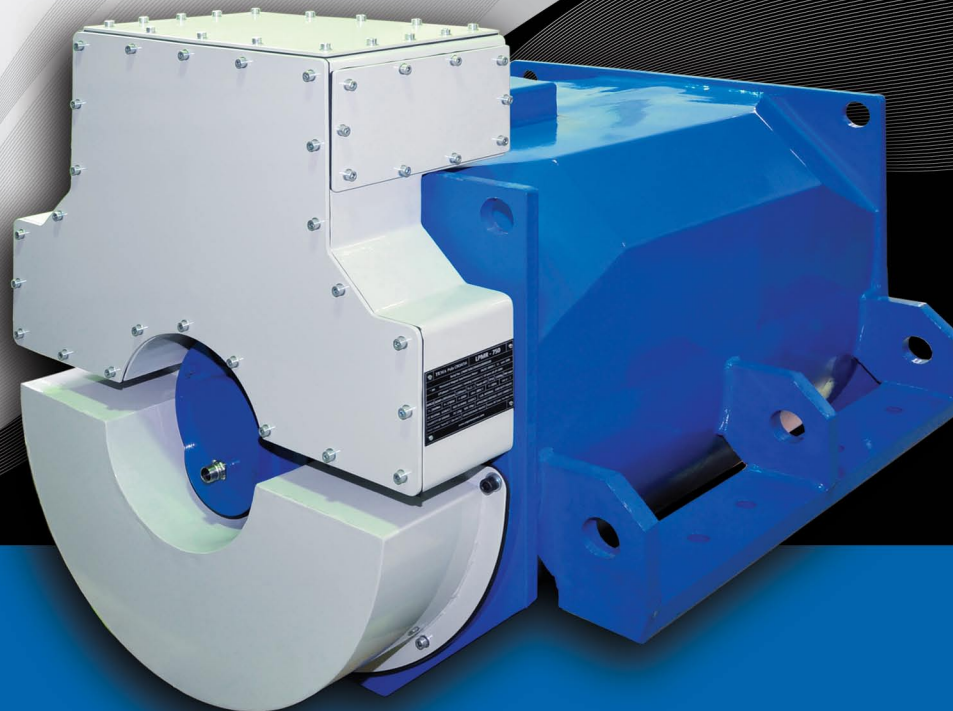


# TEMA LPMR

Reluctance Supported  
Permanent Magnet Motors



*Practicing the advantage of a new  
permanent magnet motor technology*

**450-1350 HP**

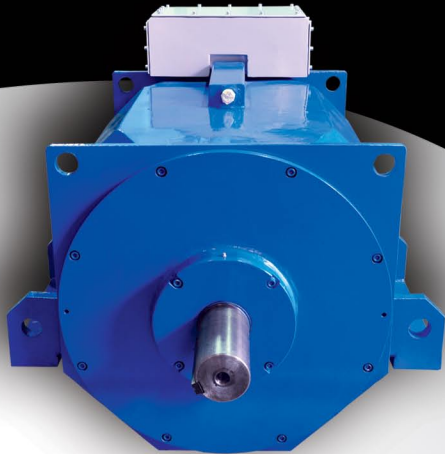
**TEMA** d.o.o.

phone. +385/52 216 740

fax. +385/52 507 599

email. [info@tema.hr](mailto:info@tema.hr)

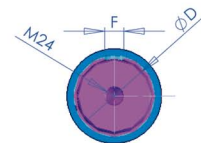
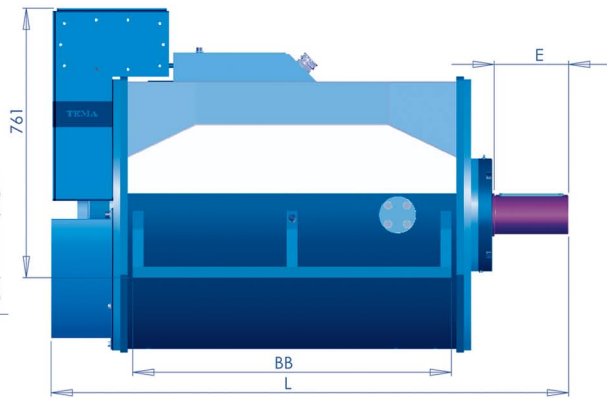
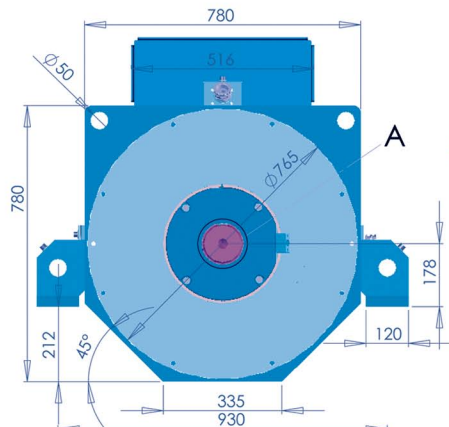
[www.tema.hr](http://www.tema.hr)



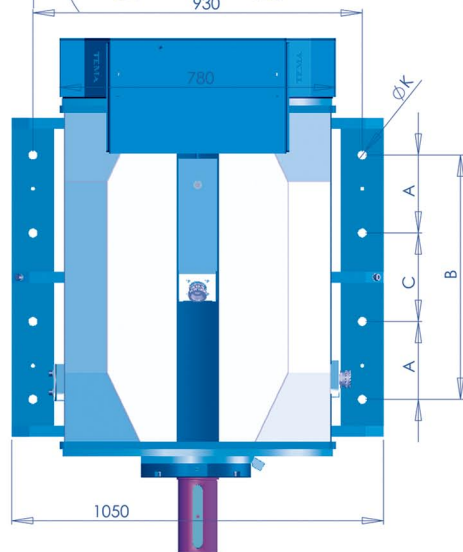
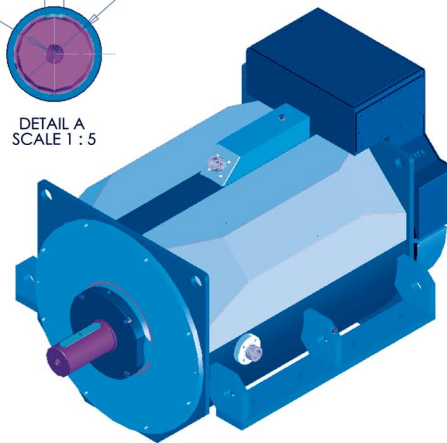
LPMR

## Your *Permanent* Power

*Enjoy the silence and vibration free propulsion  
Reduce engine room & increase your useful space  
Increase the efficiency & protect the nature  
Enlarge your cruising range  
Go permanent magnet motor propulsion...*

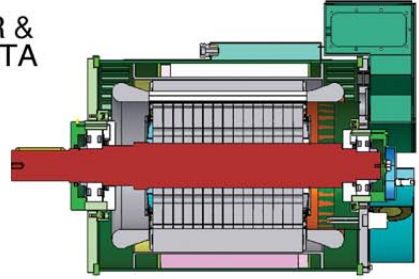


DETAIL A  
SCALE 1 : 5



Motor Type	L [mm]	D [mm]	E [mm]	F [mm]	GA [mm]	A [mm]	B [mm]	C [mm]	BB [mm]	K [mm]
LPMR-350.6.07..	1164	85	130	22	90	155	464	154	620	26
LPMR-400.6.08..	1200	85	130	22	90	155	464	154	620	26
LPMR-450.6.09..	1236	95	155	25	100	155	464	154	620	26
LPMR-500.6.10..	1272	95	155	25	100	190	560	180	770	28
LPMR-550.6.11..	1308	95	155	25	100	190	560	180	770	28
LPMR-600.6.12..	1344	110	210	28	116	190	560	180	800	28
LPMR-650.6.13..	1380	110	210	28	116	190	560	180	800	28
LPMR-700.6.14..	1416	110	210	28	116	220	690	250	900	28
LPMR-750.6.15..	1452	110	210	28	116	220	690	250	900	28
LPMR-800.6.16..	1488	110	210	28	116	220	690	250	900	28
LPMR-850.6.17..	1524	120	210	32	127	230	710	250	920	35
LPMR-900.6.18..	1560	120	210	32	127	230	710	250	920	35
LPMR-950.6.19..	1596	120	210	32	127	230	710	250	920	35
LPMR-1000.6.20..	1632	120	210	32	127	230	710	250	920	35

# LPMR PERMANENT MAGNET MOTOR & GENERATOR FAMILY - TECHNICAL DATA

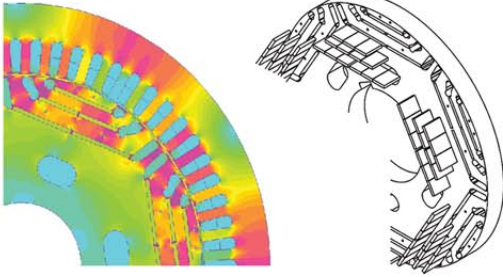


Flange = 780x780mm      Isolat.Class = H      Twtin = 25°C  
 Nnom = 1800 RPM      Thrm.Class = F      Qwtmin = 4m<sup>3</sup>/h  
 Nmax = 3000/4000 RPM      fnom = 90 Hz      Pwmax = 5 bar  
 Mch.Prt IP23&IP54      fmax = 200 Hz      cos ϕ = 0,85 - 0,99

Motor Type Ups = 400/460 Vrms	Pnom [KW]	Pnom [HP]	To [Nm]	Tnsp [Nm]	Effc [%]	Nbase [RPM]	Nmax [RPM]	Lovall [mm]	Wght [Kg]
LPMR-350.6.07AW	350	469	2034	1858	96,2	4000	4000	1164	733
LPMR-400.6.08AW	400	536	2346	2123	96,3	4000	4000	1200	832
LPMR-450.6.09AW	450	603	2620	2389	96,3	4000	4000	1236	931
LPMR-500.6.10AW	500	671	2975	2654	96,5	3800	4000	1272	1030
LPMR-550.6.11AW	550	738	3210	2919	96,6	3450	4000	1308	1129
LPMR-600.6.12AW	600	805	3520	3185	96,8	3130	4000	1344	1228
LPMR-650.6.13AW	650	872	3735	3450	96,5	2900	4000	1380	1327
LPMR-700.6.14AW	700	939	4130	3715	96,7	2700	3000	1416	1426
LPMR-750.6.15AW	750	1006	4323	3981	96,8	2500	3000	1452	1525
LPMR-800.6.16AW	800	1073	4713	4246	96,7	2350	3000	1488	1624
LPMR-850.6.17AW	850	1140	4987	4512	96,9	2200	3000	1524	1723
LPMR-900.6.18AW	900	1207	5212	4777	96,9	2100	3000	1560	1822
LPMR-950.6.19AW	950	1274	5441	5042	96,8	2000	3000	1596	1921
LPMR-1000.6.20AW	1000	1341	5823	5308	96,7	1900	3000	1632	2020

Motor Type Ups = 550/690 Vrms	Pnom [KW]	Pnom [HP]	To [Nm]	Tnsp [Nm]	Effc [%]	Nbase [RPM]	Nmax [RPM]	Lovall [mm]	Wght [Kg]
LPMR-350.6.07BW	350	469	2034	1858	96,3	4000	4000	1164	735
LPMR-400.6.08BW	400	536	2346	2123	96,5	3850	4000	1200	833
LPMR-450.6.09BW	450	603	2620	2389	96,5	3400	4000	1236	932
LPMR-500.6.10BW	500	671	2975	2654	96,6	3050	4000	1272	1035
LPMR-550.6.11BW	550	738	3210	2919	96,6	2800	4000	1308	1130
LPMR-600.6.12BW	600	805	3520	3185	96,9	2550	4000	1344	1231
LPMR-650.6.13BW	650	872	3735	3450	96,6	2360	4000	1380	1332
LPMR-700.6.14BW	700	939	4130	3715	96,9	2200	3000	1416	1428
LPMR-750.6.15BW	750	1006	4323	3981	96,8	2050	3000	1452	1529
LPMR-800.6.16BW	800	1073	4713	4246	96,9	1920	3000	1488	1627
LPMR-850.6.17BW	850	1140	4987	4512	96,8	1800	3000	1524	1725
LPMR-900.6.18BW	900	1207	5212	4777	97,0	1700	3000	1560	1826
LPMR-950.6.19BW	950	1274	5441	5042	96,9	1620	3000	1596	1923
LPMR-1000.6.20BW	1000	1341	5823	5308	96,8	1530	3000	1632	2022

- Rotor position feedback resolver sensor built in
  - All motors are water cooled - forced ventilation cooling system on request
  - All motors can operate in 40°C ambient temperature with different tech specification
  - Motors can be supplied in a frameless OEM version
- We retain the right to change any data without prior notice.



Energy Saving & Maintenance Free LPMR motor family join synchro reluctance and permanent magnet torque production to deliver high KW/cm<sup>3</sup> features and to extend the constant power speed range capability. High overcurrent capability and low rotor inertia makes these motors highly dynamic. These motors have very high efficiency and low torque ripple. Stator only dissipation facilitates minimizing the cooling system.

#### FEATURES ■

- Embedded Permanent Magnet Segments
- Mechanical, chemical & magnetic PM protection
- PM rotor robust on direct motor terminals short circuit
- Constant torque & constant power control features
- Very low torque ripple
- Low vibration
- High efficiency
- High W/Kg ratio
- Ambient friendly machine
- Efficient water cooling system
- Low thermal dissipation
- Low operating temperature
- Long life

#### PRACTICE ■

- PM & reluctance torque motor contribution
- All winding wire connections outside the machine
- 3x3 phase system wiring
- 1x3 or 3x3 phase system supply
- Double bearing isolation system
- Three or nine phases connection
- Closed mechanical design
- Robust mechanical construction
- Water or Air cooling system
- Perfectly fits submersed applications
- Frame or frameless delivery
- No maintenance required

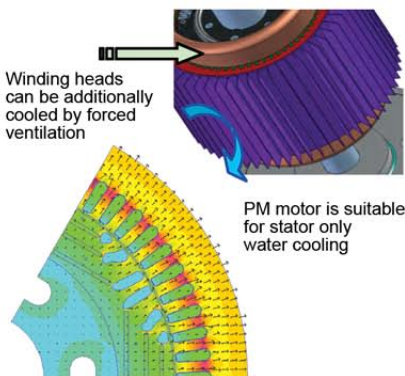
#### BENEFITS ■

- Smaller dimensions
- Lower weight
- Lower cost
- Smoother running
- Constant torque across RPM's
- Short circuit on the motor terminal support
- Mechanically protected PM segments
- Chemically protected PM segments
  - Nickel Plated
  - Resin Barrier
- Both bearings isolated
- Higher efficiency under various conditions

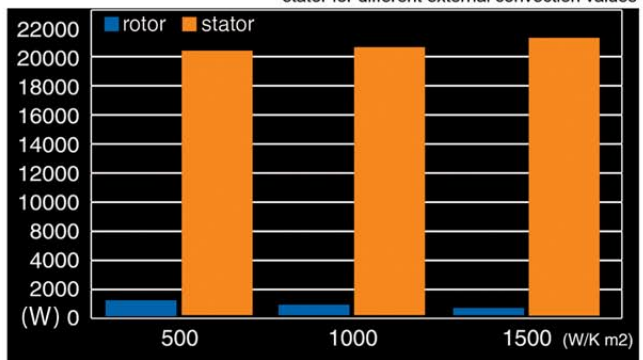
#### APPLICATIONS ■

- Shipbuilding
- Marine propeller and jet propulsion
- Wind turbines
- Electric vehicles traction
- Mining and drilling
- Oil industry
- Cement and sugar milling
- Paper industry
- Steel and plastic industry
- Water pumps
- Compressors

Rotor dissipation absence makes these motors extremely efficient in a very extended speed and power range.



Heat fluxes drained through the rotor and stator for different external convection values



High quality winding, advance isolation technology and no wire connections inside the motor makes these machines highly reliable and inverter compliant.

LPMR motors can be supplied over single three phase or triple three phase inverters -this way combining low power drive and redundant supply for high demanding applications



Three separate winding groups



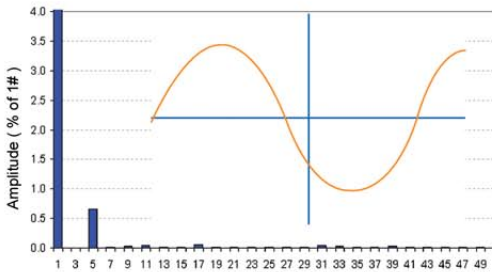
PM segments embedded inside the rotor structure



No wire connections inside the machine

Specific design makes LPMR motors very efficient and easy to cool, producing a high torque with low operation temperature and compact construction.

The BEMF is of a pure sinusoidal waveform that enables LPMR motors for a very smooth running generating low vibration and torque ripple.



Connection box is accessible from three sides making multiple wiring supply easy and comfortable.

Solid rotor enables reliable motor high speed operation. Every PM segment is mechanically and chemically protected.

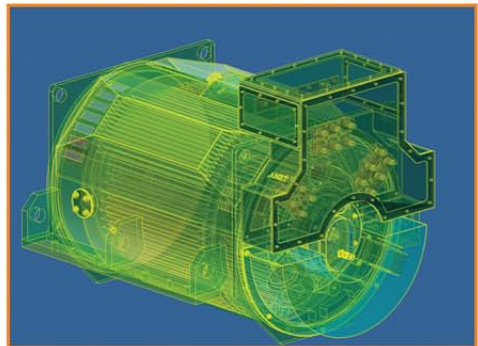


Efficient cooling system & low losses reduce LPMR motors overall dimensions



Special rotor design allows extended motor control in Constant Power speed range

**TEMA**  
LPMR



Closed cooling system and robust mechanical design