



## High Efficiency Motors - ECOPM



**ECOPM Synchronous Motors** the High efficiency makes them compatible with current and future Energy saving regulations.

Their efficiency classification exceeds the standard defined by 64030-31 regulation as IE4 premium.

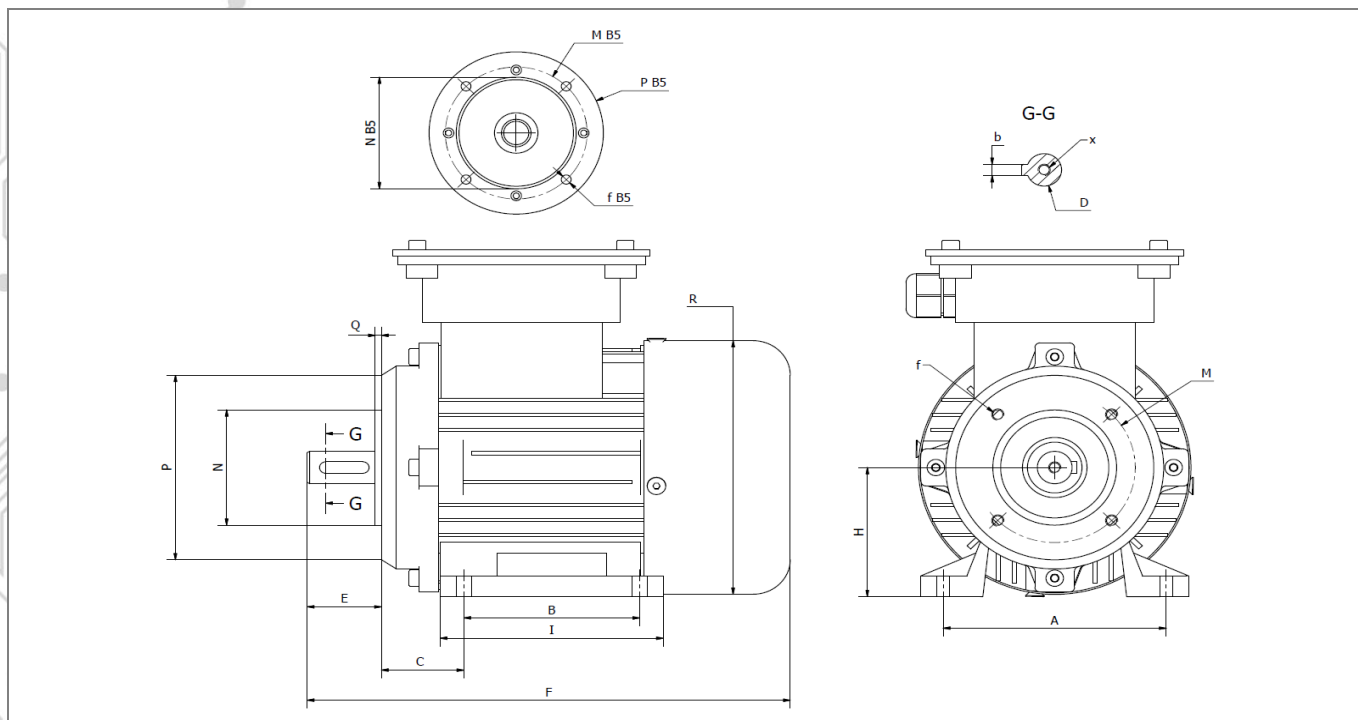
*ECOPM motors can only work with inverter*

- Rare earth magnets for high temperature
- **8 poles** construction, Sinusoidal Bemf
- Integrated Thermal Protection with PTC
- Sensorless, standard version selfventilated
- Standard IEC housing, B3 B5 and B14 shape
- Compact design, reduced weight
- High efficiency, low losses
- Silent, high protection degree

Tab. 1

Description  Winding Code	Symbol	Motor	MEC 56		MEC 71		MEC 90		MEC 112	
		UM	A	B	A	B	A	B	A	B
<b>Stall Torque</b>	$M_0$	Nm	<b>2</b>	<b>4</b>	<b>5</b>	<b>10</b>	<b>13</b>	<b>25</b>	<b>32</b>	<b>64</b>
<b>Max Voltage</b>	$U_{MAX}$	V	400	400	400	400	400	400	400	400
<b>Stall Current</b>	$I_0$	A	0,8	1,6	1,6	3,3	4,3	8,3	8,5	16,5
<b>Nominal Current</b>	$I_N$	A	0,83	1,7	1,7	3,4	4,4	8,5	8,7	17
<b>Nominal Torque</b>	$M_N$	Nm	2	4	5	10	13	25	32	64
<b>Nominal Power</b>	$P_N$	kW	0,4	0,8	0,9	1,8	2,5	4,7	5	10
<b>Nominal Speed</b>	$N_N$	$\text{min}^{-1}$	2000		1800		1800		1500	
<b>Maximal Speed</b>	$N_{MAX}$	$\text{min}^{-1}$	5000		4500		4000		3000	
<b>Nominal Frequency</b>	$F_n$	Hz	133	133	120	120	120	120	100	100
<b>Peak Current</b>	$I_{MAX}$	A	3	6	6	12	12	24	25	50
<b>Voltage Constant</b>	$K_E$	V/Krpm	180	180	200	200	200	200	240	240
<b>Torque Costant</b>	$K_T$	Nm/A	2,7	2,7	3,3	3,3	3,3	3,3	4	4
<b>Rotor Inertia</b>	$J_R$	$\text{Kg cm}^2$	0,9	1,7	4,5	8,5	20	40	90	170
<b>Resistance @ 20°C</b>	$R_{U-V}$	ohm	75	30	22	9	5,5	2	1,7	0,7
<b>Inductance</b>	$L_{U-V}$	mH	170	80	40	20	25	13	11	6
<b>Mass</b>	m	Kg	2,6	3	5,4	6	10,2	12	28	31,6
<b>Efficiency @ <math>I_n</math></b>	$\eta$	%	87,5	88,2	89,3	90,2	92	93,1	94	94,6

Torque and Current data referred to the servoventilated version.



Quote in mm

Tab. 2

Motor Type	56	71	90	112
<b>A</b>	90	112	140	190
<b>B</b>	71	90	100	140
<b>N</b>	50	70	95	110
<b>P</b>	80	105	140	160
<b>M</b>	65	85	115	130
<b>f</b>	M5	M6	M8	M8
<b>R</b>	110	140	180	226
<b>E</b>	30	40	50	60
<b>D</b>	14j6	19j6	24j6	28j6
<b>b</b>	5	6	8	8
<b>C</b>	36	45	56	70
<b>Q</b>	2,5	2,5	3	3,5
<b>F</b>	195	250	308	380
<b>N - B5</b>	80	110	130	180
<b>P - B5</b>	120	160	200	250
<b>M - B5</b>	100	130	165	215
<b>f - B5</b>	7	9	12	14
<b>x</b>	M4x12	M5x12	M8x19	M10x22

Data shown on this catalogue are referred to the following conditions:

- Room Temperature max 40° C
- Room Temperature min. 0 °C
- Altitude max 1000 m asl
- F insulation class , F and H insulating
- Rms value
- B3-B14 construction shape
- IP54 protection (shaft excluded)
- Values tolerance ±10%
- Overtemperature max 100K
- 8 poles motors. Only with inverter

Data of this catalogue may be changed without notice.

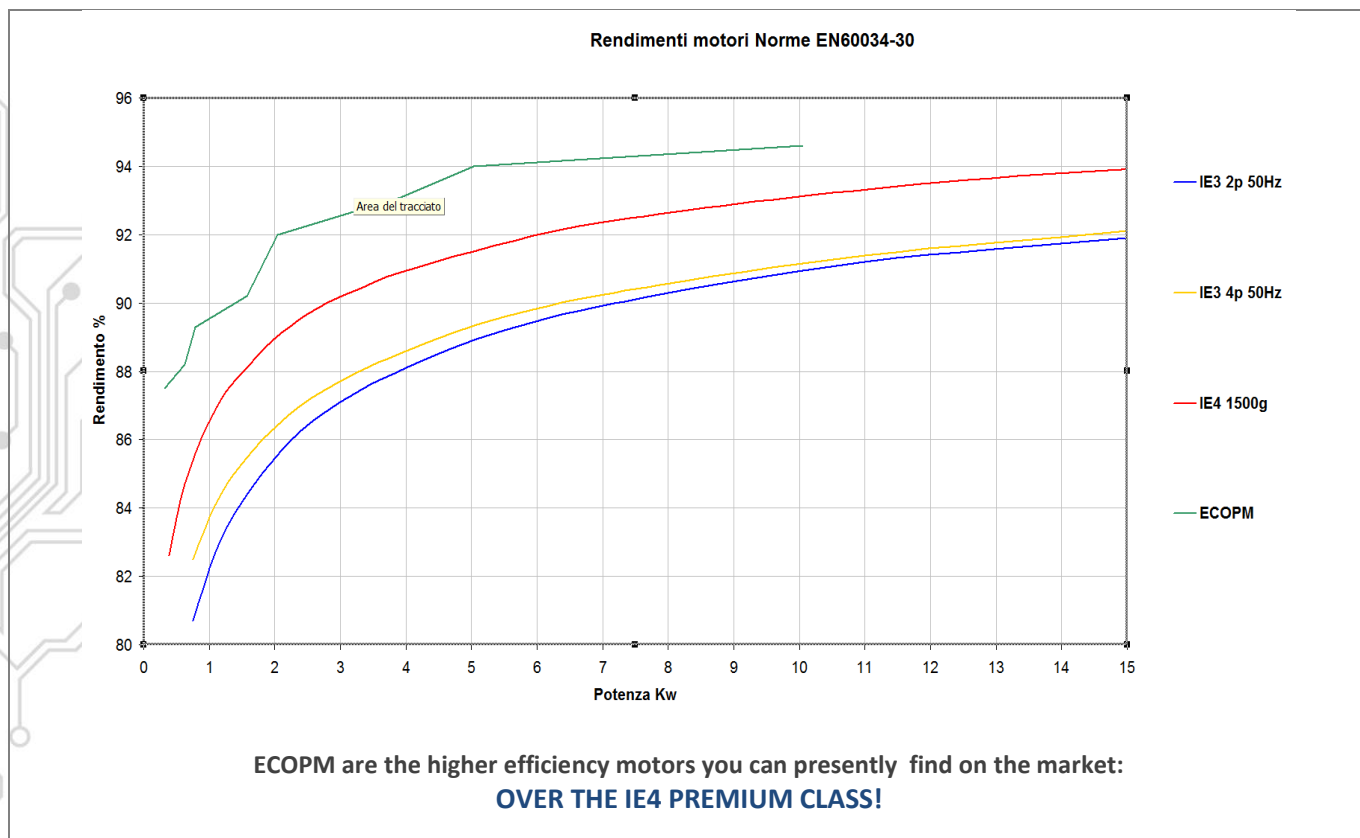
## CODE COMPOSITION

1	2	3	4	5	6	7	8	9	10	11	12	13
E	C	O	5	7	1	B	2	1	A	1	x	x

### POS. DESCRIPTION

1-3	<b>Product</b>	ECOPM : Permanent Magnet Synchronous Motor SPMSM										
4	<b>Motor Type</b>	5=SPM 7=LSPMSM (only on request)										
5-6	<b>Motor Size</b>											
7	<b>Motor Length</b>											
8	<b>Voltage</b>	1= DC bus 320 V 2= DC bus 560 V										
9	<b>Speed</b>	1= 1.000 rpm	3= 1.800 rpm	5= 2.500 rpm	7= 3.500 rpm							
		2= 1.500 rpm	4= 2.000 rpm	6= 3.000 rpm	8= 4.000 rpm							
10	<b>Ventilation</b>	A= self ventilated F= forced ventilated 0= without ventilation										
11	<b>Motor Type</b>	1= B3/B14 standard, terminal board cover at the top 2= B5 shape 3= B3, terminal board cover at the top 4= B14 shape										
12-13	<b>Special version</b>	66 = ring seal										

**IMPORTANT:** Our **ECOPM** ECO5 Synchronous Motors are not suitable to be directly connected to the supply mains. Their operation is expected only in combination with an inverter. The inverter chosen must be able to drive a PMSM motor without feedback (function sensorless PMSM). On the market there are some type of inverters able to perform this function very well. Not all inverters are suitable to this function. It's very important to carefully match the combination motor-inverter-load. Our technical department is at your disposal for more detailed information.



**MATCHING TABLE MOTOR-INVERTER**

Motor Type	Inverter 1x230		Inverter 3x400	
	Type	Total Efficiency	Type	Total Efficiency
ECOPMxx				

The perfect combination with a suitable inverter allows to take advantage of the characteristics of the ECOPM motors. The ability to vary the speed, especially in applications with pumps and fans, leads to a drastic reduction of consumptions, due to the very high efficiency of the motor and the lower power demand when the motor operates at reduced speed.

The economics benefits in terms of energy saved allow to compensate the higher cost in a very short time. Any contributions or/and incentives can be added to the saving of the price.

We should not forget also the environmental aspects in terms of lower emissions and less energy wasted.

**SANGALLI SERVOMOTORI s.r.l.**  
 Via Federico Rossi, 5 – 20900 Monza – MB  
 Tel. 039 2020 322 / 039 2020 747  
 Fax 039 2020 56  
[www.sangalliservomotori.it](http://www.sangalliservomotori.it)  
[www.ie5efficiency.com](http://www.ie5efficiency.com)



ISD : E220486

