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LOVE NATURE WITH

HYOSUNG HIGH EFFICIENCY MOTOR

Global Top Energy, Machinery & Plant Solution Provider

Why you should buy an IE2 Motor?

The high efficiency electric motor is an 'environment-friendly' product that reduces carbon dioxide emissions and has 20-30% less energy losses, and 3-18% higher efficiency compared with general electric motors.

Hyosung IE2 motor reduces power losses by up to 30% on average. This means that when you operate an 15kW IE2 motor for 3,000 hours, you can save about 2MW per year. Lower losses result in lower running cost which in turn lowers your electricity bills.

What is IE2 regulation?

IEC/EN 60034-30 standard published by the International Electrotechnical Commission(IEC) in October 2008 which combines the different requirements for induction motor efficiency levels around the world including CEMEP.
It requires efficiency to be measured using common methods specified on IEC/EN 60034-2-1:2007, and uses efficiency classes defines in IEC/EN 60034-30:2008.

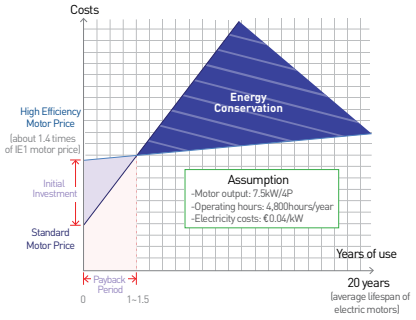
Why Hyosung High Efficiency motor?

It will :
- Cut the burden of the climate change levy due to lower CO_2 emissions
- Lower energy losses resulting in lower cost of ownership
- Shorten pay-back periods

Hyosung motor is the most commonly used brand in Korea and best suited for various industrial applications. Hyosung creates the perfect movement with high efficiency levels and broad selections of product line up.

- Permanent Magnet Motors
- Explosion Proof Motors
- Brake Motors
- Etc.

Economic Efficiency of Hyosung Motor



Hyosung High Efficiency Motor gives you

Better energy conservation through maximized efficiency
: 20~30% reduced loss by using optimally designed core andwinding
: High quality raw materials through stable long-term contracts with world-class partners

Longer lifespan
: F type insulation system
: Service factor 1.15
: Reliable bearings - SKF, FAG, NSK, NTN, etc

Lower noise level
3~8dB(A) lower than standard motors
: Modified form and structure of fan to minimize noise level
: Designed through elaborate computer systems
- ANSYS & NASTRAN, FLUX2D SIMULATION, etc.

Higher compatibility
: Same motor output in same frame size(IEC) with most of standard motors

Change One, Save More

Your Best Drive Solution, HYOSUNG

Hyosung made a strong impression on potential customers at the Hannover Messe

2010 Business Performance of Hyosung

Sales	Operating Income	Net Income
USD 10,829 million	USD 587 million	USD 179 million

Current Status of Sales (million USD)

Hyosung

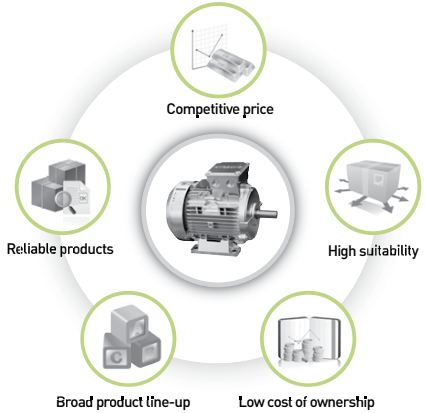
Hyosung aims to be a world-leading company based on **'Value Management through Global Excellence.'**
In order to deliver the best value to our customers, we do our best in diverse fields, including power industries, industrial materials, fibers, chemicals, construction, trading, and information technology.

To meet the growing demands of the global market, Hyosung has expanded its business worldwide. We have established a global network that consists of a total of 54 offices : 23 manufacturing corporations, 8 trade corporations (4 branch offices), and 19 trade offices around the world, including offices in the US, Asia, Europe and the Middle East.

In addition, with global manufacturing bases in the US, China, Vietnam, and Europe, Hyosung is growing to become a world-class company through new product development, continuous R&D investment, customer-oriented service activities, and aggressive localized marketing strategies.

Eco-friendly Hyosung High Efficiency Motor

According to our research, industrial motors take a share of as much as 60% of industry's total energy consumption. That is, by using poorly designed or inappropriate motors, we could risk wasting a huge amount of this energy. Hyosung is committed to providing the best solution to our customers. With Hyosung, your company can protect the environment, cut unnecessary energy costs and improve overall profitability.



General performance cast iron motors - 2 poles

Technical data for totally enclosed squirrel cage three phase motors

IP 55 - IC 411 - insulation class F, temperature rise class B
IE efficiency class according to IEC 60034-30; 2008

Output kW	Size	Speed r/min	Efficiency Full load 100%	Efficiency 3/4 load 75%	Power factor cosφ	Current I_N A	Current I_S/I_N	Torque T_N N·m	Torque T_I/T_N	Torque T_B/T_N	Moment of inertia J = 1/4 GD² kgf·m²	Weight kgf	Sound pressure level L_{PA} dB(A)
3000r/min = 2poles	400V 50Hz												
0.75	80M	2800	77.4	76.9	0.82	1.7	7.1	2.6	2.4	2.8	0.00234	15	68
1.1	80M	2795	79.6	79.1	0.84	2.4	7.2	3.8	2.5	2.9	0.00234	15	68
1.5	90L	2840	81.3	80.8	0.85	3.1	8.5	5.0	2.7	3.2	0.00614	24	68
2.2	90L	2795	83.2	82.7	0.82	4.7	7.2	7.5	2.1	2.5	0.00614	24	68
3	100L	2875	84.6	84.1	0.87	5.9	7.9	10.0	2.2	2.6	0.00787	30	72
4	112M	2905	85.8	85.3	0.86	7.8	7.8	13.1	2.2	2.8	0.00787	39	72
5.5	132S	2930	87.0	86.5	0.82	11.1	8.8	17.9	2.5	3.3	0.0151	56	75
7.5	132S	2900	88.1	87.6	0.82	15.0	7.5	24.7	2.0	2.7	0.0151	56	75
11	160M	2935	89.4	88.9	0.84	21.1	8.7	35.8	2.4	3.2	0.0528	109	81
15	160M	2935	90.3	89.8	0.84	28.5	8.7	48.8	2.5	3.3	0.0528	109	81
18.5	160L	2920	90.9	90.4	0.87	33.8	7.4	60.5	2.0	2.7	0.0589	136	81
22	180L	2935	91.3	90.8	0.88	39.5	7.5	71.5	1.8	2.4	0.0970	182	77
30	200L	2930	92.0	91.5	0.89	52.9	8.0	97.7	1.5	2.6	0.230	280	78
37	200L	2940	92.5	92	0.90	64.5	7.5	120.1	1.4	2.2	0.230	280	78
45	225S	2955	92.9	92.4	0.90	77.7	8.7	145.4	1.6	2.6	0.404	365	78
55	250M	2965	93.2	92.7	0.89	96.2	7.9	177.1	1.7	2.4	0.732	550	86
75	280S	2970	93.8	93.3	0.89	129.7	7.2	241.0	1.0	2.5	1.65	690	90
90	280M	2975	94.1	93.6	0.90	153.4	8.1	288.8	1.3	2.3	1.80	810	90
110	315S	2970	94.3	93.8	0.90	187.1	7.5	353.5	1.0	2.2	2.14	1090	90
132	315M	2965	94.6	94.1	0.90	223.8	8.4	424.9	1.7	2.1	2.28	1090	90
160	315M	2965	94.8	94.3	0.91	267.7	8.8	515.1	1.8	2.1	2.35	1090	90
200	315L	2975	95.0	94.5	0.92	330.3	7.9	641.7	1.2	2.4	2.92	1580	97

1) Temperature rise class F

IS/IN = Starting current / Rated current
TI/TN = Locked rotor torque / Rated torque
Tb/TN = Breakdown torque / Rated torque

IE - class concerns motors from 0.75 kW to 375 kW

General performance cast iron motors - 4 poles

Technical data for totally enclosed squirrel cage three phase motors

IP 55 - IC 411 - insulation class F, temperature rise class B
IE efficiency class according to IEC 60034-30; 2008

Output kW	Size	Speed r/min	Efficiency Full load 100%	Efficiency 3/4 load 75%	Power factor cosφ	Current I_N A	Current I_S/I_N	Torque T_N N·m	Torque T_I/T_N	Torque T_B/T_N	Moment of inertia J = 1/4 GD² kgf·m²	Weight kgf	Sound pressure level L_{PA} dB(A)
1500r/min = 4poles	400V 50Hz												
0.75	80M	1395	79.6	79.1	0.74	1.8	6.0	5.1	2.4	2.9	0.00270	15	52
1.1	90L	1445	81.4	80.9	0.73	2.7	8.6	7.3	3.0	3.4	0.00614	24	54
1.5	90L	1420	82.8	82.3	0.81	3.2	6.9	10.1	2.2	2.6	0.00614	24	54
2.2	100L	1430	84.3	83.8	0.81	4.7	8.8	14.7	2.8	3.3	0.0141	30	56
3	100L	1425	85.5	85.0	0.81	6.3	8.2	20.1	2.7	3.2	0.0141	30	56
4	112M	1430	86.6	86.1	0.80	8.3	7.6	26.7	2.3	2.8	0.0171	39	56
5.5	132S	1440	87.7	87.2	0.81	11.2	6.2	36.5	1.7	2.0	0.0402	56	62
7.5	132M	1440	88.7	88.2	0.82	14.9	6.2	49.7	1.7	2.1	0.0402	70	62
11	160M	1460	89.8	89.3	0.79	22.4	7.3	71.9	2.4	2.8	0.0855	109	66
15	160L	1460	90.6	90.1	0.80	29.9	6.9	98.1	2.1	2.5	0.106	136	66
18.5	180M	1460	91.2	90.7	0.83	35.3	6.9	120.9	2.0	2.4	0.199	161	70
22	180L	1460	91.6	91.1	0.83	41.8	6.9	143.8	2.0	2.4	0.299	182	70
30	200L	1470	92.3	91.8	0.84	55.8	7.5	194.8	2.0	2.5	0.448	295	71
37	225S	1470	92.7	92.2	0.85	67.8	8.0	240.3	2.2	2.4	0.753	295	72
45	225S	1465	93.1	92.6	0.86	81.1	7.7	293.2	1.9	2.3	0.753	365	72
55	250M	1480	93.5	93.0	0.86	98.7	7.7	354.7	1.7	2.5	1.34	550	73
75	280S	1480	94.0	93.5	0.88	130.9	6.8	483.7	1.7	2.3	2.34	690	83
90	280M	1480	94.2	93.7	0.86	160.4	7.8	580.5	1.8	2.3	2.49	810	83
110	315S	1480	94.5	94.0	0.88	190.9	7.9	709.4	1.8	2.3	3.31	1090	83
132	315M	1480	94.7	94.2	0.88	228.6	7.7	851.3	1.8	2.4	3.59	1090	83
160	315M	1480	94.9	94.4	0.88	276.5	7.4	1031.9	1.8	2.4	3.67	1090	83
200	315L	1485	95.1	94.6	0.88	344.9	7.0	1285.5	1.5	2.1	6.35	1580	87

1) Temperature rise class F

IS/IN = Starting current / Rated current
TI/TN = Locked rotor torque / Rated torque
Tb/TN = Breakdown torque / Rated torque

IE - class concerns motors from 0.75 kW to 375 kW

SAMT
Specialised Air Motors and Transmission

General performance cast iron motors - 6 poles

Technical data for totally enclosed squirrel cage three phase motors

IP 55 - IC 411 - insulation class F, temperature rise class B
IE efficiency class according to IEC 60034-30; 2008

Output kW	Size	Speed r/min	Efficiency Full load 100%	Efficiency 3/4 load 75%	Power factor cosφ	Current I_N A	Current I_S/I_N	Torque T_N N·m	Torque T_I/T_N	Torque T_B/T_N	Moment of inertia J = 1/4 GD² kgf·m²	Weight kgf	Sound pressure level L_{PA} dB(A)
1000r/min = 6poles		400V 50Hz											
0.75	90L	925	75.9	75.4	0.70	2.0	6.0	7.7	2.0	2.4	0.00614	24	53
1.1	90L	930	78.1	77.6	0.72	2.8	6.0	11.3	1.7	2.1	0.00614	24	53
1.5	100L	940	79.8	79.3	0.70	3.9	6.5	15.2	2.4	3.0	0.01409	30	54
2.2	112M	950	81.8	81.3	0.69	5.6	6.5	22.1	1.7	2.2	0.0200	39	54
3	132S	965	83.3	82.8	0.69	7.5	8.2	29.7	1.6	2.2	0.0657	56	59
4	132M	965	84.6	84.1	0.70	9.7	7.3	39.6	2.0	2.5	0.0801	70	59
5.5	132M	965	86	85.5	0.75	12.3	7.8	54.4	2.3	2.7	0.0801	70	59
7.5	160M	970	87.2	86.7	0.73	17.0	8.2	73.8	2.7	3.2	0.159	109	61
11	160L	955	88.7	88.2	0.79	22.7	7.3	109.9	2.2	2.6	0.200	136	61
15	180L	965	89.7	89.2	0.78	30.9	7.5	148.4	1.4	1.9	0.344	182	64
18.5	200L	980	90.4	89.9	0.74	39.9	8.3	180.2	2.4	2.9	0.771	295	64
22	200L	980	90.9	90.4	0.76	46.0	7.6	214.3	2.1	2.6	0.771	295	64
30	225S	980	91.7	91.2	0.80	59.0	7.8	292.2	1.9	2.4	1.27	365	67
37	250M	985	92.2	91.7	0.79	73.3	7.5	358.6	1.7	2.2	2.20	550	72
45	280S	985	92.7	92.2	0.80	87.6	8.7	436.1	1.9	2.7	2.88	690	74
55	280M	975	93.1	92.6	0.82	104.0	8.6	538.4	1.8	2.6	4.20	810	74
75	315S	985	93.7	93.2	0.82	140.9	8.4	726.8	1.4	2.4	5.56	1090	74
90	315M	985	94	93.5	0.82	168.5	8.6	872.2	1.4	2.5	5.76	1090	74
110	315M	985	94.3	93.8	0.83	202.9	7.9	1066.0	1.7	2.3	5.76	1090	74
132	315L	990	94.6	94.1	0.83	242.7	7.9	1272.7	1.7	2.3	9.43	1580	80

1) Temperature rise class F

IE - class concerns motors from 0.75 kW to 375 kW

IS/IN = Starting current / Rated current
TI/TN = Locked rotor torque / Rated torque
Tb/TN = Breakdown torque / Rated torque

Technical data at a glance

This table list is the most important technical data.

Type of motor	IEC Squirrel-Cage motors
Connection type	Star connection or delta connection
Number of poles	2, 4, 6
Frame sizes	80M to 315L
Rated output	0.75 ~ 200kW
Frequencies	50 Hz
Versions	Totally Enclosed Fan Cooled(TEFC) Motors • "High Efficiency"(IE2) according to IEC 60034-30
Marking	Efficiency classification according to IEC 60034-30, IE2: 2-, 4-, 6-pole, IE1: 2-4-6-pole
Rated speed (synchronous speed)	1000 ~ 3000 r/min
Rated torque	2.2 ~ 1289.9 N·m
Insulation of the stator winding according to EN 60034-1 (IEC 60034-1)	Temperature class 155℃(F), used acc. To temperature class 130℃(B) (also for motors with increased output)
Degree of protection according to EN 60034-5 (IEC 60034-5)	IP55 as standard
Cooling according to EN 60034-6 (IEC 60034-6)	Fan cooled as standard frame sizes 80M to 315L (IC 411)
Admissible coolant temperature and site altitude	-15℃ ~ +40℃ as standard, site altitude up to 1000m above sea level.
Standard voltages according to EN 60038 (IEC 60038)	50Hz : 380V, 400V, 415V The voltage to be used can be found in the selection and ordering data for the required motor.
Type of construction according to EN 60034-7 (IEC 60034-7)	Without flange : IM B3, IM B6, IM B7, IM B8, IM V5, IM V6, IM V5 With flange : IM B5, IM V1, IM V1, IM V3, IM B35
Paint finish Suitability of paint finish for climate group according to IEC 60721, Part 2-1	Color Munsell No. 0.5PB 3.2/4.4
Vibration quantity level accoding to EN 60034-14 (IEC 60034-14)	Level A (normal- without special vibration rerquirements) Optionally : Level B (with special vibraion requirements)
Weights	The weight is listed in the selection for the required motor.