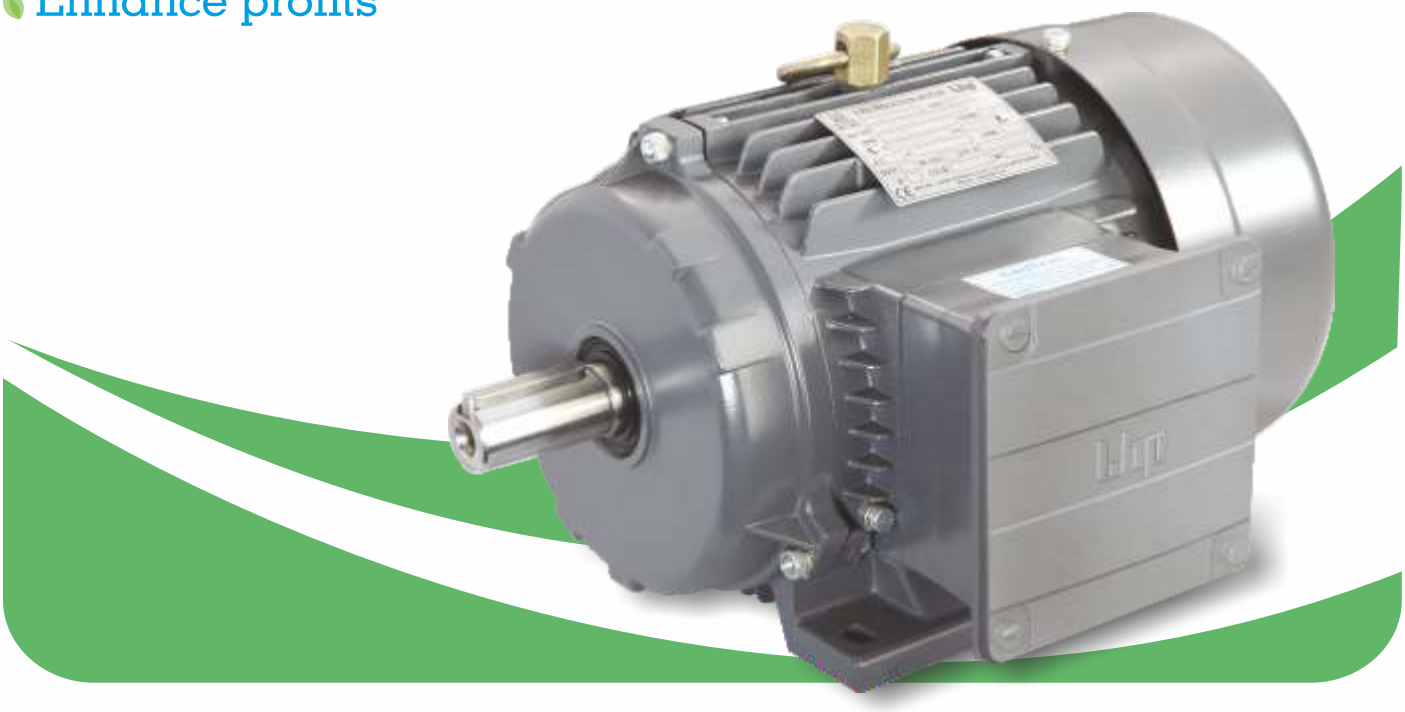
# IE2 Motors

- Save energy
- Protect environment
- Enhance profits



# IEC Motors

## Considerations for selection and usage of IE2 motors

### Motor size

The load factor should be chosen between 65% and 100% so that the advantage of saving energy is achieved. If the motor is under-sized i.e. in a situation where the load factor is less than 65%, the desired energy saving may not be achieved.

### Operating speed

IE2 motors have less slip compared to standard motors. Hence, their operating speed is more. This may adversely affect the operating efficiency of the motor pump or the motor fan in case of centrifugal application.

### Starting current

The resistance of IE2 motors is low as compared to standard motors. This results in a high starting current and inrush current. The connected system and control gears should be capable of handling the higher starting current.

### Method of testing efficiency

The efficiency method used to evaluate the efficiency of IE2 motors is more stringent than the method used in case of standard motors. So there may be cases where standard motor's efficiency may appear to be closer to IE2 efficiency. However, in the actual usage IE2 motors consume less power.

### Special application

In special applications with heavy starting duty and intermittent operation or when motors are operated with wider voltage variation like -15% Voltage, IE2 motors do not result in any significant energy savings.

### VFD application

When IE2 motors are used in conjunction with VFDs, they result in energy saving irrespective of the type of load like intermittent loading, heavy starting duty, etc. Further, the higher inrush current is not encountered by the motor because the VFD modifies the starting current of the motor. It applies low voltage, low frequency supply at the time of starting.

# IE2 Motors

## About LHP

Established in 1981, LHP is a reputed manufacturer of a wide range of high-quality motors up to 355 L frame (375 kW). The range includes various types of motors such as Standard Induction, Flame-proof, Geared, Brake, Dual Speed, Non-Sparking, Crane & Hoist Duty and Special Purpose Motors to name only a few. The range has been proving its worth for different applications in various industries. LHP motors are the preferred choice of major corporates, MNCs & OEMs due to the product quality, performance, timely deliveries and competitive prices.

The ISO 9001 - 2008 certification, CE mark, 3 BIS licences and National Awards for Quality Products have made LHP Motors the customer's 'First Choice'.

## LHP IE2 motors conform to IEC 60034-30:2008 and IS-12615:2011

- Suitable for continuous process industries where high energy saving is essential
- Short payback period for replacement
- Enhanced motor life
- Less maintenance

## Applications

Machine tools, Textile, Air conditioning, Dairy equipment, Packing machinery, Material handling equipment, Geared motors, Wood seasoning plants, Solvent extraction plants, Edible oil factories, Cement, Paper, Sugar and Steel plants.

## Specifications

| | |
|---|---|
| Range | Up to 1000kW |
| RPM | 3000, 1500, 1000 (synchronous) |
| Mounting | Foot (B-3), Flange (B5), Face (B-14) and combinations |
| Frame | 63 to 450 |
| Protection | IP : 55 |
| Insulation | F class |
| Voltage | 415V, 380V or as per requirement |
| Frequency | 50 Hz / 60 Hz or as per requirement |

## Applicable standards

| | |
|---|---|
| IS : 325 (IEC 34 - 1) | Specifications for 3 phase induction motors |
| IS : 12615 (IEC 34 - 30) | Specifications for Energy Efficiency Induction Motors |
| IS : 4722 (BS 4999) | Specifications for rotating electrical machines |
| IS : 4691 (IEC 34 - 5) | Degree of protection provided by enclosure for rotating electrical machines |
| IS : 4889 (IEC 34 - 2) | Method of determination of efficiency of rotating electrical machines |

## The values of efficiency for motors to classify as IE2 in accordance with the new IS:12615-2011/IEC 60034-30 are as under.

| | 2 Pole | | | 4 Pole | | | 6 Pole | | |
|---|---|---|---|---|---|---|---|---|---|
| kW | Frame size | Efficiency % | | Frame size | Efficiency % | | Frame size | Efficiency % | |
| | | IE1 | IE2 | | IE1 | IE2 | | IE1 | IE2 |
| 0.37 | 71 | 66.1 | 72.2 | 71 | 65.1 | 70.1 | 80 | 63 | 69 |
| 0.55 | 71 | 69.1 | 74.8 | 80 | 69.1 | 75.1 | 80 | 67 | 72.9 |
| 0.75 | 80 | 72.1 | 77.4 | 80 | 72.1 | 79.6 | 90S | 70 | 75.9 |
| 1.1 | 80 | 75.0 | 79.6 | 90S | 75.0 | 81.4 | 90L | 72.9 | 78.1 |
| 1.5 | 90S | 77.2 | 81.3 | 90L | 77.2 | 82.8 | 100L | 75.2 | 79.8 |
| 2.2 | 90L | 79.9 | 83.2 | 100L | 79.7 | 84.3 | 112M | 77.7 | 81.8 |
| 3.7 | 100L | 82.7 | 85.5 | 112M | 82.7 | 86.3 | 132S | 80.9 | 84.3 |
| 5.5 | 132S | 84.7 | 87 | 132S | 84.7 | 87.7 | 132M | 83.1 | 86.0 |
| 7.5 | 132S | 86.0 | 88.1 | 132M | 86 | 88.7 | 160M | 84.7 | 87.2 |
| 11 | 160M | 87.6 | 89.4 | 160M | 87.6 | 89.8 | 160L | 86.4 | 88.7 |
| 15 | 160M | 88.7 | 90.3 | 160L | 88.7 | 90.6 | 180L | 87.7 | 89.7 |
| 18.5 | 160L | 89.3 | 90.9 | 180M | 89.3 | 91.2 | 200L | 88.6 | 90.4 |
| 22 | 180M | 89.9 | 91.3 | 180L | 89.9 | 91.6 | 200L | 89.2 | 90.9 |
| 30 | 200L | 90.7 | 92 | 200L | 90.7 | 92.3 | 225M | 90.2 | 91.7 |
| 37 | 200L | 91.2 | 92.5 | 225S | 91.2 | 92.7 | 250M | 90.8 | 92.2 |
| 45 | 225M | 91.7 | 92.9 | 225M | 91.7 | 93.1 | 280S | 91.4 | 92.7 |
| 55 | 250M | 92.1 | 93.2 | 250M | 92.1 | 93.5 | 280M | 91.9 | 93.1 |
| 75 | 280S | 92.7 | 93.8 | 280S | 92.7 | 94 | 315S | 92.6 | 93.7 |
| 90 | 280M | 93.0 | 94.1 | 280M | 93.0 | 94.2 | 315M | 92.9 | 94.0 |
| 110 | 315S | 93.3 | 94.3 | 315S | 93.3 | 94.5 | 315M* | 93.3 | 94.3 |
| 125 | 315M | 93.4 | 94.5 | 315M | 93.4 | 94.6 | 315M* | 93.4 | 94.4 |
| 132 | 315M* | 93.5 | 94.6 | 315M* | 93.5 | 94.7 | 315L* | 93.5 | 94.6 |
| 160 | 315L* | 93.7 | 94.8 | 315L* | 93.8 | 94.9 | 355L | 93.8 | 94.8 |
| 200 | 315L | 94.0 | 95.0 | 315L | 94.0 | 95.1 | 355L | 94.0 | 95.0 |
| 250 | 355L | 94.0 | 95.0 | 355L | 94.0 | 95.1 | 355L | 94.0 | 95.0 |
| 315 | 355L | 94.0 | 95.0 | 355L | 94.0 | 95.1 | 355L | 94.0 | 95.0 |
| 355 | 355L | 94.0 | 95.0 | 355L | 94.0 | 95.1 | 355L | 94.0 | 95.0 |
| 375 | 355L | 94.0 | 95.0 | 355L | 94.0 | 95.1 | 355L | 94.0 | 95.0 |

**Notes :**
1. IS : 1231 defines frame size to output correlation only up to Frame size 315M
2. EN 50347 : 2001 specifies 132 kW to 315M in 2 pole and 4 pole
3. * These frames are indicated as "preferred" in IS:12615-2011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