



Smart solutions.  
Strong relationships.

## **SUPER PREMIUM EFFICIENCY LV AC MOTORS**

IE4 Efficiency Class



  
**Apex Series**

*We put all our energy into saving yours !*

# APEX SERIES

Out of our commitment towards high energy efficiency and top notch performance, CG presents the next and latest generation of a green solution...

## Apex series IE4 motor – Super premium efficiency motor

It complies with new efficiency requirements of IEC60034-1:2014-03 with highest efficiency and lowest payback period. Our super premium efficiency motor delivers highest efficiency ever which ensures even lower payback period over the lifecycle of motor. By maximizing the output especially in continuous duty applications, due to energy efficiency, our Apex series IE4 motor offers a way to curb energy consumption without limiting your growth and hence reduces CO<sub>2</sub> emissions.

## Why should you consider buying Apex series IE4 motors ?

- **Highest efficiency**  
Super premium efficiency of Apex series motor leads to more energy savings and reduces carbon emission.
- **Tested in India's only CSA approved lab**  
To keep regular check on instrumentation accuracy and testing procedure to ensure guaranteed efficiency our 7 test labs with 0.2 class instrumentation and torque transducers are approved by CSA under CPC programme.
- **Early payback**  
By maximizing energy savings you get quicker return on investments.
- **Same output/Frame ratio**  
Lower efficiency motors can be replaced easily with Apex series IE4 motors as frame size is same.
- **More reliable**  
Less bearing temperature ensures the extended life of motor. Hence Apex series motors are definitely a long term secured solution for the future.
- **Low operating cost**

## Applications

- Conveyors belts
- Textile machines
- Pumps
- Fans
- Mills
- Presses
- Centrifugal machines
- Elevators
- Others

## IE4- Conventional Apex series motors

Range	
Output	0.55 kW to 45 kW
Frames	80 to 225
Poles	2, 4, 6
Efficiency	IE4

## Next generation Line Start Permanent Magnet (LSPM) IE4 motor:

LSPM is a hybrid motor with squirrel cage rotor fitted with low energy ferrite magnets making it suitable for line starting as well as super premium efficiency.

LSPM operates like an induction motor while starting due to the presence of squirrel cage. After reaching near synchronous speed, the LSPM pull in to synchronism and continues to operate at synchronous speed with zero rotor losses and super premium efficiency.

## Applications:

- Fans, Pumps, Compressors, Mixers, Spinning frames, Textile machines, Others.

## Features:

- Super premium efficiency
- Innovative rotor design (patent filed)
- Zero slip operation
- Line starting
- Compatible with standard VFDs
- APEX mechanical platform

## Benefits:

- Same output x frame ratio so it is interchangeable with conventional motor.
- Low bearing temperature ensures extended life and less maintenance.
- Higher productivity because of increased product output due to synchronous operation.
- Easy speed synchronization with multiple motors fed by the same inverter.
- Faster return on the investment.

## IE4- LSPM technology motors

Range	
Output	5.5 kW to 22 kW
Frames	132 to 180
Poles	4
Efficiency	IE4

## Reference standards - Rotating electrical machine

Standards	Description
IEC 60034-1:2010	Rating & Performance
IEC 60034-1:2014-03	IE code for efficiency
IEC 60034-2-1:2007	Determination of losses and efficiency
IEC 60034-5:2006	Degrees of protection
IEC 60034-9:2007	Noise limits
IEC 60034-14:2007	Vibration limits
IEC 60072-1:1991	Dimension
IS 1231:1974	Dimension foot mounted
IS 2223-1983	Dimension flange mounted

# APEX SERIES

Efficiency table

OUTPUT	2 - POLE				4 - POLE				6 - POLE			
KW	IE1	IE2	IE3	IE4	IE1	IE2	IE3	IE4	IE1	IE2	IE3	IE4
0.55	69.0	74.1	77.8	81.5	70.0	77.1	80.8	83.9	65.8	73.1	77.2	80.9
0.75	72.1	77.4	80.7	83.5	72.1	79.6	82.5	85.7	70.0	75.9	78.9	82.7
1.10	75.0	79.6	82.7	85.2	75.0	81.4	84.1	87.2	72.9	78.1	81.0	84.5
1.50	77.2	81.3	84.2	86.5	77.2	82.8	85.3	88.2	75.2	79.8	82.5	85.9
2.20	79.7	83.2	85.9	88.0	79.7	84.3	86.7	89.5	77.7	81.8	84.3	87.4
3.00	81.5	84.6	87.1	89.1	81.5	85.5	87.7	90.4	79.7	83.3	85.6	88.6
4.00	83.1	85.8	88.1	90.0	83.1	86.6	88.6	91.1	81.4	84.6	86.8	89.5
5.50	84.7	87.0	89.2	90.9	84.7	87.7	89.6	91.9*	83.1	86.0	88.0	90.5
7.50	86.0	88.1	90.1	91.7	86.0	88.7	90.4	92.6*	84.7	87.2	89.1	91.3
11	87.6	89.4	91.2	92.6	87.6	89.8	91.4	93.3*	86.4	88.7	90.3	92.3
15	88.7	90.3	91.9	93.3	88.7	90.6	92.1	93.9*	87.7	89.7	91.2	92.9
18.5	89.3	90.9	92.4	93.7	89.3	91.2	92.6	94.2*	88.6	90.4	91.7	93.4
22	89.9	91.3	92.7	94.0	89.9	91.6	93.0	94.5*	89.2	90.9	92.2	93.7
30	90.7	92.0	93.3	94.5	90.7	92.3	93.6	94.9	90.2	91.7	92.9	94.2
37	91.2	92.5	93.7	94.8	91.2	92.7	93.9	95.2	-	-	-	-
45	91.7	92.9	94.0	95.0	91.7	93.1	94.2	95.4	-	-	-	-

\* - This ratings are available in LSPM construction and for other ratings please contact CG sales.

## TESTING FACILITY

IEC has adopted testing procedure from CSA, IEEE 112-method B i.e measurement of efficiency by actual stray load losses calculation. It is well known that induction motor testing standards vary significantly in their defined methodologies, instrumentation accuracy, and testing procedures. Sometimes, the efficiency value for the same motor can differ by 5% with different standards. Even though the same standard is used in experimental tests, the machine efficiency can still vary by more than 2 % when performed in different testing sites.

So it becomes important to keep regular check on instrumentation accuracy and testing procedure to ensure guaranteed efficiency. Our 7 test labs with 0.2 class instrumentation and torque transducers are approved by CSA for accuracy and testing procedure under CPC programme.

In order to qualify for the CPC program, you will need to obtain a certificate of qualification from CSA Group demonstrating:

- Complete knowledge of all applicable product standards
- The ability to design, manufacture and test products that comply with those standards
- Access to suitable testing facilities

We are the only company in India to have CSA category certificate ( CPC).



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Due to continuous product improvements and its incorporation, CG reserves the right to change the design, technical specifications and dimensions without prior notice.

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