### BHARATHIYAR INSTITUTE OF ENGINEERING FOR WOMEN

**ENERGY EFFICIENT MOTORS** 

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- What is energy efficient motor(EEM)?
- Difference between standard motor and energy efficient motor
- Need of an energy efficient motors
- Efficiency
- Maintenance
- Applications
- Advantages and disadvantages
- Conclusion

## WHAT IS ENERGY EFFICIENT MOTOR?

An "energy efficient" motor, simply put, is a motor that gives you the same output strength by consuming lesser amounts of power

Electrical efficiency, useful power output per electrical power consumed. Mechanical efficiency, a ratio of the measured performance to the performance of an ideal machine.



BLDC motors are known for their high efficiency, typically ranging from 80-95%. This is because they don't have brushes and use electronic switching to control the current, which eliminates energy loss. BLDC motors also offer high controllability and starting

# DIFFERENCE BETWEEN STANDARD MOTOR AND ENERGY EFFICIENT MOTOR

- More copper in the windings.
- Reduced fan loses.

 Energy efficient motors operate with efficiencies that are typically 2-6% higher than standard motors.



controlling the electrical output of your device or equipment at its initial point of operation. If the electrical output or current exceeds the "safe limit", the motor starter will deactivate the motor.

#### MAINTAINANCE OF EFFICIENT MOTORS

 Semi-Annually: Lubricate bearings; vacuum or blow out interior; check commutator, brushes and leads; check brush spring tension; test armature windings; check electrical connections; and test field coils.

It consists of annual system inspections and component replacements based on a motorspecific maintenance schedule. The development of faults is a long process, so systematic preventive maintenances limit unplanned shutdowns. We recommend to replace diodes and snubbers during every major overhoul (L4).

#### CONSTRUCTION FOR ENERGY EFFICIENT MOTORS

Stator Windings

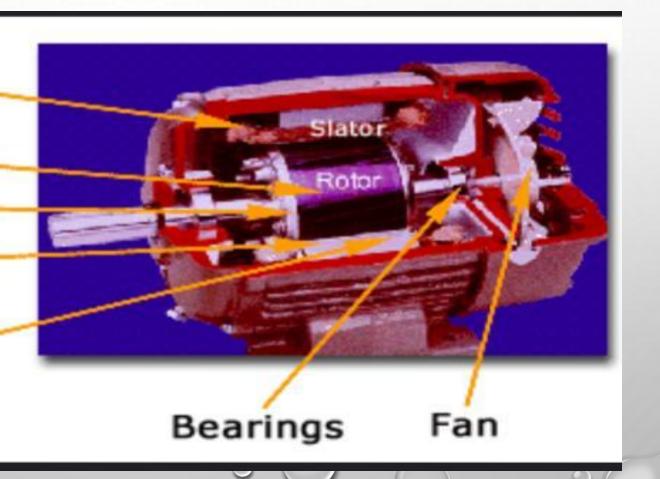
Rotor

End Rings

Air Gap

Stator Laminations







#### **ADVANTAGES**

- Environmental: Increased efficiency can lower greenhouse gas (GHG) emissions and other pollutants, as well as decrease water use.
- Economic: Improving energy efficiency can lower individual utility bills, create jobs, and help stabilize electricity prices and volatility.



- In domestic appliances such as a mixer, a blender, a refrigerator and washing machine.
- In an electric fan, a hair dryer, a record player, a tape recorder and a blower.
- In an electric car, a rolling mill, an electric crane, an electric lift, a pump, a computer and an electric train.

### **CONCLUSION**

Finally i conclude that most of the industrial loads having motors are consuming 70% of the total electricity.so it is better to replace standard motors with energy efficient motors where ever economical. so that

In Future, the initial cost may be available at the same cost as a standard motor when the population of EE Motors increases

we can Save energy. Save money.

Save atmosphere from pollution.

