

		<i>Document Code:</i> <b>ED-P-02.01-04</b>	<i>Design Specification:</i> <b>HIGH VOLTAGE ELECTRIC INDUCTION MOTORS (IEC 60034)</b>	
<i>Engineer Division</i>	<i>Technical Department</i>	ELECTRICITY	SEPTEMBER 2017	Page 8 of 27

#### 4.7. Efficiency

Manufacturer shall always offer the motors of the higher efficiency it can build, always in accordance with the technical requirement of this specification.

For the economical evaluation during purchasing process it shall be considered not only the initial cost but also the cost of the energy consumption during a period of life of 5 years for the specific working conditions of each project.

### 5. CONSTRUCTIONAL CHARACTERISTICS

#### 5.1. External dimensions

The frame and main external dimensions shall correspond to the values specified in the IEC standard 60034.

#### 5.2. Construction type

The construction type and assembly requested in the Data Sheet shall be defined in accordance with the IEC standard 60034.

#### 5.3. Degree of Protection

Motors will be enclosed. The degree of protection of frame and the terminal box against external agents shall be IP55 and IP65, respectively.

The motor shall have one of the following cooling systems while maintaining the required degree of protection:

- a) Totally enclosed type, fan outer surface cooled with finned frame
- b) Totally enclosed type, with external and internal fans and with frame with tubes
- c) Totally enclosed type, with external and internal fans and with built on air-to-air heat exchanger
- d) Totally enclosed type, with external and internal fans and with built on air-to-water heat exchanger

#### 5.4. Frame

The motor frame shall withstand all possible forces during normal starting, short-circuits and counter-phase connections and in the event of re-acceleration due to supply voltage momentary interruptions.

Unless otherwise specified in the project documentation, the frame shall be made of cast iron or corrosion-resistant steel appropriate for the most adverse environmental conditions.

#### 5.5. Rotor

The Rotors shall be made laminated

The rotor squirrel-cages shall be made of copper.

The axial force, if any, shall be absorbed by the motor bearings.

Rotors and fans shall be separately and dynamically balanced with a half-key inserted (verify with the manufacturer of the equipment being driven).

The quality of balancing shall be at least grade G2.5 according to ISO 1940

The manufacturer must specify in its quotation the type of the cage (single or double cage, deep bars, etc.).