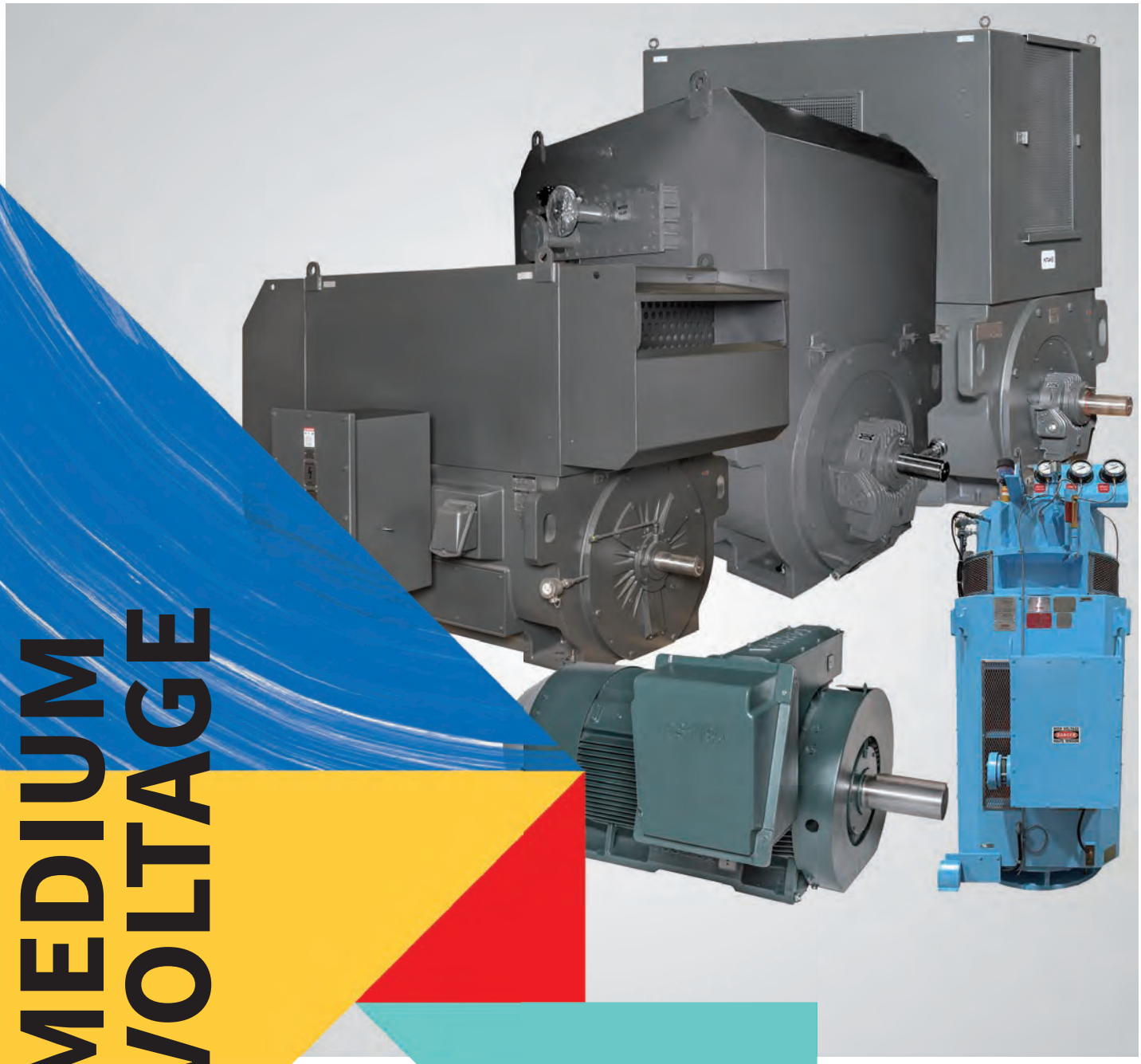
TOSHIBA

MEDIUM VOLTAGE MOTORS

SOLUTIONS



MEDIUM VOLTAGE

WE DON'T JUST DESIGN MOTORS, WE DESIGN SOLUTIONS

Toshiba International Corporation (TIC) offers a wide range of medium voltage motors ranging from 200 to 134,000 HP and 2,300 to 13,800 V for many industries and applications. In 1984, TIC began manufacturing medium voltage motors in Houston, Texas and since then has developed a proud tradition of supplying some of the most reliable and robust motors in the market. Combining advanced engineering with quality manufacturing, TIC has the flexibility to provide medium voltage motors that meet stringent application demands. At TIC, not only do we manufacture quality products and machines, we help engineer solutions.

The following options for medium voltage motors are available from TIC:

- Voltage Up to 13,800 V
- Vertical & Horizontal Mounting
- Squirrel Cage & Wound Rotor Induction Motors
- Synchronous Motors
- Explosion Proof Motors
- Up to 80,000 HP for Synchronous Motors/Generators
- Manufacturing Up to 32,500 HP for Induction Motors/Generators
- Complete Range of Enclosures: Totally Enclosed Fan Cooled (TEFC), Air-to-Air Cooled (TEAAC), Water-to-Air Cooled (TEWAC), Totally Enclosed Force-Ventilated (TEFV), Open Drip Proof (ODP), Weather Protected (WPI & WPII)

BENEFITS TO BUYING TOSHIBA MOTORS

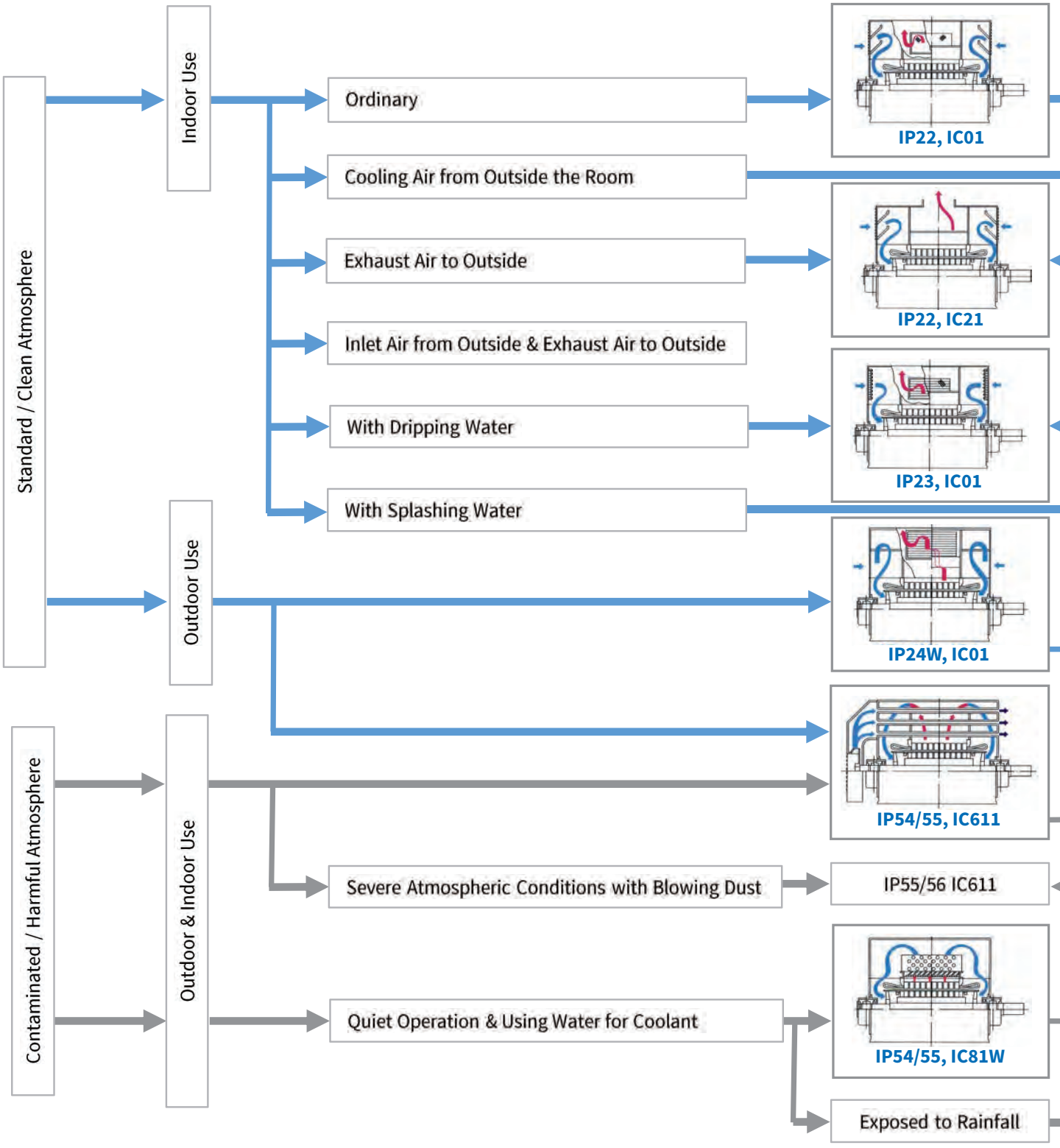
- **Energy Savings**
  Advanced Technology & Design for Maximum Efficiency
- **Extended Motor Life**
  Low Vibration Levels, Enhanced Cooling Methods & Advanced Materials
- **Low Noise**
  – Advanced Frame Construction to Reduce Electrical Noise
  – Cast Iron Frames Up to 5000 HP
- **Reliability**
  – Advanced Manufacturing Processes
  – ISO 9001 Certification in All Manufacturing Facilities
- **Testing & Services**
  – Testing Capabilities include IEEE® & JEC standards, Temperature, Efficiency, Vibration & Noise (Complete API 541 Testing Also Available)
  – Access to Network of Worldwide Service Facilities
  – Field Service & Trouble-Shooting Services (Available 24/7)
  – TOSHcare® Lifecycle Services Available at Additional Cost

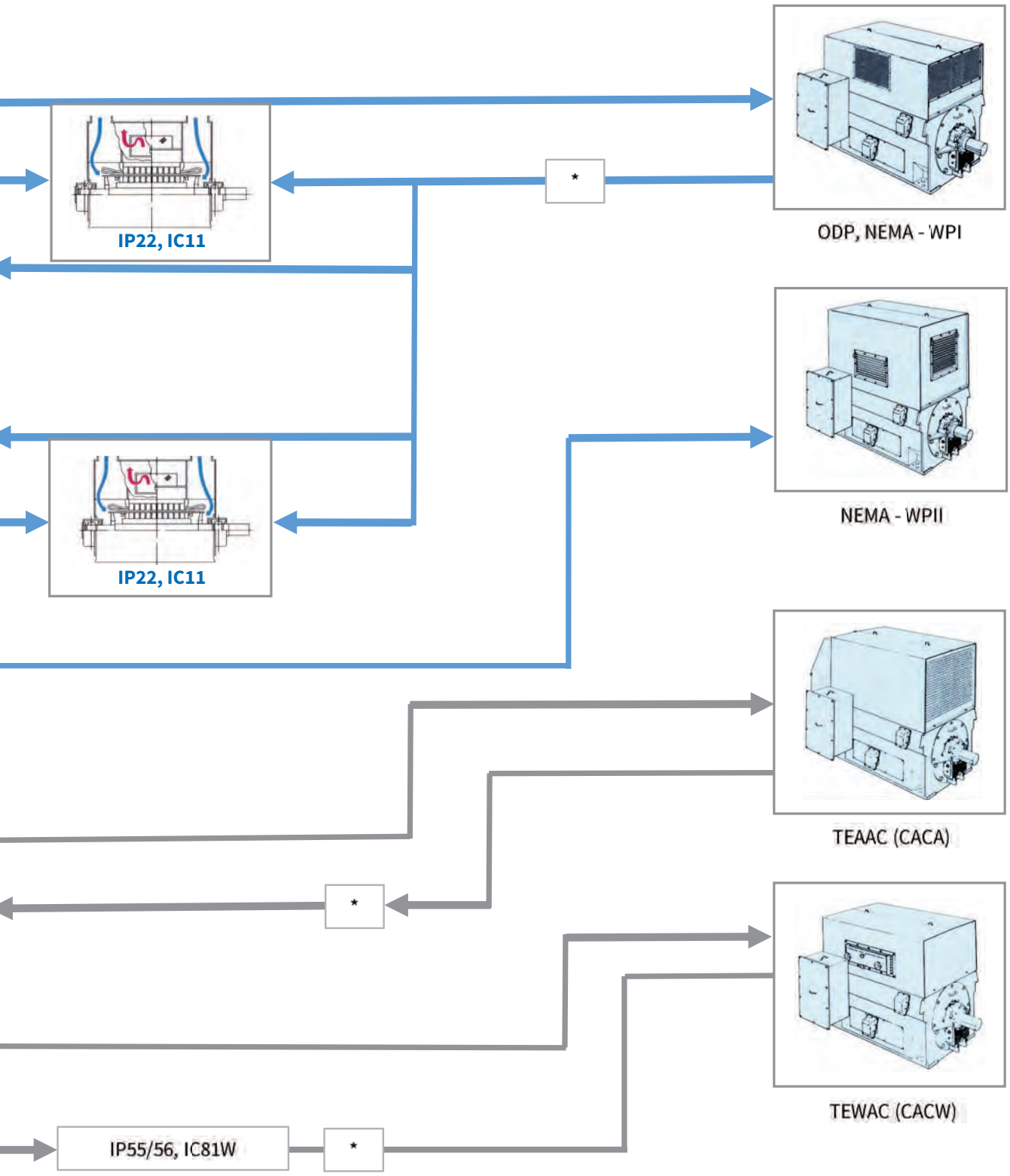
OFFERING A COMPLETE RANGE OF FEATURES AND SERVICES

- Manufactured to Meet Worldwide Standards (NEMA®, IEC, BS, AS, CSA N299 &/or NQA-1 App. B)
- Motors Can be Built to Latest Edition of API 541, 546 & 547 General & Special Purpose
- Two-Pole Stiff Shaft (Designed for Adjustable Speed Applications such as Pipelines)
- High Inertia Applications
- Two-Speed, Pole Amplitude Modulated (PAM) Motors
- Fabricated Copper Low Pressure Die Cast Aluminum Rotor Designs
- Self-Lubricated Sleeve Bearing Capability up to 5,000 HP at 3,600 RPM
- TOSTIGHT II Advanced Mica Insulation System with Micro-Processed Controlled Epoxy VPI
- Complete Range of Accessories & Motor Protection Devices
- Adjustable Speed Drive Compatibility with Extended Warranty Available on Motor & Drive Systems Purchased from TIC
- Electronic Data & Software

TOSHIBA

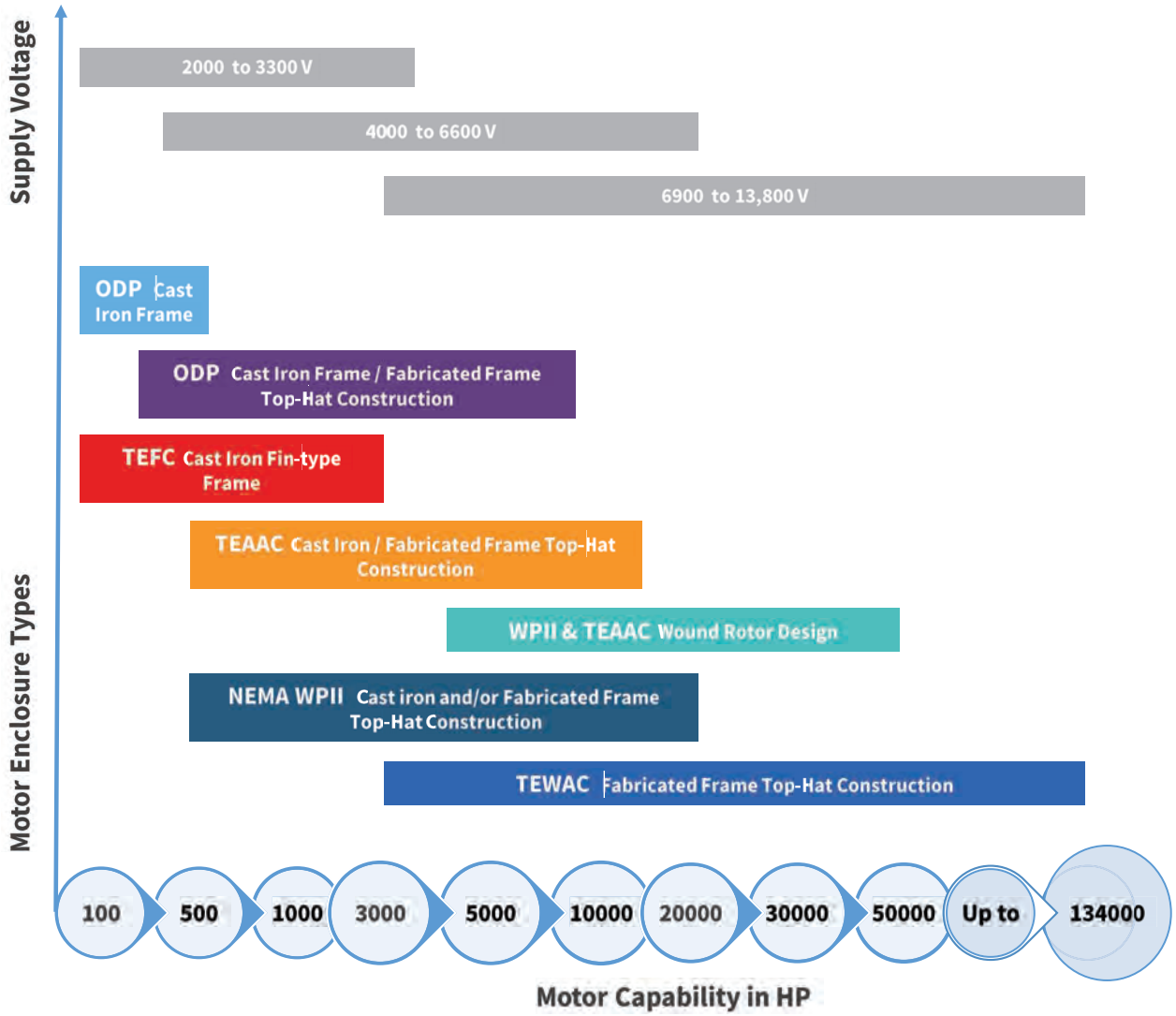
SELECTING THE DEGREE OF PROTECTION & COOLING METHOD





*• An additional degree of protection is available on the motor by changing the top-hat configuration.

TYPICAL VOLTAGE RANGES FOR INDUCTION & SYNCHRONOUS MOTORS



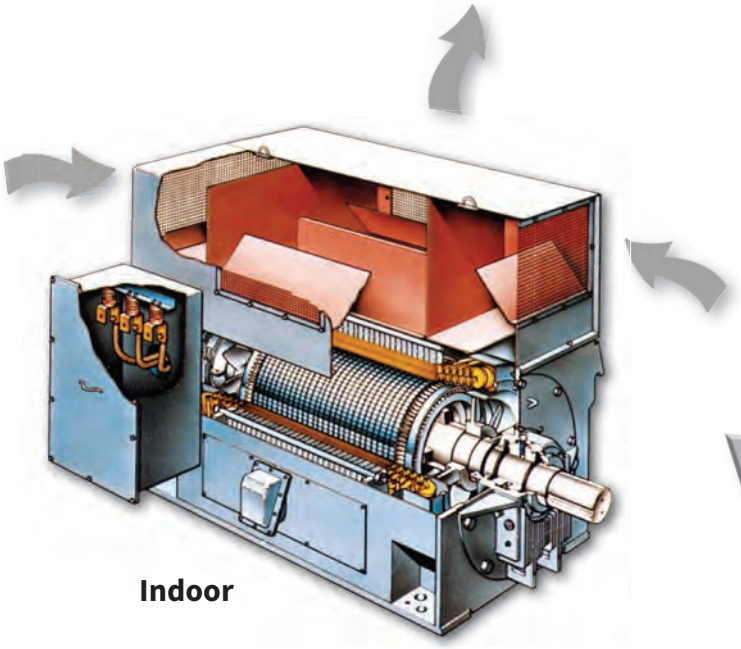
INDUSTRIES SERVED

- Oil & Gas
- Pulp & Paper
- Aggregate & Cement
- Mining & Minerals
- Chemical
- Utilities
- Water & Wastewater

APPLICATIONS

- Conveyors
- Crushers
- Compressors
- Mills
- Fans
- Pumps
- Special Applications

MEDIUM VOLTAGE MOTOR ENCLOSURES

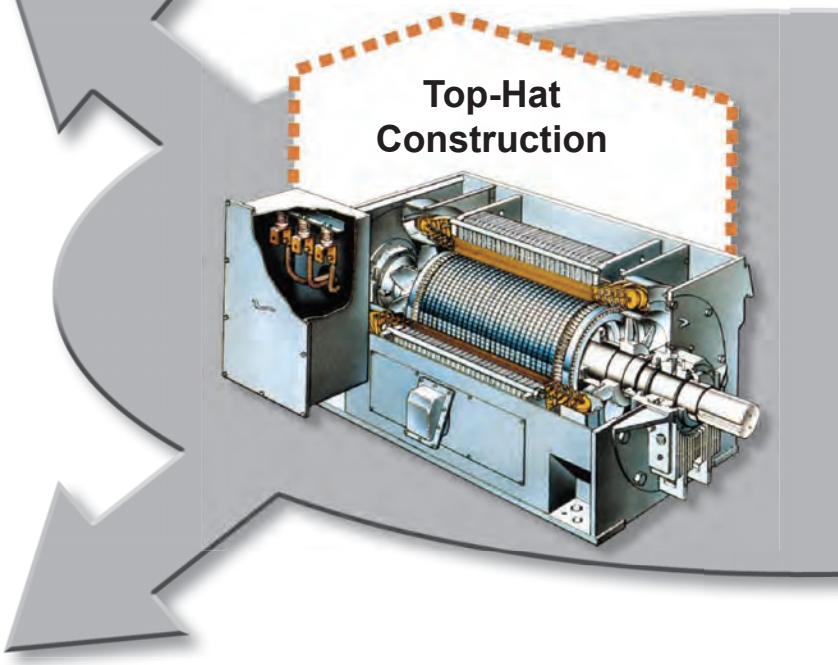


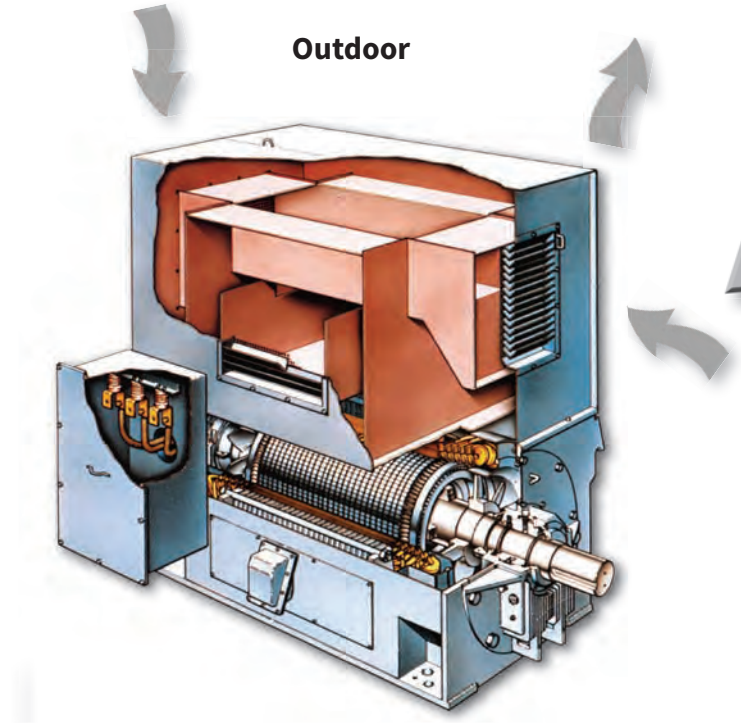
NEMA Weather Protected Type I

A drip-proof motor (IP22, IC01) is a common choice for a large, well-ventilated room. Fresh air is drawn in by a high-performance fan(s) through intakes of the air housing and cools the core and coils, before being exhausted from the motor's side openings.

Also, the air intake and exhaust openings of the air housing have louvers and/or wire meshes that prevent intrusion of water drips and other foreign matter from intruding into the motor. The enclosure itself also meets NEMA WP1 requirements.

Additional rainproof louvers can be added on the air intake and exhaust openings (IP23, IC01) for outdoor motors, creating a rainproof-outdoor motor.





NEMA Weather Protected Type II

This open-outdoor motor (IP24W, IC01) is intended for outdoor use and incorporates an air housing in accordance with NEMA WP2 requirements. The motor includes three right-angled turns for air inlets and outlets. The inlet air duct has a section where wind velocity falls below 3m/sec (600 ft/min), causing dripping water, dust and foreign matter to fall outside of the motor before air reaches the electrical parts of the motor.

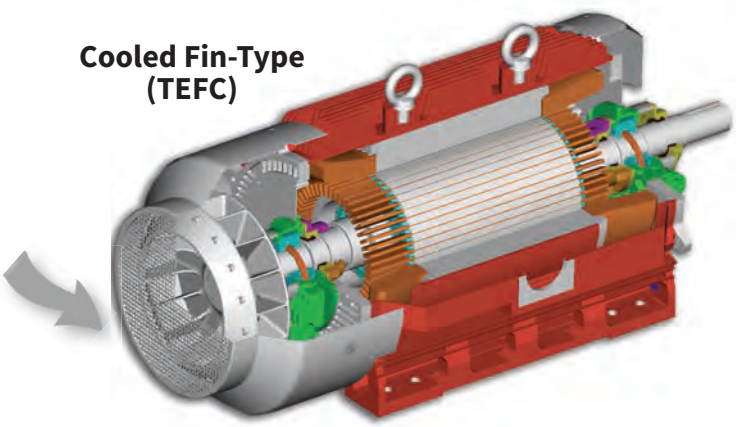
Ducting that meets and or exceeds industry standards for NEMA WP-II-type machines provide air flow direction. Stainless steel air filters can also be provided to meet the NEMA "guarded" definition as well as furnished on WPII enclosures.

Totally Enclosed Fan Cooled

A totally-enclosed fan-cooled motor (TEFC) (IP54/55, IC611) is generally used in dust-laden environments containing corrosive or harmful gas.

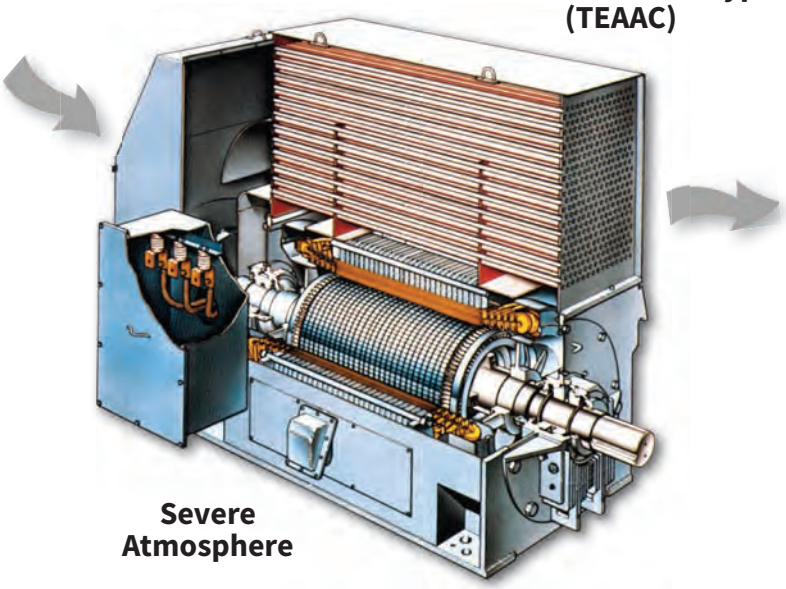
A TEFC motor is generally used outdoors. Cooled air passes over fins to cool the machine. Fins are easily accessible and should be cleaned regularly. Removing the fan cover allows for ease of access to the machine.

For Air-to-Air Cooled motors, an external fan is mounted on the opposite drive and directs fresh air into the pipes of the housing located on the machine. The pipes act as a heat exchanger through which cool air passing through the pipes expels hot air from inside the motor.



Cooled Fin-Type (TEFC)

Air-to-Air Cooled Type (TEAAC)



Severe Atmosphere

A Solution for Every Application

Fundamental Construction

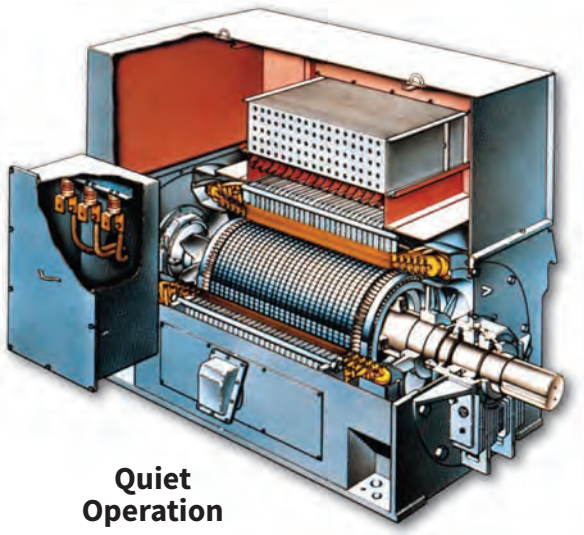
A modular frame allows for flexibility in top-hat design, making it appropriate for use in various environmental conditions.

Totally Enclosed Water-to-Air Cooled

A totally enclosed water-to-air cooled motor (TEWAC) (IP54/55, IC81W) is especially useful in a location where low noise operation is required or where it is desirable to remove heat from the motor ambient.

This type of motor includes a water-to-air exchanger in the air housing in the upper part of the motor. Water passing through the heat exchanger efficiently cools air circulating throughout the motor.

A drain in the air housing also protects the motor itself from damage caused by water that may leak from the air cooler. (Leakage alarm detectors are also available.)



Quiet Operation

Toshiba International Corporation (TIC)

Toshiba Corporation in Japan

Contact Medium Voltage Motors Application & Technical Support to learn more about Toshiba's medium voltage motor solutions:

(855) 803-7091

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