

Motor & Drive Solutions for the Mining Industry



Engineered Capabilities to Meet Your Industry Demands


- ✓ Complete Product Line of Motors & Drives
 - Suitable for SAG and ball mills, conveyors, crushers, grinders, and more
- ✓ Westinghouse Legacy Driven by TECO Experience
- ✓ Dedicated Customer Service & Knowledgeable Technical Support Team
- ✓ Superior Product Reliability

Engineering Services, Field Services, & Repair

- ✓ Service & Repair Capabilities with a Full Line of Renewal Parts



Products & Services




EQ7

- 1 - 1000 hp
- Intelligent Keypad with Extensive Diagnostics
- Select Any of 4 Control Methods
 - V/ Hz
 - Dynamic Torque
 - Sensorless Vector
 - Closed-loop Vector
- Quick Setup Menu on Keypad
- External Mounting of Heatsink
- Extensive I/O Capabilities



510 Series AC Drives

- L510 Series Micro drive
 - 0.25 - 3 hp
 - Wide Variety of Features and Din-Rail Mounting Capabilities
- E510 Series
 - 0.5 - 25 hp
 - Compact, Powerful and Feature-Rich Drive
 - Built-in PLC Logic Capability
- A510 Series Multi-featured Drive
 - 1 - 200 hp
 - Choose from 5 Control Modes for your Ideal Application
- All 510 Series LED Displays are Multi-Featured




TEAMMaster®

- 1 - 1000 hp
- Intelligent Keypad with Extensive Diagnostics
- Select any of 4 Control Methods
 - V/ Hz
 - Dynamic Torque
 - Sensorless Vector
 - Closed-loop Vector
- Quick Setup Menu on Keypad
- External Mounting of Heatsink
- Extensive I/O Capabilities



WOUND ROTOR MOTORS

- Available from 25 hp to 20,000 hp
- Continuously Rated Slip Rings and Brushgear
- Heavy-Duty Rotor Construction for Dependable Service
- Thermalastic® Epoxy Insulation System
- Advanced Bearing System for Reliable Performance
- Rugged Frame Construction for Strength and Reliability
- Brush Lifting and Short Circuiting Devices Available
- Secondary Control Also Available



WORLD SERIES®

- 250 hp to 30,000 hp
- Thermalastic® Epoxy Insulation System
- Rugged Thru-Bolt Construction and End Rings
- Copper or Copper Alloy Rotor Bars
- Anti-Friction or Spherically-Seated, Self-Aligning, Split-Sleeve Bearings
- High Efficiency Designs for Reduced Life-Cycle Costs
- API 541, PAM, and Marine Duty Designs Available




SYNCHRONOUS MOTORS

- 1000 hp to 100,000 hp
- Anti-Friction or Spherically-Seated, Self-Aligning, Split-Sleeve Bearings
- Brush or Brushless Excitation
- Thermalastic® Epoxy Insulation System
- High-Speed and Slow-Speed Designs Available
- VFD Applications Available
- Special Mill and Marine Duty Designs Available



MAX-HT™

- 20 - 600 hp: 1800, 1200 & 900 RPM
- NEMA Design C (Locked Rotor Torque 200% FLT)
- TEFC (IP55)
- High Strength Steel Shaft, AISI 4140 Material
- Thermally Protected with One per Phase Thermistors
- Suitable for Vertical Mounting for Vertical Impact Crushers



EXPLOSION PROOF (Division 1, Zone 1)


- 1 - 150 hp: 3600, 1800, 1200 RPM
- Class 1, Group D; Class 2, Groups E, F & G
- Class 1, Group C on 20 hp and Below
- Wound with Inverter Duty Wire
- UL Approved for Inverter Duty
- Footed C-Face and Round Body C-Face Stocked up to 100 hp

NEMA Premium



LARGE MOTOR SERVICE

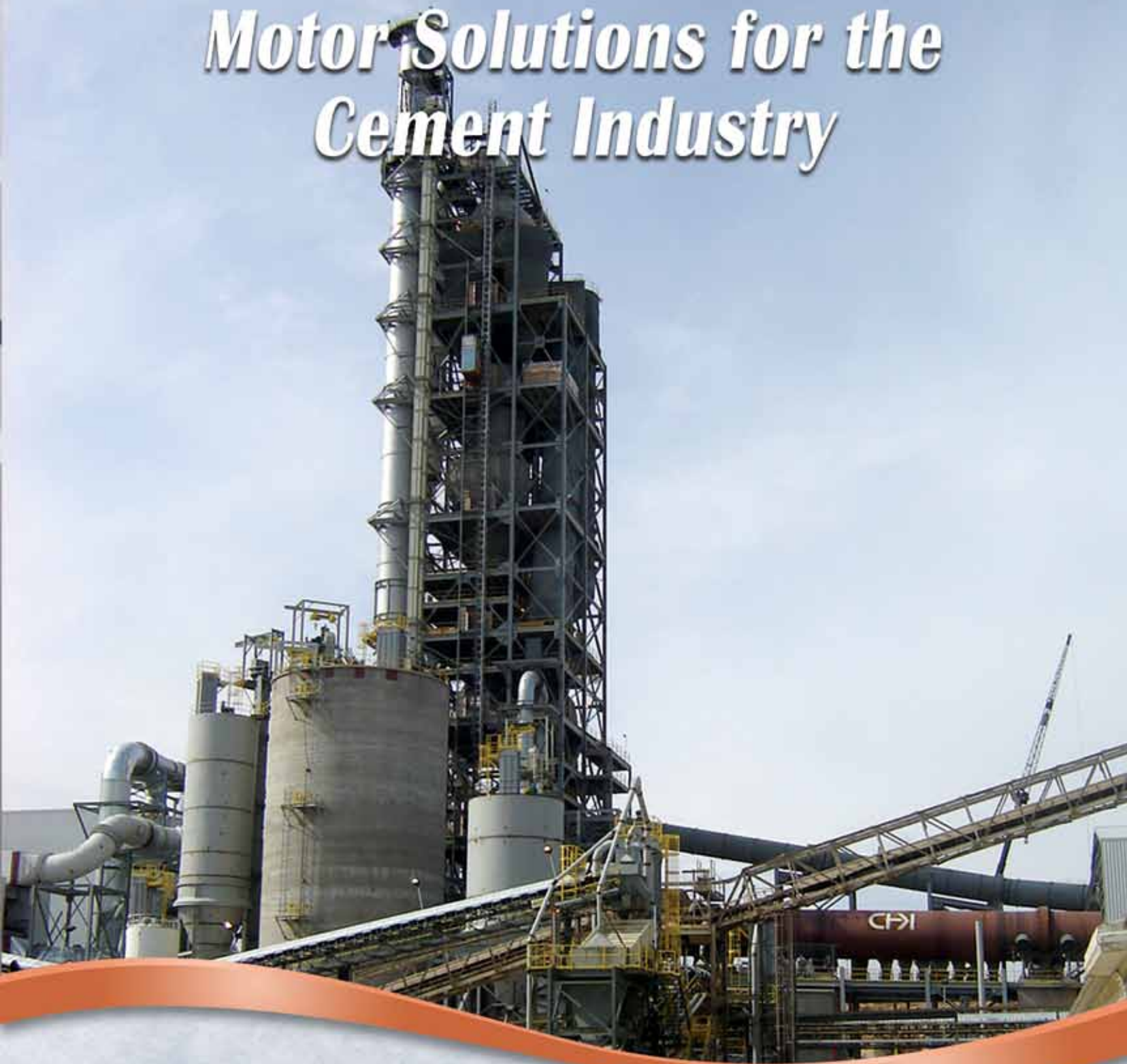
- Repair and Refurbish all Brands of Large Motors
- Engineering Studies and Evaluations
- Expert Field Service and Technical Assistance
- Redesign and Upgrade of Westinghouse and TWMC Motors
- Repairs Using OEM Materials and Process for Longer Life
- Engineered Solutions to Large Motor Problems
- High Voltage (to 13.8kV) Repairs with Global VPI
- Dual Frequency Load Testing
- Service Division Hotline
- 888-754-5006



RENEWAL PARTS

- Renewal Parts for Over 500,000 Westinghouse and TECO-Westinghouse Form Wound/ High Voltage Motors Built in Pittsburgh, PA; Buffalo, NY; and Round Rock, TX.
- Engineered Replacement Components
 - AC Rotors and Stators
 - DC Armatures, Field Frames, and Commutators
 - Field Pole Assemblies
 - Replacement and Improved Design Cooling Packages (WP11, TEWAC, and TEAAC)

Motor Solutions for the Cement Industry



TECO   **Westinghouse**



TECO-Westinghouse in the Cement Industry

A Commitment to Reliability

TECO-Westinghouse Motor Company has been a trusted brand for over 100 years. Although our processes have been refined, we remain committed to producing rugged and reliable products for the most demanding needs in the cement industry. Custom engineered induction squirrel cage, wound rotor, and synchronous motors, a wide variety of stock motors and low voltage drives, motor control centers, genuine Westinghouse renewal parts, and motor repair services are the foundation upon which you can build an industry.



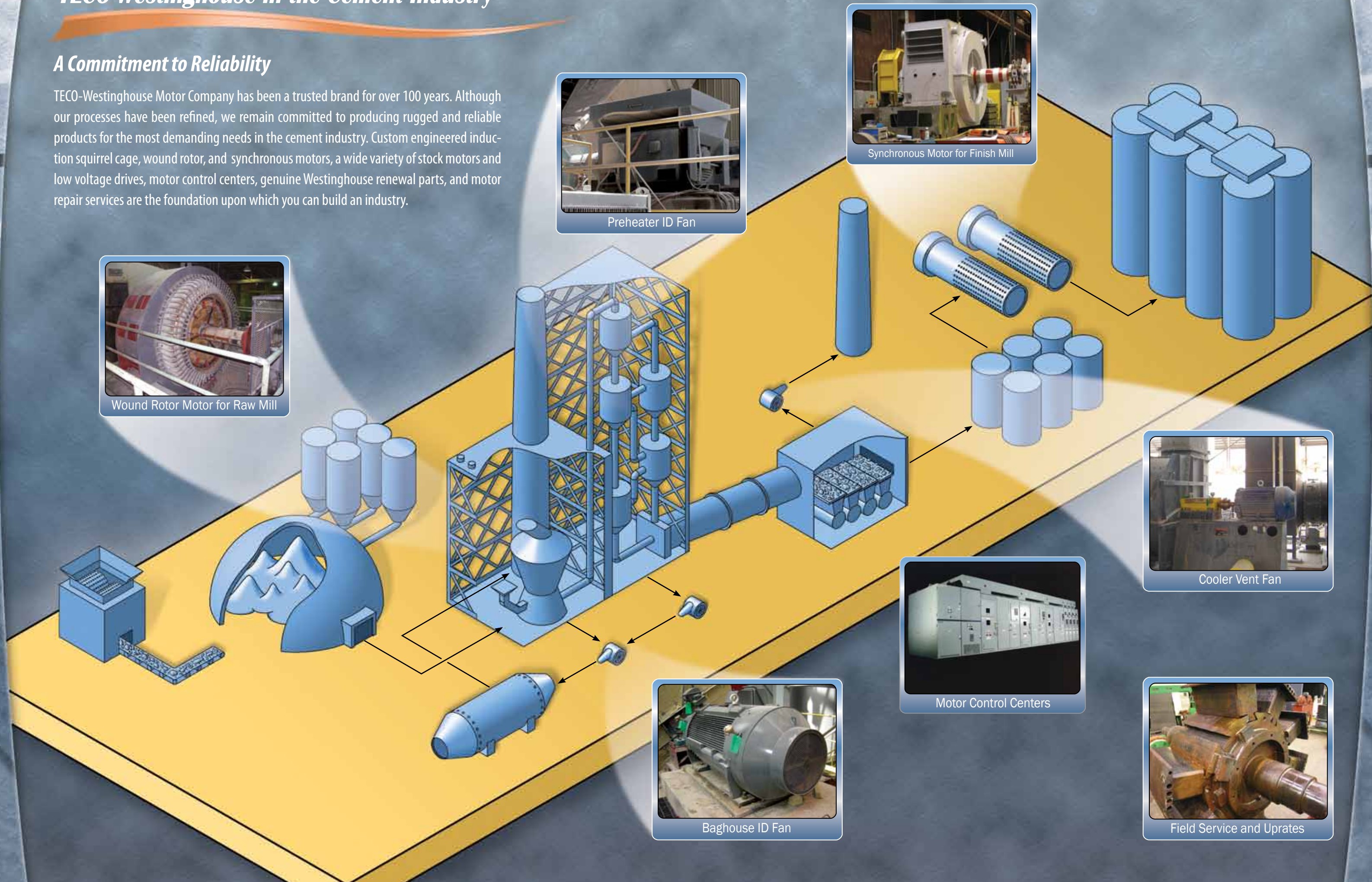
Wound Rotor Motor for Raw Mill



Preheater ID Fan



Synchronous Motor for Finish Mill



Cooler Vent Fan



Motor Control Centers



Baghouse ID Fan



Field Service and Upgrades

Let TWMC be your foundation for the future.

Complete Line of Stock Motors

- 1/3—1750 HP in stock
- NEMA Design C / High Torque
- IEEE 841
- 115—4160 Volts

Wound Rotor Motors

- 25—24,000 HP
- High Torque/ Low Inrush

Aftermarket Services

- Large Motor Repair and Uprates
- Engineering & Field Services
- Renewal Parts & Engineered Components

Induction Motors

- 250—30,000 HP
- 300—3600 RPM
- Copper/ Copper Alloy Rotor Construction

AC Drives

- 230 Volts: .5—100 HP
- 460 Volts: 1—500 HP
- Solid State Starters: 1—1000 HP

Synchronous Motors

- 1000—100,000 HP
- 180—1800 RPM
- Load Sharing via PWM
- Replacement Motors for Aging Designs

Packaged Systems

- Medium Voltage VFD Systems & Switchgear
- Lubrication Skids
- Liquid Rheostat Starters



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VERTICAL MOTORS

Vertical Solid Shaft

1 HP – 30,000 HP, 300 RPM – 3600 RPM

Vertical Hollow Shaft

1 HP – 1500 HP, 400 RPM – 3600 RPM



STANDARD SPECIFICATIONS FOR VERTICAL HIGH THRUST MOTORS

	ITEM	STANDARD SPECIFICATION
RATING	Kind of Motors	Squirrel Cage Induction (SCIM) or Synchronous
	Design Standards	NEMA MG-1, MG-13, IEC-34, BS4999, and various other international standards
	Voltages	230V to 13.2KV
	Frequency	50 & 60 Hz
	Output Range	1 HP to 30,000 HP
	RPM	300 RPM to 3600 RPM
	Time Duty	Continuous duty with 1.15 service factor or 1.0 service factor (S1, MCR)
	Frame Sizes	NEMA 184TP to 1250mm
	Protection Enclosures	ODP, WPI, WPPI, TEFC, TEAAC, TEWAC, IP-22 through IP-55
	Cooling Methods	IC 01, IC 0141
	Mounting	Flange mount, IM 3011
APPLICATION	Power Conditions	Voltage $\pm 10\%$, Frequency $\pm 5\%$, and $\pm 10\%$ maximum of combined voltage and frequency
	Application	Designed primarily for pumps
	Environment Conditions	Indoor or Outdoor Ambient temperature: -20°C to 40°C Relative humidity: Less than 95% relative humidity (non-condensation) Altitude: Less than 3300 ft as standard. Other elevations available upon request.
	Coupling Method	Direct coupled
	Direction of Rotation	Counter-clockwise (when viewed from top of motor) or clockwise
CONSTRUCTION	Frame	High grade cast iron or fabricated steel plate
	Flange Bracket (Shield)	High grade cast iron or fabricated steel plate
	Upper Bracket	High grade cast iron or fabricated steel plate
	Air Cabinet	Fabricated steel plate
	Shaft	Carbon steel or alloy steel cylindrical single extension with key-way and key
	Thrust Bearing (Upper)	Oversized angular contact thrust bearing or spherical roller thrust bearing. KTB type is also an option.
	Guide Bearing (Lower)	Vacuum de-gassed, high quality, deep-groove ball bearing. Sleeve type is also an option.
	Lubrication	Thrust Bearing: Grease lubrication for motor smaller than 324TP frame size, oil lubrication for all others. Guide Bearing: Grease lubrication for anti-friction bearings, oil lubrication for sleeve lower guide bearings.
	Shaft Opening Shield	Metal flinger at flange bracket end
	Terminal Housing	Cast iron or fabricated steel plate. Cast iron boxes can be rotated at 90° increments and are threaded for external conduit entrance. Fabricated boxes can have conduit entry locations at any 90° increment and will consist of a blank plate for field drilling.
	Lead Terminals	3 or 6 leads with solderless lug terminals
	Iron Core	High grade, insulated, cold-rolled, electro-magnetic steel sheet, equivalent to C-5 lamination
	Stator Winding	Low voltage motors are random wound; made of heavy, heat-resistant polyester enameled copper wire. Medium voltage motors are form wound; mica insulated.
	Stator Insulation	Class F insulation system that is rated for total temperature of 155°C
	Varnish Treatment	Low voltage motors: Two dips and one bake in a special heat resistant, phenolic alkyd varnish. Medium voltage motors: VPI treatment of solventless epoxy varnish.
	Rotor Winding	Aluminum die cast for motors in NEMA frame size 449 and below. Copper, or copper alloy, bar rotor in 5000 frame size and larger.
	Painting	Phenolic rust proof base plus lacquer surface finish paint in blue-gray color
	Nameplate	Stainless steel
	Bolt Thread	ISO metric system
Grounding Terminal	One available inside the primary terminal box and one on the flange	
Additional Parts	Non-reversing ratchet mechanism available when ordered. Specify direction of rotation when ordering.	
PERFORMANCE	Test Procedure	IEEE-112 Method F, IEC-34, BS4999, or JEC 37
	Temperature Rise	1.0 service factor: Not to exceed 80°C @ full load by resistance method 1.15 service factor: Not to exceed 105°C @ service factor load by resistance method
	Over Speed	125% of synchronous speed for one minute for 2 pole and 4 pole motors and 150% of synchronous speed for one minute for all other speeds.
	Over Torque	160% rated torque for 15 seconds

