

Wound Rotor™

MOTOR TECHNOLOGY

Rugged Design



Dependable Performance



WOUND ROTOR INDUCTION MOTOR APPLICATIONS

TECO-Westinghouse Motor Company Wound Rotor Induction Motors combine outstanding performance with an advanced long-life design. Available in ratings from 5 HP up to 15,000 HP, these rugged workhorses are ideal for many demanding applications including:

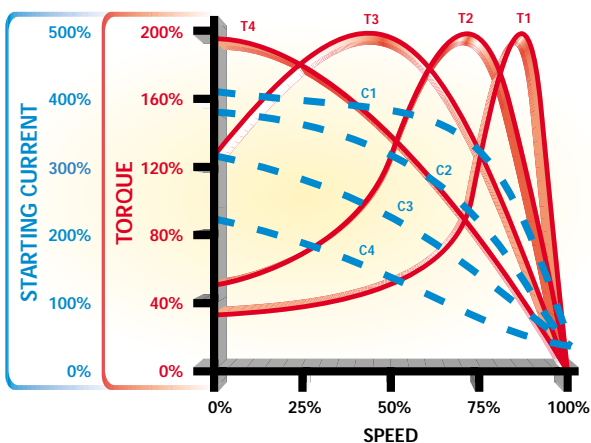
- ▲ Ball and Sag Mills
- ▲ Cranes
- ▲ Hoists
- ▲ Pumps
- ▲ Fans and Blowers
- ▲ Chippers
- ▲ Conveyors
- ▲ Banbury Mixers

With high efficiency ratings that save money over the entire life of the motor, these machines can be designed for voltage requirements ranging from 220 V to 13,800 V and for speeds from 300 RPM to 3600 RPM depending on the horsepower requirements. 50 Hz and 60 Hz ratings are available.

How It Works

Wound rotor motors are an extremely versatile breed of induction motors. Featuring a rugged design, these machines provide the unique ability to gradually bring up to speed high-inertia equipment and large loads smoothly and easily. Wound rotor motors also can develop high starting torque at standstill - while maintaining low inrush. Long motor life is ensured with the use of external resistor banks or liquid rheostats that dissipate heat build-up generated during motor start-up.

What makes the wound rotor motor a unique induction machine is its rotor. Instead of a series of rotor bars, a set of insulated rotor coils is used to accept external impedances. The rotor windings are similar to those found on a DC armature, with the coils connected together to a set of rings that make contact with carbon-composite brushes. The circuit is completed by connecting the brushes to a set of impedances such as a resistor bank or liquid rheostat. This rotor construction design allows for a varying resistance from almost short-circuit condition to an open-circuit condition with infinite external resistance. By modifying the resistance, the speed-torque characteristics can be altered. This allows for the torque to remain high, the inrush low, and the speed varied.



Typical Wound Rotor Motor Characteristics With Varying Resistances

- T1/C1 - Low Rotor Resistance / Typical Starting Current
- T2/C2 - Moderate Rotor Resistance / Moderate Starting Current
- T3/C3 - Moderately High Rotor Resistance / Low Starting Current
- T4/C4 - High Rotor Resistance / Very Low Starting Current

ADVANCED FEATURES FOR LONG LIFE

Available in horizontal and vertical configurations, TECO-Westinghouse's Wound Rotor Motors are designed with advanced features to ensure outstanding performance.

The motor's slip rings & brush gears, critical components on any wound rotor machine, are rated for continuous operation and are fitted with highly reliable brush-lifting & short-circuiting devices. The unit's high quality carbon brushes feature a large cross-sectional area to better conduct high currents safely during heavy peak load conditions. Constant-pressure brush-holders further ensure reliable performance.

The unit's stator core features insulated low-loss, high-grade electrical steel. The slot is precisely punched and special consideration is paid to protect coil insulation against damage during stator core build. The complete core is pressed between steel endplates and welded for strength and rigidity.

TECO-Westinghouse's advanced rotor design includes preformed coils of high quality rectangular-section copper. The coil conductors are protected from thermal breakdown with a heavy-build, heat-resistant, mica tape. The insulated coils are set in the semiclosed slots in the rotor core and fixed with non-magnetic slot wedges. The overhang of the rotor winding is banded with a resin-loaded glass tape that is multi-layered to withstand centrifugal and magnetic forces. Connection leads between the winding and brushes are fully insulated with mica tape and epoxy resin. The complete rotor is preheated and dipped in class F varnish and baked to cure. This process is repeated to ensure long motor life.

After the insulation is fully applied, the rotor is balanced per NEMA/BS/AS. The process involves three stages: static balancing, dynamic balancing of the rotor only, and running balancing of the complete motor.

Users can select either split sleeve or anti-friction bearings.



CHOOSE YOUR ENCLOSURE

A variety of enclosure options are available to provide protection to your motor investment. Our wide selection allows you to choose the one that best meets your unique needs:



- ▲ ODP OPEN DRIP PROOF (IP 12)
- ▲ WP1 WEATHER PROTECTED I (IPW 23)
- ▲ WP2 WEATHER PROTECTED II (IPW 24)
- ▲ TEFC TOTALLY ENCLOSED FAN COOLED (IP 44*)
- ▲ TEAAC TOTALLY ENCLOSED AIR-TO-AIR COOLED (IP 54*)
- ▲ TEWAC TOTALLY ENCLOSED WATER-TO-AIR COOLED (IP 54*)
- ▲ TEFV TOTALLY ENCLOSED FORCE VENTILATED (IP 54*)

*MINIMUM

SECONDARY CONTROLS

TECO-Westinghouse Motor Company offers a number of secondary controls for use with your Wound Rotor Motor. Choose from:

- ▲ LIQUID RHEOSTATS
- ▲ SLIP ENERGY RECOVERY SYSTEMS
- ▲ SOFT STARTERS
- ▲ DUAL LOAD SHARING, RUNNING DUTY, OR STARTING DUTY SECONDARY RESISTANCE CONTROLLERS



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