Solutions for Steel & Metal Industry

The WEG Group

WEG is a globally-accepted supplier of premium electric products for the industry. Counting on more than 27,000 employees all over the world and a daily production of 60,000 motors, WEG became the leading electric motor manufacturer in the Americas and one of the largest suppliers of electric and electronic products and systems in the world. With exports to over 135 countries and revenues exceeding US$ 3 billion, WEG Global presence is supported trough its branches established in 27 countries, manufacturing facilities and a network of distributors and representatives in the 5 continents. All WEG customoers in the Steel & Metal Industry have a long-lasting relationship with the company due to the commitment WEG has with the project and to keep the steel industy operating.

WEG Serves the **Steel & Metal** Industry Globally

Our global structure allows us to be closer to our steel & metal industry customers. Over 32 subsidiaries established in key countries are prepared to provide you with technical and commercial support; our manufacturing plants strategically located in the main markets can serve you with short deliveries; and our network of over 1,250 Authorized Service Agents located in the five continents are fully equipped to give you prompt after sales and service support.

Global Presence

WEG at a Glance

- US$ 3.1 billion yearly turnover (2012)
- Manufacturing plants in 9 countries
- Over 27,000 employees

Global Product Certifications

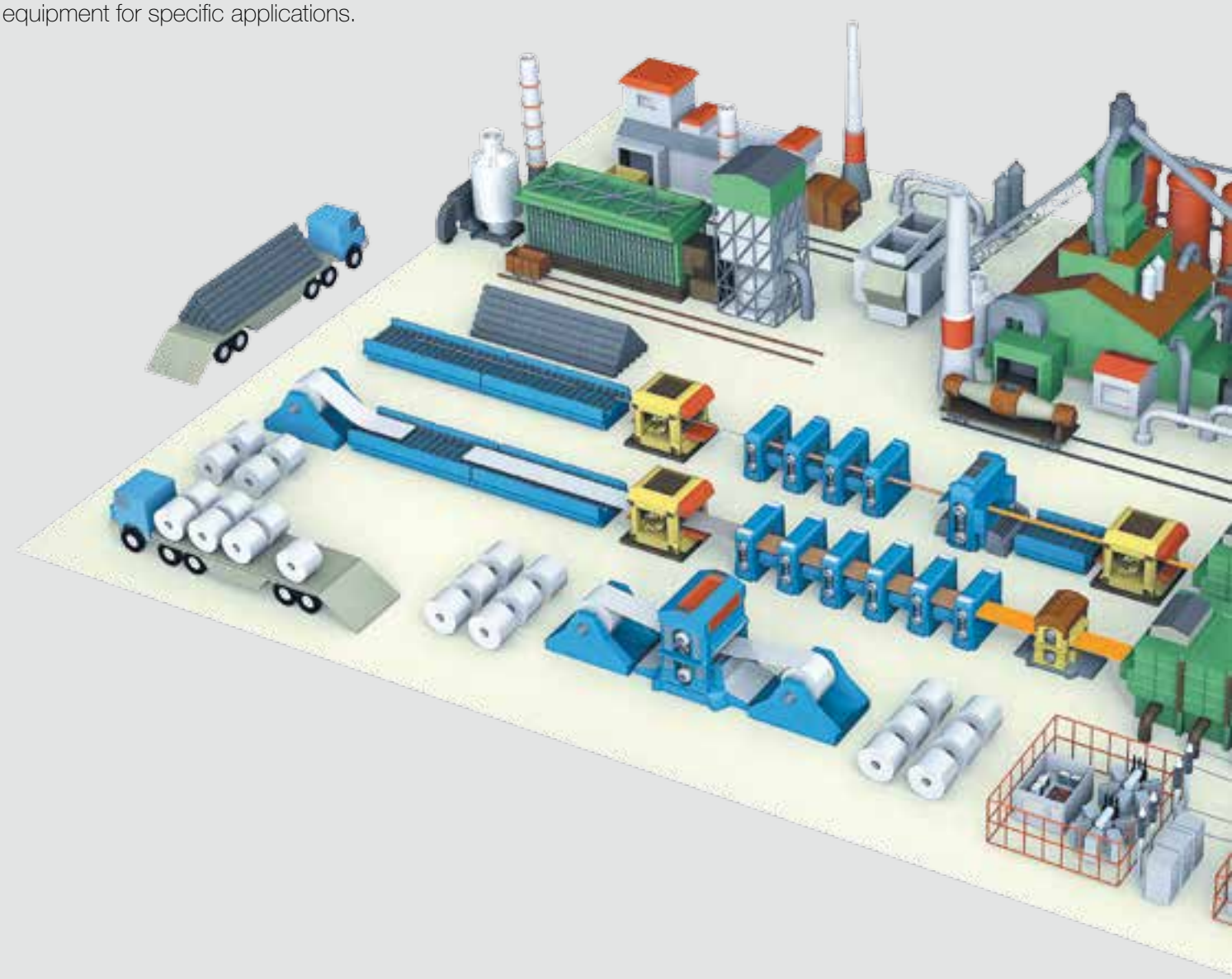
Argentina · Australia · Belgium · Canada · Colombia · Brazil · Nigeria

U.K · France · China · Italy · USA · South Africa · Europe · Global

Spain · Russia Kazakhstan Belarus · Mexico · India · Saudi Arabia · Germany · North America

Efficiency in Steelm

Steel & Metal Industries have several applications of motors in areas like material handling, material processing, several types of pumps, fans & compressors for different applications and many other special equipment for specific applications.



2,000 kW, 8P, VFD Synchronous Motor at SEVERSTALL STEEL PLANT - USA

Several Low Voltage motors in VEGA DO SUL (Arcelor Group) - Brazil

7XSDL800, 3,000 kW, 6P, B3R Laminator Motors, VEGA DO SUL (Arcelor Group) - Brazil

aking Process

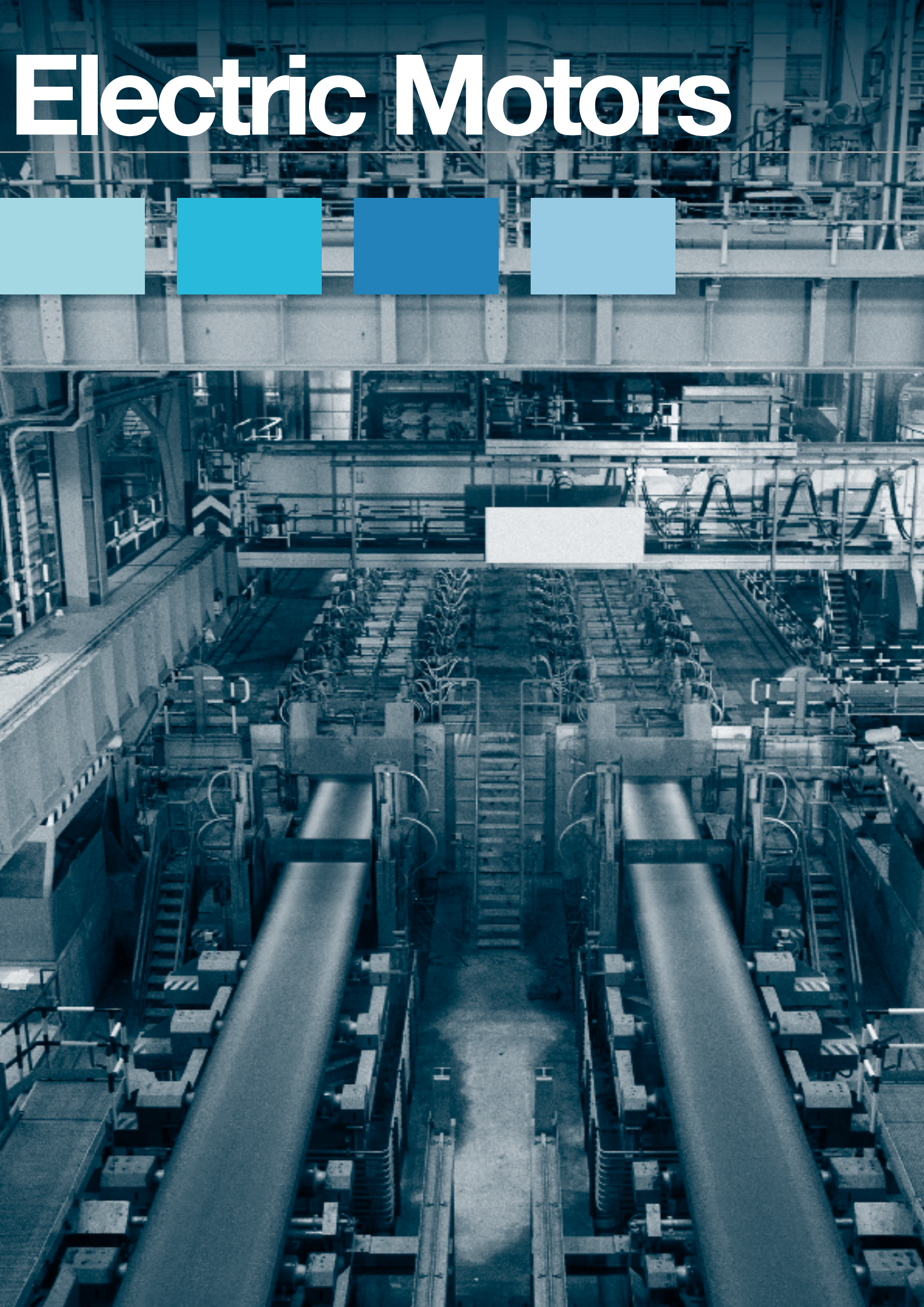
Coatings resistant to high temperatures

4,476 kW, 11,000 V, 12P, frame 1000 (MGF)
HITCHIN – LYNX - England

4 x 900 kW, 4,160 V, 8P, frame 8010 (MGP)
GERDAU AMERISTEEL - Canada

5,888 kW, 11,000 V, 14P, frame 1120 (MAW)
SIMS METAL - Australia

Electric Motors



Roller Table Motors

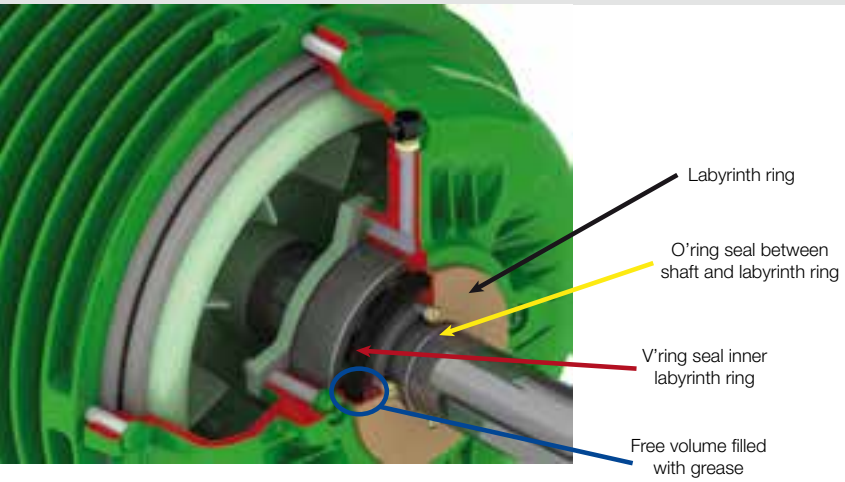
Roller Table motors are intended to drive steel mill industry operations. Specially designed to overcome the hard electrical and mechanical requirements that motors are subjected to. They present robust and versatile construction allied to high operating torques, also suitable for frequency inverter operation delivering high performance to ensure reliable operation for harsh environment and tough production process.

Product Scope

- WISE generation III
- Wire class H 200 °C
- Trickle impregnation system (continuous flow)- polyester resin
- Better filling of void spaces in slots
- Increase winding mechanical strength
- Less probability of short circuit between turns
- Hence remote chances of inter-turn short circuit
- 4 time less partial discharge
- 100% suitable for VDF Stress Operation

Product Range

- Range: 3 kW to 260 kW
- Supply: 415 Volts, 50/60 Hz & VFD
- Torque: 20 Nm to 2,972 Nm
- Pole: 4 to 12 poles
- Frame: 132 to 400
- Cooling: IC410



Larger capacity integrated steel plant are very common and hence very specialized motors are required in the hot and cold rolling mills and process lines for finished product. Such type of plants require very special design motors for applications like Mill motors for slabbing (billet, rob) and blooming mill, Cold Rolling mill (both induction and synchronous) of larger capacity suitable for precise speed and torque control through VF Drives. Followed by this there are several low voltage VFD motors for process lines.

LV & MV Motors

Synchronous Motors
MV General Purpose Motors
MV Pressurized Motors

- Output: up to 110,000 kW
- Voltage: up to 14,400 V
- Protection degree of: IP23 to IP56/ IP65

** NEMA or IEC designs.*

Characteristics
- Resistance to corrosion
- Reinforced and robust mechanical structure
- Structural strength and low vibrations
- Maintenance of constant speed
- High performance
- Low maintenance

Master Line
MV General Purpose Motors
MV Non-Sparking Motors
MV Increased Safety Motors
MV Pressurized Motors

- Output: up to 50,000 kW
- Voltage: up to 14,400 V
- Protection degree of: IP23 to IP56 / IP65

** NEMA or IEC designs.*

Characteristics
- Resistance to corrosion
- Reinforced and robust mechanical structure
- Structural strength and low vibrations
- Flexibility
- Compliance with NBR, IEC, NEMA and other standards

Water Jacket Cooled Motors – WGM Line
LV/MV General Purpose

- Output: up to 3,150 kW
- Voltage: 690 to 6,600 V
- Protection degree of: IP55 / IP66

** NEMA or IEC designs.*

Characteristics
- Cast iron or welded steel finned frames
- Low noise level
- Minimum thermal dissipation
- Reduced dimensions
- Robustness
- Not influenced by the environment (heat)

DC Motors
MV General Purpose Motors
MV Pressurized Motors

- Output: up to 10,000 kW
- Voltage: up to 800 V
- Protection degree of: IP23 to IP56 / IP65

** NEMA or IEC designs.*

Characteristics

- Design for drive by converters with thiristors
- Constant speed with load variation
- Precise sped regulation
- High efficiency
- Low noise and low vibration level

HGF
High Performance Line

- Output: up to 3,150 kW
- Voltage: up to 11,000 V
- Protection degree of: IP55 to IP56 / IP65 / IP66

** NEMA or IEC designs.*

Characteristics

- Cast iron finned frame
- Structural strength and low vibrations
- Compliance with NBR, IEC, NEMA and other standards
- High efficiency
- Simple and reduced maintenance
- Applied on conveyor belts, pumps, fans and compressor

Motors for Inverter Duty Application
MV General Purpose Motors
MV Non-Sparking Motors
MV Increased Safety Motors
MV Pressurized Motors
** NEMA or IEC designs.*

Applications

- Constant torque – speed ratio 10:1 (E.g. Grinders, Conveyors, Mixtures, etc.)
- Vector application – Speed ratio 1000:1 (suitable for constant torque operation from 0 to base speed)
- E.g. Extruders, Various process line applications in cold rolling mill

Automation Technologies

Industrial Systems Enhancing Productivity

Advanced built-in technology for speed variation; compact solutions for short-circuit protection and overload conditions; high short-circuit breaking capacity; reliability and precision on monitoring, operation and protection of electric motors; wide range of accessories and global certifications. These are some of the features and benefits offered by WEG.

WEG Control and Signaling (Ø22) - CSW Line

The Command and Signaling line developed to be used in severe environments and aggressive industrial applications with Protection Degree of IP66. It has illumination blocks with integral LED, providing high lumen/watt efficiency, low thermal dissipation, long lifespan (100,000h) and high reliability, besides being immune to mechanical vibration for not having filaments.

MPW Circuit Breakers-Motors

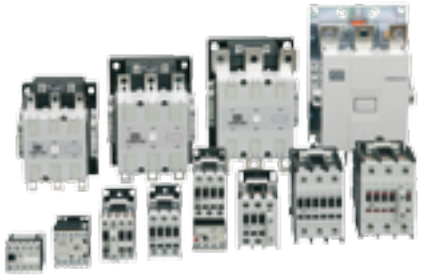
- Rated currents up to 100 A
- Solution for start/protection of motors up to 40 cv at 220 V and 75 cv at 380/440 V and electric circuits
- Adjustable thermal tripping device to protect the motor against overload
- Magnetic tripping device (short circuit protection) fixed at 13xIn
- High short-circuit interrupting capacity (100 kA)

Molded-Case Circuit Breakers

- Rated currents up to 1,600 A
- DW and ACW Line
- Specific circuit breakers for distribution, motors and generation
- Wide range of accessories
- High short-circuit interrupting capacity (ACW)

SRW01 - Smart Relay

- Reliability and precision in the monitoring, operation and protection of low-voltage electric motors
- Power supply: 24 V ac/V dc or 110-240 V ac/V dc
- Modular design - installation flexibility
- Selectable current measurement unit from 0.5 to 840 A
- Free programming software - WLP (WEG Ladder Programming)
- Full programming by means of networks or via USB
- Expansion of digital inputs and outputs (optional)
- HMI for monitoring, parameterization, operation of the motor, copy function, mounting on panel door, serial communication
- Versatile: it can be used in Modbus-RTU, Profibus-DP, DeviceNet and Ethernet communication networks
- Easy operation: performs automatic recognition and instant configuration according to the communication module installed
- Current Measurement Unit (CMU) allows the monitoring of the three phases of the motor
- The Current and Voltage Measurement Unit (CVMU) measures the motor currents, monitors voltages up to 690 V, phase sequence, power factor and all the motor powers, managing the power consumption in kW/h



Thermal Overload Relays and Contactors

- Full line 7 to 800 A (AC-3)
- Three-pole, four-pole, and auxiliary contactors
- Quick mounting on 35 mm DIN rail or fixed by screws
- Thermal overload relays from 0.28 to 840 A
- Wide range of accessories

Frequency Inverter CFW11 - LV Variable Speed Drives

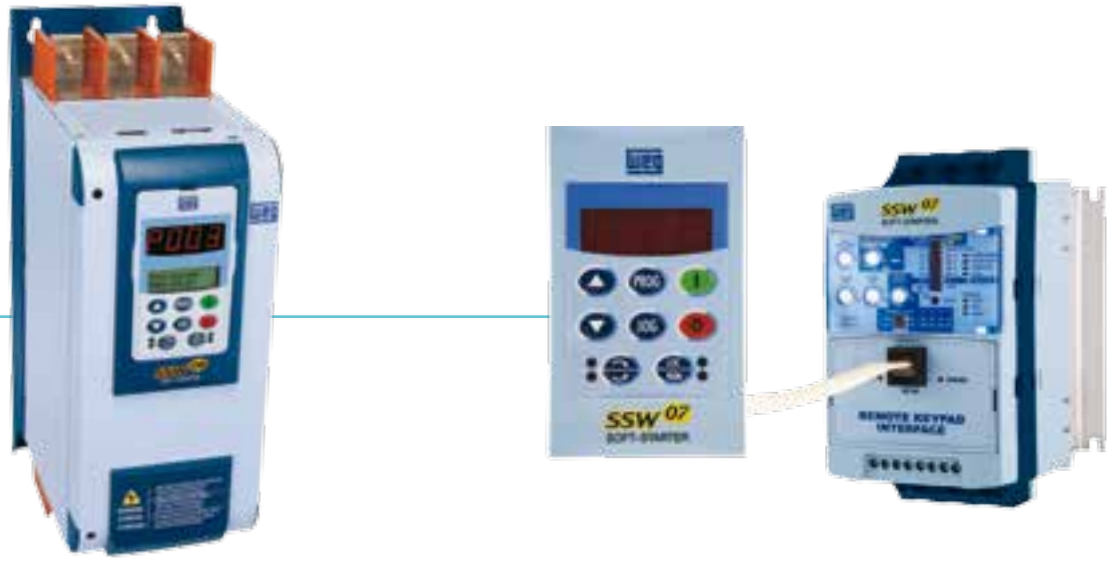
The CFW is a drive designed for the control of squirrel cage induction motors and permanent magnet motors. It can be used in a wide range of applications, since it is designed for running on either Normal or Heavy Duty loads. Its performance is excellent, providing increased productivity and an improvement in the quality of the process in which it is used.

CFW11 - System Drive

- 1.1 to 55 kW - 1.5 to 75 HP - 200-240 V ac - Three-phase
- 1.5 to 1,600 kW - 2 to 2,000 HP - 380-480 V ac - Three-phase
- 1.5 to 2,000 kW - 3 to 2,500 HP - 500-690 V ac - Three-phase
- Control: V/F, VVW or Vector
- Conformal coating
- SoftPLC built-in
- Inductors in DC bus (IEC 61000-3-12 - Harmonics)

CFW700 - General Purpose Drive

- 1.1 to 55 kW - 1.5 to 75 HP - 220-240 V - Three-phase
- 1.5 to 132 kW - 2 to 175 HP - 380-480 V - Three-phase
- 1.5 to 110 kW - 2 to 150 HP - 500-600 V - Three-phase
- Control: V/F, VVW or Vector
- Conformal coating
- SoftPLC built-in
- Inductors in DC bus (IEC 61000-3-12 - Harmonics)



Soft-Starters SSW06, SSW07 e SSW08 - LV Soft-Starters

Soft-Starters are static starters that accelerate, decelerate and protect three-phase induction motors. The control of the voltage applied to the motor by means of adjustments to the firing angle of thyristors allows the soft-starter to start and stop an electric motor smoothly.

SSW06 - Heavy Duty Soft-Starter

- 2.2 to 2,000 kW - 3 to 1,250 HP - 220-575 V ac Three-phase (3 cables)
- 1.5 to 2,000 kW - 3 to 2,500 HP - 500-690 V ac Three-phase
- 2.2 to 1,800 kW - 3 to 2,000 HP - 220-575 V ac Three-phase (6 cables)
- Torque control (1, 2 or 3 points)
- Conformal coating
- Built-in bypass
- SoftPLC built-in
- Inside delta connection

SSW07 - General Purpose Soft-Starter

- 4.5 to 330 kW - 6 to 450 HP - 220-575 V ac Three-phase
- Three-phase control
- Conformal coating
- Built-in bypass

CTW900

- Output current: 20 up to 2,000 A
- Speed or torque control
- Simplified connections for the power and control circuits
- Internal power supply for field bridge
- Human Machine Interface (HMI) with LCD display
- USB port for serial communication and software update
- SoftPLC function built-in for specific and dedicated software
- WLP and SuperDrive G2 softwares for programing and monitoring with download free
- Flash Memory for parameters and softwares backup
- Three speed feedback selections:
  - Incremental Encoder, DC Tachogenerator or Back-EMF
- Communication Protocols (optional):
  - DeviceNet, Profibus-DP, Ethernet-IP, Modbus TCP, Profinet0-IO, RS485 and RS232

MVW01 - Medium Voltage Frequency Inverter

Featuring state-of-the-art technology, the MVW01 is available from 300 cv up to 8,500 cv, in voltages from 2,300 V to 6,900 V, within a multilevel structure with high voltage IGBTs (6.5 kV). Rectifier with 12, 18 or more pulses or regenerative (for applications on conveyor belts), the MVW01 uses NPC multilevel topology (3/5 levels), combining robustness and safety with a minimum number of power components, ensuring reliability and simplicity in a compact solution.

The MVW01 features multiprocessing architecture with 32-bit processors (65-bit bus), floating point math and high performance, ensuring high efficiency in motor control. Its parameterization is extremely simple, without the need of special software applications or training.

The power packs are mounted on individual plug-in racks and are interchangeable among themselves, as well as among several inverter sizes, reducing the number of spare parts.

Switchgear, Distribution and Control of Medium Voltage Motors

They are assembled and tested for voltages from 2.3 kV up to 36 kV and Idc 31.5 to 50 kA. They were developed according to NBR IEC 62271-200 standard, complying with the NR-10 safety requirements, without losing the easy assembly and maintenance characteristics, as well as the flexibility to meet the requirements of the mining sector.

- They allow the extraction of the circuit breakers and contactors with the door closed (NR-10), with possibility of motorized extraction
- Use of communication relays according to IEC 61850 protocol
- Outputs with grounding switch

Load Center LCW

Designed with a high level of standardization, this product allows easy assembly, installation, maintenance and future expansions. The Load Center is equipped with fixed, plug-in or removable circuit breakers and/or fixed disconnecting switches intended to feed loads of MCCs and other electric panels. They are normally installed after the power transformers.

The LCW is available in the following versions:

- Conventional LCW – composed of columns partitioned into fixed drawers equipped with conventional protection and switching devices
- LCW – electric arc resistant

Low Voltage Motor Control Center

Designed with a high level of standardization, these products provide easy assembly, installation, maintenance, future expansions and interchangeability between drawers of the same MCC model and same size and function.

Certified as per NBR IEC 60439-1-TTA/PTTA standard and coordination type 1 and 2, according to IEC 60947, WEG MCCs guarantee high operating and maintenance reliability, especially regarding the safety standard NR-10.

- They offer versions 3b and 4b also internal arc resistant, as per IEC 61641

Advantages

- Lower risk of accidents with operators
- Fast and easy maintenance
- System in modules and easy expansion
- Easy rear access to the electric cable terminals
- Greater reliability on the protection system

Counting on a team of senior engineers with extensive market and design experience, the company enjoys a confortable position as a manufacturer and supplier of variable speed drives, soft-starters, motor control centers, motor starters, motor circuit breakers and an extensive series of motor control and protection products for the steel & metal applications.

Industrial Paints

WEG Coatings Division introduces to the steel industry the most advanced technology of protection in coatings for metal frames, machinery and equipment, tanks, pipes and floors. They are anti-corrosive and resistant to chemicals and high temperatures, ensuring maximum protection of the surface and less maintenance, in addition to providing excellent finish.

WEGZINC HIDRO HPH 905 Hydrosoluble Shop Primer

Two-pack, hydrosoluble, zinc silicate shop primer with excellent corrosion protection. Specially developed to protect steel during the manufacture and assembly of new constructions. It does not jeopardize the welding and gas cutting processes, maintaining the performance.

WEGZINC 401

Two-pack, zinc ethyl silicate shop primer with excellent corrosion protection. It does not jeopardize the welding and gas cutting processes, maintaining the performance. Certified by DNV and Lloyd's Register for tests of weldability-resistant shop primers. Complies with the IMO resolution MSC.215 (82) for zinc ethyl silicate shop primer.

IMP LACKTH VARNISH 1319/70 F GRAY – for Silicon Steel Sheets

Oven cured, pigmented, hydrosoluble varnish. Specially developed to protect silicon steel sheets and coils. Good chemical resistance, hardness and flexibility.

Anticorrosive Coatings for Protection and Maintenance of Steel Plants

Main Product Lines for the Steel Industry

- Epoxy finishes and primers
- Zinc Ethyl Silicate
- Anti-corrosive primers
- Polyurethane Finishes
- Alkyd Finishes
- High Temperature Coatings

Power Generation

Dry-Type Transformers

This product line offers solutions for all kinds of environments. The vacuum encapsulation process, and the quality of the resin prevent partial discharges and significantly increase the useful life of the transformer.

They are available with outputs from 300 to 20,000 kVA, in voltage classes up to 36.2 kV, with Degree of Protection up to IP55.

Oil Transformers

Reduction of weight and dimensions, types of insulating oils, longer lifespan and monitoring systems are just some of the items evaluated by WEG's technical team in order to develop oil transformers that provide the customer with the best solution. The portfolio includes a complete line of distribution and power transformers up to 550 kV, with either mineral oil, reducing the equipment cost, or vegetal oil, significantly reducing environmental impacts.

Expansion of the substation CVRD in 242 kV

Transformer 60 MVA - 242 kV

Rectifier 44.5 MVA - 15 kV, 115

Furnace transformer 75 MVA + 20% - 23 kV, 50 kA

Sustainability

Sustainability has been an integrated part of WEG's philosophy since its foundation. That is why awareness with environment protection has been a major concern in the company for the correct use of natural resources and the application of efficient energetic solutions.
As known by nations, the effective use of electric power reduces significantly environmental impacts with further cost savings and improvement of standard of people's life.
This is the path followed by WEG's continuous investments on technological innovation as well as develpment of premium efficiency electric and electronic products which are suitable to operate with high performance, high productivity, low power consumption, reduced operational costs providing outstanding benefits to customers and to the environment.
Along its successful history, energy has been the company's focus while manufacturing reliable and highly efficient products for the contribution of a global sustainable development.

Think Green.

We can't
predict
the future, but
we can see
it coming...

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