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شركة واحة العربية السعودية للإمدادات الكهربائية المحدودة
Wahah Electric Supply Co. of Saudi Arabia (Ltd.)

"... Your Partner in Building the Industry..."



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Wahah Electric Supply Company of Saudi Arabia Ltd. (WESCOSA) was formed in 1976 to meet the growing needs of energy and power sector in the Kingdom of Saudi Arabia.

WESCOSA has experienced substantial growth since its formation. The company now offers a wide-range of products designed and manufactured to meet the highest quality standards of the power generation and distribution industry.

FOLLOWING ARE SOME OF THE MILESTONES IN THE COMPANY'S HISTORY:

- 1976:** WESCOSA started manufacturing Switchboards, Panelboards and accessories under a license agreement with Westinghouse Electric Corporation, USA.
- 1978:** WESCOSA started manufacturing NEMA VE-1 Electrical Cable Ladders, Cable Tray, and Cable Trunking & Supports under a license agreement with the leading Cable Support System manufacturer in the USA, MPHusky.
- 1979:** WESCOSA started manufacturing Oil-filled Distribution Transformers under a license agreement with Westinghouse Electric Corporation. WESCOSA has been independent since 1988, and produces transformers of highest quality with its own design.
- 1983:** WESCOSA started manufacturing Dry-type Transformers, under a technical license agreement with Westinghouse Electric Corporation.
- 1992:** WESCOSA started manufacturing Metal-clad Vacuum Switchgear, under a technical license agreement with Powell Industries Inc. of USA.
- 1992:** WESCOSA started manufacturing AMPGARD Medium Voltage Starters and Low Voltage MCC's (600V) series 2100 and DS Low Voltage Switchgear under a license agreement with Westinghouse Electric Corporation.
- 1993:** WESCOSA started manufacturing Non-Segregated Busducts, under license agreement with UNIBUS Inc., of USA.
- 1993:** WESCOSA started producing Distribution Transformers of their own design for both ANSI and IEC standards.
- 1994:** Westinghouse Electric Corporation sold out its Low Voltage and Medium Voltage products division to Cutler-Hammer, which is part of Eaton Corporation, USA and WESCOSA continued to manufacture the above products under an agreement with Cutler-Hammer with the same terms and technical support.
- 1995:** WESCOSA started manufacturing Switchracks to NEMA, UL, CSA, and FM standards and NEC requirements. Suitable for outdoor applications in desert environment, corrosive environment and in hazardous locations. All enclosures are labelled with NEMA4*4x compliance labels approved by independent laboratories.
- 1995:** Large-scale concentration on service activities like Repairs, Testing, Installation, Commissioning, Refurbishment, Advisory, and Consultancy Services was initiated. A cooperation agreement with Powell Apparatus Division was created in 1999 for servicing and upgrading Switchgear & Motor Control.
- 1996:** WESCOSA started manufacturing Power Transformers.
- 1998:** WESCOSA started manufacturing Power Transformers with On-Load Tap Change (OLTC).
- 1998:** WESCOSA started manufacturing Relay & Control Panel, Synchronizing Panel and Instrument Cabinets.
- 1999:** WESCOSA added another product to its product range, namely 5kV, 360A, 40KA, Single-High Motor Control Centre (MCC) complying to NEMA ICS 3 specification. This was developed in-house, utilizing Allen-Bradley OEM kit, which is tested and proven by KEMA Netherlands.
- 2001:** WESCOSA started manufacturing Cable Bus under a license agreement with MPHusky.
- 2001:** WESCOSA started manufacturing 10MVA Power Transformers
- 2004:** WESCOSA started manufacturing IEC Switchboard and MCC under cooperation agreement with Eaton Tabula.
- 2004:** WESCOSA extended service activities through an agreement with Eaton Electrical Inc.
- 2006:** WESCOSA had a technical support agreement with Pauwels Transformers, Belgium for power transformer upto 20MVA
- 2008:** WESCOSA started manufacturing IEC LV Switchgear/controlgear under technical agreement with Hensel.

POWER TRANSFORMER

WESCOSA Power Transformers are designed to provide electrical services for distribution systems. Primary and secondary cables enter the transformers cable boxes from below through opening in the foundation. All exposed live parts are enclosed in cable boxes or compartments when required. Designs for close coupled busducts are also available.

WESCOSA provides different designs to meet both IEC and ANSI standards.

H.V. TAPS: $\pm 2 \times 2 1/2\%$ is standard. Special tapping is available. Off-Load / On-Load tap changer can be added.

STANDARD RATINGS:

THREE PHASE KVA	HIGH VOLTAGES*	LOW VOLTAGES*
	2400	
500-20,000	4160	220Y/127
	11000	231Y/133
	13200	400Y/231
	13800	480Y/277
	33000	2400Y/1390
	34500	4160Y/2400

* Other voltage ratings not listed above are supplied on request.



COMPARTMENTAL ANSI TRANSFORMER

The WESCOSA pad mounted distribution compartmental ANSI transformer is an oil filled, three phase, specifically designed for servicing such as underground distribution loads for shopping centers, schools, institutions and industrial plants. It is available in both live front and dead front construction, for radial or loop feed applications, with or without fusing or switching.

Industry Standards WESCOSA pad mounted transformers meet the following industry standards.

ANSI C57.12.00, ANSI C57.12.22, ANSI C57.12.26, ANSI C57.12.70, ANSI C57.12.80, ANSI C57.12.90, NEMA TR.1, NEMA TR-P9



RATINGS:

*kVA: 45, 75, 112.5, 150, 225, 300, 500, 750, 1000, 1500

*High Voltages (Primary)

4160 Grd Y/2400	2400 Δ
8320 Grd Y/4800	4160 Δ
12470 Grd Y/7200	4800 Δ
13200 Grd Y/7620	7200 Δ
13800 Grd Y/7970	8320 Δ
34500 Grd Y/19920	12000 Δ
	12470 Δ
	13200 Δ
	13800 Δ
	14400 Δ

* HV Taps: 2 x 2 1/2% above and below normal

* HV BIL: 45 kV BIL – 2400 Volts

60 kV BIL – 4160 – 4800 Volts

75kV BIL – 7200 Volts

95 kV BIL – 1200 to 16340 Volts

150 kV BIL – 34500 Grd Y/19920 Volts

* Low Voltages (Secondary)

All voltages are rated 30kV BIL

480Y/277, 220Y/127, 231Y/133, 480r, 400Y/231

208Y/120 (Refer to WESCOSA on 1500kVA)

240r (Refer to WESCOSA on 1500kVA)

240r/120 lighting tap (Refer to WESCOSA on 250-1500kVA)



POLE AND PAD MOUNTED DISTRIBUTION TRANSFORMER

WESCOSA distribution transformers are designed, manufactured and tested in accordance with IEC 76 and its equivalent standards. Standard type transformers are well suited for serving both industrial and commercial applications: the small, compact design saves valuable space and the lighter weight makes handling and installation easier and less expensive. In addition to the standard types, a variety of options are available to meet the customer's specific requirements.

RATINGS:

* kVA: 50, 100, 200, 300, 500, 1000, 1500

* High Voltages (Primary)

13800 Delta

33000 Delta

* Low Voltages (Secondary)

All low voltages are rated 30kV BIL

231Y/133V

400Y/231V

* HV Taps: 2 x 2 1/2% above and below normal

* HV BIL: 95/110 kV BIL – 13800 volt

170/200kV BIL – 33000 volt

• Other voltage ratings not listed above are supplied on request.



PACKAGE / UNIT SUBSTATION

WESCOSA Package/Unit Substations are available with wide range of ratings up to 1600kVA with maximum system voltage of 15kV. The Substation is assembled as an integrated unit from sheet steel, built on heavy channel steel foundation frame to withstand the weight of its components.

The Package Substation consists of three compartments:

1. Medium Voltage Compartment
2. Transformer Compartment
3. Low Voltage Compartment



MULTITAP / RECTIFIER TRANSFORMER

Multitap / Rectifier Transformers are used in Electrical Submersible Pumps (ESP) systems. These systems require specialized transformers to convert power supply voltage to the voltages suitable to the pump motor used in the system. WESCOSA Multitap transformers provide a wider range of taps than general-purpose distribution transformers. The purpose of this wide range is to accommodate motor's changes as the voltage requirement varies for each size of ESP motor.

WESCOSA Multitap transformers are pad-mounted type with enclosed bushings and sealed tanks.

FEATURES:

- ONAN cooling with mineral transformer oil
- Hermetically Sealed tank design
- Three phase transformers
- Wide range of taps (standard 25 taps)
- Appropriate Top Oil & Average Winding Temperature Rise to suit the desert service conditions
- Drain Valve (optional built-in sampler)
- Thermometer and oil level gauge (optional contacts)
- Pressure Vacuum Gauge (optional) with contacts (optional)
- Primary and secondary enclosed bushings.
- Designed for Fixed and Variable speed drives



DRY TYPE TRANSFORMERS

WESCOSA offers a complete line of in-Kingdom manufactured three-phase dry type transformers up to 1000kVA. The distinguished WESCOSA Transformer family provides dependable utilization voltages that are vital in today's energy conscious distribution system in Saudi Arabia. WESCOSA Dry-type Transformers are quiet and reliable.

WESCOSA provides different designs to meet the variety of customers needs in Saudi Arabia.

These include:

Voltage*

480V-480Y/227V 480V-220Y/227V

480V-208Y/120V 380V-220Y/127V

* Other voltage ratings not listed above are supplied on request

* Step-up transformers are supplied on request

* Transformers with r - r connection are supplied on request



LV - METAL ENCLOSED SWITCHGEAR

DSL LV Switchgear is designed, constructed, and tested in accordance with ANSI C37.20.1 standards and conforms with NEMA SG3, NEMA SG5 ANSI C37.51, and UL 1558

Ratings are as follows:

- Voltage: Up to 600 Volts AC, 3-phase, 3-wire, 4-wire
- Main bus ampacity: 2000, 3200, 4000, and 5000 Amps based on UL & ANSI Standards
- Main 600 Amp an optional bus is available
- Short circuit capability: up to 65 kA with non-current limiting breakers (DSL) interruption; up to 200 kA with current limiting type breakers (DSL) at 480 volts AC.

FEATURES:

- Four-Position Drawout
- Double Steel Front Safety Barrier
- Ease of Inspection and Maintenance
- Safety Shutter System for Primary Stationary Contacts
- Standard 100 kA Bus Bracing, Optional 200 kA
- Front Accessible Removable Writing Trays
- Rugged Formed Steel Base with Jacking Provisions
- Doors with Removable Hinge Pins



MAGNUM DS LOW VOLTAGE METAL ENCLOSED SWITCHGEAR

Magnum DS Switchgear conforms to the following standards:

- ANSI C37.21.1 & C37.51
- NEMA Standard SG5
- CSA
- UL Standard 1558

Rating are 600 Vac. Vertical and cross bus ratings are 2000, 3200, 4000 and 5000 A and 200 kA short circuit capacity. 6000, 8000 and 10,000 A is available.

Magnum DS Power Circuit Breakers are/provide:

- Designed to: • NEMA Standard SG-3 • ANSI Standard C37.13, C37.16, C37.17 • UL 1066
- 100% rated, fully selective protection.
- Integral microprocessor-based breaker tripping systems.
- Two-step stored-energy breaker closing.
- Magnum DS Circuit breakers have high with stand rating from 42 kA to 100 kA
- Magnum MDSL, with integral current limiters to provide interrupting ratings of 200 kA at 600 Vac.
- Magnum MDSX have, fast opening contracts for interrupting ratings up to 200 kA at 480 Vac. with without fuses.
- Trip Functions: Magnum DS trip units provide the maximum in flexibility and are available in the following configurations: LSI, LSIG & LSIA (ground fault alarm only).

Enclosures are NEMA 1 with gray paint finish (ANSI 61) using modern electrostatic powder coating. Outdoors type 3R available.



LOW VOLTAGE METAL ENCLOSED IEC SWITCHGEAR/CONTROLGEAR

LV Switchgear/ Controlgear is designed, constructed, and tested in accordance with IEC 60 439/EN 60 439-1 or 3 Standard.

- Manufactured under license agreement with hensel Industries, Germany.
- Meets IEC Specifications 60 349/EN 60349-1 or 3.
- SAS 600, SAS 2000, SAS 5000 system.

Features:

• Rated current	250 to 5000A
• Short circuits withstand current	21 to 200kA
• Equipment installation	Fixed & plug in
• Inner Partitioning	form 1, 2b, 3b, & 4b.
• Degree of protection	IP 30/40/54.
• Widths:	350,400,600,650,850 & 1100 mm.
• Cabinet frame colour	RAL 7035.
• Cabinet base colour	RAL 7016



LOW VOLTAGE MOTOR CONTROL CENTERS (MCC)

Freedom and Advantage 2100 Series MCCs are applied on electrical systems up to 600 V, 50 or 60 Hz, having available fault currents of up to 100,000 amperes rms. Enclosure designs include NEMA 1 Casketed, NEMA 2, 12 and 3R. All controllers are assembled with Cutler-Hammer components of proven safety, quality and reliability. All components are wired in accordance with NEC and UL standards.

FEATURES:

- UL label
- 42, 65 and 100 kAIC ratings.
- The main horizontal bus is rated at 600 amperes as standard with ratings of 800, 1200, 1400, 1600, 2000, 2500 & 3200 amperes optionally available.
- Molded Case and Air Power Circuit Breakers.
- Labyrinth Barrier System for Vertical Bus
- Across-the-line reduced voltage, and solid-state starters
- Variable frequency drives and VFD options.
- Pull-apart Terminal Blocks
- Front Only or Front-and-Rear Unit Mounting
- Unit Grounding Clips
- Tin-plated copper bus bars are supplied as standard.
- Silver-plated copper is also available.



POWL-VAC METAL-CLAD VACUUM SWITCHGEAR

- Manufactured under license agreement with Powell Industries Inc. U.S.A
- Meets ANSI specifications C37.04, C37.06, and C37.20 & tested in accordance with C37.09 and C37.20.
- Available in 1 high and 2 high construction configurations.

Available in the following rating:

- 4.16 to 15kV
- 250 to 1000MVA
- 1200 to 3000 Amps
- Custom designed transition sections to extend existing switchgear of any make.



5 KV, 360 AMP (CLASS 400A), 40KA MOTOR CONTROL CENTER

- Employs Allen-Bradley make vacuum contactors and isolating switches
- Meets NEMA ICS3 specifications.
- Tested in accordance with NEMA ICS3 and UL 347 at KEMA, Netherlands
- Available in 1-High and 2-High construction configuration



ANNUNCIATOR PANELS

WESCOSA Annunciator panels are manufactured with annunciation units of various brands like AMETEK power Instruments Annunciator and TRK to meet ANSI/NEMA standard.

ANNUNCIATOR

- Microprocessor Based
- Field Programmable
- Compact Unit
- Programmable Common Relay Output
- High-speed event capture (1 ms)
- Auxiliary relay output from windows (optional) for remove Annunciation
- Rugged construction
- Modbus Output
- Windows are available in five different colors (White/Red/Amber/Green/Blue)
- Suitable for indoor and outdoor application
- Four different size windows to choose

Available in six different auxiliary power supplies.

- 24 VCD/ 48VCD/ 125VCD/ 250VCD/ 120VCD, 50&60 Hz/ 240VAC, 50&60Hz.
- Transmitter /Alarm signal conditioning module (optional) for analog inputs.
- Compact Multi-tone hooter Provides 28 different tones.
- Type tested for RFI/EMI and radiated emission.
- Enclosure
- Free standing with front or rear access design / wall mounting type.
- Protection category IP41 to IP55.



PROTECTION AND CONTROL PANELS

WESCOSA Protection and Control Panels are designed and manufactured to provide high degree of protection and control to power system equipment i.e. Transmission Line, Busbars, Power Transformers and Breakers, etc.

FEATURES:

- Microprocessor based / Numerical Protective Relays
- High accuracy analog / Digital Meters (Optional)
- Custom designed Mimic diagrams (Optional)
- Both freestanding type and wall mounting type panel design available
- Both fixed and swing type 19" rack construction available for Relay / Meters and pilot devices installation on floor mounting type panel.
- Glazed door for floor mounting type panel to view protection panel front mounted components.
- Dead front with rear access or front access type control panels.
- Test switch facilitates testing of relays and meters from the front of the panel.
- Panel protection - NEMA type 1, IP 41 to IP 55
- Meets ANSI/NEMA/IEC Standard



SYNCHRONIZING PANELS

WESCOVA Synchronizing panels are designed and manufactured to meet power system requirements.

FEATURES:

- Microprocessor based Auto-Synchronizer
- One Synchronizing unit controls multiple systems with up to six different sets of breaker closing parameters.
- Suitable for small diesel units to large hydros.
- Synchronizer unit suitable for automatic control of the generators.
- Both Manual and Auto Synchronizing feature
- Custom designed Mimic diagram.
- High accuracy analogue / digital meters (optional)
- Test switch facilitates testing of Relays and Meters from the front panel.
- Dead front with rear access or front access.



LOW VOLTAGE SWITCHRACK

WESCOVA builds high quality, free standing, factory assembled and wired switchracks, custom-built to meet exact requirements of the customer. Structures are made of steel I-beams and C-channel members bolted and/or welded and hot-dip-galvanized. Enclosures are either painted NEMA-4, natural stainless steel as NEMA-4X, natural or epoxy painted explosion proof NEMA 4/4X/7 copper-free aluminum. Explosion-proof enclosures are from Crouse-Hinds or equally approved manufacturers.

Switchracks are manufactured to NEMA, UL, CSA, and FM standards and NEC requirements. Suitable for outdoor applications in desert environment, corrosive environment and in hazardous locations.



PANELBOARDS (UL LISTED)

- Pow-R-Line 1A, 2A and 3A – 100A – 600A Main Bus
- Standard design utilizing Series C Circuit Breakers
 - Increased series ratings (with Series C Main Circuit Breakers) provide higher short circuit ratings using standard panelboard breakers
 - Branch Pow-R-Line 3A can accommodate branch breakers dual mounted through 150 Amps and single mounted through 225 Amps.
 - Lock and Door opening mechanism includes a positive slide catch and right or left-hand installation.
 - Surface of flush trims.
 - UL tested and listed. Meets NEC and NEMA standards.
- PRL-1 240V AC Max, 100AF Branches
 PRL-2 480V AC Max, 100AF Branches, 14kAIC at 480V AC
 PRL-3 480V AC Max, 150AF Branches, 65kAIC at 480V AC

Pow-R-Line 4B and 4F

- Pow-R-Line 4B panelboard utilizes circuit breakers.
- Pow-R-Line 4F panelboard utilizes type FDPW fusible switches
- A single chassis accommodates both circuit breakers and fusible switches
- Main and neutral are located at the same ends to provide additional space for branch devices.
- Three-piece trim facilitates installations.
- Will accommodate Series C Circuit Breakers to provide higher ratings in a standard chassis and increased series ratings.
- UL tested and approved. Meets NEC and NEMA standards.
- Branch breakers combination of 100AF, 250AF, 400AF, 600AF, 800AF, & 1200AF.



BUSDUCTS

BUSDUCTS

- Non-segregated Busduct Ratings: 600V to 15kV, up to 5000A.
- Segregated Phase Busduct Ratings: Up to 15kV, 5000A.
- This product conforms to ANSINEMA standards.



CABLE BUS

WESCOSA Cable-Bus System provides an efficient, dependable and high quality installation for transmitting power between various equipment.

Rating:

- 600V to 15kV
- 800A to 6000A

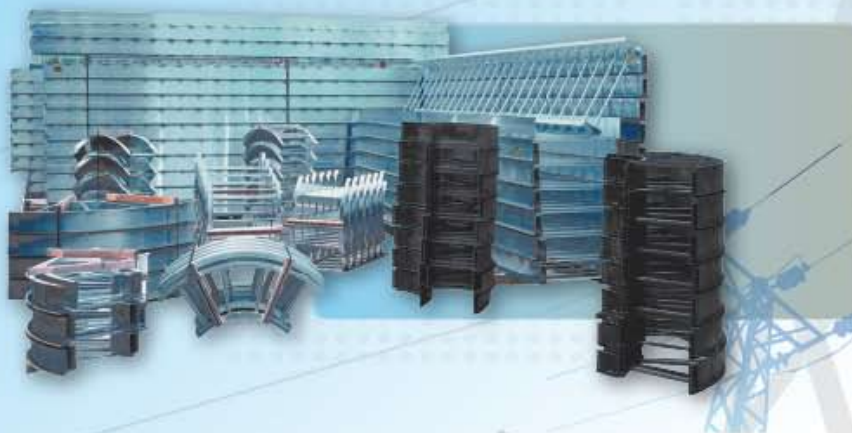
Withstand up to 100kA sys (rms), short-circuit current



CABLE TRAYS & LADDERS

WESCOSA Cable tray is identical to the MPHusky cable tray manufactured in the USA, and is designed strictly in accordance with NEMA standard VE-1, & ISO 9001 certified. The same all-welded aluminum alloy 6063-T6 & A.S.T.M. 123 of H.D.G.A.F. that has proven reliability in withstanding the climatic and corrosive conditions experienced within the Kingdom, is utilized in the manufacture of our cable tray at the facility in Dammam, Saudi Arabia.

WESCOSA offer a complete line of cable support systems manufactured and available in Saudi Arabia.



WESCOSA INDUSTRIAL SERVICES DIVISION (WISD)

Testing activities can be handled in field or at factory to cover refurbishment, maintenance, installation, testing and commissioning and coordination study of various equipment.

WISD Services can be broadly classified as:

- Service for all products
- Maintenance & Refurbishment
- Installation, Testing & Commissioning
- Design and Modification
- Replace, Retrofit or Refill
- Spare Parts Components
- Engineering Support

We extend our above services to the following products but not limited to:

TRANSFORMER : Power & Distribution Transformer
SWITCHGEAR : MV SWITCHGEAR of vacuum, oil, SF6, etc. LV Switchgear
MCC : All type of Motor Control Centers
BREAKERS : LV & MV Breakers
BUSDUCTS : Both MV & LV Busducts
 SF6 / Oil Switches
 Ring Main Units, Switch Boards, Control Panels
 All types of Relays, etc.



RETROFITS & REPLACEMENT

WESCOSA can offer factory retrofit; we replace the breaker handle and handle mechanism with Cutler Hammer products. A new door will be manufactured at our factory. The old unit wrapper is cleaned and re-painted and the existing bus stabs are reused. Wide range of Cutler Hammer, Powell and GE products can be retrofitted or refilled by WESCOSA Industrial Services Division.

INSTALLATION:

Call us anytime; we carry out Termination, Electrical Installation and Control Wires interconnection for all distribution equipment.

TESTING & COMMISSIONING:

All testing activities can be conducted at our factory or at site to meet your requirements by using advanced equipment. We have sufficient Engineers & Technicians to commission wide range of products related to transmission and distribution equipment.

DESIGN, SUPPLY & MODIFICATION

Do you need to upgrade or modify your Switchgear & MCC?
 Do you have to change the application?
 Do you have old transformer requires to meet new standard?
 Do you have a problem in the length of your busduct?

Answer: WESCOSA INDUSTRIAL SERVICES DIVISION CAN PROVIDE THE SOLUTION

CALIBRATION LABORATORY

Technology changes are rapidly increasing the numbers and types of electrical/ electronic test and measurement tools that typically feature increasing levels of sophistication with a growing list of functions and capabilities, all of which need a calibrated to keep running in top form. With all quality systems, in the kingdom, an excellent solution to help ensure that you always receive precise, reliable, and fast calibration services is WESCOSA.

SUPERIOR QUALITY SYSTEM

WESCOSA is an ISO 9001 calibration Laboratory. Its quality system meets the exacting and stringent requirements of government and commercial agencies.

CALIBRATION SERVICES CAPABILITIES

Calibration of your instrument are accomplished to standard maintained by WESCOSA calibration laboratory which has an ISO 9001:2000 Certification and using standards that are directly/indirectly traceable to the national Physical laboratory (UK) and national institute of standard and technology (U.S.) within the limitation of their laboratories services, or have been derived from accepted values of physical constants, or by the ratio type of self-calibration techniques.

REPAIR

WESCOSA also offers repair services on your non-conforming test equipment whenever practicable.

