



LAVAN INDUSTRIAL GROUP

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LAVAN INDUSTRIAL GROUP

About us:

LAVAN INDUSTRIAL GROUP was established in 2003 and has since grown progressively into one of the leading reputable Electrical companies, sourcing the right technology to be your partner for Success.

Services:

LAVAN INDUSTRIAL GROUP Main Services:



MV & LV & GIS Switchgear, Compact Substation & Mobile Substation



HV Substation, Power Transmission Line & Distribution, EPC Contracts



Load Break Switch & Vacuum Circuit Breaker



Procurement of Electrical Equipment



Design and Execution of HV Substation, Transmission Lines and Manufacture of Electrical Switchgears



Manufacturing & Trading Company



گروه صنعتی لاوان

معرفی:

گروه صنعتی لاوان به عنوان مجموعه ای پیشرو در حوزه های برق، انرژی و منابع نفت و گاز در سال 1382 با نام شرکت لاوان تابلو آغاز به کار نمود و پس از هفت سال تجربه موفق و با پشتیبانی نیروی انسانی متخصص حوزه فعالیت خود را گسترش و با تاسیس شرکتهای لاوان نیرو، بارزکلید، پویان ره پرنده در سال 1389 تشکیل گردید. این مجموعه به عنوان شرکتی دانش بنیان و با تکیه بر توان علمی و مدیریتی بالا، پروژه های داخلی و خارجی متعددی را با موفقیت به اتمام رسانده است.

خدمات:

گروه صنعتی لاوان ارائه دهنده خدمات زیرمی باشد:

تولید کننده تابلو برق های فشار ضعیف، فشار متوسط، GIS، پست کمپکت و پست موبایل



اجرای خطوط انتقال و توزیع، پست های فشار قوی، قراردادهای EPC



تولید کننده کلیدهای فشار متوسط (سکسیونر، دژنکتور)



تامین تجهیزات برق



طراح و مجری خطوط انتقال و پست های فشار قوی و سازنده تابلوهای برق



شرکت بازرگانی تولیدی



LAVAN TABLO COMPANY

LAVAN TABLO, as a knowledge-based company, founded in 2003, is active in the designing & manufacturing MV & LV & GIS switchgear, compact substation & mobile substation under Local and International Standards, We have conducted our original Research and Development and strenuously strived for the establishment of new businesses and these efforts have allowed us to diversify into the other areas of Power and Energy Solutions. Apart of being a manufacturing company, we can assist our customers to locate solutions- Specially engineered to meet their rapidly changing needs.

LAVAN NIROO COMPANY

We are one of the leading companies in the provision of environmental and engineering services for Power Transmission & Distribution (T&D) infrastructure. The company is proceeding the last steps to obtain a Rank from Planning & Management organization. Accomplishing EPC + F projects up to 300 Billion Rials. Our team of engineers and specialists provide full set of services required within electricity supply industry. Our clients are both network owners, such as transmission and distribution utilities, and network users, such as generators, electricity consumers and rail network operators.

BAREZ KELID COMPANY

Necessity of making and developing power networks and for doing services at different projects in country, BAREZ KELID, as a knowledge-based company, was established for effective presence in power industry to designing and manufacturing different types of MV switches in 2010. BAREZ KELID successfully produced MV SF6 gas insulated load break switch and vacuum circuit breaker for doing type tests according to international standards in the first year. Designing and manufacturing all cases and equipment for these products have performed by experts and specialists of BAREZ KELID as a sub-group of LAVAN INDUSTRIAL GROUP. Our products are competitive to different foreign samples. Our current products are SF6 gas insulated load break switch in 24 and 36 KV ranges and vacuum circuit breaker in Fixed and Withdrawable types.



شرکت لاوان تابلو

شرکت لاوان تابلو به عنوان شرکت منتخب دانش بنیان، در سال 1382 با تفکراتی نوین و مبتنی بر جدیدترین روش های روز دنیا و تحت استانداردهای معتبر بین المللی و داخلی و اهتمام به دو اصل ارتقاء کیفیت و کسب رضایت مشتری با هسته مهندسی کارآمد در زمینه طراحی و تولید انواع تابلوهای فشار ضعیف و فشار متوسط در مدل های فیکس و کشویی، تابلوهای پروسس و کنترل، تابلوهای GIS، پست کمپکت و پست موبایل پا به عرصه صنعت برق کشور گذاشت. به غیر از بحث تولید، این شرکت بر حسب نیاز مشتریان خود خدمات مشاوره ای فنی و مهندسی نیز ارائه می دهد.

شرکت لاوان نیرو

لاوان نیرو یکی از شرکتهای پیشرو در ارائه خدمات فنی و مهندسی به منظور اجرای خطوط انتقال و توزیع بوده و در حال طی کردن مراحل پایانی اخذ رتبه از سازمان مدیریت و برنامه ریزی کشور می باشد. این شرکت توانایی انجام پروژههای EPC را تا سقف 300 میلیارد ریال را دارا می باشد و تیم مهندسان و متخصصان ما کاملترین خدمات را در صنعت برق ارائه می دهند. مشتریان ما هم شامل مالکین شبکه مانند تاسیسات انتقال و توزیع، و هم شامل کاربران شبکه مانند تولیدکنندگان، مشتریان برق و اپراتورهای شبکه ریلی می باشند.

شرکت بارز کلید

باتوجه به رشد روزافزون ولزوم ساخت و توسعه شبکه های برق و با هدف انجام خدمات در پروژه های مختلف در سطح کشور، شرکت بارز کلید به عنوان شرکت منتخب دانش بنیان، با هدف حضوری موثر در صنعت برق ایران در زمینه طراحی و ساخت انواع کلید فشار متوسط صنعت برق در سال 1389 در کرمان تاسیس گردید. بعد از یک دوره کار فشرده شرکت بارز کلید موفق به تولید کلیدهای فشار متوسط سکسیونر و دژنکتور جهت انجام تایپ تست براساس استانداردهای بین المللی در سال اول فعالیت خودگردید. طراحی و ساخت تمامی قالب ها و تجهیزات لازم مربوط به این محصول توسط کارشناسان و متخصصان شرکت بارزکلید کرمان به عنوان یکی از زیرمجموعه های گروه صنعتی لاوان انجام شده است. تولیدات ما توان رقابت با انواع مدل های خارجی را دارا می باشد. محصولات فعلی ما سکسیونرگازی در سطح ولتاژ 24 و 36 کیلوولت و دژنکتور خلاء در دو تیپ فیکس و کشویی می باشد.

POUYAN RAH PARAND COMPANY

Pouyan Rah Parand is the leading electrical distributors in Iran, supplying area electrical equipment and wholesale electrical supplies to Industrial, Marine, Offshore, Panel Builders and Petrochemical Industries in Iran and worldwide.

As an electrical wholesaler, we source electrical components from key manufacturers across the world, all supplying high quality products and invest in ongoing research and development. Because technology moves rapidly, we continually update the product portfolio to ensure we meet the demands of an ever-changing market place.

KARMANIA VOLTAGE COMPANY

KARMANIA VOLTAGE founded in 2006, provides EPC services for substation, transmission and power generation projects through the process of designing, supply, construction, Installation, testing and commissioning. KARMANIA VOLTAGE performs the complete range of services for high voltage power Transmission and distribution.

JOINT VENTURE LAVAN INESING COMPANY

Lavan Inesing started their Joint Venture relationship since 2013 for manufacturing, selling or otherwise supplying the LV/MV switchgear under International reputable licenses or any successor and replacement transaction (the “Proposed Transaction”).



شرکت پویان ره پرنده

پویان ره پرنده توزیع کننده پیشرو در ایران می باشد که تجهیزات برقی را به صورت عمده در اختیار صنایع پتروشیمی و دیگر صنایع، بخش های دریایی و سازندگان تابلو برق قرار می دهد. به عنوان فروشنده عمده لوازم برقی، ما قطعات مورد نیاز را از تولیدکنندگان معتبر جهان تهیه نموده و به دلیل درحال گسترش بودن تکنولوژی ما دائما در حال به روز کردن محصولات خود هستیم.

شرکت کارمانیا ولتاژ

شرکت مهندسی کارمانیا ولتاژ در سال 1385 تاسیس شد. هدف اصلی از تاسیس شرکت کارمانیا ولتاژ اجرای پروژه های خطوط انتقال و پست های فوق توزیع بوده است. این شرکت هم اکنون در زمینه های اجرای پروژه های برق صنعتی، طراحی و اجرای پروژه های مخابراتی و سیستم های PLC و اتوماسیون صنعتی و همچنین طراحی و تولید انواع تابلو برق های صنعتی نیز فعالیت دارد.

شرکت لاوان اینسینگ

شرکت لاوان-اینسینگ در سال 1391 به منظور تولید و فروش تابلو برق های صنعتی فشار ضعیف و متوسط تحت لیسانس های معتبر جهانی و همچنین همکاری در زمینه اجرای پروژه های بین المللی، تاسیس گردید.

LAVAN TABLO COMPANY



Overview

Since the Company's foundation in 2003, based on designing & manufacturing LV & MV Switchgear, Compact Substation and Industrial Automation, we have conducted our original Research and Development and strenuously strived for the establishment of new businesses and these efforts have allowed us to diversify into the other areas of Power and Energy Solutions.

Apart of being a manufacturing company, means we can assist our customers to locate solutions- Specially engineered to meet their rapidly changing needs.

LMS1 LOW VOLTAGE SWITCHGEAR MD MAX TYPE



Notable system advantages regarding design aspects:

- Optimum protection for personnel and plant
- Design verified by type testing including arc fault containment
- High operational reliability and availability
- Earthquake, vibration and shock-proof designs are available
- Maintenance accessible bus bar
- Rigid frame construction
- Simple retrofitting procedures
- Compact, space saving design
- Simplified project implementation utilizing LTC 's dedicated engineering tool
- Rigid frame construction.

Overview

The LAVAN TABLO LMS1 system is a low voltage switchgear assembly. Its design is verified in accordance with IEC 61439-1/-2. The consistent application of the modular principle both in electrical and mechanical design as well as the use of standardized components allow its flexible and compact design. Depending on operating and environmental conditions different design levels are available.

The LMS1 design proves to have the approved solution for the following industries:

- Oil & Gas, on and offshore
- Chemical/Petrochemical
- Pharmaceutical
- Power Stations, conventional, biomass, energy from waste
- Paper
- Water treatment
- Mining
- Steel
- Food
- Marine

LMS1 Rear Access

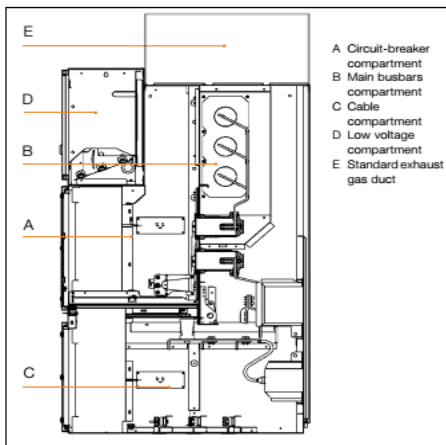
Technical data

standards		Low voltage switchgear and control gear assemblies - verification	IEC 61439-1/2
Test certification			
Electrical data voltage	Rated	Rated insulation voltage Ui	1000 v 3_ 1500 v -**
		Rated operating voltage Ue	690 v 3_, 750 v -**
		Rated impulse withstand voltage Uimp	6/8/12kv
		Over voltage category	I/III/IV I
		Degree of pollution	3
		Rated frequency	Up to 60 HZ
Electrical data Arc fault containment		Copper bus bars:	
		Rated current Ie	Up to 6300A
		Rated peak withstand current Ipk	Up to 250 KA
		Rated short time withstand current Icw	Up to 100 KA
		Copper Distribution bars	
		Rated current Ie	Up to 2000 A
		Rated peak withstand current Ipk	Up to 176 KA
		Rated short time withstand current Icw	Up to 100KA
		Rated operational voltage	Up to 690 V
		Prospective short-circuit current	Up to 100 KA
		Duration	300 ms
		Criteria (IEC 61641)	1 to 7
Forms of segregation		Up to form 4b	
Mechanical characteristic		Cubicles and frame	DIN 41488
		Recommended height	2200 mm
		Recommended width	400,600,800,1000, 1200 mm
		Recommended depth	400,600,800,1000, 1200 mm
		Basic grid size	E = 25 mm acc. To DIN 43660
		Degrees of protection	According to IEC60529
	Surface of protection/paint	Frame, incl. internal, subdivisions	2.0/2.5 mm
		Cladding , internal	1.5/2.0 mm
		Cladding ,external	1.5 mm
		Frame, incl. internal, subdivisions	Zink or Aluzinc coated
		Cladding , internal	Zink or Aluzinc coated
		Cladding ,external	Zink or Aluzinc coated and powder coated RAL 70350(light grey)
Impact Test	Plastic components	Halogen-free, self-extinguishing, flame retardant	IEC 60707 , DIN VDE 0304 PART 3
Optional extras, available on request	Bus bar system	Bus bars	Bare, tinned or silver plated bars. Fully insulated with heat shrinkable sleeving and removable rubber boots.
		Special qualification	Test certification
	Paint	Enclosure	Special colors on request

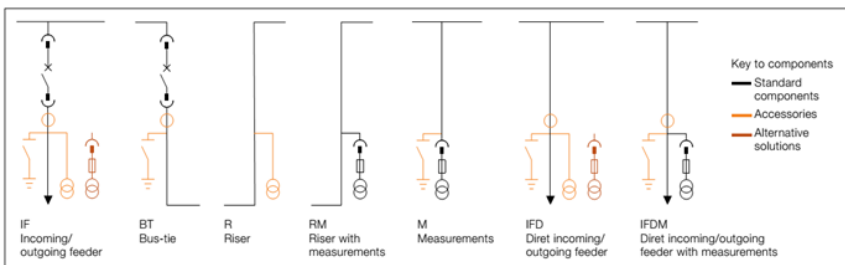
LUX1- SINGLE BUSBAR SYSTEM AIR INSULATED SWITCHGEAR UNIGEAR ZS1 TYPE



Typical feeder unit



single-line diagram of typical unit



General

Each panel consists of a single unit that can be equipped with circuit-breaker, contactors or switch-disconnector, as well as all accessories for the switchgear's conventional units.

Each panel provides a cubicle in the upper part for auxiliary instrumentation.

The switchgear does not require rear access for installation and maintenance procedures.

All service operations are carried out from the front

Range

- ...12-17.5 kV, ...4000 A, ...50 kA
- ...24 kV, ...3150 A, ...31.5 kA
- Standard IEC
- Highly customized versions

Safety

- Fitted with safety interlocks
- Internal arc classification IAC AFLR
- Classified LSC-2B, PM
- CB racking with closed door

Flexibility

- Wide range of applications
- Vacuum and SF6 circuit-breaker
- Vacuum contactor
- Traditional CT/VT and sensors
- Wall and free-standing solution


Quality

- Large installed base
- Installed in multiple countries

Design includes

- Protection and control
- Earthing switch
- IS Limiter
- Load break switch
- Integrated capacitor banks
- Bay computer

Technical data

Switchgear	LUX1 12 kV	LUX1 17 kV	LUX1 24 kV
Type of construction - Internal Arc Classification	IAC AFLR	IAC AFLR	IAC AFLR
Rated voltage [kV]	12	17.5	24
Insulation levels / power frequency / lightning impulse [kV]	12 / 28 / 75	17.5 / 38 / 95	24 / 50 / 125
Rated frequency [Hz]	50 / 60	50 / 60	50 / 60
Rated main bus bar current (40 °C) [A]	...4000	...4000	...3150
Rated feeder current (40 °C) [A]	...4000	...4000	...3150
Rated short-time current [kA x 3 s]	...50	...50	...31.5
Arc proof withstand current (IEC 62271-200) [kA x 1 s]	...50	...50	...31.5
Tested according to	IEC	IEC	IEC
Overall dimensions of the basic cubicle 	H [mm] 2200...2675 *)	2200...2675 *)	2325...2733 *)
	W [mm] 560 / 800 / 1000 **)	560 / 800 / 1000 **)	800 / 1000 **)
	D [mm] 1340 / 1390	1340 / 1390	1700
Technical catalogue No.	1VCP000138	1VCP000138	1VCP000138

*) With installed exhaust gas duct

**) Depending rating of nominal current

Electrical characteristics

Rated voltage	kV	7.2	12	17.5	24
Rated voltage	kV	7.2	12	17.5	24
Rated power frequency withstand voltage	kV	20	28	38	50
Rated lightning impulse withstand voltage	kV 1min	60r	75	95	125
Rated frequency	Hz	50-60	50-60	50-60	50-60
Rated short-time withstand current	kA 3s	...50	...50	...40	...25
Peak current	kA	...125	...125	...100	...63
Internal arc withstand current	kA 1s	...40	...40	...40	...25
	kA 0.5s	...50	...50	-	-
Main bus bar rated current	A	...4000	...4000	...4000	...2500
Branch connection rated current	A	630	630	630	630
		1250	1250	1250	1250
		1600	1600	1600	1600
		2000	2000	2000	2000
		2500	2500	2500	2500
		3150	3150	3150	3150
Branch connection rated current	A	3600	3600	3600	2500
with forced ventilation	A	4000	4000	4000	-

LUX3.2 AIR-INSULATED MEDIUM VOLTAGE SWITCHGEAR ZS3.2 TYPE



Standards and specifications

UniGear LUX3.2 switchgear panels comply with the standards and specifications for factory-assembled and type tested high voltage switchgears to IEC publications 62271-200 and 62271-100. In addition, in accordance with IEC 60529, the switchgear panels have degrees of Protection:

IP 4X for the enclosure

IP 2X for the partitions

The corresponding IEC publications, the national or local safety at work regulations and the safety regulations for production materials are to be followed during erection and operation of these system.

Special service conditions

Per IEC 62271-100, the manufacturer and user may agree on special service conditions which deviate from the normal service conditions. The manufacturer must be consulted in advance about each special service conditions. Examples are as follows:

- At site altitudes above 1000 m, the effects of the reduction in dielectric strength of the air on the insulation level are to be considered.
- Increased ambient temperatures must be compensated for in the design of the busbars and tee-off conductors, or the current carrying capacity will be limited. Heat dissipation in the switchgear panel can be assisted by fitting additional ventilation.

Summary

The metal-enclosed, three-pole air-insulated switchgear panels without disconnectors of UniGear LUX3.2 series are factory-assembled, type-tested indoor panels for a rated voltage of 36/40.5 kV. They are designed as withdrawable module type panels, and fitted with a single bus bar system. The withdrawable parts are fitted with vacuum circuit-breakers.

Details of the technical design and configuration of individual switchgears, such as the technical data, detailed equipment lists for the individual panels and comprehensive circuit documentation, etc., can be found in the relevant order documents.

Service conditions

Normal service conditions

The switchgears are fundamentally designed for the normal service conditions for indoor switchgears IEC publication 62271-1. The following limit values, among others, apply:

■ Ambient temperature:

■ Maximum +40° C

■ Maximum 24 h average +35° C

■ Minimum (according to)

“minus 15 indoor class”) -15° C

■ Humidity

■ Highest average value measured over 24 hours

Relative humidity 95 %

■ Highest average value measured over 1 month

Relative humidity 90%

Remark:

With indoor installation, it is assumed that the humidity within the enclosure can reach high values, but that there is normally no condensation on the installed equipment. Condensation can be prevented by appropriate configuration of the station building or switchgear room.

The maximum site altitude is 1000 m above sea level.

Technical data

Electrical data

Standard:		IEC/ Chinese GB	Russian GOST
Rated voltage	KV	36/40.5	Unorm.: 35 Umax.: 40.5
Rated power frequency	KV	70/95	
Rated lightning impulse withstand voltage /1 min	KV	170/185	190
Rated frequency	HZ		50
Rated current of bus bar	A	1250, 1600, 2000, 2500, 3150	
Rated current of tee-off, circuit-breaker	A	1250, 1600, 2000, 2500, 3150 ³⁾	
Rated peak withstand current	KA	63,80	
Rated short-circuit breaking	KA	25,31.5	
Current of circuit breaking			
Rated short time current 4 s ¹⁾	KA	25,31.5	
Auxiliary voltage	V	DC2) 110, 220, AC 110, 220	

1) Take the short-circuit withstand capability of the instrument transformers into account separately

2) Special DC voltages on request

3) Up to 3150 A at 40°C and 2500 A at 55°C with forced ventilation

Resistance to internal arc faults

The switchgear units have been tested in according with IEC 62271-200 (Annex A, class A, criteria 1 to 5), the switchgear units are classified as IAC AFLR 31.5 kA for 1 s. 2.3 Dimensions and weights (Figure 2/1 and 2/2)

Dimension according to Figures 2/1 and 2/2

Weight: 1100 kg to 2000 kg, according to the equipment installed.

GAS INSULATED RING MAIN UNIT 12-24 KV SAFE RING SAFE PLUS TYPE



General

Safe Ring is a SF₆- insulated ring main unit for the secondary distribution network. Safe Ring can be supplied in 10 different configurations suitable for most switching application in 12/24 KV distribution networks. As an option, Safe Ring can be delivered as extendable ring main unit.

Safe Plus is LTC's flexible, extendable compact switchgear. Together, Safe Ring and Safe Plus represent a complete solution for 12/24 KV secondary distribution networks. Safe Ring and Safe Plus have identical user interfaces.

Safe Ring and/ Safe Plus is a completely sealed system with a stainless steel tank containing all the live parts and switching function. A sealed steel tank with constant atmospheric condition ensures a high level of reliability as well as personnel safety and a virtually maintenance-free system.

Modular and external busbar

The Safe Ring concept offers a choice of either a switch fuse combination or circuit-breaker with relay for protection of the transformer. Safe Ring can be supplied with an integrated remote control and monitoring unit.

All modules except the metering module and circuit-breaker module are only 325 mm wide. SafePlus can be configured with a maximum of five modules in one SF₆ tank with an internal busbar. To configure switchgear with more than five modules as many tanks as needed can be joined together by of an external busbar. Alternatively the whole switchgear can be configured as fully modular with the use of the external busbar between all modules. the external busbar is fully insulated and screened in order to maintain climatic independence and a maintenance free solution. All modules can be delivered prepared for future extension.

Customer Benefit

- A wide range of functional units, easy to extend & upgrade
- Up to five modules in one common gas tank
- No live parts exposed
- Fully sealed for lifetime
- Climatically independent
- Designed & tested according to IEC
- High reliability & safety
- Compact dimensions
- Safe & easy for operators in both
- Maintenance free

GIS Technical Data

Safe Ring		C-module		F-module		V-module	
		Switch disconnector	Earthing switch	Switch-fuse disconnector	Downstream earthing switch	Vacuum circuit- breaker	Earthing switch/ disconnector
Reated voltage	KV	12/17,5/24	12/17,5/24	12/17,5/24	12/17,5/24	12/17,5/24	12/17,5/24
Rated frequency ⁵	HZ	50/50/50	50/50/50	50/50/50	50/50/50	50/50/50	50/50/50
Power frequency withstand voltage	KV	28 ⁴)/38/50	28 ⁴)/38/50	28 ⁴)/38/50	28 ⁴)/38/50	28 ⁴)/38/50	28 ⁴)/38/50
Lightening impulse withstand voltage	KV	95/95/125	95/95/125	95/95/125	95/95/125	95/95/125	95/95/125
Rated normal current	A	630/630/630		200 ¹		200/200/200	
Breaking capacities							
-active load	A	630/630/630					
-closed loop	A	650/650/650					
-off load cable charging	A	140/140/140					
-off load transformer	A	20/20/20					
-earth-fault	A	205/160/160					
-earth-fault cable charging	A	117/91/91					
-short-circuit breaking current	KA			see ²		16/16/16	
Making capacity	KA	52,5/40/40	52,5/40/40	see ²		40/40/40	40/40/40
Short time current 3 sec ³).	KA	21/16/16	21/16/16			16/16/16	16/16/16

LM6 MEDIUM VOLTAGE SWITCHGEAR



LM6, need to say more?

LM6, the light flexible switchgear developed as a modular, simple to apply design, with fewer components, providing a high reliable, quality and safe product for you, our Customer.

By reducing the number of components, utilizing modern materials correctly, we have developed an environmentally and user friendly product. The simple design and construction of LM6 will stand the test of time for generations to come.

General

LM6 is an air insulated (AIS), metal enclosed, switchgear cubicle design of the next generation developed through continuous innovation and vision to meet the changing market needs. The standard cubicle is powder pointed light gray (RAL 7035) on visible parts.

LM6 provides long-term technical solutions for various applications. Safety, user friendliness and environmental concerns have been the driving force in the development of the switchgear.

LM6 switchgear is a compact solution for a fully automated power distribution network. Supported by sensor technology and the latest in protection relays, it meets even the most demanding requirements in hospitals and airports. LM6 is a worldwide switchgear development utilizing the global experience of LTC to incorporate the needs of Customers from all over the world.

LM6 Technical data

Rated voltage Ur	KV	12	17.5	24
BIL	KV			
-common value		75	95	125
- across the isolating distance		85	110	145
AC withstand voltage				
- common value	KV	28 ¹⁾	38	50
-across the isolating distance		32 ¹⁾	45 ¹⁾	60
Rated frequency	HZ	50/60	50/60	50/60
Rated current				
-bus bar	A	630/1250	630/1250	630/1250
-feeder	A	630/800/1250 ⁴⁾	630/800/1250 ⁴⁾	630/800/1250 ⁴⁾
Rated short time withstand current				
-main circuit	KA	25	20	20
-earthing circuit	KA	25	20	20
Rated peak withstand current	KA	65	50	50
Rated duration of short circuit	S	1	1	1
Arc- fault current,1s	KA	20	20	20
Degree of protection, enclosure	IP2XC	IP2XC	IP2XC	IP2XC
Degree of protection, partitions	IP2X	IP2X	IP2X	IP2X
Ambient temperature	[°C]			
-maximum value		+40	+40	+40
- maximum value of 24 h-mean		+35	+35	+35
- minimum value		-5 ³⁾	-5 ³⁾	-5 ³⁾
Altitude above sea level	[m]	≤ 1000 ²⁾	≤ 1000 ²⁾	≤ 1000 ²⁾

1) Higher values in accordance with national standards on request

2) Adjustment is necessary for greater altitudes

3) Lower ambient temperature on request.

4) 1250 A = CBW, SBW, BRC, DBC

LCS1 COMPACT SUBSTATION-CCS



For safe, reliable and space saving power distribution solutions

LCS1 is prefabricated substation, factory-designed, tested and ready to install and is fully compliant with IEC 62271-202 (IEC 61330). Our compact substations are engineered to the highest possible standards for personnel safety and aesthetics, designed to help solve problems of footprint and space limitations experienced within dense urban load centers.

Salient features

- Modular construction of enclosure provides high degree of flexibility to meet specific site requirements
- Fully compartmentalized construction for MV switchgear, transformer and LV switchgear
- Specially designed ventilation system to suit local climate conditions
- Appealing aesthetics
- Safety ensured for operator, public and environment
- Low life-cycle cost

Product portfolio

Outdoor LCS1 for Secondary Distribution up to 36kv Configuration

- MV switchgear
- Step-down distribution transformer
- LV switchgear

LCS1 Electrical Characteristics

	Outdoor LCS1 up to 24kV	Outdoor LCS1 up to 36kV
Standard applicable	IEC 62271-202 (IEC 61330)	IEC 62271-202 (IEC 61330)
Normal ambient temperature	40° C	40° C
Maximum ambient temperature	50° C	50° C
Enclosure construction	Modular	Modular
Ventilation	Natural	Natural
Temperature class (Std.)	K 10	K 10
Degree of protection		
MV and LV compartment	IP 54	IP 54
Transformer compartment	IP 23	IP 23
MV Switchgear		
Rated voltage (kV)	12/24kV	36 kV
Rated Insulation level		
Power Frequency (Kv rms)	28/50	70
Impulse (kV P)	75/125	170
Rated frequency (Hz)	50	50
Isolator		
Rated normal current (A)	630	630
Breaking capacity (A)	630	630
Making capacity (kA)	52.5/40	50
Vacuum circuit breaker		
Rated normal current (A)	630	630
Breaking capacity (kA)	630	630
Making capacity (kA)	52.5/40	50
Transformer		
Rated power (kVA)- oil type	1600	2000
Rated power (kVA)- Dry type	2000	NA
Rated secondary voltage (V)	433	433
Vector Group	Dyn 11	Dyn 11
Tapping Range	± 5 in steps of 2.5%	± 5 in steps of 2.5%
Type Test		
IP	Yes	Yes
Enclosure class	Yes	Yes
Impact Test	Yes	Yes

MOBILE SUBSTATION

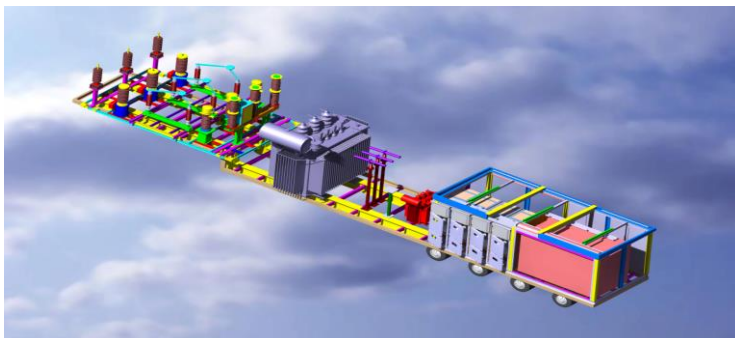


Mounted on skids, semi-trailers, trailers or in a container for rail and road transportation, the substations come as complete assemblies that are ready to connect. LTC ensures that the solution complies with the local grid code as well as the requirements posed by existing transformers that are running in parallel. Careful clarification of local transportation needs and choice of the truck ensures a smooth on-site delivery as well as easy mobility.

The scope of supply covers the complete assembly with a power transformer bay composed of a power transformer, AIS, GIS or hybrid switchgear, protection and control equipment as well as all auxiliary systems including batteries and battery chargers, fire detection systems, etc. Optional equipment such as generators can also be included.

Our domain knowledge and global experience assures you of sturdy turnkey solutions of highest availability, flexibility and maneuverability regardless of the application.

Typical configuration of Mobile Substation



LTC Mobile Substations ensures a safe & reliable grid connection to fit the most demanding environments anywhere, anytime

The solutions are available for all voltage levels from Medium to high voltages, as well as all power ratings, and ensure reliable and high quality energy supplies.

- to temporary and seasonal loads
- to moving loads such as mining excavators
- during maintenance procedures and emergency repairs, planning and construction phase of a substation

Features

- set on the site in the shortest possible time, and operation can be started immediately
- available as a permanent substation, or as an emergency installation for substation failures
- utilized as a tentative substation facility for Civil Engineering & construction works
- compactly reduced its width to the transport-body during transportation
- easily transportable to peak-load area
- least maintained by usage of all Vacuum Circuit Breakers, suitable for a long unmanned operation

Available configurations	Trailer/ semi-trailers, skid-mounted, containerized, rail-wagon			
General data				
Applicable standards	IEC/ANSI			
Rated frequency	50 or 60 HZ			
Ambient temperature range	-25 up to +55°c			
Seismic withstand capability	Up to 0.5 g or on request			
Voltage levels				
- HV section				
Rated voltage	72.5 kV	145 kV	170 kV	245kV
Test voltage	140 kV x 60 s	275 kV x 60 s	325 kV x 60 s	460 kV x 60 s
Switching				
BIL	325 kV	650 kV	750 kV	1050 kV
- MV Section				
Rated voltage	7,2 kV	12 kV	17.5 kV	24 kV
Test voltage	20 kV x 60 s	28 kV x 60 s	38 kV x 60 s	50 kV x 60 s
BIL	60 kV	75kV	95 kV	125 kV
Rated current	Up to 2500 A			
Rated breaking capacity	Up to 40 kA			
Power transformer				
Rated power	Up to 120 MVA (40 1-phase)			
Insulation	Oil			
Windings	2/3 windings HV/HV/MV			
Voltage regulation	OLTC			
Available configurations - bays	Single bay line, H configurations, with OHTL or incoming cable, transformer, generator, coupler			
Main equipment				
Power transformer	Main and auxiliary units, neutral grounding			
Switchgear	AIS / GIS / MTS (Mixed Technology Switchgear)			
Instrument transformers	Protection, control and metering functions			
HV cables	XLPE with direct plug-in solution up to 400 kV			
Surge arresters	ZNO surge arrester for cable / transformer protection			
Protection & control				
Control and protection IEDs/system	IEC 61850 Relion based systems			
PLC/telecommunications	Telecom facilities for remote operation and integration in SCADA system			
Auxiliaries				
Batteries and battery charger	All auxiliary systems designed and rated according to the specific application requirements and customer needs.			
Auxiliary transformers				
Rectifier				
AC/DC distribution panels				
Fire detection system				
Air-conditioning system				
Heating system				
Additional features				
Hydraulic system to control lifting jacks	Available on Request			
Pressurized PEC (Prefabricated electric center) suitable for hazardous areas				
Moveable oil pit				
Factory-tested and ready-to-connect	The entire mobile solution can be pre-tested before delivery. Tests include functional / operating modes, protection, telecommunication, etc.			

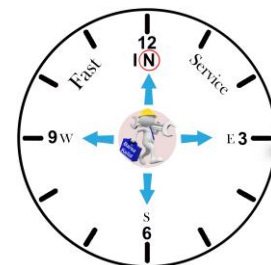
BAREZ KELID COMPANY



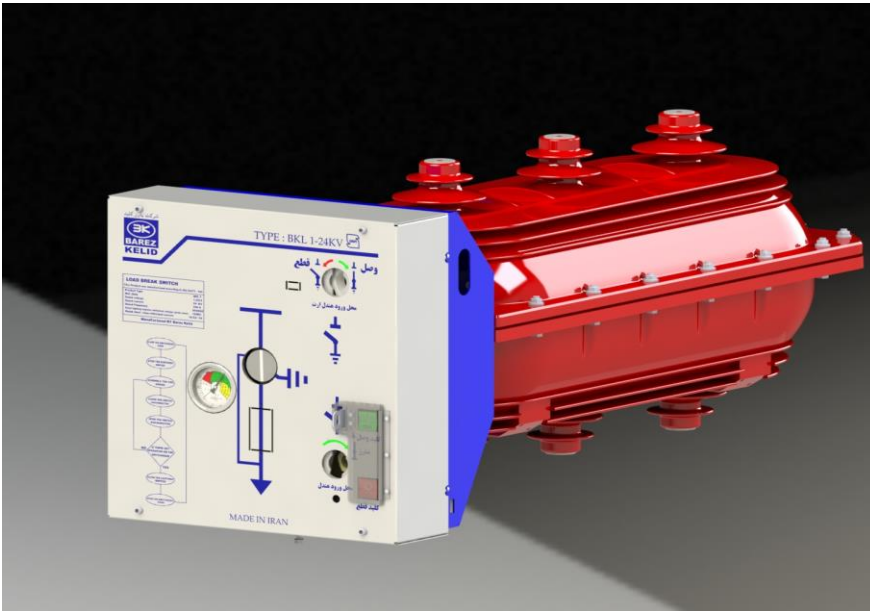
Overview

Since the Company's foundation in 2003, based on designing & manufacturing LV & MV Switchgear, Compact Substation and Industrial Automation, we have conducted our original Research and Development and strenuously strived for the establishment of new businesses and these efforts have allowed us to diversify into the other areas of Power and Energy Solutions.

Apart of being a manufacturing company, means we can assist our customers to locate solutions- Specially engineered to meet their rapidly changing needs.



BKL1- 24KV LOAD BREAK SWITCH



General

LB Skit is a product to let you develop harmonized functions equipped with SF6 breaking technology switchgear.

These functions allow you to produce all your Medium Voltage substation requirements up to 36 kV.

The result of in-depth analysis of your requirements, both now and in the future, LB Skit means that you can take advantage of all the features of both a modern and proven technology.

Upgradability

- LB Skit, a comprehensive product
- A comprehensive product covering your present and future requirements
- A design adapted to the extension of your units
- A catalogue of components for all your applications
- A product designed to be in compliance with standards constraints
- Options to anticipate the tele control of your units.

LBSkit: a product with adapted fuse-switch protection

With the LBSkit, Schneider Electric proposes components for MV protections with fuses. Fusarc CF fuse range is an excellent solution to protect various types devices such as MV transformers, motors, capacitors, public and industrial distribution networks.

Compactness

LBSkit, an optimized product

- Compact components, for reduced increment units
- Rationalized space requirement for switchboard installation

Maintenance

- LBSkit, a product with reduced maintenance
- The active parts (breaking and earthing) are integrated in an SF6-filled, “sealed for life” unit
- The control mechanisms, are intended to function with reduced maintenance under normal operating conditions
- Enhanced electrical endurance when breaking.

Ease of installation

- Reduced dimensions and weights
- A solution adapted to cable connection
- Simplified switchboard bus bar connection

Easy and safe to operate

LBS kit, a well-proven product

- A three-position switch to prevent incorrect operating
- The earthing disconnector has full closing capacity
- Positive breaking of position indicators
- Clear and animated display mimics
- Switching lever with an “anti-reflex” Function

LBSkit: a product designed with tele control in mind

LBSkit is perfectly adapted to tele control applications.

Motorized, option available, LBSkit combines with remote control interface.

You, therefore, benefit from a ready-to connect unit that is easy to incorporate providing guaranteed operation.

General Characteristics

Rated voltage (kV)		24	36
Insulation level			
50 Hz - 1 min (kV r ms)	insulation	50	70
	insulation	60	80
1.2/50 μ s (kV peak)	insulation	125	170
	insulation	145	195
Short-time withstand current			
Switch (kA/1 s)	25	630 A	
	20	630 A	
	16	630 A	
	12.5	630 A	
Disconnecter (kA/1 s)	25	630 – 1250 A	1250 A
	20	630 – 1250 A	
	16	630 – 1250 A	
	12.5	630 – 1250 A	
Maximum breaking capacity			
Transformer off load (A)	16		
Cables off load (A)	31.5		50
Switch (A)	630		
Fuse-switch ** (kA)	25	20	

he making capacity is equal to 2.5 times the short-time withstand current.

(*) Equipped referring to installation guide, and setting up at an altitude below 1000 m.

(**) Depending on fuse characteristics, and on using of Schneider Electric Fusarc CF fuses.

Temperatures

The products must be stored in a dry area, free from dust and with limited temperature variations	for stocking: from -40°C to $+70^{\circ}\text{C}$ for working: from -5°C to $+40^{\circ}\text{C}$ other temperatures, consult us
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Endurance

Units	Mechanical endurance	Electrical endurance
Switch Fuse-switch	IEC 60265 1000 operations Class M1	IEC 60265 100 breaks at I_n , p.f. = 0.7 Class E3
Disconnecter	IEC 62271-102 1000 operations.	

BKV-L1-24 KV LATERAL TYPE



General

The lateral vacuum circuit breaker is designed as per the latest technology of circuit breaker and is compatible with our Load Break Switch to serve as the complete set of power switch.

Standard equipment

VD4/R fixed circuit-breakers with rh lateral operating mechanisms (210 mm distance between centers) and VD4/I fixed circuit-breakers with lh lateral operating mechanisms (210 mm distance between centers)

Lateral Vacuum Circuit Breaker

The BKV-L1 series of medium voltage vacuum circuit-breakers for indoor installation are benefited the separate pole technique. Each pole has a vacuum interrupter inside which is built in the resin directly during the cylinder molding stage. This construction technique ensures protection of the vacuum interrupter against impact, dust and condensation. The operating mechanism is stored energy type and free unlocks system, with opening and closing operations independent from the operator. Remote control of the circuit-breaker is possible by the applications of special electrical accessories.

Product feature

- A complete range of specifications and series meets the needs of all kinds of electric currents and cut off levels
- High performance

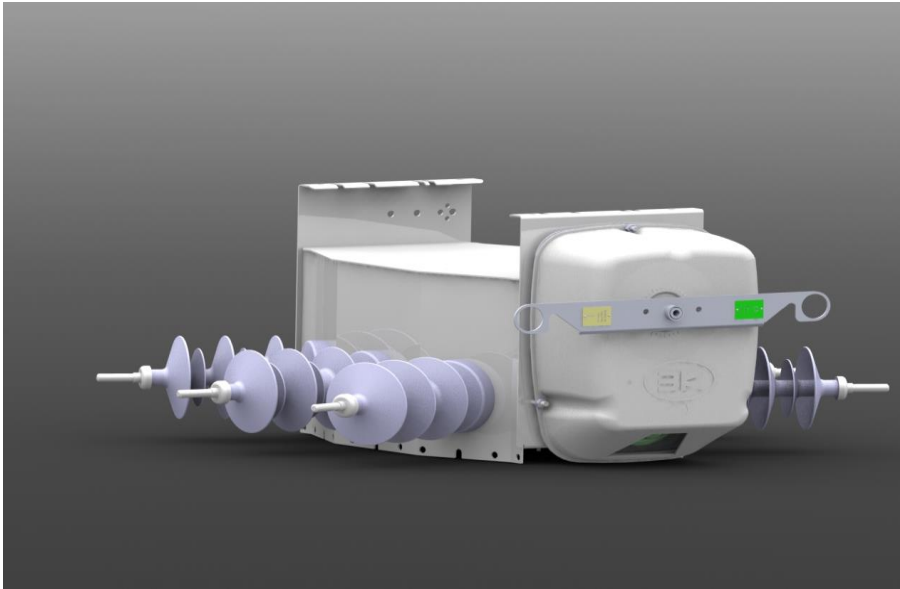
The coded basic version of the fixed circuit breakers is always the three-pole type and comes equipped with:

1. Opening pushbutton
2. Closing pushbutton
3. Operating counter
4. Circuit-breaker open/closed indicator
5. Lever for loading the springs in the manual mode (built into the operating mechanism)
6. Indicator for closing springs loaded/relieved

Lateral Vacuum Circuit Breaker Technical Data (24 Kv-630/800/

Rated voltage	24 kV
Rated frequency	50/60 HZ
Rated current	630/800/1250/1600A
Power frequency	50KV
Lighting impulse with stand voltage	125/150 KV
short-circuit breaking current	20/25/31.5 KA
short-circuit making current	50/63/80 KA
Cable breaking current	20 A
Short time withstand current	20/25/31.5 KA
Rated withstand current	50/63/80 KA
Old of operation	10000 times
Operation sequence	O – 0.3-co-180s-co

BKL-A1-24/36 KV SWITCH DISCONNECTOR



General

The BKL-A124/36KV is a SF6-insulated pole mounted switch dis-connector suitable for both conventional overhead lines and BLX type lines with insulated conductors and specifically designed for use in modern tele-controlled distribution automation systems.

The BKL-A124/36KV offers reliable maintenance free operation even in the most demanding climatic conditions including salt laden atmospheres, corrosive industrial pollution, snow and ice.

Switch design

The three phase switch unit is mounted inside a sealed for life stainless steel tank filled with a small SF6 overpressure. The stainless steel tank is designed specifically to guarantee the safety of the operation personnel even with the internal arc faults at the maximum fault capacity. Due to high internal arc containment capacity of the tank the BKL-A124/36KV in most cases withstands an internal fault without venting hot gases. The independent spring operating mechanism provides a guaranteed load break fault make capability by ensuring the opening and closing speed of the switch. The BKL-A124/36KV is provided with a standard SF6 gas density indication unit ensuring guaranteed lightning impulse withstand voltage rating and maximum reliability when used as a point of isolation.

Control

The switch can be manually controlled or it can be provided with an integrated motor drive for both tele and/or local electrical control. The motor drive can easily be retrofitted on site to manually operated units. Both manual operation and mechanical locking (when fitted) are by hook stick with local electrical operation at ground level (when required) via a control box. Hook stick operation negates the need for the provision of an operator earth mat.

Installation

The switch is suitable for horizontal mounting either above or below the cross arm.

A selection of different mounting equipment is also available.

Position indication

The BKL-A124/36KV is provided with light reflecting position indicators which are directly connected to the switch operating shaft providing clear and unambiguous switch position indication.

When manual switch locking is required half eyelid indication over the position indicator is provided.

Position indicating contacts directly connected to the operating shaft are provided to give remote switch position indication via the RTU to the tele control system.

Insulators

The BKL-A124/36KV is provided with standard 400 series outer cone bushings fitted with silicone rubber insulators. Silicone rubber insulator is suitable for line termination with standard cable lugs. Outer cone bushings are also suitable for standard elbow type cable connectors. A wide range of current transformers suitable for overcurrent and earth fault protection are available for mounting around the bushings.

Remote control

The BKL-A124/36KV can be provided with a stainless-steel pole mounted control box sealed to IP54 and incorporating:

- 24 VDC battery and charger
- Open/Close Remote/Local Control
- Battery monitor device
- VT Supply fail
- RADIO & RTU (to customer approved standards)
- Earth fault passage indicator
- Auto sectionalizing

One control box can control up to four BKL-A124/36KV switches.

Technical specification

Sectors BKL-A124/36KV switch disconnect or complies with the IEC 60265-1 (1998) requirements for General purpose switches in electrical endurance class E2 and mechanical endurance class

Ratings		BKL-A124/36KV 36
Rated voltage	kV	36
Power-frequency withstand voltage, 60 sec wet		
– to earth and between phases kV	kV	70
– across isolating distance	kV	80
Lightning impulse withstand voltage		
– to earth and between phases	kV	170
– across isolating distance	kV	195
Current ratings		
Electrical endurance class		E2/E3
Rated normal current	A	630
Mainly active load breaking current	A	630/400
Number of breaking operations CO		50/400
Closed loop breaking current	A	630
Line- and cable-charging breaking current	A	40
Earth fault breaking current	A	175
Cable-charging breaking current		
under earth fault conditions	A	80
No-load transformer breaking current	A	20
Short-circuit ratings		
Electrical endurance class		E2/E3
Short-time withstand current I _k (3 s)	kA	12.5
Peak withstand current, I _{dyn} , peak	kA	31.5
Short-circuit making current	kA	31.5/25
Number of making operations		3/5
Degree of protection (Top motor box)		IPX7
Creepage distance of insulators	mm	960
Mechanical endurance (number of close - open operations)		5000
Ambient air temperature limits		-40...+60
Filling pressure (+20°C)	bar(abs)	1.5
Weight	kg	99

LAVAN NIROO COMPANY



Overview

Lavan Niroo, founded in 2004, provide EPC services for substation, transmission power generation projects through the process of designing, supply, construction, installation, testing and commissioning. Lavan Niroo is an engineering company of Lavan group which is a leading player in the electric industry. Lavan Niroo offers safe, reliable and efficient power transmission distribution equipment. The manufacturing knowledge of Lavan Niroo & Lavan group enables Lavan Niroo to stand out from the other power EPC companies. Lavan Niroo performs the complete range of services for high voltage power transmission distribution and renewable energies. with this easy access to Lavan Niroo's knowledge and expertise, Lavan Niroo strives to offer our customers with the most economical, environmentally friendly, well performed and socially acceptable solutions. Up to now, Lavan Niroo has already successfully executed several projects all over in Iran.



Services

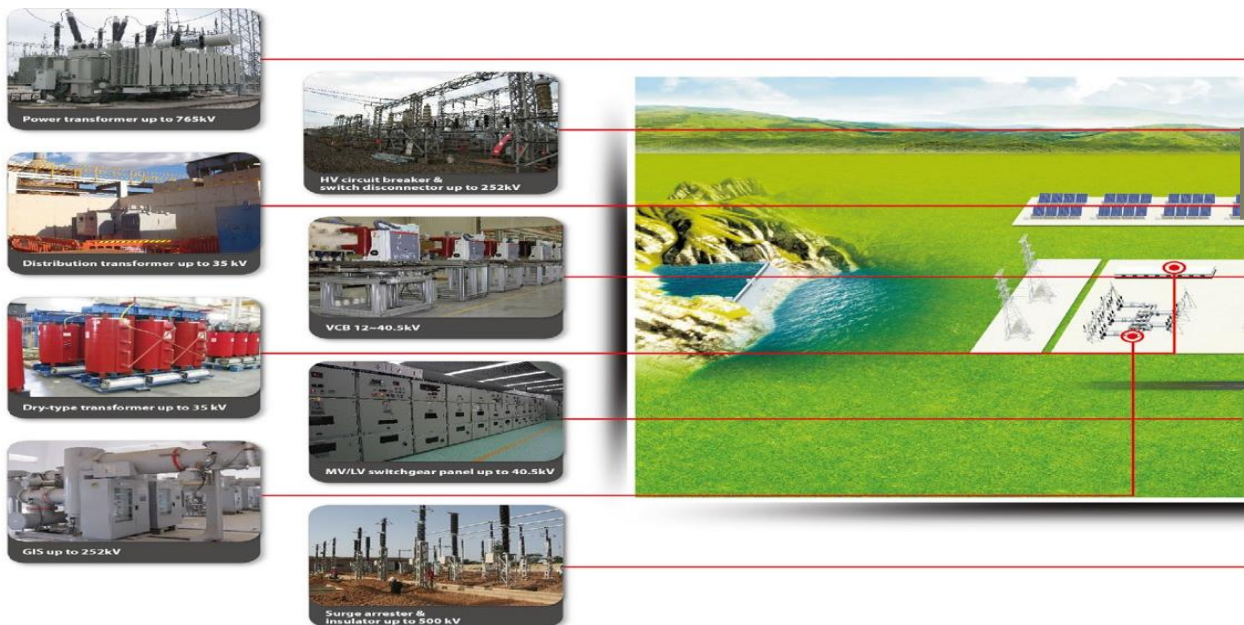
Engineering Scope

- Concept & basic design drawing
- System configuration
- Current transformer/ Voltage transformer calculation
- AC/DC capacity calculation
- AC/DC circuit design
- Earthing system calculation & plan
- Lightning protection calculation
- Cable calculation
- Short circuit current calculation
- Short circuit force calculation
- Protection relay setting calculation
- Cable block diagram & schedule
- Steel gantry structure calculation
- Steel support structure calculation
- Installation drawing design
- Civil foundation design
- Construction drawing design
- Installation and operation maintenance manual
- Site Inspection and testing procedure manual
- Asbuilt document



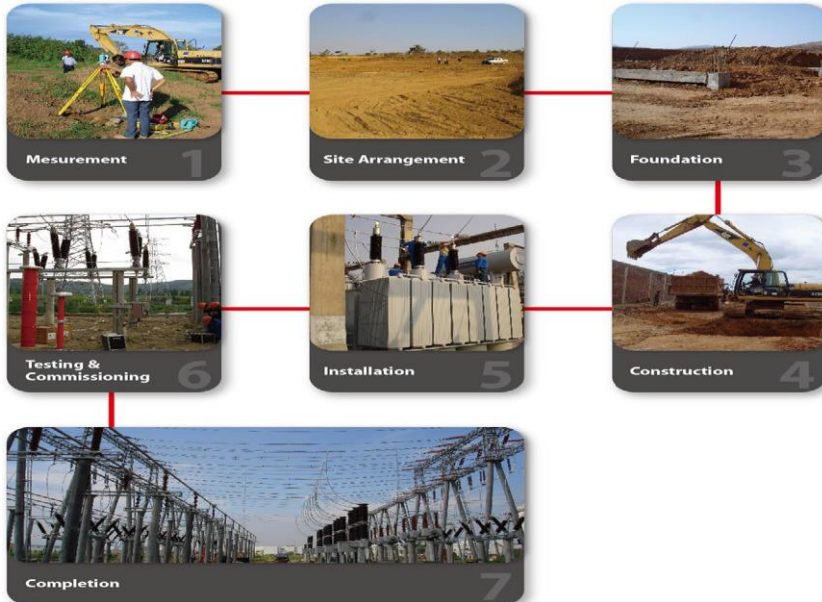
Procurement

Lavan Niroo provides power transmission & distribution equipment such as power transformers, GIS, HV SF6 circuit breakers and disconnectors, VCBs, MV/LV switchgear panels, surge arrester & insulators, CT & PT, cable & wire, capacitors, power protection & automation equipment and prefabricated substations; solar energy products such as PV cells, PV modules, thin films, inverters, monitoring system; low voltage distribution electrical products such as MCBs, MCCBs, ACBs, contactors, fuses, etc.



Construction

The construction capability Lavan Niroo supports its mission to safely and effectively deliver every turnkey project at a great extent. This capability lies in its local business network, local construction partner resources and extensive experience with local culture, regulations and laws. Safety and the minimum impact to the environment and the social is first rule that everyone follows throughout the whole process.



Transmission distribution projects

- ✓ Engineering, procurement and commissioning of 132 kV for two line bays of Bardsir Substation
- ✓ Engineering, procurement and commissioning of 132 kV transmission line of Kerman Steel S/S
- ✓ Engineering, procurement and commissioning of 132/33 kV Kerman Steel Substation (ongoing)
- ✓ Engineering, procurement and commissioning of 11 km 63 kV transmission line for Aab Asian Water Development Co. Bandar Abbas
- ✓ Execution of lighting system in production workroom for Iran Copper Industries Khatoon Abad Copper Complex
- ✓ Execution of earthing system in main hall and acid washing room for Pars Wire & Rope Industries, Sirjan
- ✓ Execution of lighting system in Melting Hall for Iran Copper Industries, Khatoon Abad Complex
- ✓ Execution of earthing system in production workroom for Iran Copper Industries, Khatoon Abad Complex
- ✓ Development, modification and optimization of power distribution grid for Kerman Northern Distribution Co.
- ✓ Installation, testing and commissioning of Khazra Industrial Zone Mobile Substation Kerman(ongoing)
- ✓ Procurement, installation and commissioning of two compact mobile substations for Iran Copper Industries., Miduk Complex

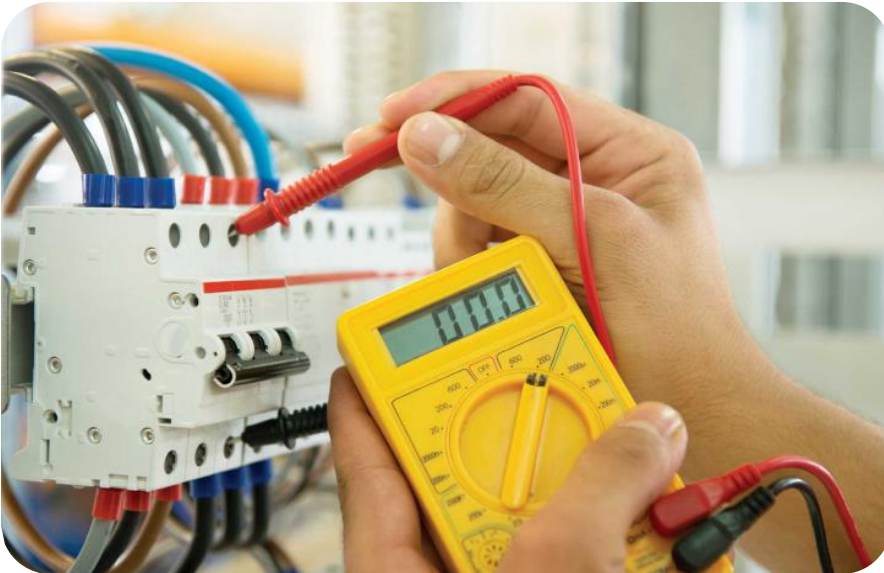
KARMANIA VOLTAGE CO.



Overview

KARMANIA VOLTAGE, founded in 2006, provides EPC services for substation, transmission & power generation projects through the process of designing, supply, construction, installation, testing and commissioning. KARMANIA VOLTAGE offers safe, reliable and efficient power transmission & distribution equipment. KARMANIA VOLTAGE performs the complete range of services for high voltage power transmission & distribution. With this easy access to KARMANIA VOLTAGE knowledge and expertise, KARMANIA VOLTAGE strives to offer our customers with the most economical, environmentally friendly, well performed and socially acceptable solutions. Up to now, KARMANIA VOLTAGE has already successfully executed several projects all over Iran.

POUYAN RAH PARAND



Overview

Pouyan Rah Parand is the leading electrical distributors in Iran, supplying area electrical equipment and wholesale electrical supplies to Industrial, Marine, Offshore, Panel Builders and Petrochemical Industries in Iran and worldwide.

Pouyan Rah Parand is more than just electrical distributor and supplier. We can provide the expertise, advice and support to meet the demands of industry and work as a partner to provide the right solution on time, every time.

As an electrical wholesaler, we source electrical components from key manufacturers across the world, all supplying high quality products and invest in ongoing research and development. Electrical distributor and supplier operating in Tehran, Iran, where technology moves rapidly, we continually update the product portfolio to ensure we meet the demands of an ever-changing market place.

Gawe
material eléctrico de distribución



JOINT VENTUR LAVAN INESING CO.



The Company **INESING** has matured in more than 10 years of experience, knowledge and professionalism at the highest level, consolidating its presence in the market of construction and installation of electrical systems. Strongly committed to research and technological innovation, INESING can deliver projects and products up to your needs: from industrial and civil plant to MV and LV panels, from switchboards to the production of hydroelectric power and wind power, from security to the maintenance of any installation carried out. INESING knows always how to provide ready and targeted answers, with the aim to solve the most specific problems of each customer. For this reason, the company avails itself of technicians and highly qualified experts able to provide projects and solutions.

The design is in fact a service through which INESING identifies recommends and justifies the investments that companies operating in different markets must deal with from time to time. INESING thus becomes an ideal partner with whom to share all aspects of the optimization of their electrical systems or energy producer tools.

INESING supports customers at every stage of approach to working: from design to installation, from the supply of electrical equipment (ABB, ALSTOM, SCHNEIDER & SIEMENS products) to after-sales service. The attention to every detail, guaranteed by international certifications coherent with the most recent regulations, allow INESING a solid trust from the customers, destined to grow over time in accordance with the continuous changes of functional needs.

Joint Venture

Lavan Inesing started their Joint Venture relationship since 2013 for manufacturing, selling or otherwise supplying the LV/MV switchgear under International reputable licenses or any successor and replacement transaction (the "Proposed Transaction").