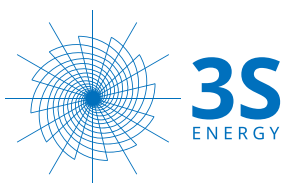




3S GENERAL PRODUCTS & SERVICES

Lighting - Batteries - Pumping systems - Photovoltaic panels - Cables - T&D Power Grids - Transformers & Custom Substations - Distribution panel boards



STRATEGIC SOURCING SOLUTION LTD
Certificate No 63802944-000-09-16-8

Strategic Sourcing Solution LTD

Our aim is to provide the best services and products.

We take quality very seriously and we have an internal quality insurance program and also an external one which is controlled regularly by national and international bodies. We have implemented a full range of quality insurance standards ISO 9001, ISO 14001, OHSAS 18001.

3S energy Table of contents



Lighting

04



Batteries

16



Pumping systems

36



Photovoltaic panels

50



Cables

56



T&D Power Grids

64



Transformers & Custom Substations

78



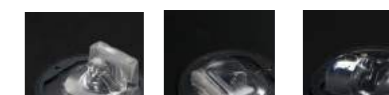
Distribution panel boards

94

3S energy Lighting



Orpheus LED II Range, LED luminaires for perimeter and street lighting



Features

- T4, STR, DWC2 asymmetric optics
- Adjustable arm, 60mm internal diameter
- Silicone lenses with pressure release channel
- LED, IP65
- Colour temperature (Tc): 5000K (4000K, 3000K)
- Colour rendering index (CRI): 70 (80,90)
- Interchangeable lenses
- Aluminium casing and radiator
- In line with Zhaga standard
- Ambient temperature range: -25°C to 45°C
- Colour: grey
- 230V – 50Hz, consumption 40W, 70W, 120W
- Driver with overvoltage, overheat, over-load and short circuit protection
- Upon request, may be equipped with smart drivers with AstroDIM or DALI dimming modes / pre-set to be equipped with smart dimming and control components
- Power factor local compensation >0.96
- Mounted on arm, adjustable
- L= 300mm to 700mm (according to model) * l=176mm *
- h=125mm
- 4kg to 7kg (depending on model)

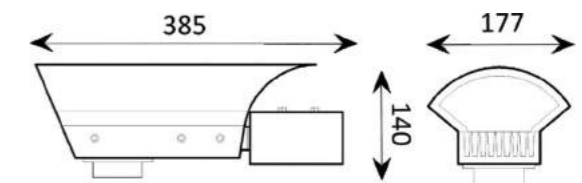


Applications

- Perimeter lighting of industrial buildings, warehouses, factories
- Parking areas, gas stations, park pathways
- General outdoor lighting, secondary roads
- Street lighting

Orpheus 1L LED luminaire

This is an IP65 rated perimetral LED light, with minimaist shape and high performance characteristics. The Orpheus LED luminaire is compliant with the following standards: EN60598-1:2005, EN60598-I/AI:2008, EN61347-2-13:2007, EN61347-1:2009, EN62031:2009, EN62384:2007, EN62384/AI:2010.



Characteristics

- Asymmetrical optics - optical silicone
- silicone lenses with pressure relief channel
- correlated color temperature (CCT): 4000K, 5000K
- color rendering index (CRI): 70, 80
- aluminium housing
- passive cooling system
- standard color: grey
- driver with protection against overvoltage, overheating, overcharge, short circuit
- power factor compensation >0,96
- ambient temperature: -40°C to +35°C
- mounten on pole with h:3 to 9m and diameter above 54mm
- IP65
- 230V - 50 Hz
- absorbed power 35W (HE series), 40W (HO series)
- 5kg

Applications

- Perimeter lighting for market houses, deposits, industrial plants
- Parking areas
- Gas stations
- Park alleys
- General outdoor lighting, secondary street lighting

Lighting features	Lm / W	Code	Options
40W, 6157lm, 5000K, CRI 70, asymmetric optics ***	154	2640***.750	Upon request
70W, 10776lm, 5000K, CRI 70, asymmetric optics ***	154	2680***.750	Upon request
120W, 18471lm, 5000K, CRI 70, asymmetric optics ***	154	26120***.750	Upon request

*** choose the asymmetric optics: T4, STR, DWC2

Observation: Luminous flux (lm) is gross. The net flux depends on the ambient conditions of operation.

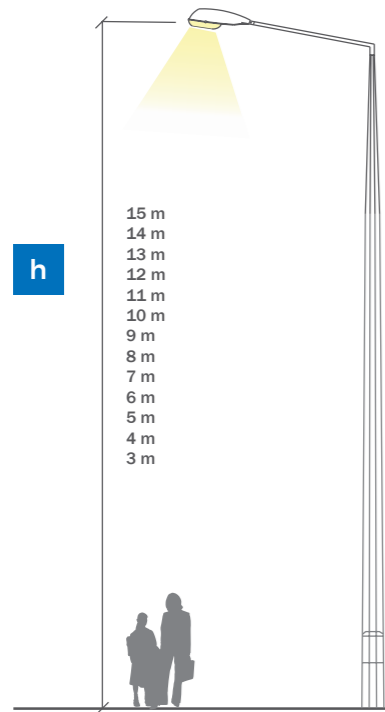




3s energy Lightning posts

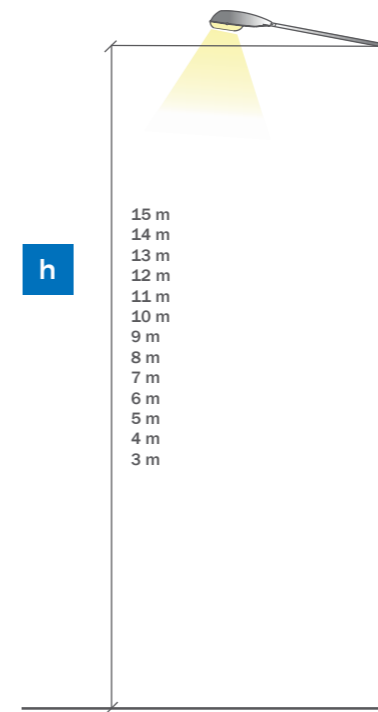
You can become right now by making the first step in saving the planet. How? Simply replacing the traditional light lamps with 3S Energy energy-saving lamps. It is one of the best things you can do to the environment and... to your budget.

Environmental protection has now become an active source of concern and we all have a responsibility to help reduce emissions and energy losses.



Monoblock octagonal pillars

1. Designed according to EN 1461 standard;
2. On request they can be painted in electrostatic field;
3. Pillars with a height of up to 12 m are made of one piece; The largest that have 12m are made of modules;
4. The size of the flange is a function of the height of the pillar;
5. Supports up to 4 arms, different shapes and sizes, made upon request.

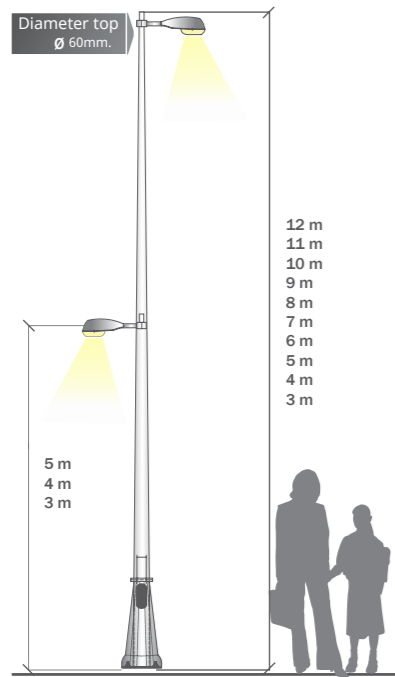


Octagonal pillars with detachable arms

1. Designed according to EN 1461 standard;
2. On request they can be painted in electrostatic field;
3. The corresponding arm of the pillar is attached; The largest that have 12m are made of modules;
4. The size of the flange is a function of the height of the pillar;
5. Supports up to 4 arms, different shapes and sizes, made upon request.

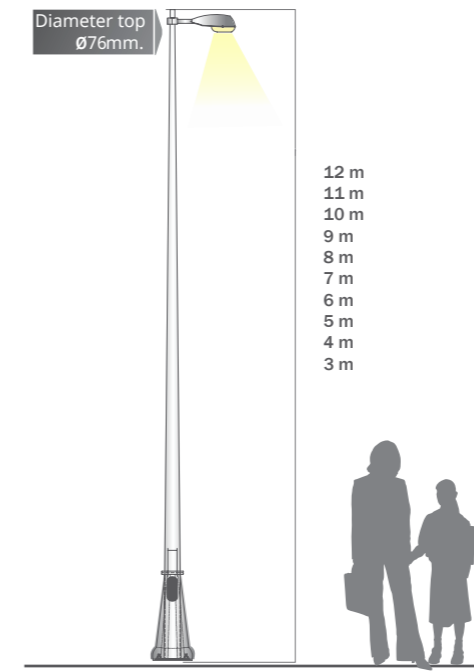
Specifications						Flange	Nuts and bolts	Foundation	Task			
Height (m)	Section 1	Section 2	Size top (mm)	Size bottom (mm)	Thick-ness	Sizes (mm)	Pieces type (mm)	Lenght	Sizes (mm) - PO=1	Vertical task (N)	Wind speed (km/h)	
2,5	8	-	60	105	3	220x220x8	4-M12	432	400x400x600	1	618,5	130
3,5	8	-	60	105	3	220x220x8	4-M12	432	400x400x600	1	618,5	130
4,5	8	-	60	105	3	220x250x10	4-M16	500	500x500x600	1	691,95	130
5,5	8	-	60	105	3	250x250x10	4-M16	500	500x500x600	1	691,95	130
6,5	8	-	60	125	3	250x250x10	4-M16	500	600x600x600	1	871,25	130
7,5	8	-	60	138	3	250x250x10	4-M16	500	700x700x600	1	871,25	130
8,5	8	-	60	155	3	300x300x12	4-M16	500	800x800x700	1	969,25	130
9,5	8	-	60	161	3	300x300x2	4-M16	500	800x800x800	1	969,25	130
10,5	8	-	60	200	3	400x400x14	4-M20	600	800x800x800	1	527,8	130
11,5	8	-	60	220	3	400x400x14	4-M20	600	800x800x800	1	969,25	130
12,5	8	-	60	245	3	400x400x14	4-M20	600	1000x1000x1000	1	969,25	130
14,5	8	-	60	245	3	400x400x14	4-M20	600	1000x1000x1000	1	969,25	130

Specifications						Flange	Nuts and bolts	Foundation	Task			
Height (m)	Section 1	Section 2	Size top (mm)	Size bottom (mm)	Thick-ness	Sizes (mm)	Pieces type (mm)	Lenght	Sizes (mm) - PO=1	Vertical task (N)	Wind speed (km/h)	
3	8	-	60	105	3	220x220x8	4-M12	432	400x400x600	1	618,5	130
4	8	-	60	105	3	220x220x8	4-M12	432	400x400x600	1	618,5	130
5	8	-	60	125	3	220x250x12	4-M12	432	500x500x600	1	691,95	145
6	8	-	60	140	3	250x25x10	4-M16	576	500x500x600	1	691,95	145
7	8	-	60	170	3	280x280x12	4-M16	576	600x600x600	1	871,25	145
8	8	-	60	180	3	300x300x14	4-M16	576	700x700x600	1	871,25	145
9	8	-	60	205	3	300x300x16	4-M20	720	800x800x700	1	969,25	145
10	8	-	60	220	3	400x400x16	4-M20	720	800x800x800	1	969,25	145
11	8	-	60	235	3	420x420x16	4-M20	720	800x800x800	1	527,8	145
12	8	-	60	250	3	420x420x16	4-M20	720	800x800x800	1	969,25	145
13	8	-	60	225	3	400x400x18	4-M24	864	1000x1000x1000	1	969,25	145
14	8	-	60	240	3	400x400x18	4-M24	864	1000x1000x1000	1	969,25	145
15	8	-	60	250	3	400x400x18	4-M24	864	1000x1000x1000	1	969,25	145



Conical pillars with flange, circular section

1. Designed according to EN 1461 standard;
2. On request they can be painted in electrostatic field;
3. The size of the flange is a function of the height of the pillar;
4. Supports up to 4 arms, different shapes and sizes, made upon request.



Conical pillars with flange, circular section

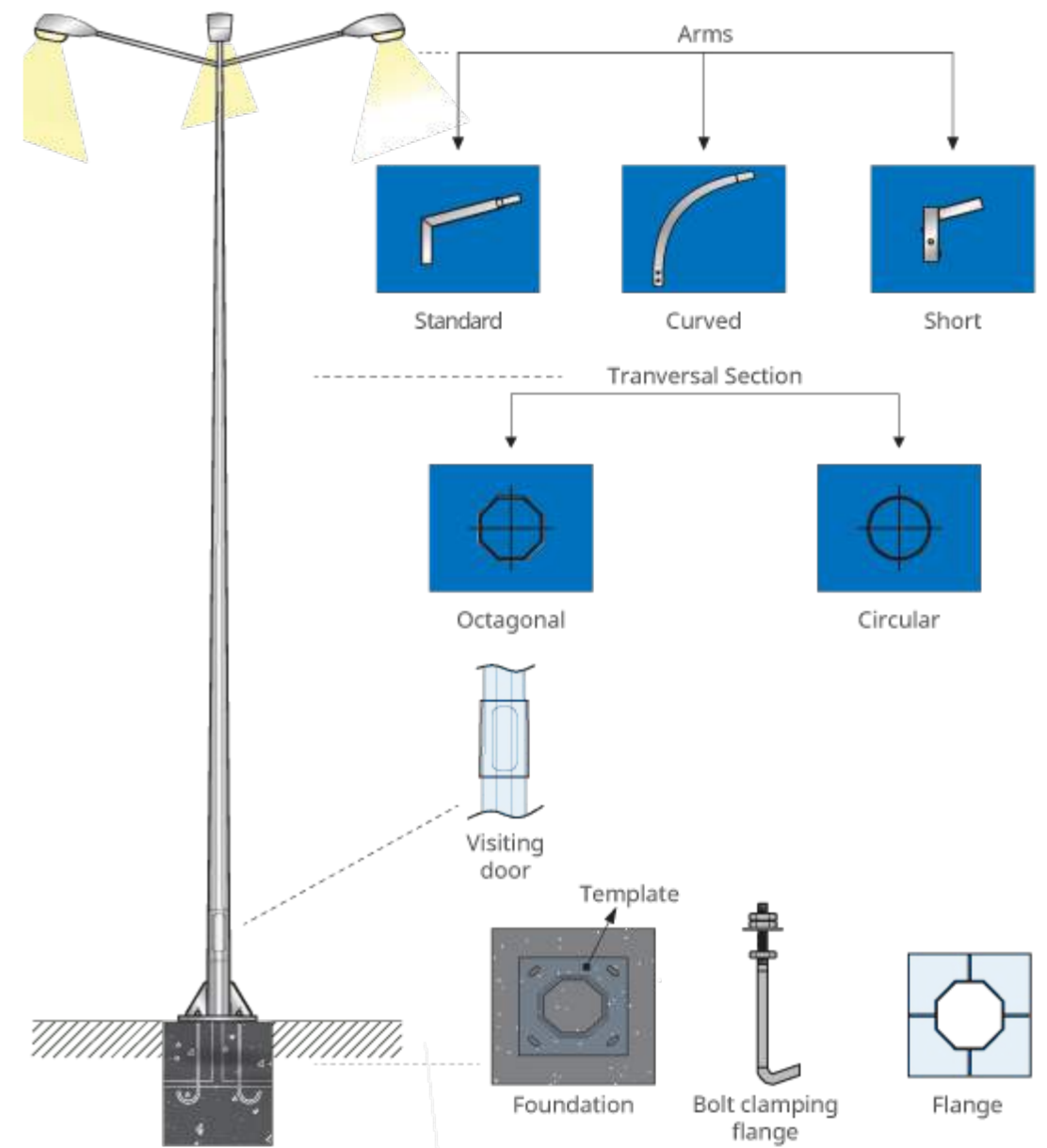
1. Designed according to EN 1461 standard;
2. On request they can be painted in electrostatic field;
3. The size of the flange is a function of the height of the pillar;
4. Supports up to 4 arms, different shapes and sizes, made upon request.

Specifications				Flange		Nuts and bolts		Foundation		Task		
Height (m)	Section 1	Section 2	Size top (mm)	Size bottom (mm)	Thickness	Sizes (mm)	Pieces type (mm)	Length	Sizes (mm) - PO=1	Vertical task (N)	Wind speed (km/h)	
3	-	0	60	90	3	220x220x8	4-M12	432	400x400x600	1	618,5	120
4	-	0	60	100	3	220x220x8	4-M12	432	400x400x600	1	618,5	120
5	-	0	60	110	3	220x250x10	4-M12	432	500x500x600	1	691,95	130
6	-	0	60	120	3	250x250x10	4-M16	500	500x500x600	1	691,95	130
7	-	0	60	130	3	250x250x10	4-M16	500	600x600x600	1	871,25	130
8	-	0	60	140	3	350x350x10	4-M16	500	700x700x600	1	871,25	130
9	-	0	60	150	3	350x350x12	4-M16	500	800x800x700	1	969,25	130
10	-	0	60	160	3	350x350x12	4-M16	500	800x800x800	1	969,25	130
11	-	0	60	170	3	360x360x16	4-M20	600	800x800x800	1	527,8	120
12	-	0	60	180	3	360x360x16	4-M20	600	800x800x800	1	969,25	120

Specifications				Flange		Nuts and bolts		Foundation		Task		
Height (m)	Section 1	Section 2	Size top (mm)	Size bottom (mm)	Thickness	Sizes (mm)	Pieces type (mm)	Length	Sizes (mm) - PO=1	Vertical task (N)	Wind speed (km/h)	
3	-	0	76	105	3	220x220x8	4-M12	432	400x400x600	1	618,5	130
4	-	0	76	116	3	220x220x8	4-M12	432	400x400x600	1	618,5	130
5	-	0	76	126	3	220x220x10	4-M16	500	500x500x600	1	691,95	145
6	-	0	76	136	3	250x250x10	4-M16	500	500x500x600	1	691,95	145
7	-	0	76	146	3	260x260x12	4-M16	500	600x600x600	1	871,25	145
8	-	0	76	156	3	350x350x12	4-M16	500	700x700x600	1	871,25	145
9	-	0	76	166	3	350x350x12	4-M16	500	800x800x700	1	969,25	145
10	-	0	76	176	3	350x350x16	4-M16	500	800x800x800	1	969,25	145
11	-	0	76	186	3	400x400x14	4-M20	500	800x800x800	1	527,8	145
12	-	0	76	196	3	400x400x14	4-M20	500	800x800x800	1	969,25	145



Specifications



3S energy Batteries

Auto Batteries

“

We have more than 25 years experience in the battery industry we are the second largest market share holder and producer in Romania.

We have a wide range of batteries for all your needs.

We are very involved in our quality assurance and in that regard we have the only R.A.R. (Regulatory Agency for Automotive) testing facility for Automotive battery (ploiesti 3).

On automotive industry we have a full range of automobile batteries from 45Ah to 100Ah to heavy duty and super heavy duty from 150Ah to 240 Ah.

Battery types:

Durable (35Ah, 42Ah, 45Ah, 55Ah, 62Ah, 70Ah, 71Ah, 85Ah, 88Ah, 90Ah, 100Ah)

Durable Japan (45Ah, 50Ah, 60Ah, 70Ah, 95Ah)

Durable Top (55Ah, 66Ah, 75Ah, 100Ah)

Durable Maxim(55Ah, 65Ah, 80Ah, 100Ah)

Fortza (55Ah, 65Ah, 75Ah, 100Ah)

Suprema (54Ah, 55Ah, 62Ah, 66Ah, 75Ah, 85Ah, 100Ah)



3S Durable Battery

- » Auto battery charged with low water consumption electrolyte, maintenance-free
- » 24 months warranty
- » Expected life of 4 to 5 years



Technology

The use of the revolutionary technology “expanded-metal technology” permits using both grills from Lead - Calcium alloy. The special design facilitates mounting more plates in the same cell, thus increasing the total performances and the expected lifetime of the battery.

Constructive Characteristics

- » Polypropylene-Copolymer Tanks (PPCo), handle for easy handling
- » Caps with special stoppers that allow recombination of the gases released during operation
- » Grates for negative and positive plates of lead-calcium alloy, expanded metal
- » Separators of polyethylene type “handbag”
- » Gauge dimensions according to SR EN 60095-2 + A11: 2000;
- » Functional characteristics according to SR-EN 50342-1: 2006, EN 50342-2: 2008

Technical and functional advantages

- » “PbCa Expanded-metal” technology ensures very low water loss, below 1g / AH, guarantees lifetime maintenance free, under normal operating conditions
- » They can be stored in normal conditions, without recharging for a period of minimum 6 months
- » The grates design insures best performance that creates a long lifetime expectancy
- » Start-up power at -18 ° C is superior by up to 17% compared to batteries with maintenance

Nr.	Battery Type		Start-up current (-18 C) SR EN	Dimension			Weight with electrolyte (+/- 5%) Kg	Applications on vehicles
	Tens. (V)	Cap.C20 (Ah)		A	L (mm)	I (mm)		
1	12	35	280	196	128	225	10.1	Tico, Matiz, Petrol car 1300 cm3
2	12	42	330	175	175	190	10.3	Petrol car 1400 cm3
3	12	45	390	207	175	190	11.4	Petrol car 1400 cm3
4	12	55	480	242	175	190	14,5	Petrol car 1800 cm3
5	12	62	510	242	175	190	15,4	Petrol car 2000 cm3, Diesel car 1600cm3
6	12	62	540	242	175	175	14.5	Petrol car 2000 cm3, Diesel car 1800cm3
7	12	70	600	278	175	190	16.5	Petrol car 3000 cm3, Diesel car 2000cm3
8	12	71	640	278	175	175	16.2	Petrol car 3000 cm3, Diesel car 4000cm3
9	12	85	740	315	175	175	20,1	Petrol car 3500 cm3, Diesel car 2800cm3
10	12	88	720	353	175	175	22.6	Petrol car 3500 cm3, Diesel car 2800cm3
11	12	90	760	353	175	175	22,8	Petrol car 3500 cm3, Diesel car 2800cm3
12	12	100	800	353	175	190	22.8	Petrol car 4200 cm3, Diesel car 3000cm3

3S Durable JAPAN Battery



Nr.	Battery Type		Start-up current (-18 C) SR EN	Dimensions			Weight with electrolyte (+/- 5%) Kg	Applications on vehicles
	Tens. (V)	Cap.C20 (Ah)		A	L (mm)	I (mm)		
13	12	45	300	236	128	226	12,8	Petrol car 1400 cm3
14	12	50	420	200	170	223	13,5	Petrol car 1800 cm3
15	12	60	450	230	171	220	14.4	Petrol car 2000 cm3, Diesel car 1600cm3
16	12	70	540	256	173	230	16.9	Petrol car 3000 cm3, Diesel car 1900cm3
17	12	95	760	330	174	225	21.2	Petrol car 4200 cm3, Diesel car 2800cm3

3S Durable Top Battery

- » Auto battery charged with low water consumption electrolyte, maintenance-free
- » 24 months warranty
- » Expected life of 4 to 5 years



Technology

The 3S's Durabila TOP batteries are using the newest innovation in Calcium-Calcium technology, they supply an excellent start-up current in cold conditions and have increased reliability consistent with the new-generation automobiles which rely on a lot more power due to sophisticated on-board equipment.

Constructive Characteristics

- » Polypropylene-Copolymer Tanks (PPCo),
- » Handle for easy handling
- » Grates for negative and positive plates of lead-calcium alloy, expanded metal
- » Separators of polyethylene type "handbag"
- » Gauge dimensions according to SR EN 60095-2 + A11: 2000;
- » Functional characteristics according to SR-EN 50342-1: 2006, EN 50342-2: 2008

Technical and functional advantages

- » "PbCa Expanded-metal" technology ensures very low water loss, below 1g / AH, guarantees lifetime maintenance free - under normal operating conditions
- » They can be stored in normal conditions, without recharging for a period of minimum 6 months

- » The special grates design insures best performance that creates a long lifetime expectancy
- » Start-up power is superior by up to 32% compared to batteries with maintenance, due to an increased number of plates

Nr.	Battery Type		Start-up current (-18 C) SR EN	Sizes			Weight with electrolyte (+/- 5%) Kg	Applications on vehicles
	Tens. (V)	Cap.C20 (Ah)		A	L (mm)	I (mm)		
1	12	55	480	242	175	175	13,7	Petrol car 1800 cm3
2	12	66	570	242	175	190	15,8	Petrol car 2500 cm3, Diesel car 1900cm3
3	12	75	640	278	175	190	18,5	Petrol car 4000 cm3, Diesel car 1600cm3
4	12	100	900	353	175	190	24,5	Petrol car 4200 cm3, Diesel car 3500cm3



3S Maxima

- » Auto battery charged with low water consumption electrolyte, maintenance-free
- » 24 months warranty
- » Expected life of 4 to 5 years



Technology

The MAXIMA battery is an excellent solution which includes a lot of innovations in the same product.

They are made with advanced technology, sealed and equipped with a safety system that meets three functions:

1. Personal labyrinth for every cell for preventing acid leakage
2. Centralized gas emissions filter provided with a single point of emission
3. Anti-blast filter that prevents the inside gas explosions and protects the motor compartment from the explosive gases

The MAXIMA batteries are built with Calcium-Calcium technology for both the negative and positive plate. This technology limits the auto-discharging for both the storage time as well as when the vehicle is not in use for a long time. The limited consumption of water allows for a maintenance free life-time.

Constructive Characteristics

- » Polypropylene-Copolymer Tanks (PPCo),
- » Handle for easy handling
- » Grates for negative and positive plates of lead-calcium alloy, expanded metal
- » Very reduced gauzes and therefore increased energy density with Up to 16%

- » Caps with special stoppers that allow recombination of the gases released during operation
- » Separators of polyethylene type "handbag"
- » Gauge dimensions according to SR EN 60095-2 + A11: 2000;
- » Functional characteristics according to SR-EN 50342-1: 2006, EN 50342-2: 2008
- » Anti-explosion filter
- » Also available in inverted terminals (Terminal + on left)
- » Charging indicator: type " magic eye"

Technical and functional advantages

- » "PbCa Expanded-metal" technology ensures very low water loss, below 1g / AH, guarantees lifetime maintenance free - under normal operating conditions
- » They can be stored in normal conditions, without recharging for a period of minimum 6 months
- » Due to the type-gauge characteristics and excellent parameters MAXIMA batteries covers all the necessary powers for auto-vehicles
- » **Viability and Security.** MAXIMA batteries are catalogued SPC (Safety Power Check) and they have a secured lid. The centralized gas system is optimized that allows the gas condensation in order for them to return to the battery. The presence of the safety valve in the lid eliminates risk of sparks and flames.

Nr.	Battery Type		Start-up current (-18 C) SR EN	Sizes			Weight with electrolyte (+/- 5%) Kg	Applications on vehicles
	Tens. (V)	Cap.C20 (Ah)		A	L (mm)	I (mm)		
1	12	55	510	207	175	190	12.7	Petrol car 2000 cm3
2	12	65	600	242	175	190	14.9	Petrol car 2500 cm3, Diesel car 1900cm3
3	12	80	720	278	175	190	18,3	Petrol car 4000 cm3, Diesel car 2500cm3
4	12	100	850	353	175	190	23,5	Petrol car 4200 cm3, Diesel car 3500cm3
5	12	110	950	396	175	190	26	Petrol car 5000 cm3, Diesel car 4000cm3

3S Fortza

- » Auto Battery – “ Sealed – Maintenance free”
- » 24 months warranty



Technology

FORTZA Batteries are made with advanced technologies, sealed and equipped with a safety system.

- » Double lid system which insures the complete seal of the battery capable to fulfil the requirement for “ Automotive Specification” for the anti-leak tests of the electrolyte (The FORTZA battery can be held upside down for a short amount of time without any leakage;
- » Produced with the newest Lead-Calcium technology
- » Anti-flame protection insures increased security allowing the gases to evacuate without any ignition danger;
- » Absolute free maintenance. FORTZA Batteries do not need any water over their lifetime. The revolutionary technology used insures top performances of the capacity and the start-up current in low temperatures.



Constructive Characteristics

- » Polypropylene-Copolymer Tanks (PPCo) in red color,
- » Ergonomic design “handle for easy handling”
- » Grates for negative and positive plates of lead-calcium alloy, expanded metal
- » Very reduced gauzes and therefore increased energy density with Up to 16%
- » Caps with special stoppers that allow recombination of the gases released during operation
- » Separators of polyethylene type “handbag”

- » Gauge dimensions according to SR EN 60095-2 + A11: 2000;
- » Functional characteristics according to SR-EN 50342-1: 2006, EN 50342-2: 2008
- » Charging indicator: type “ magic eye”

Technical and functional advantages

- » “PbCa Expanded-metal” technology ensures very low water loss, below 1g / AH, guarantees lifetime maintenance free - under normal operating conditions
- » They can be stored in normal conditions, without recharging for a period of minimum 6 months
- » Due to the type-gauge characteristics and excellent parameters FORTZA batteries covers all the necessary powers for auto-vehicles
- » The special grates design insures best performance that creates a long lifetime expectancy 4-5 years
- » Start-up power is superior by up to 30% compared to batteries with low maintenance, due to the redesign and the increased number of plates.

Nr.	Battery Type		Start-up current (-18 C) SR EN	Sizes			Weight with electrolyte (+/- 5%) Kg	Applications on vehicles
	Tens. (V)	Cap.C20 (Ah)		A	L (mm)	I (mm)		
1	12	55	510	207	175	190	13,1	Petrol car 2000 cm3
2	12	65	600	242	175	190	15,3	Petrol car 2500 cm3, Diesel car 1900cm3
3	12	75	680	275	175	190	18,3	Petrol car 4000 cm3, Diesel car 2500cm3
4	12	80	720	275	175	190	18,7	Petrol car 4000 cm3, Diesel car 2500cm3
5	12	100	850	353	175	190	22,75	Petrol car 4200 cm3, Diesel car 3500cm3

3S Suprema

- » Auto Battery – “ Sealed – Maintenance free”
- » 24 months warranty



Technology

The 3S's SUPREMA Battery uses the most recent innovation in the fabrication of Calcium-Calcium technology that insures the best start-up performance in cold conditions and superior power, needed for the last generation vehicles who requires a lot more energy being equipped with a lot of systems and modern gadgets. The cap is double thermo welded and has a recombination labyrinth for every cell. SUPREMA offers maximum protection for electrolyte leakage even if the battery is upside down (**Roll over test**). THE SUPREMA is maintenance free over their entire lifetime.

Constructive Characteristics

- » Polypropylene-Copolymer Tanks (PPCo) in red color,
- » The cap is double thermo welded and has a recombination labyrinth for every cell
- » Large number of plates
- » Ergonomic design “handle for easy handling”
- » Grates for negative and positive plates of lead-calcium alloy, expanded metal
- » Very reduced gauzes and therefore increased energy density with Up to 16%
- » Caps with special stoppers that allow recombination of the gases released during operation
- » Separators of polyethylene type “handbag”
- » Gauge dimensions according to SR EN 60095-2 + A11: 2000;
- » Functional characteristics according to SR-EN 50342-1: 2006, EN 50342-2: 2008
- » Charging indicator: type “ magic eye”

Technical and functional advantages

- » Ideal for auto vehicles with a large number of electrical equipments
- » They can be stored in normal conditions, without recharging for a period of minimum 6 months
- » Due to the type-gauge characteristics and excellent parameters SUPREMA batteries covers all the necessary powers for auto-vehicles
- » “PbCa Expanded-metal” technology ensures very low water loss, below 1g / AH, guarantees lifetime maintenance free - under normal operating conditions
- » The redesign favors exceptional performance which lead to an increased lifetime
- » Start-up power (at -18 ° C) is superior by up to 30% compared to batteries with low maintenance, due to the redesign and the increased number of plates.
- » The expected lifetime is over 5 years

Nr.	Battery Type		Start-up current (-18 C) SR EN	Sizes			Weight with electrolyte (+/- 5%)	Applications on vehicles
	Tens. (V)	Cap.C20 (Ah)		A	L (mm)	I (mm)		
1	12	54	510	207	175	175	12,3	Petrol car 2000 cm3
2	12	55	560	207	175	190	13,4	Petrol car 3000 cm3
3	12	62	600	242	175	175	14,6	Petrol car 3000 cm3, Diesel car 1900cm3
4	12	66	640	242	175	190	15,0	Petrol car 3000 cm3, Diesel car 1900cm3
5	12	75	720	278	175	175	17,1	Petrol car 4000 cm3, Diesel car 2800cm3
6	12	75	750	278	175	190	17,8	Petrol car 4000 cm3, Diesel car 3000cm3
7	12	85	800	315	175	175	19,0	Petrol car 4000 cm3, Diesel car 3200cm3
8	12	100	900	353	175	175	22,2	Petrol car 4200 cm3, Diesel car 3500cm3
9	12	100	920	353	175	190	22,4	Petrol car 4200 cm3, Diesel car 3500cm3

Heavy Duty Batteries

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To insure the best quality possible we have all our products tested before shipping in our own DIGATRON testing facility.

We take quality very seriously and we have an internal quality insurance program and also an external one which is controlled regularly by national and international bodies. We have implemented a full range of quality insurance standards ISO 9001, ISO 14001 , OHSAS 18001.

3S produces 3 battery ranges for trucks, tractors, buses and heavy duty industrial vehicles.

Battery types:

3S Heavy Duty®

3S Super Heavy Duty®

3S Magic Truck SMF®



3S Heavy Duty®

- » Auto batteries Electrolyte charged “with low water consumption, no maintenance”
- » 24 months warranty (110 Ah to 240 Ah)
- » Lifetime expectancy 4 years



Technology

Made with special hybrid technology for “heavy duty” , with reinforced groups in special resins, which increases resistance to vibrations and shocks.

Constructive Characteristics

- » Polypropylene-Copolymer Tanks (PPCo) in red color,
- » Large number of plates
- » Ergonomic design “handle for easy handling”
- » Grates for negative plates of lead-calcium alloy
- » Very reduced gauzes and therefore increased energy density with Up to 30%
- » Caps with special stoppers that allow recombination of the gases released during operation
- » Separators of polyethylene type “handbag”
- » Gauge dimensions according to SR EN 60095-2 + A11: 2000;
- » Functional characteristics according to SR-EN 50342-1: 2006, EN 50342-2: 2008
- » Charging indicator: type “ magic eye”

Technical and functional advantages

- » The Heavy-duty construction insures an optimal operation function in vibration and shocks condition on trucks
- » They can be stored in normal conditions, without recharging for a period of minimum 3 months
- » HEAVY-DUTY covers all the range of tractors, busses, trucks etc.
- » The hybrid technology ensures very low water loss, below 4g / AH, guarantees lifetime maintenance free - under normal operating conditions
- » The special design of the grates insures exceptional performance
- » Start-up power (at -18 ° C) is superior by up to 50% compared to batteries with maintenance.

Nr.	Battery Type		Start-up current (-18 C) SR EN	Sizes			Weight with electrolyte (+/- 5%) Kg	Applications on vehicles
	Tens. (V)	Cap.C20 (Ah)		A	L (mm)	I (mm)		
1	12	110	720	344	172	234	26.8	Motor vehicles, trucks, tractors
2	12	110	760	514	175	210	33.0	Motor vehicles, trucks, tractors
3	12	120	850	344	172	284	32.5	Motor vehicles, trucks, tractors
4	12	135	900	514	175	223	36.9	Motor vehicles, trucks, tractors
5	12	150	1000	513	223	210	42.2	Motor vehicles, trucks, tractors
6	12	180	1200	510	218	223	46.9	Trucks, buses, coaches
7	12	200	1250	507	224	218	48.3	Trucks, buses, coaches
8	12	225	1400	518	273	237	61.0	Trucks, buses, coaches
9	12	240	1300	513	274	242	63.5	Trucks, buses, coaches

3S Super Heavy Duty®

- » Auto batteries Electrolyte charged “with low water consumption, no maintenance”
- » 24 months warranty
- » Lifetime expectancy 4 – 5 years



Technology

The batteries in the auto Super Heavy Duty series use flame separators with glass fiber “glass-mat” combined with reinforced special plates.

Due to this type of separators the lifetime in cycles is bigger and the resistance to vibration is increased over the normal type batteries. The vibration test conformable to SR EN 50342 is made on an acceleration of 6g’s for a duration of 20h compared to classic batteries which are tested at 3g’s for 3 hours.

The Super Heavy duty batteries offers extra performance in extreme weather and road conditions.

Constructive Characteristics

- » Extra resistance to vibrations and shocks
- » Thick plates especially designed for maximum resistance over corrosion
- » The SUPER HEAVY DUTY BATERIES are specially designed for heavy vehicles such as pick-ups, trucks, lorries and buses etc.
- » Durable plates for heavy uses with special interior design
- » Polypropylene-Copolymer Tanks (PPCo), easy handle
- » Charging indicator: type “ magic eye”
- » Very reduced gauzes and therefore increased energy density with Up to 30%

- » Caps with special stoppers that allow recombination of the gases released during operation
- » Gauge dimensions according to SR EN 60095-2 + A11: 2000;
- » Functional characteristics according to SR-EN 50342-1: 2006, EN 50342-2: 2008
- » Grates for plates made out of lead-calcium alloy and Separators of polyethylene type “hand-bag” coupled with flame resistant glass fiber separators

Offered Advantages

- » Maximum resistance over corrosion
- » Increased lifetime in cycles
- » High performance
- » No maintenance due to increased volume of electrolyte and special alloys
- » Reduced water consumption (1g/Ah – TS EN 50342-1)
- » Resistance to shocks and vibration
- » Increased start-up power in any conditions
- » Durable terminals
- » Deep cycles
- » Maximum performance with special armed separators with fibers

Nr.	Battery Type		Start-up current (-18 C) SR EN	Sizes			Weight with electrolyte (+/- 5%) Kg	Applications on vehicles
	Tens. (V)	Cap.C20 (Ah)		A	L (mm)	I (mm)		
1	12	150	1000	513	223	223	44,0	Motor vehicles, trucks, tractors
2	12	180	1150	513	223	223	47,1	Trucks, buses, coaches
3	12	225	1300	517	275	237	60,8	Trucks, buses, coaches

3S Magic Truck SMF ®

Auto batteries Electrolyte charged “with low water consumption, no maintenance”

- » 24 months warranty (110 Ah to 240 Ah)
- » Lifetime expectancy 4 years



Special stoppers and two lids that insures recombination of the oxygen and hydrogen emitted over the 2 plates. It is so prevented the loss of water and the leakage of electrolyte. The positive electrode incorporates silver, tin and calcium alloys (PbCaAg), while the negative electrode incorporates Calcium (Pb-Ca) insuring the minimum loss of water.

Technology

- » Special lid insures 100% seal
- » Charging level indicator mounted on the lid : type “ magic eye
- » Alloy plates Ca-Ca with silver and tin (PbCaAg-PbCa)
- » Big electrolyte reserve over the plates
- » Robust and thicker construction inside the terminals
- » Special stoppers with labyrinth
- » Completely seals double seal lids : patented design
- » Flame “arrestor” mounted inside the lid for insuring protection against sparks and fire
- » Special handle
- » Degasification in two places insures a safety discharge of the gases produced by the battery, without any explosion risk

Detailing technology

- » Thick plates especially conceived for better resistance against corrosion. The positive electrode incorporates silver and the negative one has calcium, thus insuring a minimum water loss
- » Specially conceived for leakage prevention over hard terrain and vibration and for the condensation of water evaporated in high temperatures
- » The block of the battery was modified to increase the electrolyte volume, reducing any effect of corrosion
- » Increasing the electrolyte reserve insures a better performance of the battery in high temperatures
- » The thicker construction inside the terminals increases mechanical resistance and reduces the negative effects of vibration

Advantages

- » Ready to use , completely without maintenance
- » Extra resistance to vibration
- » Increased lifetime in cycles
- » Low water consumption (1g/Ah – TS EN 50342-1)

Nr.	Battery Type		Start-up current (-18 C) SR EN	Sizes			Weight with electrolyte (+/- 5%)	Applications on vehicles
	Tens. (V)	Cap.C20 (Ah)		A	L (mm)	I (mm)		
1	12	150	1000	513	223	223	37.8	Trucks and articulated trucks; Distribution vehicles; Buses and coaches; Vehicles used for public services; Construction machinery; Agricultural vehicles.
2	12	180	1200	513	223	223	40.9	
3	12	225	1300	517	275	242	54.0	

3S energy **Solar Water Pumping System**

As a company we want to provide the best products and services to the world, which make use of the power of the sun, to move water and sustain life.



3S To Pumps - 3S2P

The Complete Efficient Solar Water Pumping System

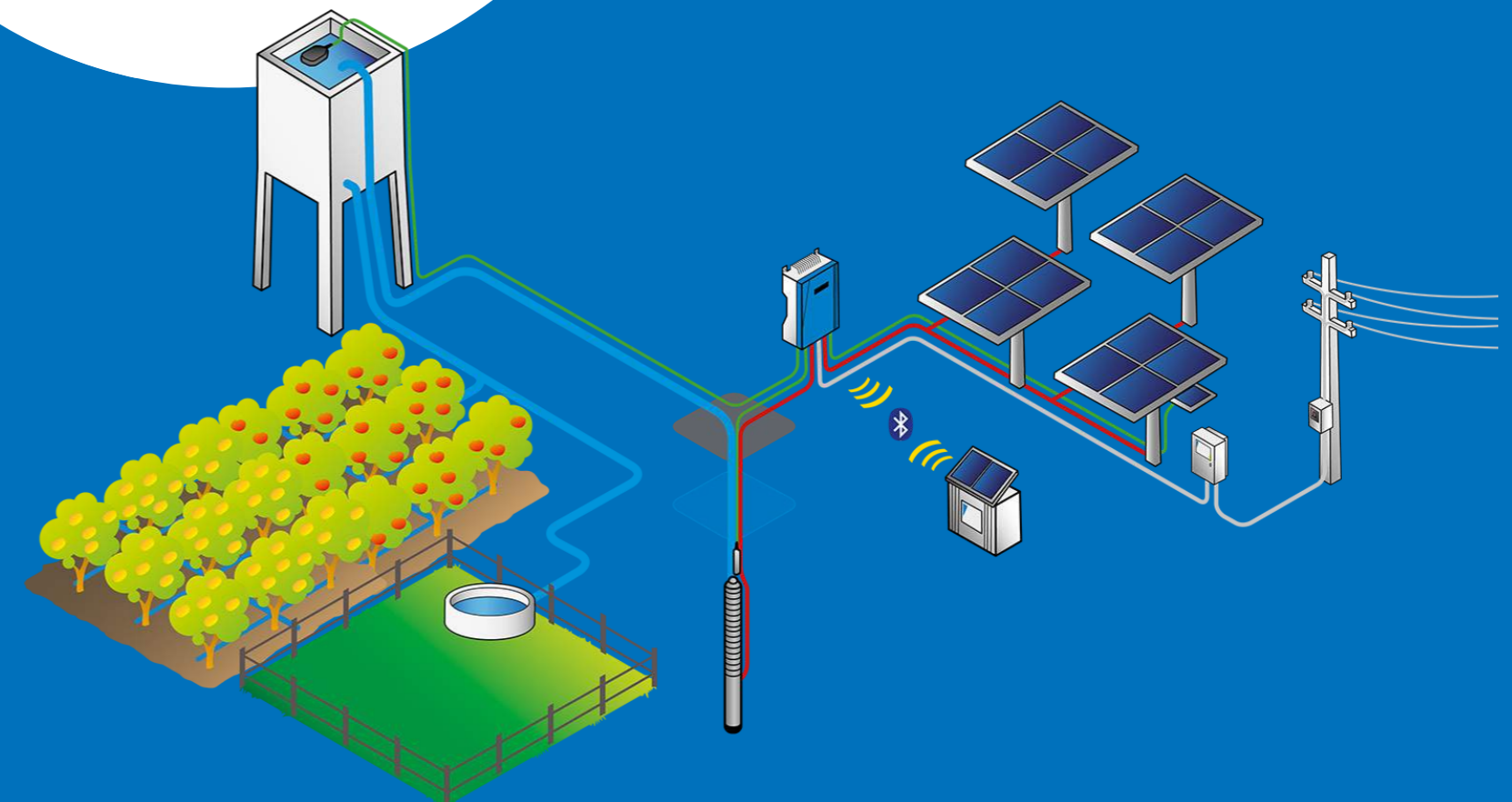
Pumping water uses a significant amount of power. The sun provides us with an almost infinite energy source that, with the right planning and equipment, means we can pump water anywhere without the need for power infrastructure.

3S2P is an advanced solar water pumping system. The system is designed specifically to use the power of the sun to move water, so replacing the need for grid power or diesel.

As solar power is not consistent through the day then 3S2P constantly changes the pump parameters to optimize the amount of water available.

3S2P systems are the most efficient available, delivering 30% to over 1,000% more water than the competitors' products depending on weather conditions.

3S2P covers a wide power range from 150W to 4kW with a wide range of pumps for submersible, surface or swimming pool applications.



Designed for Solar Water Pumping

3S2P has been designed from the first white board sketches to be a solar pumping system. The system has been designed and built by an engineering team who only focus on solar water pumping. This experience means they design, test and build systems where operation in the harshest, most remote environments is normal.

3S2P is designed to be field serviceable, the pump unit components and electronics are modular to allow for cost effective and fast replacement.

With PS2 you will benefit from:



No infrastructure to install

Using solar power means that you can install a pumping system almost anywhere, irrespective of power infrastructure availability and the associated costs. 3S2P is designed for the harshest off-grid environments.



Low cost of water

3S2P uses brushless and sensorless DC motors for maximum efficiency, this results in significantly more water being pumped with the available power. This efficiency results in a lower unit cost of water pumped.



Low operational costs

Operational cost savings are achieved as the system requires no fossil fuels, can be fully remotely managed and is designed to have a long working life. The result is very low, or no operating costs.



Lowest project risk

As 3S2P is designed to be a complete system, it has all of the needed software and hardware for your water project. The result is that your projects are delivered on time, on budget and without technical risk.

Ultimate Efficiency

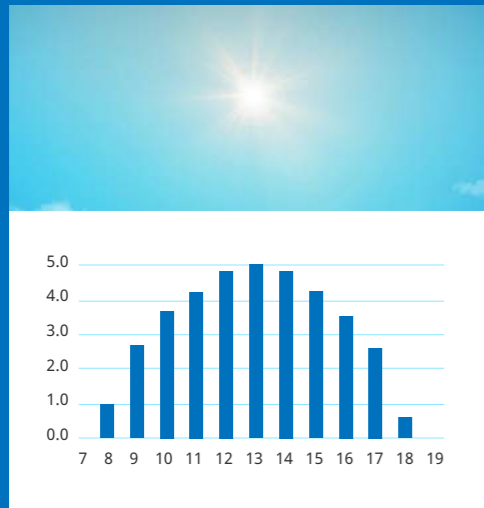
All 3S2P systems use a unique DC brushless and sensorless motor named ECDRIVE. This motor is a perfect match for solar applications as it has a very high efficiency across its whole operating range. This is very different to a small AC motor where maximum efficiency is only achieved in a narrow operating band.

Solar power is always changing through the day and depending on weather conditions. The 3S ECDRIVE and 3S2P have an average daily efficiency of above 90 %, most of our competitors achieve 65 % with clear blue skies and much less when there is cloud cover.



3S2P DC Brushless Solution vs Leading Competitors AC solution

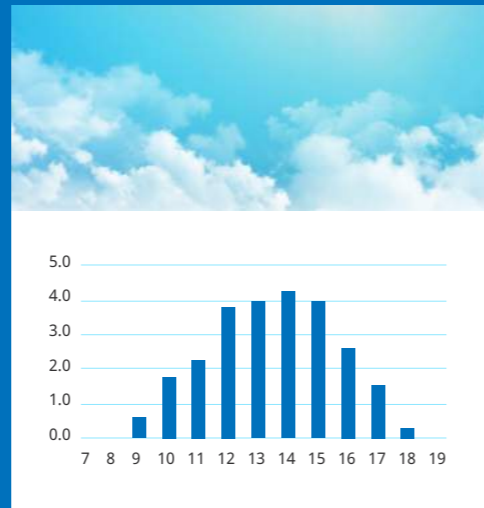
Perfect Solar Day



39 m³
10,300 US Gal.

+36%
more water

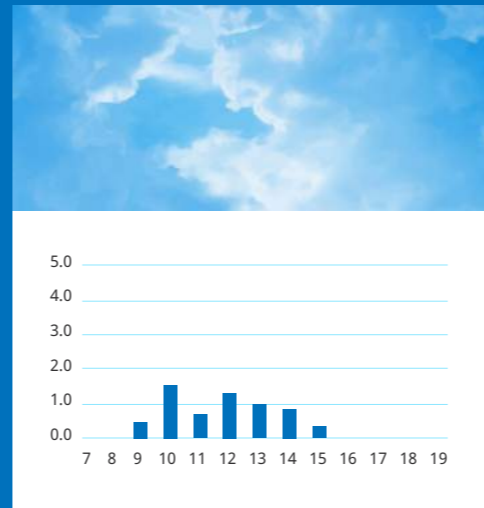
Cloudy Day



25 m³
6,700 US Gal.

+60%
more water

Very Overcast Day



6.0 m³
1,600 US Gal.

+1,460%
more water

The Complete Solution

An effective solar water pumping system is made up of more than one component. When you choose a 3S system you will get an integrated solution design specifically for solar water pumping from a company with absolute focus on this technology.

3S2P is designed to be a complete solar water pumping system comprising of a specialized pump controller and carefully matched pumps.

3S2P has eight sensor inputs that allow analogue and digital sensors to be connected. This combination of sensors with the powerful inbuilt software applications allows for full pump control and water specific applications.

The system also has an inbuilt Sun Sensor which measures the available irradiation and then makes decisions of what to do based on the available power. The SunSensor also avoids unnecessary stop start cycles which increase pump wear.

3S2P is a complete solution “out of the box” without the need for building additional switching cabinets or PLC units.

PS3S

The Complete Solar Water Pumping System with Smart-

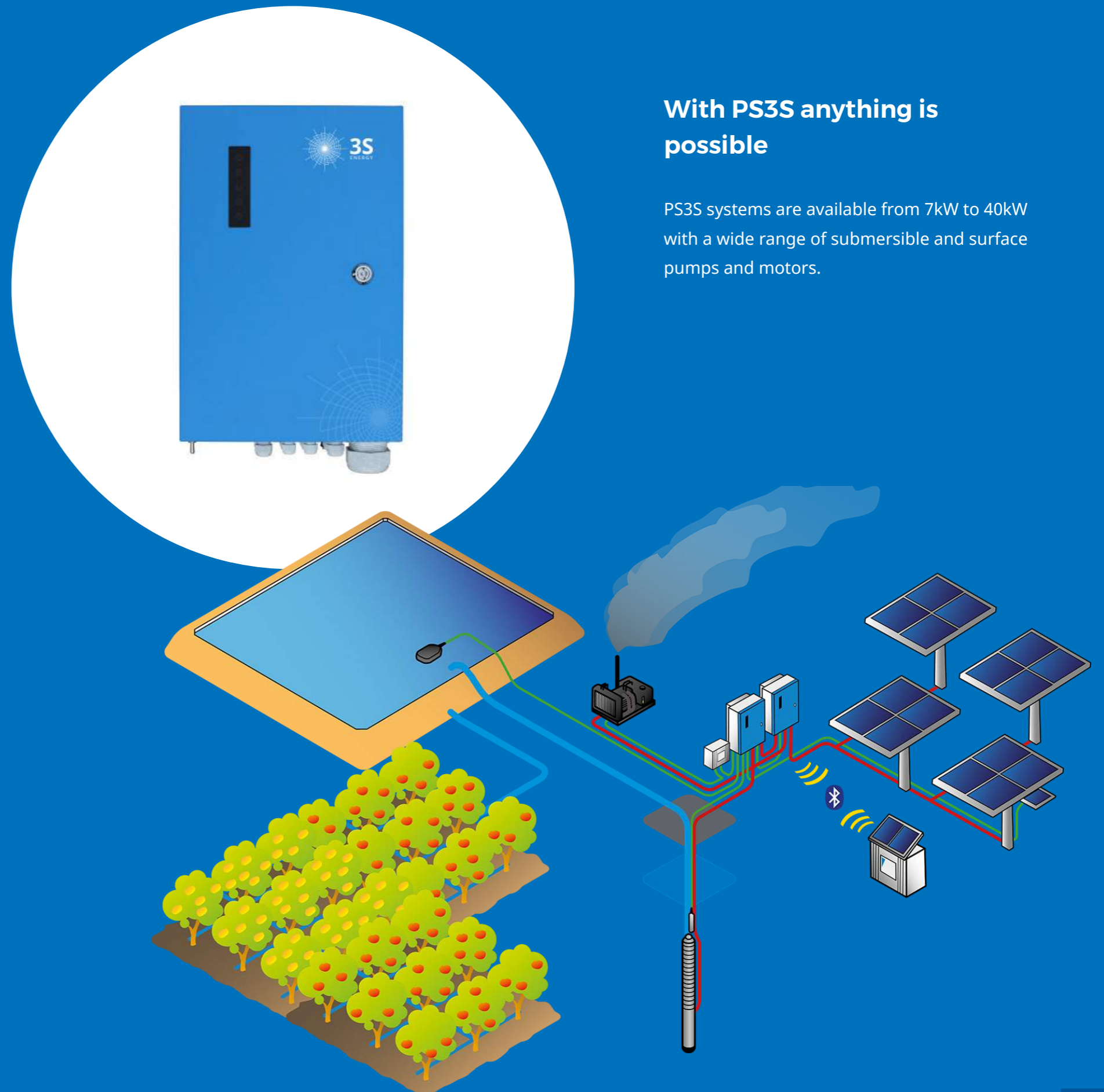
PS3S is the latest generation of solar water pumping systems for larger projects. PS3S can operate exclusively on solar power or with our new SmartSolution. PS3S SmartSolution provides a true hybrid pumping system which automatically can blend grid power and generator power with the core solar power supply.

PS3S is an advanced solar water pumping system. The system is designed specifically to use the power of the sun to move water, so replacing the need for grid power or diesel.

As solar power is not consistent through the day then PS3S constantly changes the pump parameters to optimize the amount of water available.

Being designed as an off-grid solar water pumping system, PS3S has all of the inputs and outputs needed in an integrated self-managing system.

Where water demands cannot be met by solar power alone the hybrid PS3S SmartSolution seamlessly blends in external power sources on demand.



With PS3S anything is possible

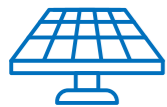
PS3S systems are available from 7kW to 40kW with a wide range of submersible and surface pumps and motors.

With PS3S you will benefit from:



No infrastructure to install

Using solar power means that you can install a pumping system almost anywhere, irrespective of power infrastructure availability and the associated costs. PS3S is designed for the harshest off-grid environments.



Right sizing

With infinite smart motor control PS3S is very gentle on pump motors, this both extends the system life and allows for any generators that are integrated into the system to be much smaller than for conventional pump systems.



Low operational costs

Operational cost savings are achieved as the system requires no fossil fuels, can be fully remotely managed and is designed to have a long working life. The result is very low, or no operating costs.



Lowest project risk

As PS3S is designed to be a complete system, it has all of the needed software and hardware for your water project. The result is that your projects are delivered on time, on budget and without technical risk.

Designed for Solar Water Pumping

PS3S has been designed from the first white board sketches to be a solar pumping system. The system has been designed and built by an engineering team who only focus on solar water pumping. This experience means they design, test and build systems where operation in the harshest, most remote environments is normal.

Having a great feature set is only part of being a good solar water pumping system, what really matters is how efficient the system is. Efficiency defines how much water it will pump. PS3S has class leading efficiency and optimized maximum power point tracking for best performance when conditions are not perfect. The system also has active power management to ensure that high ambient temperatures have minimal impact on water output.



SmartSolution Hybrid Power

With our SmartSolution PS3S becomes a hybrid powered system. Hybrid means seamlessly blending solar power with grid or generator power sources.

The PS3S becomes the brain of your water system, looking at what power is available, using solar power wherever possible and only starting a generator or putting a load on the power grid when there is not enough sun. This function is not a simple switching

system, there is active blending of power sources meaning that your solar investment is fully utilized and that the use of expensive, non-renewable power is minimized.

The PS3S SmartSolution manages all of this for you, including generator auto start and stop, timed starts and also volume based decision making. This flexibility means that the most efficient and effective solutions can be built to meet any water need.

The Complete Solution

PS3S is designed to be a complete solar water pumping system comprising of a specialized pump controller and carefully matched pumps. PS3S has eight sensor inputs that allow analogue and digital sensors to be connected. This combination of sensors with the powerful inbuilt software applications allows for full pump control and water specific applications.

The system also has an inbuilt Sun Sensor which measures the available irradiation and then makes decisions of what to do based on the available power. The Sun Sensor also avoids unnecessary stop start cycles which increase pump wear.

PS3S is a complete solution “out of the box” without the need for building additional switching cabinets or PLC units.

3S energy Solar Panels

Who we are

We are 3S, dedicated to quality and sustainability in the energy business.

Our factory is located in Romania, member of the EU near the city of Constanta with easy access to the port.

What recommends us?

The benefits of using 3S photovoltaic panels are:

- » real efficiency: 250W – 300W;
- » high efficiency equipments using only exclusive certificated raw materials;
- » high quality, guaranteed by quality control over technological flow;
- » 25 years warranty of maintaining the performance of photovoltaic panels in accordance with required certification;
- » double certification, **ISO 9001:2015** and **TUV InterCert Saar**.



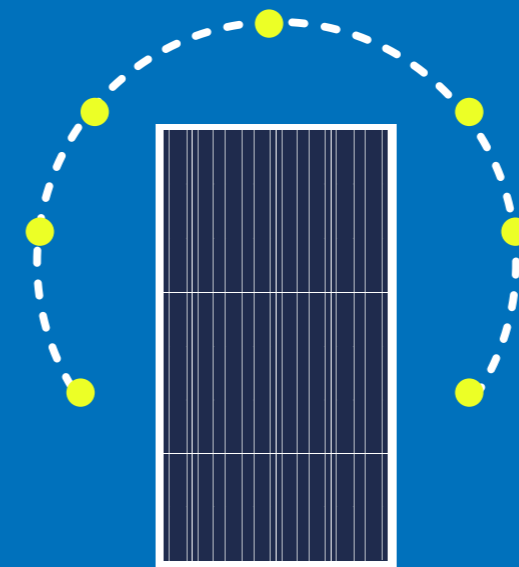
Why is it important to test the efficiency of photovoltaic panels?

With the passing of time, the efficiency of photovoltaic panels may register a descending trend of maximum 25%.

The decrease of the efficiency of photovoltaic panels by a certain percentage has negative and direct effects on the production of renewable energy.

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The risk of renewable energy production decrease is reduced at a minimum thanks to our testing procedure.



14h/day with sun
in a normal day of summer

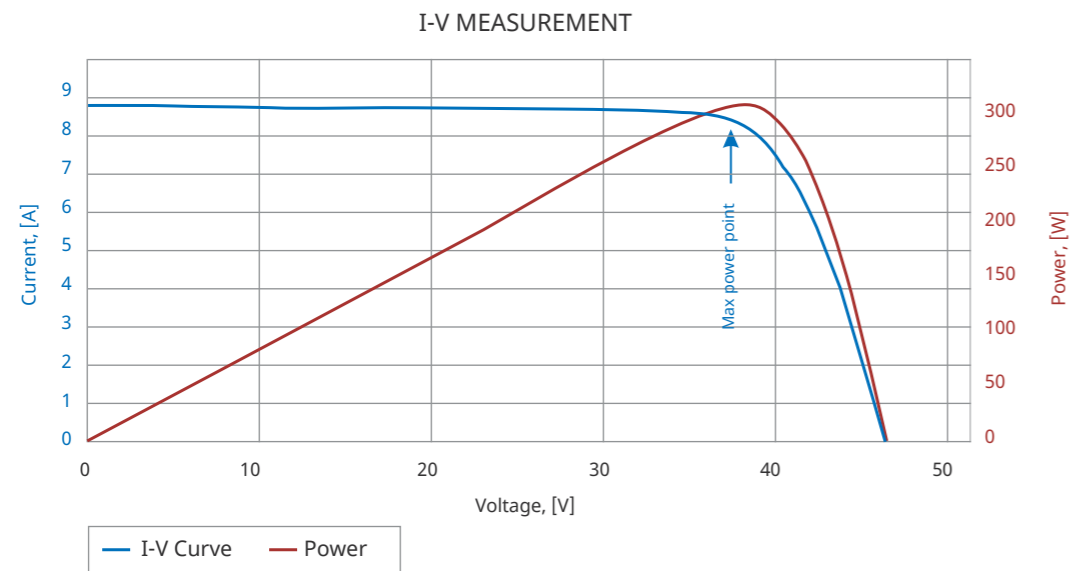
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5 seconds
when testing with Sun Simulator



Class AAA

Graphic model of Sun Simulator



Technical information

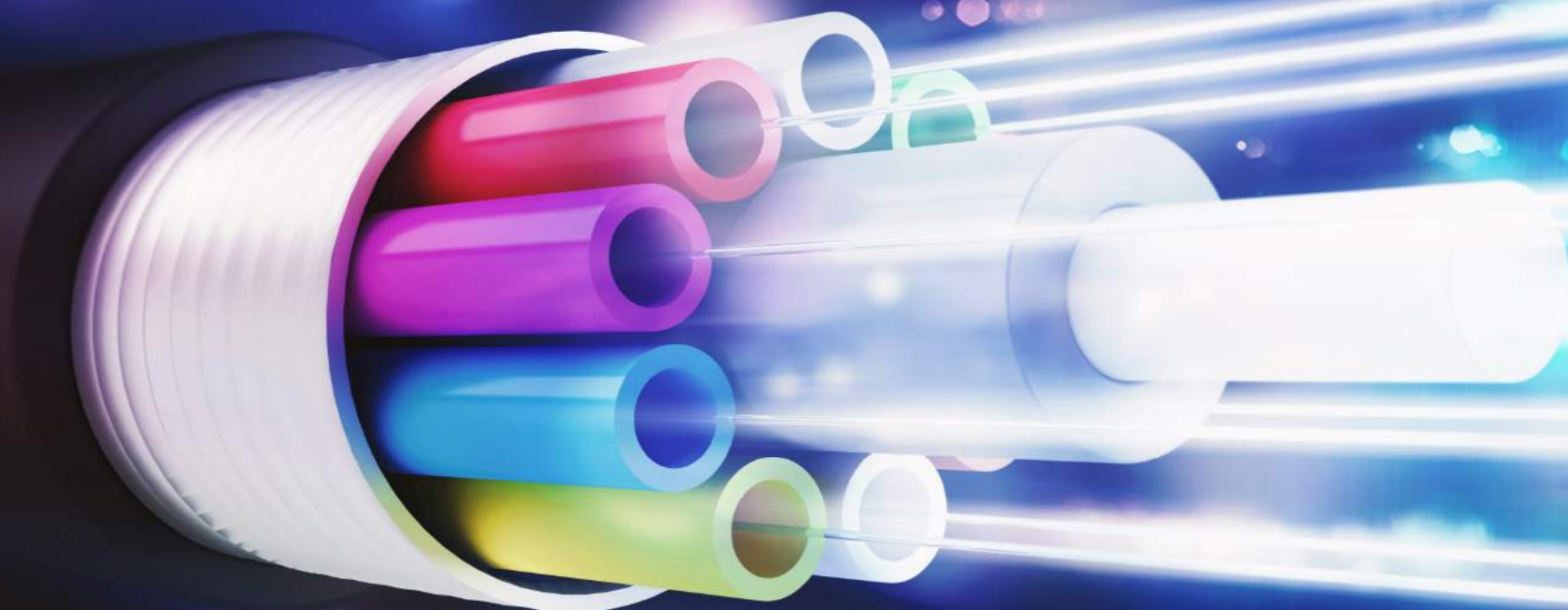
Electrical characteristics	WT 250P17	WT 255P17	WT 260P17	WT 300P17	WT 250M17	WT 255M17	WT 260M17
	Maximum Power at STC (Pmax)	254.99W	259.99W	264.99W	304.99W	254.99W	259.99W
Maximum Power Voltage (Vmp)	31.62V	31.8V	32.04V	37.94V	31.8V	32.04V	32.46V
Maximum Power Current (Imp)	8.37A	8.428A	8.466A	8.389A	8.32A	8.46A	8.56A
Open Circuit Voltage (Voc)	37.98V	38.1V	38.28V	45.576V	38.16V	38.28V	38.46V
Short Circuit Current (Isc)	8.903A	8.963A	9.002A	8.923A	9.06A	9.09A	9.11A
Module efficiency	16.4%	16.6%	16.76%	16.5%	16.40%	16.5%	16.6%

Packing configuration

Modules/Pallet	26 pcs	26 pcs
Maximum Pallets/Container (40'GP)	28 pcs	28 pcs
Maximum Modules/Container (40'GP)	728 pcs	728 pcs



3S energy Cables



We produce all types of Low Voltage Cables, Medium Voltage Cables, High and Extra High Voltage Cables and Submarine Cables.

With a wide portfolio of reliable and competitive cable solutions for international customers, the 3S Cables Group is one of the largest cable producers in Europe. The Group manufactures power, telecommunication and submarine cables, as well as enamelled wires and compounds.

With a strong export orientation and focus on development of value added products, such as high and extra-high voltage cables and submarine cables, the Group implements significant investments towards enriching its product portfolio and enhancing its sustainability profile. The Company implemented a EUR 60 million

approximately investment plan for the manufacture of high-voltage submarine cables in Fulgor's plant.

The Company's wide product range, which is sold internationally under the Cablel® trademark, extends to PVC, EPR and XLPE insulated power cables (rated up to 500kV), marine and low smoke

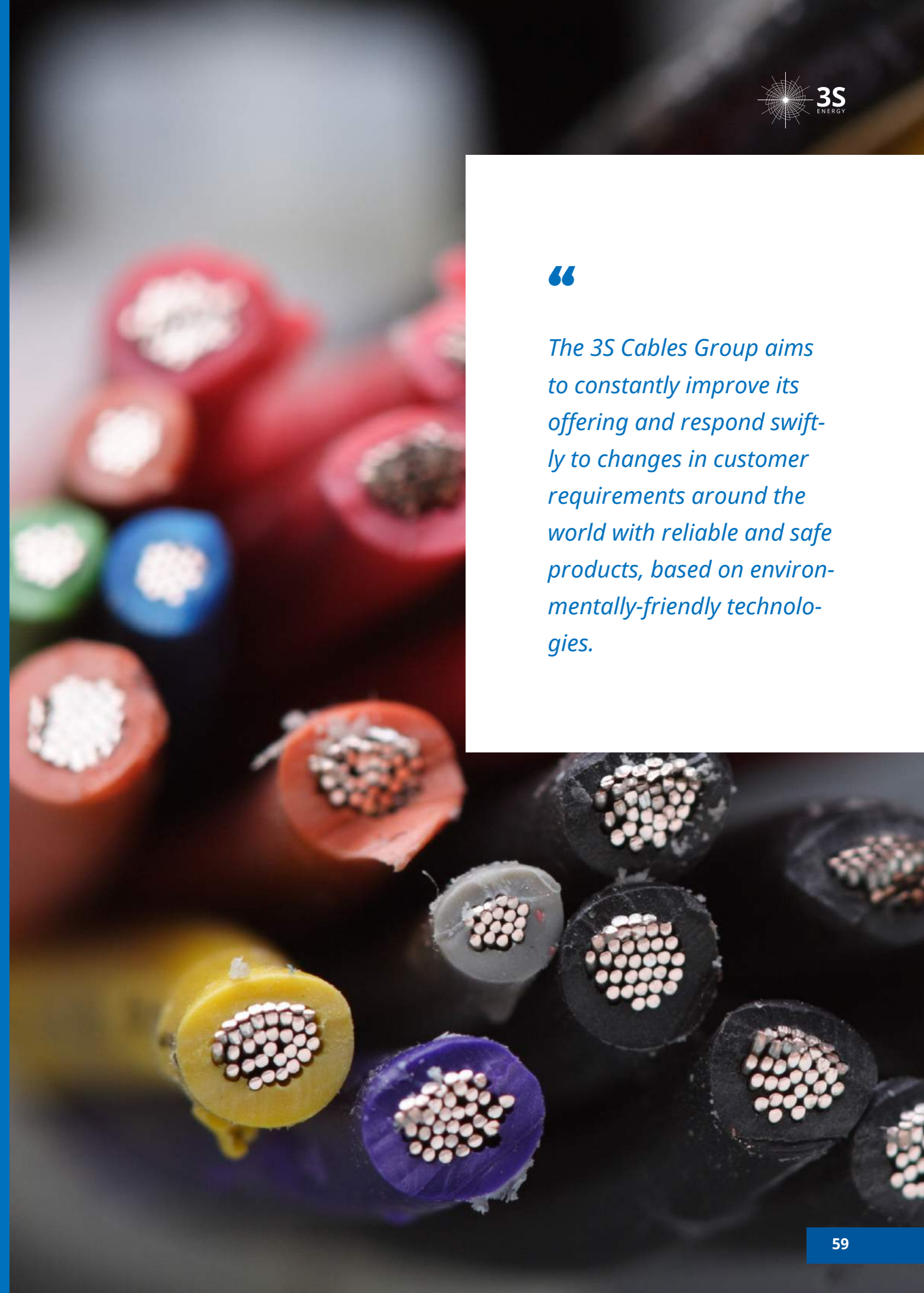
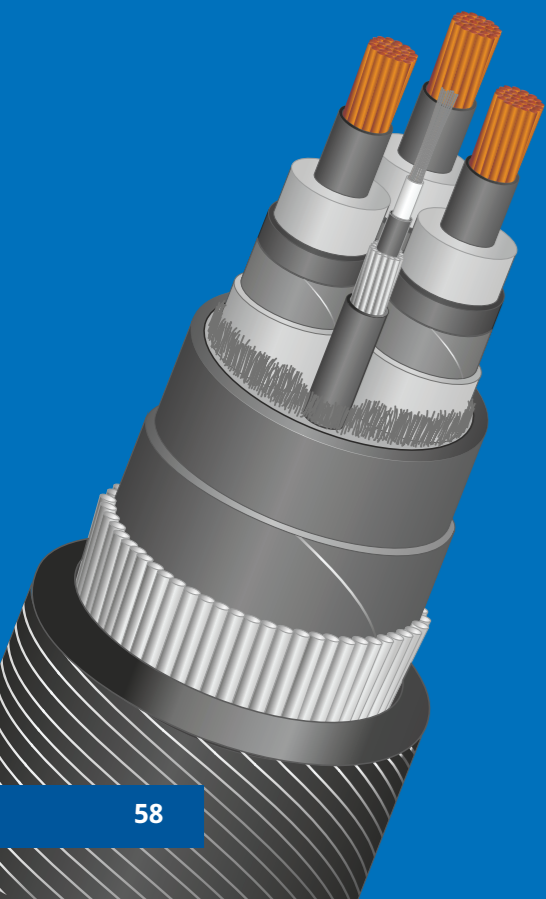
halogen free cables, fire resistant cables, telecommunication, signal and data cables with copper conductors or optical fibres, as well as fire retardant halogen free plastic and elastomer compounds and enamelled wires. Wires and cables are supplied to a variety of international standards, such as VDE, CEI, ICEA, NF, SEN, BS, UL, NEMA, JIS, ASTM, DIN and ELOT. Many of the Company's products are certified by BASEC, VDE, IMQ, NF-USE, NETWORK RAIL, KEMA, DNV and UL.

All 3S Cables enamelled wires are manufactured and tested to the IEC 60317-0-1 standard; customers may also request any other recognised international standard.

Technical know-how is combined with continual investment in state-of-the-art machinery, to ensure levels of efficiency and quality which meet the strictest standards. The Company's Quality Management System is certified to ISO 9001:2008, its Environmental Management System to ISO 14001:2004 and its Occupational Health and Safety to OHSAS 18001:2007. 3S Cables Group has the necessary expertise to develop and offer turnkey solutions that meet specific demands of its customers.

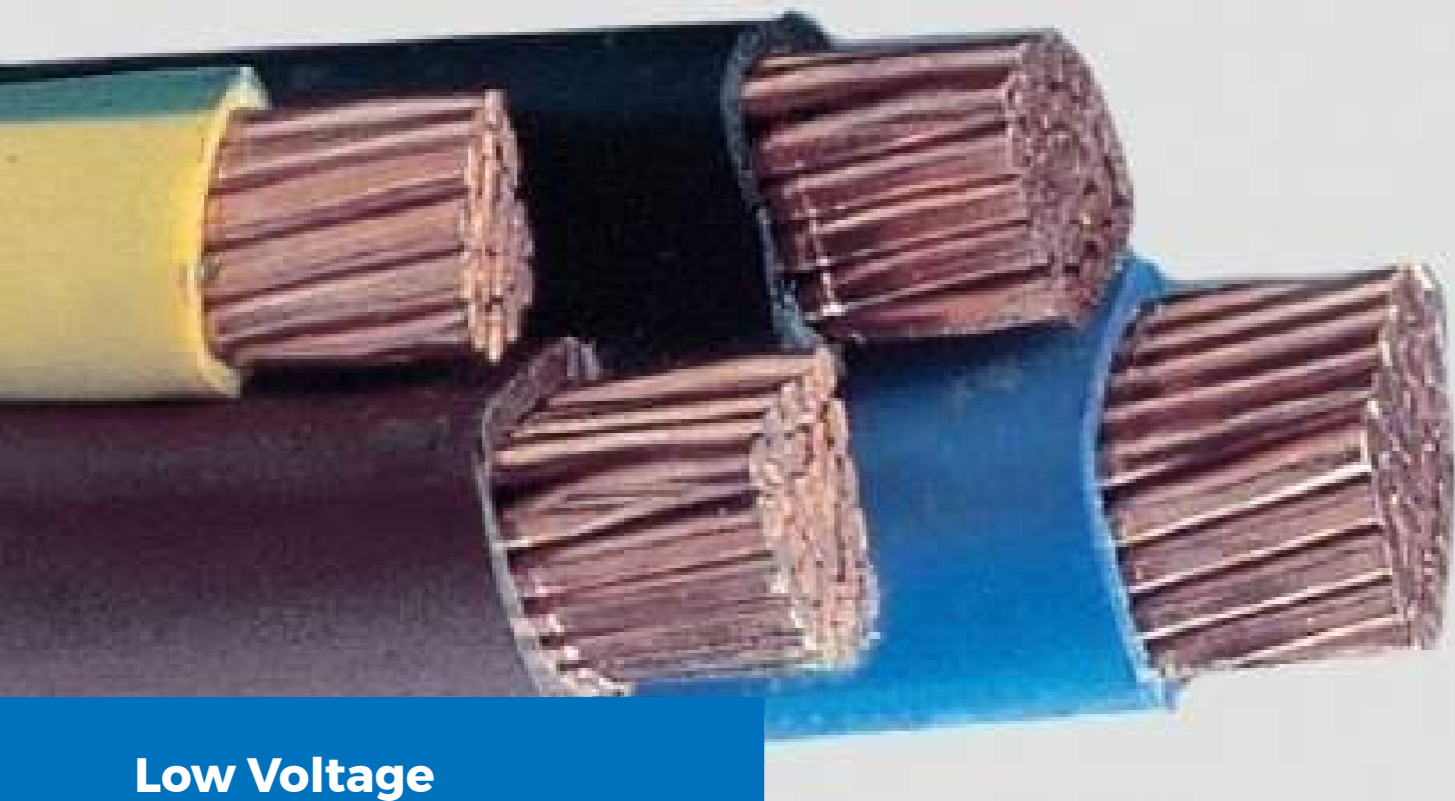
Commitment to quality and sustainable development has been a key factor in enabling 3S Cables Group to establish a strong market position internationally.

The Company's highly experienced technical and managerial staff have a strong commitment to innovation, technological excellence and outstanding quality, which ensures that users of 3S Cable products have made a reliable choice.



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The 3S Cables Group aims to constantly improve its offering and respond swiftly to changes in customer requirements around the world with reliable and safe products, based on environmentally-friendly technologies.



Low Voltage Cables

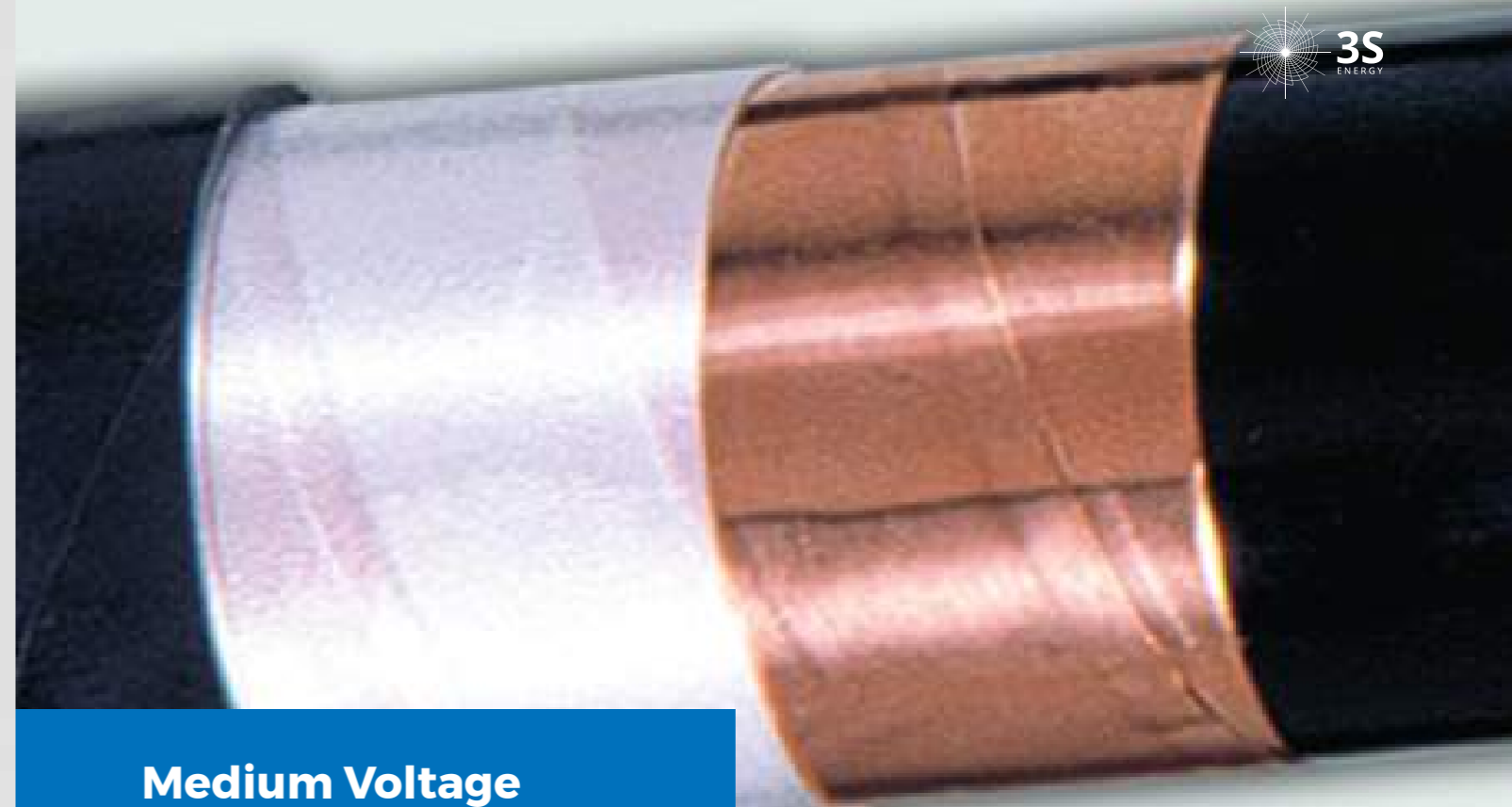
Technology

Low Voltage power cables are constructed with rigid, solid or stranded, copper and aluminium conductors, and flexible (bare or tin-plated) copper conductors.

XLPE, PVC, LSF/LSOH and elastomer compounds are the main insulating and shielding compounds for these cable types.

Steel (or aluminium for single core cables) wires or tapes may be applied under the outer sheath, providing additional mechanical protection.

Cables for special applications, halogen-free, fire-retardant, fire-resistant and with low smoke emissions can also be provided.



Medium Voltage Cables

Technology

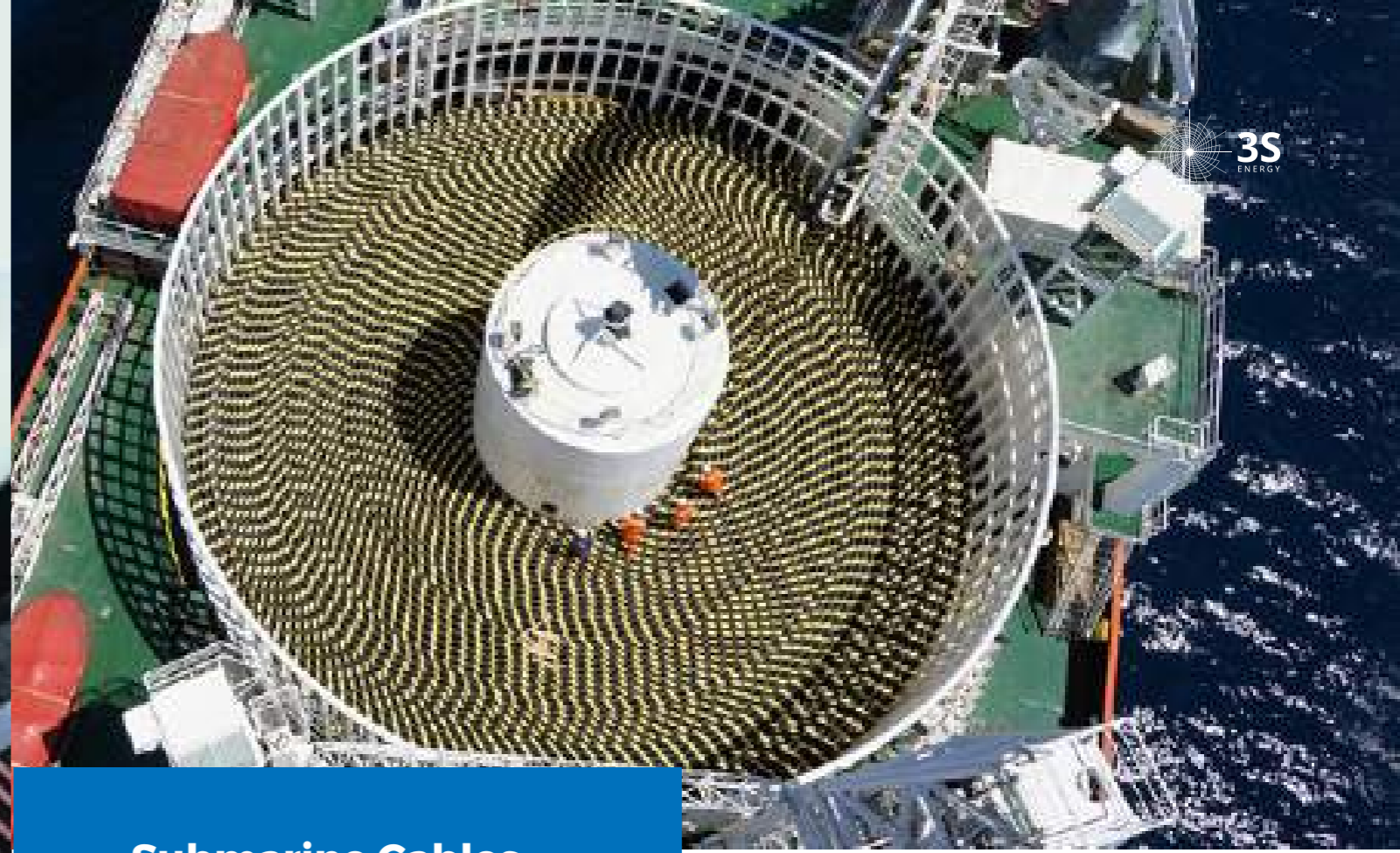
Medium voltage cables are constructed with copper or aluminium conductors and insulation either from XLPE, or EPR, or paper insulated. If required the conductors can be longitudinally waterblocked. Furthermore, the pipes can be constructed to be flexible (bare or tin-plated) for mining cables and other heavy duty applications.

The metallic screen can be longitudinally and radially waterblocked. PVC, PE (MDPE or HDPE) and LSF are applied as outer sheath materials. Steel (or aluminium for single core cables) wires or tapes may be applied under the outer sheath, providing additional mechanical protection.

Cables for special applications, halogen-free, fire-retardant, fire-resistant and with low smoke emissions can also be provided.



High and extra-high voltage cables AC/DC



Submarine Cables

Technology

The Group manufactures high voltage cables since 1970. More specifically, from 1970 to 1996 the Group was manufacturing paper insulated high voltage cables. From 1996 onwards, the group manufactures high voltage cables with cross linked polyethylene (XLPE) insulation. In 2008 the Group acquired the capacity to manufacture extra-high voltage cables with cross linked polyethylene (XLPE) insulation with nominal voltage up to 500kV.

The constant investments for the manufacture of high and extra-high voltage AC and DC cables, testing facilities, education and training of the technical staff are a testament that 3S Cables Group consistently delivers reliable cutting-edge products.

High voltage cables are constructed with copper or aluminium conductors and super clean XLPE insulation. Extruded semiconductive layers are applied over and under the XLPE insulation simultaneously by a triple cross head. Over the extruded insulation screen a metallic screen is applied consisting of copper wires or a lead or aluminium sheath. PVC, HDPE and LSF are applied as outer sheath materials. DTS (Distributed temperature sensing) systems and DCR (Dynamic Cable Rating) systems can be provided.

Since 1972 3S Cables Group has manufactured submarine power cables with insulation from cross linked polyethylene (XLPE), elastomer (EPR) or paper, as well as submarine fibre-optic cables.

The Group has expanded the facilities of its subsidiary Fulgor, transforming it into one of the most cutting-edge technologically advanced facilities for the manufacture of high and extra-high voltage submarine cables, of static and dynamic type, with alternate or direct current and with cross linked polyethylene (XLPE) insulation, as well as flexible submarine polyethylene pipes. The Group's objective is to participate in national and international turnkey projects for underwater – submarine interconnections with submarine cables, submarine pipes, as well as coastal projects.

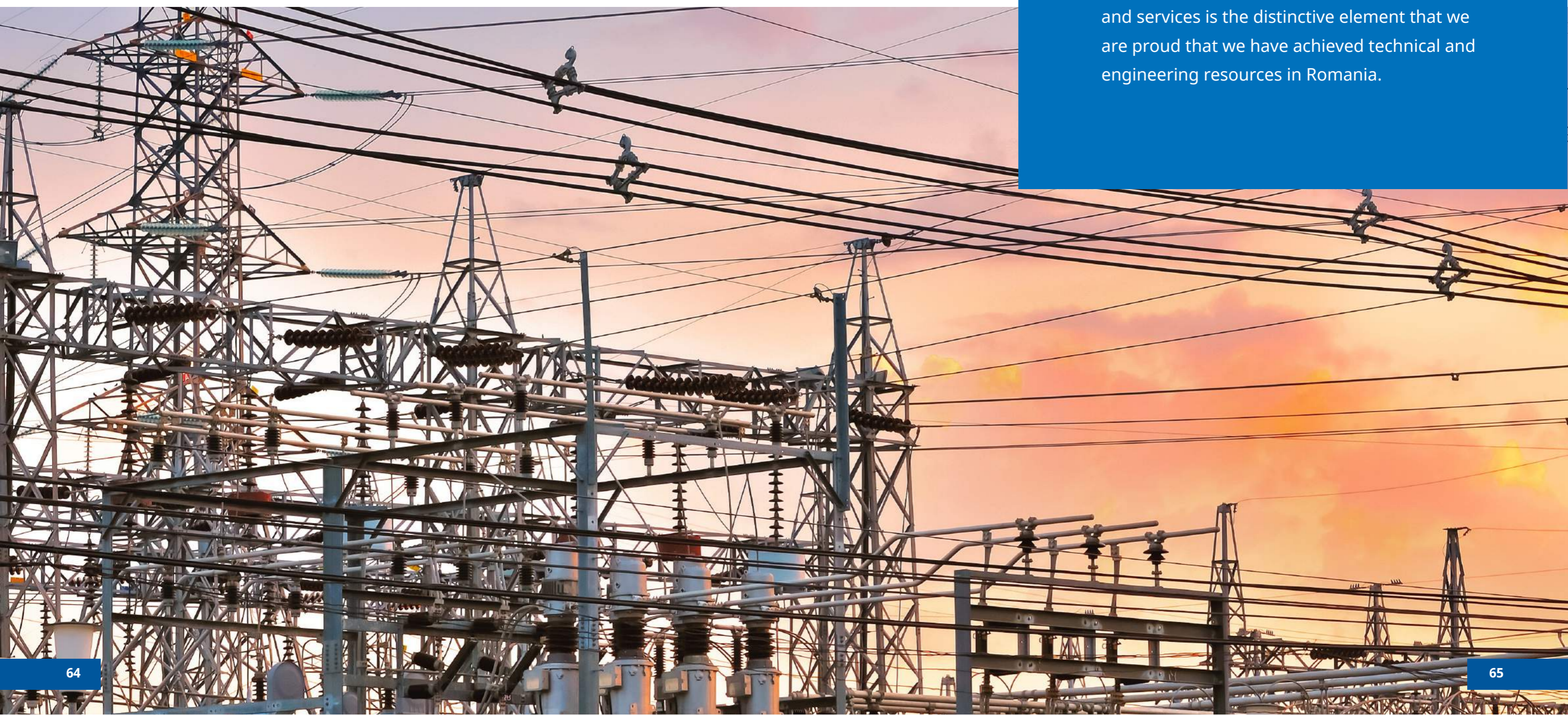
Our technical expertise in combination with constant investments in advanced equipment ensures levels of efficiency and quality, which meet the strictest specifications.

The cables are produced in long continuous lengths. For each cable type the company has developed repair and land-submarine cable transition joints and provides trained personnel for their assembly.

3S energy T&D Power Grids

3S Energy is regional leader of turnkey products and electro-energy market especially transport and distribution

Our mission is to continuously improve products and services to meet the growing needs of our clients, enabling us to create profit, to develop and strengthen the long-term independence. Quality and safety systems, products and services is the distinctive element that we are proud that we have achieved technical and engineering resources in Romania.



“

Our capacity is up to 25.000 t steel per year and we produce street lighting, tramway poles and high and extra high voltage poles & pylons

Research & Development

- » Production facilities for concrete, steel and fibreglass poles
- » Technical Department for engineering of steel, concrete, fiberglass & hybrid structures
- » Production of poles & towers from 3m up to 130m – with the free choice of materials & technologies



Forrest Crossing – different isolator arrangements

Low & Medium Voltage

Steel Poles

Customized for local requirements

- » Adapting of existing accessories from existing pole standards
- » Calculation of poles and cross-arms according to the conductor requirements
- » Low weight – easy to install
- » Special duplex coating for maximum corrosion protection
- » Small footprint – high load bearing capacity



Cable termination & circuit breaker pole



Double Cable Termination Pole

Spun Concrete Poles

A Spun Concrete Pole is the most Economic Solution for Distribution Networks in harsh environments:

- » Spun concrete has a high density and high strength
- » Concrete Pole = Industrial Product
- » Long term experiences with extreme climate conditions (Australia, USA, New Zealand etc.)

Customized for local requirements

- » Adapting of existing accessories from the wood pole standards
- » Calculation of poles and cross-arms according to the conductor requirements
- » Special coating for the pole ends (heat, sand, salt, UV,...)
- » Special UV resistant pole caps
- » Internal aeration system (chimney effect)



Special Poles - Innovations

Hybrid Pole - Steel base & FRP top

(fibre glass reinforced plastic)

- » Bird protection pole: Approved isolated to part to avoid any kind of bird losses due to electrical shocks
- » Perfect wood replacement pole – FRP top is insulating
- » Very flexible, holes in the FRP top part can be drilled by the customer
- » Very robust against damages because of the steel base
- » For LV and MV
- » Very light design – easy to install



High Voltage

Steel Poles 110kV



110kV Line Luxemburg



110-kV-Tap-off pole



Concrete Poles 110kV

110kV Concrete Pole

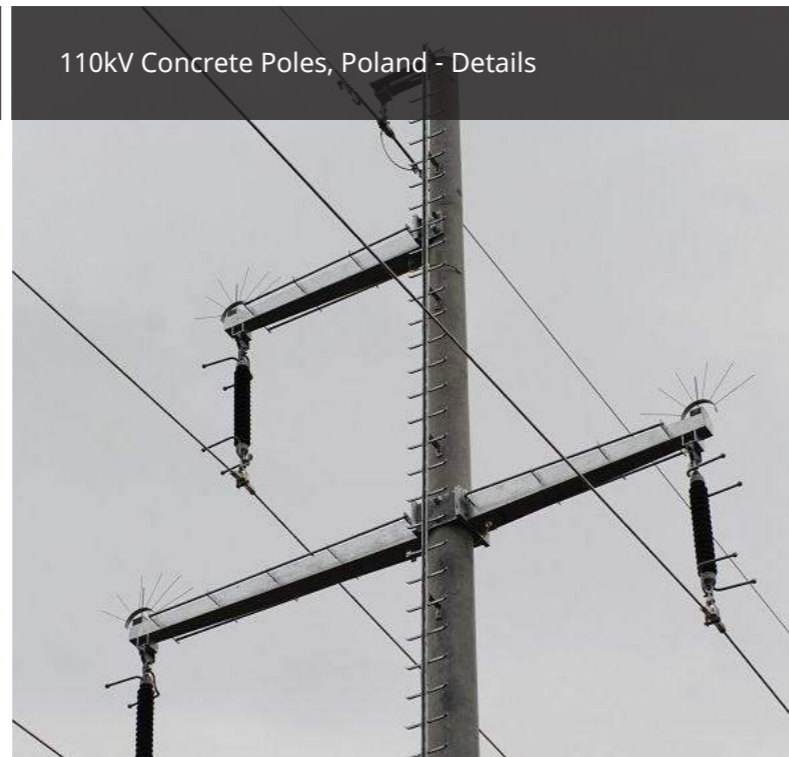


Concrete Pole with Steel Crossarm

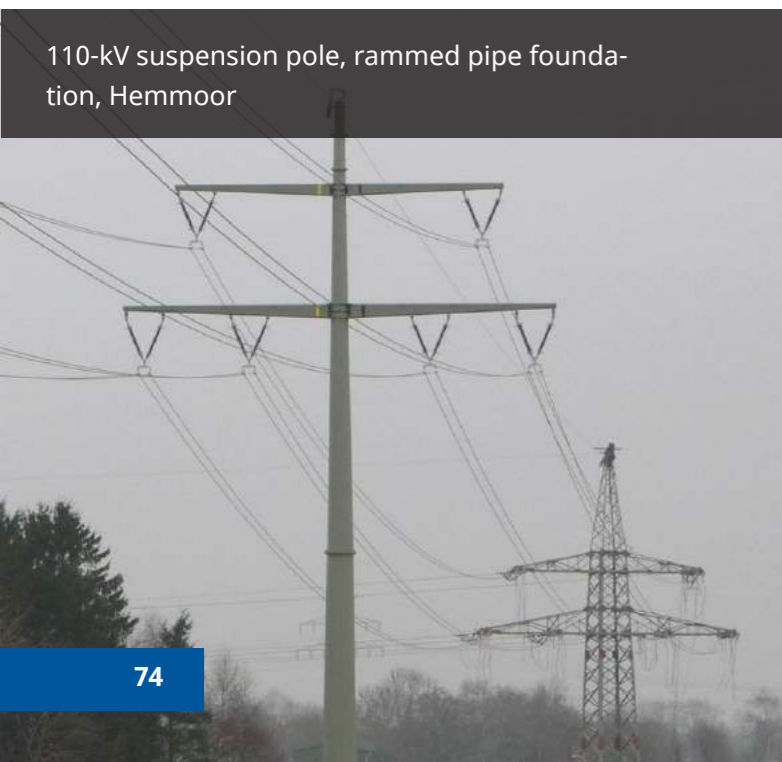


Hybrid Lines for 110kV

Compact Lines for 110kV



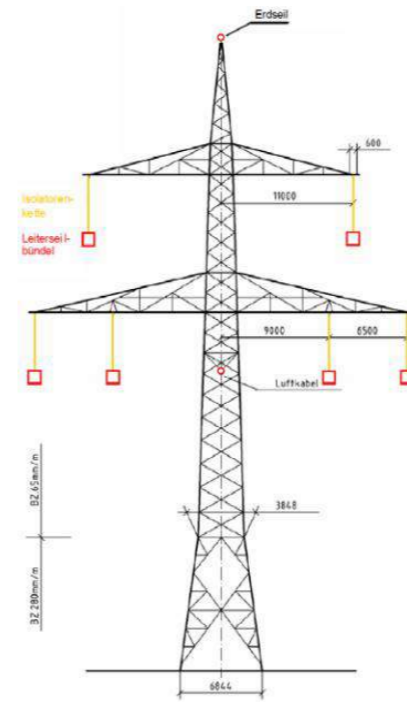
Innovations 110kV



Extra High Voltage

Actual situation Compact Poles:

- » Reduction of visual impact
- » Reduction of electric magnetic fields
- » Reduction of "right of way"
- » Reduction of pole footprint
- » Fast erection due to preassembled delivery



“

Higher acceptance by the people, smaller trenches, lower impact on landscape



3S energy Transformers & Custom Substations

3S Energy has full capability of production of indoor MV transformers and custom substation.



Compact transformer substations overview

Variants

The model variants are set according to the type of operation which can be indoor or outdoor, to the transformer's rated power and to the equipment configuration.

Design/ architectural variants

We aim to give customers a choice of a product design from a large variety of architectural models that can be customized to the location area.

Depending on the request, our specialist team is ready to provide advice for both technical and architectural solutions.



General technical features

Operation conditions

Environment temperature during operation	[°C]	-25÷+40
Solar radiation	[W/mp]	max.1000
Climate	x	WDr/CT (moderate: warm dry/cold/temperate)
Resistance to snow load	[kN/mp]	2,5
Wind load	[kN/mp]	0,8
Pollution level	level	2
Altitude	x	≤1000m
Air humidity inside the transformer substation	%	95 (24 hours average) or 90 (monthly average)

Technical features

		MV Switchgear	LV Panel
Rated voltage	[kV]	24	0.4
Operation voltage	[kV]	20	0.4
Lightning impulse withstand voltage (1,2/50µs)	[kV]	125	8
Industrial frequency withstand voltage	[kV]	50	3,5
Arc resistance	[kA]	12,5	-
Arc test duration	[s]	0,5	-



Indoor compact transformer substations

- » AlfaPower 400I variant 01
- » AlfaPower 400I variant 02
- » AlfaPower 400I variant 03
- » AlfaPower 400I variant 04
- » AlfaPower 630I variant 05
- » AlfaPower 630I variant 06
- » AlfaPower 630I variant 07
- » AlfaPower 630I variant 10
- » AlfaPower 1000I variant 20
- » AlfaPower 1600I variant 22
- » AlfaPower 2x1000IE variant 24
- » AlfaPower 2x1600I variant 25
- » AlfaPower DG2061 variant 26
- » AlfaPower 250I variant 38

3S Energy compact transformer substations dimensions

Variants	Overall Dimensions [mm]		
	Length L	Width I	Height H (from the ground)
AlfaPower 400I-variant 01	4200	2100	2650
AlfaPower 400I-variant 02	4400	2500	2650
AlfaPower 400I-variant 03	4100	2300	2650
AlfaPower 400I-variant 04	3900	2100	2650
AlfaPower 630I-variant 05	4700	2500	2650
AlfaPower 630I-variant 06	4300	2200	2650
AlfaPower 630I-variant 07	3900	2200	2650
AlfaPower 630I-variant 10	5700	2500	2650
AlfaPower 1000I-variant 20	4910	2500	2650
AlfaPower 1600I-variant 22	5300	2840	2650
AlfaPower 2x1000IE-variant 24	4500	3900	2650
AlfaPower 2x1600I-variant 25	5940	4210	2650
AlfaPower DG2061-variant 26	4000	2440	2600
AlfaPower 250I-variant 38	3800	1750	2650



**3S Energy indoor
transformer substations models**



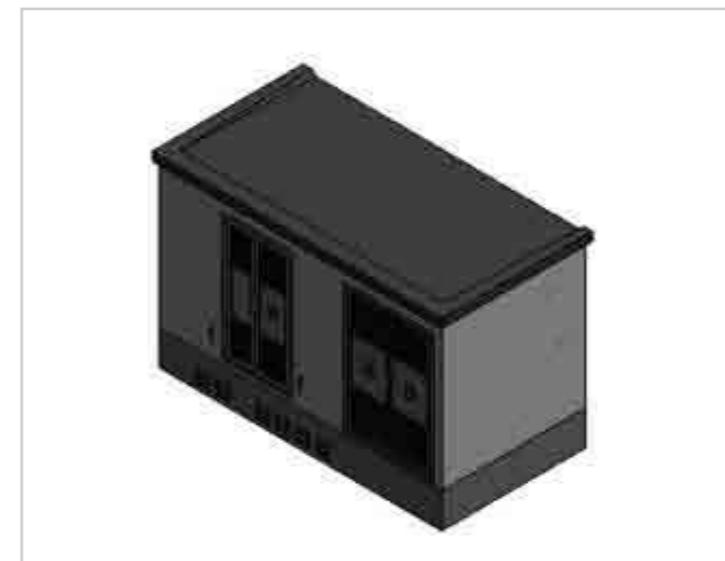
AlfaPower-400I



AlfaPower-630I, variant 10



AlfaPower-2X630I



AlfaPower-1600I



Outdoor compact transformer substations

- » AlfaPower 400 E variant 11
- » AlfaPower 400 E variant 12
- » AlfaPower 400 E variant 13
- » AlfaPower 400 E variant 14
- » AlfaPower 630 E variant 15
- » AlfaPower 630 E variant 16
- » AlfaPower 630 E variant 17
- » AlfaPower 630 E variant 18
- » AlfaPower 630 E variant 19
- » AlfaPower 1000 E variant 21
- » AlfaPower 1600 E variant 23
- » AlfaPower 160 E variant 35
- » AlfaPower 250 E variant 36





3S Energy compact transformer substations dimensions

Variants	Overall Dimensions [mm]		
	Length L	Width I	Height H (from the ground)
AlfaPower 400E-variant 11	3300	2500	2650
AlfaPower 400E-variant 12	3100	1900	2650
AlfaPower 400E-variant 13	2800	2300	2650
AlfaPower 400E-variant 14	2800	1900	2650
AlfaPower 630E-variant 15	3400	2000	2650
AlfaPower 630E-variant 16	3500	2500	2650
AlfaPower 630E-variant 17	3200	2300	2650
AlfaPower 630E-variant 18	3000	2000	2650
AlfaPower 630E-variant 19	3480	1550	2650
AlfaPower 1000E-variant 21	4080	2500	2650
AlfaPower 1600E-variant 23	4380	2840	2650
AlfaPower 160E-variant 35	2600	1500	2650
AlfaPower 250E-variant 36	2800	1750	2100

**3S Energy outdoor
transformer substations models**



AlfaPower-400E, variant 11



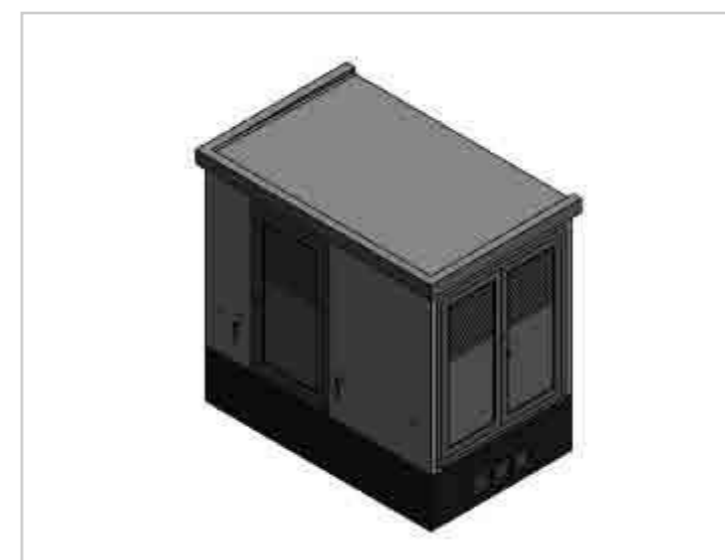
AlfaPower-630E, variant 16



AlfaPower-400E, variant 12



AlfaPower-630E, variant 19



AlfaPower-250E, variant 36

3S energy Distribution panel boards

Our constant concern for quality has led us, year after year, to focus on updating the machinery, technical equipment and other specific kits for our domain



3S Energy electrical power distributor

3S Energy is a leading provider of first class solutions for electric power distribution with over 20 years experience in the field. The company manufactures low and medium voltage electrical equipment, power distribution equipment and metallic enclosures. 3S Energy bids and manages contractor works. It provides ongoing technical support, maintenance and post warranty.

3S Energy develops projects aimed at providing and distributing clean energy from renewable sources. 3S Energy signifies today 10 Divisions, 10 Sales Branches, 4 workshops, 3 modern factories and a strong brand, based on strong experience, qualifications and enthusiasm of 350 professionals.

Power factor compensation equipment

Fulfills the compensation of reactive power consumed by the inductive receivers for achieving a power factor $\cos\varphi > 0,92$.

Features

- » coupling and uncoupling of the adjustment levels in manual or automatic mode;
- » short-circuit protection of the adjustment levels via fuses.

Components

- » Alfa-System metal panel or metal cabinet, which provides IP 30 protection class (for indoor version) or IP54 (for outdoor version);
- » three-phase contactors for capacitive loads with current limiting resistors;
- » three-phase reactive capacitors with discharge resistors;
- » reactive power automatic controller;
- » short-circuit protection unit (HRC fuses)

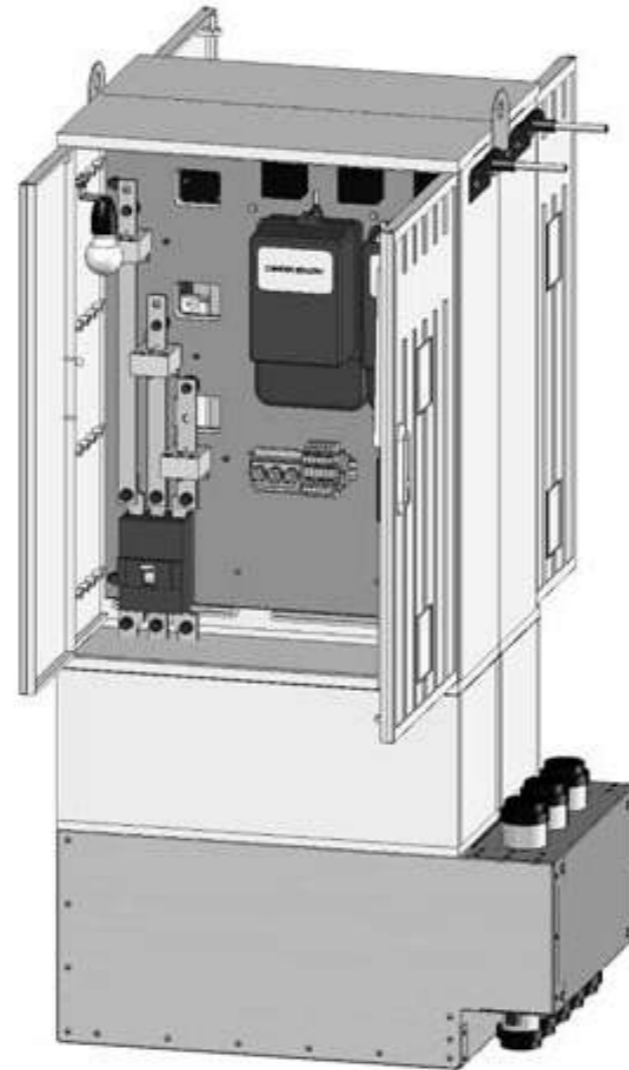


- for the compensation levels;
- » ventilation system (for outdoor version);
- » thermostatic circuit (the outdoor version);
- » main automatic circuit breaker (optional);
- » internal electrical circuits made with insulated copper conductors;
- » cable glands for the incoming/ outgoing power cables.



0.4 kV distribution feeder pillar, metal/polycarbonate enclosed

The feeder pillars (CD) are designed for aerial transformers erected on one or two posts, equipped with 40 ÷ 250 (400) kVA, 20/0, 4kV power transformer and perform by supplying electricity to consumers in rural or suburban areas, as well as street lighting.

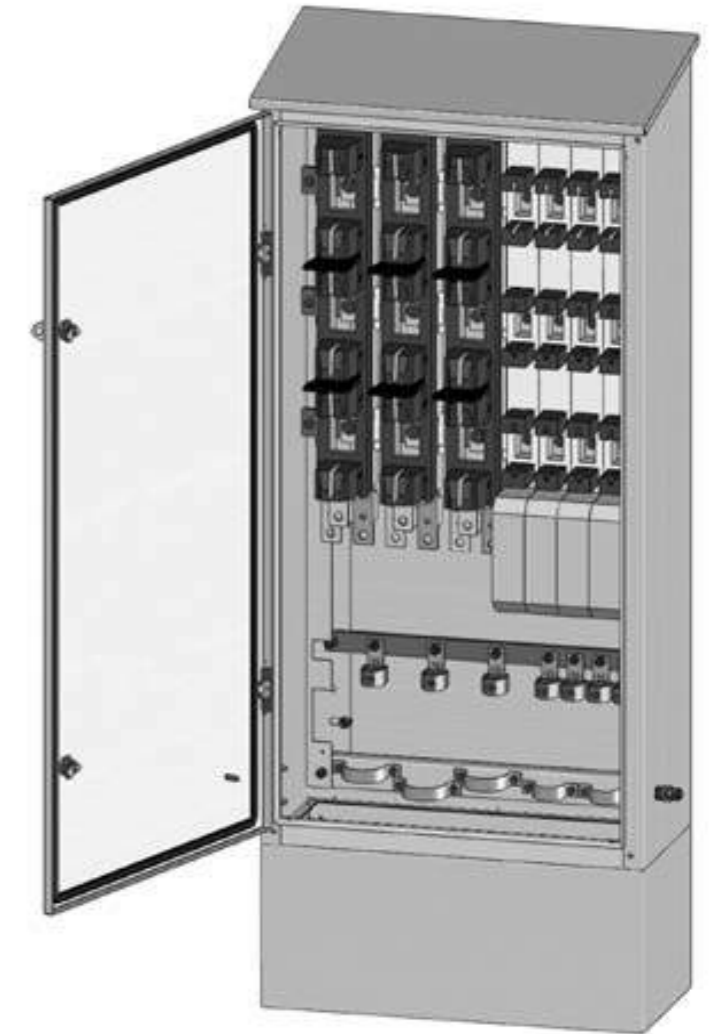


Features

- » supports and protects against weather the switchgear, protection and distribution equipment required in power distribution;
- » provides main circuit tripping and protects the transformer via the automatic circuit breaker, which eliminates faults before the transformer and the low voltage network overloading;
- » provides disconnection in case of failure on each phase of the electric circuit on the low voltage outgoings by fuse tripping, and perform protection to operating personnel by displaying the fuses in the removed position;
- » provides metering according to the variants required by the electricity supplier.

Main distribution panel board, metal/polycarbonate enclosed

The main distribution panel board (FB) is employed in low voltage distribution networks for power supply to domestic consumers (blocks of flats, villas, etc.) and public buildings.



Features

- » performs fault protection on each phase of the electric circuit for low voltage outputs to the distribution network by tripping the fuses ;
- » provides protection to operating personnel by displaying the fuses in the removed position;
- » ensures the closing of the urban power supply loop.

Components

- » enclosure: metal (for outdoor version), providing IP 54 protection class and polycarbonate - glass fiber reinforced (for outdoor version), providing IP 44 protection class;
- » mounting polycarbonate base for the panel board;
- » metal rack for supporting the feeder columns;
- » three-phase feeder columns with SIST type fuses or vertical three pole sockets or three pole vertical switch disconnectors, both on input and output.

Three phase metering and protection panel board, metal/ polycarbonate enclosed



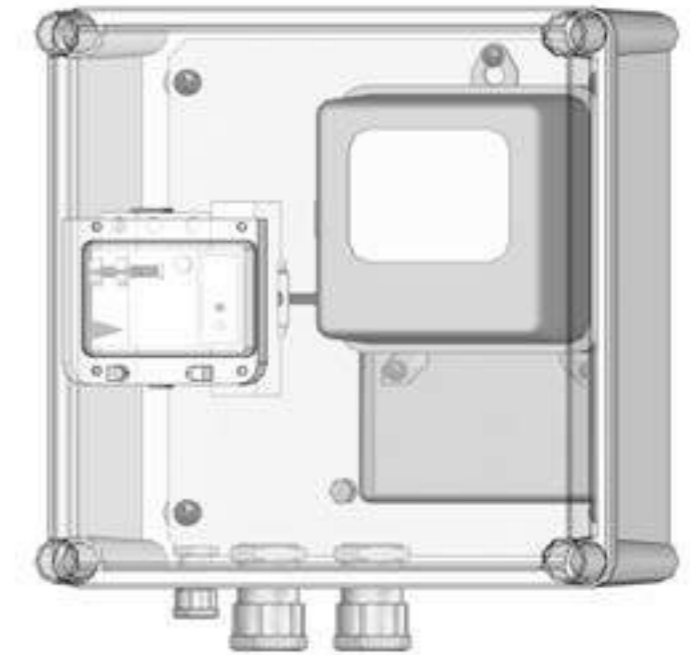
The three phase metering and protection panel board (BMPT) is employed in the low voltage distribution network to supply power to consumers or public buildings

Features

- » connects the consumers' electric appliances to the power supplying equipment of the utility provider;
- » active or/ and reactive energy metering;
- » short-circuit and overload protection of the main power supply column;
- » industrial frequency surge protection occurred at the consumer by the accidental disengaging of the neutral conductor;
- » protection against electric shock by directly touching the live circuits and equipment of the metering and protection panel;

- » Availability for the consumer to re-connect the power supply in the case of tripping the fault protections by providing a window to switch the circuit breaker, preserving the protection level, and capability for restricting access by the utility provider;
- » capability for meter readings or, if the case, for unconstrained interruption of power supply by the utility provider;
- » electricity theft and panel damage protection.required in power distribution;

Single phase metering and protection panel board, metal/ polycarbonate enclosed



The single phase metering and protection panel board (BMPT) is employed in the low voltage distribution network to supply power to households.

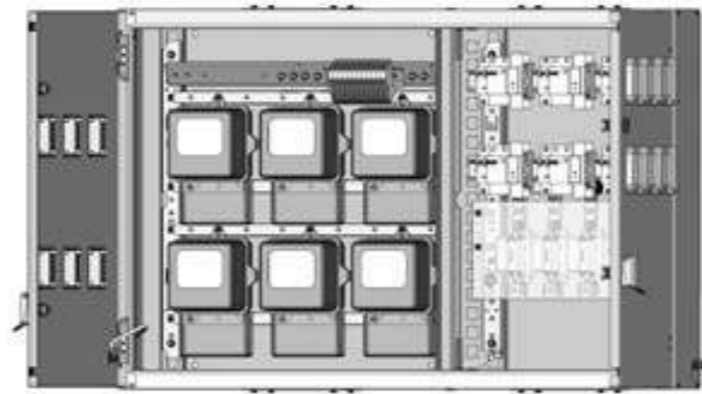
Features

- » active energy metering;
- » Short-circuit, overload and differential residual currents protection of the end user's main power supply;
- » Industrial frequency surge protection occurred at the consumer by the accidental disengaging of the neutral conductor;
- » Protection against electric shock by directly touching the live circuits and equipment of the metering and protection panel;

- » availability for the consumer to re-connect the powersupply in the case of tripping the fault protections by providing a window to switch the circuit breaker, preserving the protection level, and capability for restricting access by the utility provider;
- » capability for meter readings or, if the case, for unconstrained interruption of power supply by the utility provider;
- » electricity theft and panel damage protection

Distribution and metering panel board, metal/polycarbonate enclosed

The distribution and metering panel boards (FDC-P/S) are employed for the distribution, monitoring and protection of households' power supply circuits.



Features

- » connects the households and commercial consumers' electric installations, to the power supplying equipment of the utility provider;
- » metering of active/ reactive energy consumption for each subscriber, as well as for the communal areas lighting;
- » short-circuit, overload and differential residual current protection of the end user power supply columns;
- » industrial frequency surge protection occurred at the consumer by the accidental disengaging of the neutral conductor;
- » protection against electric shock by directly touching the live circuits and equipment of the distribution and metering panel;
- » availability for the consumer to reconnect the power supply in the case of tripping the fault protections by on of the consumers appliances;
- » capability for meter readings or, if the case, for unconstrained interruption of power supply by the utility provider;
- » electricity theft and panel damage protection

Low voltage three phase junction box

The junction box (CJ) is used in low voltage distribution networks for public lighting underground or overhead cables connection and for short circuit protection in this system.



Features

- » apparent power circuit (three phase) disconnection for operating personnel protection, by removing the fuses or the tags on the terminal block.

Components

- » metal or polycarbonate enclosed, providing IP 54 protection class;
- » individual power supply column for light fittings with LF type fuses;
- » junction elements consisting of: connection terminal block/ three phase power supply column fitted with SIST type fuses/ connectors;
- » cable glands or fitting for the incoming/ outgoing power cables;
- » pole mounting accessories.

Low voltage three phase selective protection box

The selective junction box (CS) is used in low voltage distribution networks to provide selective and perceptive protections to short circuit currents, downstream of the assembly point, before the end of line and its derivatives.



Features

- » apparent power circuit (three phase) disconnection for operating personnel protection, by fuses removal

Components

- » metal or polycarbonate enclosed, providing IP 54 protection class;
- » three phase power supply column fitted with SIST type fuses;
- » cable glands or fitting for the incoming/ outgoing power cables;
- » pole mounting accessories.

Public lighting main switch panel

The main switch panel (PAIP) is employed in low voltage networks to supply electricity for public lighting, in single and three phase systems, in manual or automatic, as well as for electricity metering.

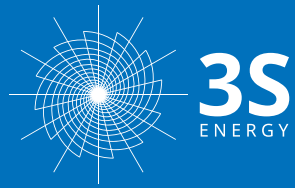


Features

- » active energy metering;
- » Short-circuit protection with fused main circuit and fused control circuit;
- » manual or automatic control of public lighting.

Components

- » metal or polycarbonate enclosed, providing IP 54 protection class;
- » electricity metering block, with single phase or three phase meter;
- » single phase or three phase power supply column for public lighting;
- » public lighting control unit with manual control (rotary switch) or automatically (photocell or time switch);
- » internal electrical circuits made with insulated copper conductors;
- » cable glands for the incoming/ outgoing power cables;



STRATEGIC SOURCING SOLUTION LTD

Company No. 2142536



30/F JARDINE HSE ONE CONNAUGHT
PLACE CENTRAL - HK



office@3s.energy