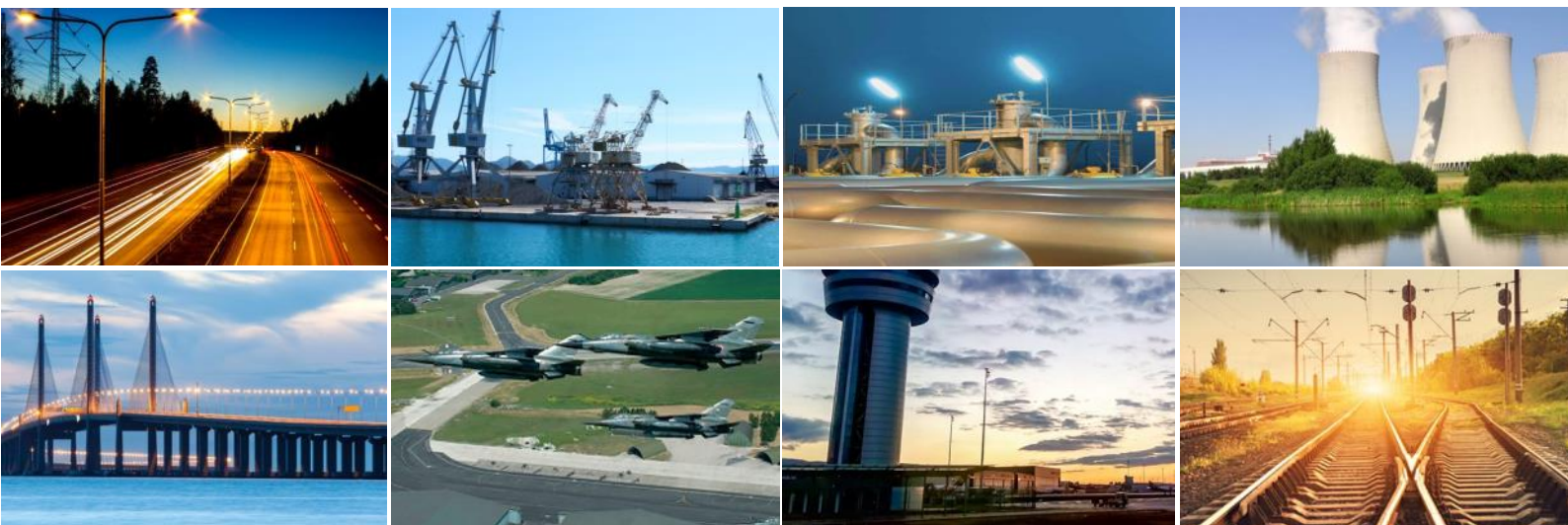




AUGIER Energy Distribution

A solution for every case

950 V - 3200 V - 5500 V - 6600 V

- ☒ Lighting: Road, highway, industrial zone, bridge, tunnel, harbour
- ☒ Road equipment : message signs, camera
- ☒ Airport : VOR, DME, localizer, car park lighting, fence lighting
- ☒ Railway: GSM-R, tunnel lighting, switch
- ☒ Military: Monitoring device, target, fence, entry box

950 V SOLUTION

Supply of road equipment (message sign, video) - 3 kVA - up to 3200 meters	5
Supply of a service area on a motorway - 50 kVA - 650 meters	6
Supply of expressway lighting - 50 kVA - 1300 meters	7
Supply of aircraft parking lighting - 80 kVA -1200 meters	8
Supply of ski run lighting - 10 kVA - 3500 meters	9

MV SOLUTION - 3200 V - 5500 V - 6600 V

Supply of road equipment for the traffic operation - 630 kVA -17 km	11
Power supply for lighting of a bridge - 400 kVA - 10 km	12
Power supply for lighting on a bridge - 1600 kVA - 15.6 km	13
Lighting supply of the docks on a port - 2x1000 kVA - 1100 meters	14
Supply of security and buildings fences on an airport - 630 kVA - 16 km	15
Supply of highway lighting - 5x1000 kVA - 74 km	16
Power supply of 120 well sites - 3000 kVA - up to 12 km	17

YOUR PROJECT

Questions to formalize your project	18-19
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Glossary

LV	Low Voltage
BTM	Maximum Low Voltage - 950 V
MV	Medium Voltage - 3200 V to 6600 V

Whenever the low voltage 230 V or 400 V power does not allow a remote receiver and also the cable section is too large, AUGIER proposes to transport the energy in 950 V.



BOOST YOUR ENERGY

950 V Voltage is ideal for projects where it is necessary to supply remote receivers of small or medium power rating.

The most frequently used power rating are between 3 and 50 kVA. Facilities may be achieved up to 100 kVA.

This concerns remote receivers from few hundred meters to 3 or 4 km

950 V voltage transportation allows the use of U1000 R2V cable.



SUPPLY FOR ROAD EQUIPMENTS (message sign, video...) 3 kVA - up to 3200 meters - 950 V

Supply for road equipments

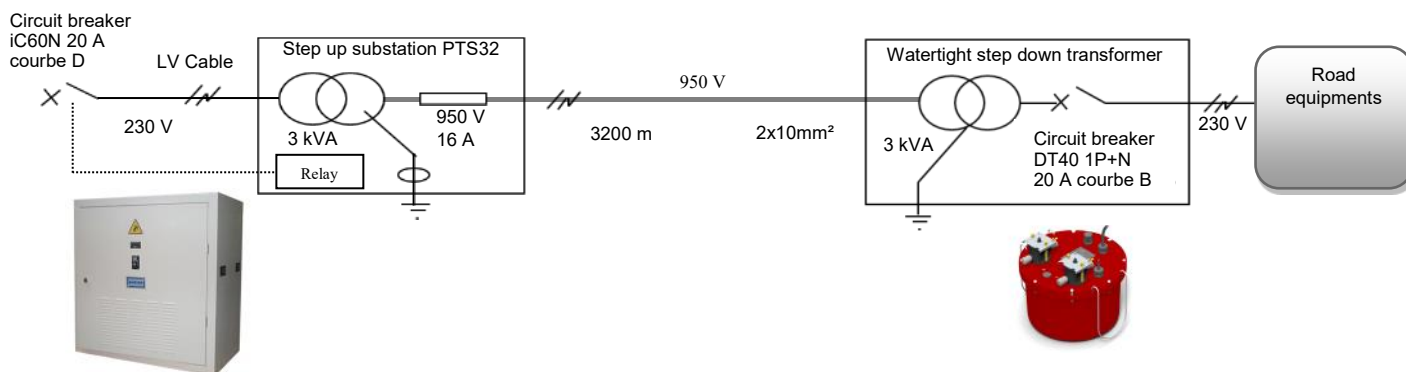
Customer request

To achieved the power supply for remote receivers on different highway sites. The 230 V single phase power source is available at the beginning of the installation.

AUGIER Solution

Power transportation in 950 V from a step up substation. This substation supplies a watertight TER transformer installed in a pit. Section of cable 950V U1000R2V 2x6mm² or 2x10mm², without sub LV network.

Characteristic										
Site	Available voltage	LV circuit breaker	Step up transformer (kVA)	Useful power (kVA)	Step down transformer (kVA)	Transportation voltage	Length Network (m)	Cross section 950V (mm ²)	Volt Drop 950V	ICC min Max Length (m)
1	230V Single phase	iC60N 20 A Courbe D	3	3	3	950V Single phase	1200	2x6	2,3%	2143
2	230V Single phase	iC60N 20 A Courbe D	3	3	3	950V Single phase	1800	2x6	3,5%	2143
3	230V Single phase	iC60N 20 A Courbe D	3	3	3	950V Single phase	3200	2x10	3,6%	3571

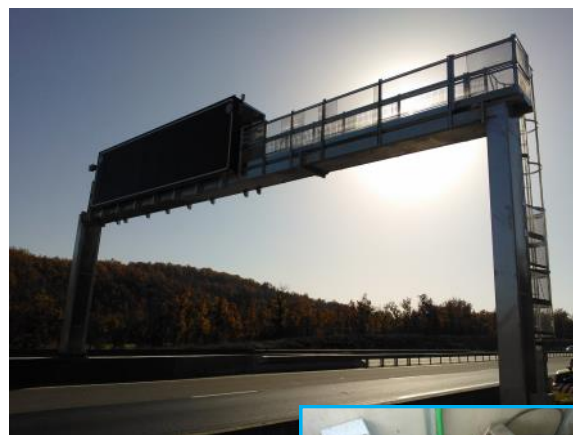


Supply of AUGIER materials



Indoor PTS32 3 kVA

- Three step up substation PTS32 3kVA 230V / 950V, aluminium substation, outdoor type, installed on a concrete base or inside a local
- 3 TER MM transformer 3kVA 950V / 230V, transformer installed in a pit



Watertight TER, IP68
Installed in a pit



Supply of a service area On a motorway

50 kVA - 650 Meters - 950 V

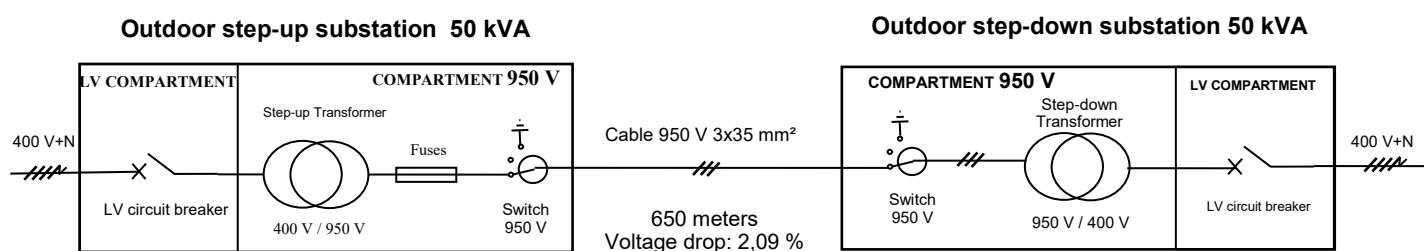
Power supply of large site

Customer request

To carry 50 kVA on 650 meters to supply the uses of a service area. Supply the sanitaries, the lighting, the signalling.

AUGIER Solution

To bring up the voltage from 400 V to 950 V three phase and carry the electrical energy with a cable U1000 R2V, 3x35 mm².



Supply of AUGIER materials

- A step-up substation PTS95 50 kVA 400 V / 950 V
- A step-down substation PTS95 50 kVA 950 V / 400 V

Substation in aluminium, outdoor type, with watertight transformer, installed on a concrete base.



Substation PTS95 950 V

Supply of expressway lighting 50 kVA - 1300 meters - 950 V

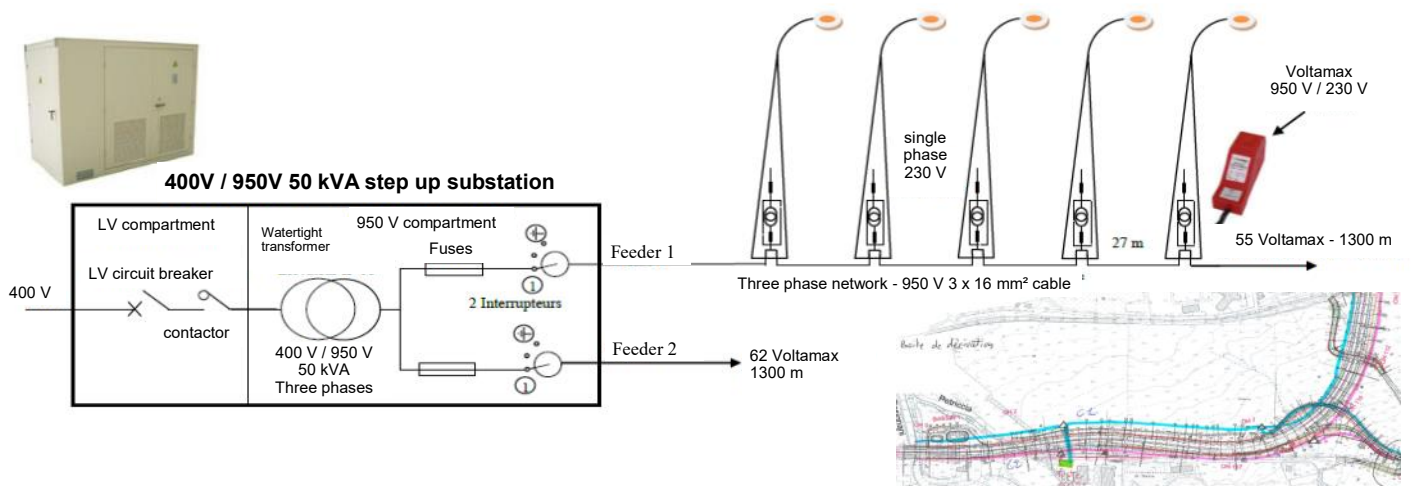
Power supply of large site

Customer request

To achieved the power supply of a expressway lighting. The expressway comprising 117 poles, each equipped with one 150 W HPS lamp, with possibility of extension. Energy (400 V) is available at the beginning of the installation.

AUGIER Solution

Power transportation in 950 V from a step up substation. This substation supplies watertight transformers Voltamax, each Voltamax being installed directly into the pole which supplies a 150 w HPS lamp.
950 V U1000R2V cable cross section 3x16mm² without LV sub network.



Supply of AUGIER materials



- One step up substation PTS95 50 kVA 400V / 950V, aluminium substation, outdoor type, installed on the concrete base
- 117 Voltamax transformers 150T 950V / 230V, Voltamax installed in the pole



Outdoor substation PTS95 with 50 kVA watertight transformer

Supply of airport parking lighting 80 kVA - 1200 meters - 950 V

Power supply of large site

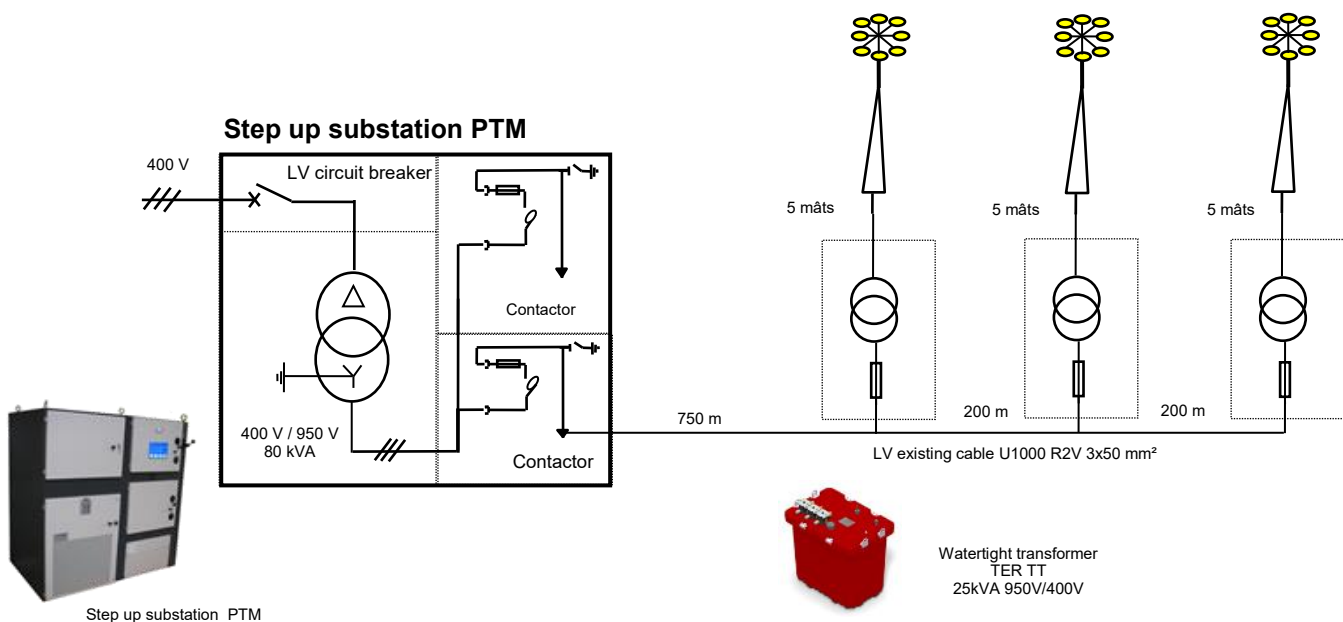
Customer request

To achieved the power supply for 15 masts for lighting of the aircraft parking.
Network length of 1200 meters, with a power rating of 60 kVA to supply with existing cables U1000R2V 3x50mm².

AUGIER Solution

Power transportation in 950 V from a substation equipped with a 80 kVA transformer, using the existing cables U1000R2V. The substation, with two departures contactors, supplies watertight step down transformers installed in a pit. Each transformer supply five masts.

The TER TT transformer electrical supply uses the existing U1000R2V cable 3x50mm².



Supply of AUGIER materials

- One step up substation PTM two feeders contactors 950V, with 80 kVA, 400V/950V transformer
- Three watertight step down transformers TER TT 25 kVA 950V/400V, transformer installed in a pit



Supply of ski run lighting

10 kVA - 3500 meters - 950 V

Outdoor lighting

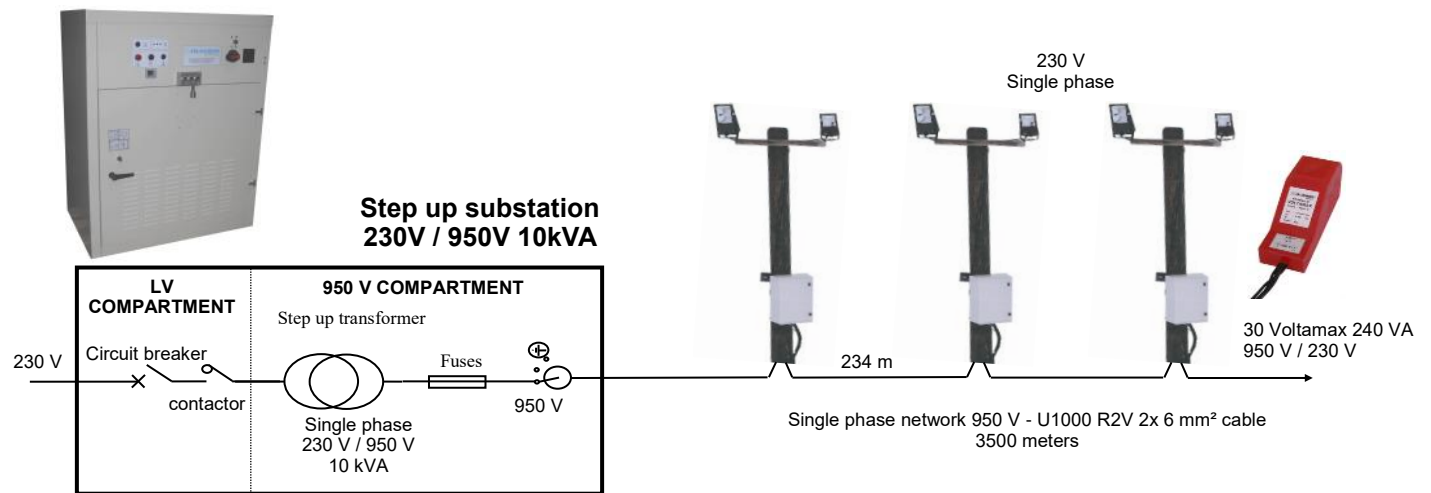
Customer request

To achieved the power supply for ski run lighting with 15 poles equipped with 2 metal halide lamps 70w. Average inter distance of 234 meters between the masts, for a total length of 3500 meters.
Altitude between 2300 and 2950 meters.
Strong constraint, use a small cable cross section to facilitate implementation (difficult access).

AUGIER Solution

Power transportation in 950 V from a step up substation.

This substation supplies Voltamax transformers, transformers installed in a cabinet with two Voltamax by cabinet. 950 V U1000R2V cross section cable 2x16mm² without LV sub network.



Supply of AUGIER materials



Indoor PTS32 10 kVA

- One step up substation PTS95, 10kVA 230V / 950V, aluminium substation, indoor type installed in the substation
- 30 transformers Voltamax150M 950V / 230V, Voltamax installed in LV cabinet



Voltamax 950V / 230V
Watertight, IP68
Installed in a cabinet

MV Solution 3200 V - 5500 V - 6600 V

Examples of applications

Whenever the 950 V low voltage does not make it possible to supply even more distant receivers, AUGIER proposes to transport the energy in intermediate high voltage from 3200 V to 6600 V.



DISTRIBUTING ENERGY EVERYWHERE

MV voltage are essential for all projects where it is necessary to supply remote receiver of medium or high power rating.

The distributed power rating are mainly from 25 kVA to 1600 kVA.

This includes remote receivers spread over large distances, from 2 km to 50 km.

Supply of road equipment for the traffic operation

630 kVA - 17 km - 5500V / 10 kVA - 3 km - 950 V

Outdoor lighting

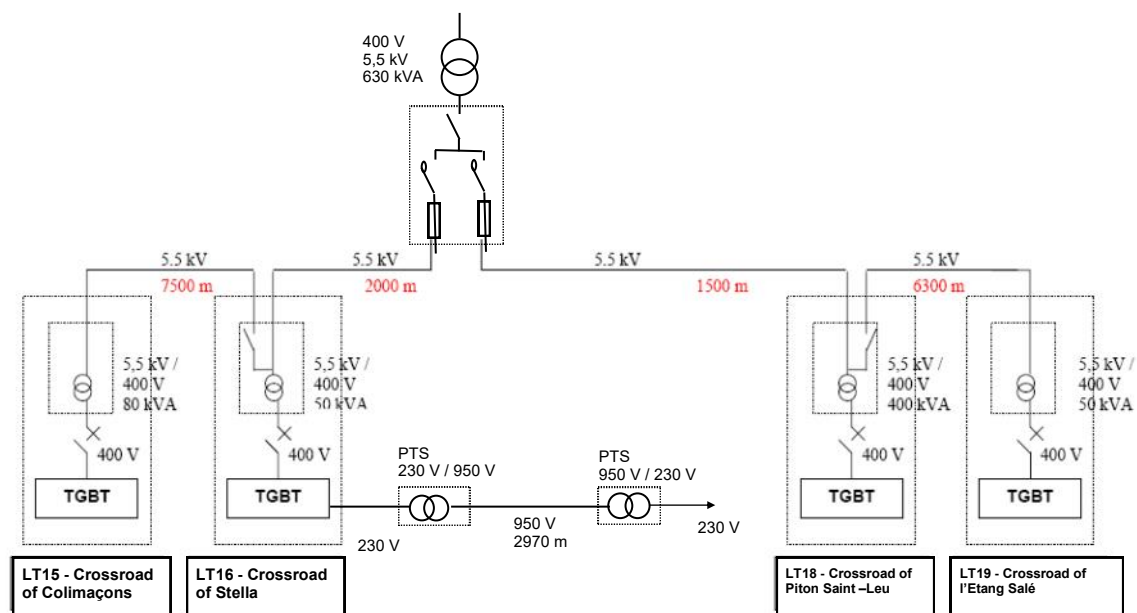
Customer request

Electrical supply of road equipment, variable message panels, video, civil work structure (viaduct and tunnel), equipment split on 30 km.

AUGIER Solution

To transport the electrical energy in 5500 V from two substations. Each substation supplies main technical substation 5500V / 400V.

From those technical substations, a 950 V sub network has been created to supply remote consumers (camera or others).



Supply of AUGIER materials

- Four 5500 V feeder contactors
- Ten step down stations PTC from 50 to 400 kVA 5500 V / 400 V
- Twelve step-up stations PTS from 5 to 16 kVA 230 V / 950 V
- Nineteen step-down stations PTS from 5 kVA to 16 kVA 950 V / 230V

Substation in aluminium, indoor or outdoor type.
Outdoor substation with watertight transformer,
installed on a concrete base



Substation PTS with watertight transformer.



Power supply for Lighting of a bridge 400 kVA - 10 km - 5500 V

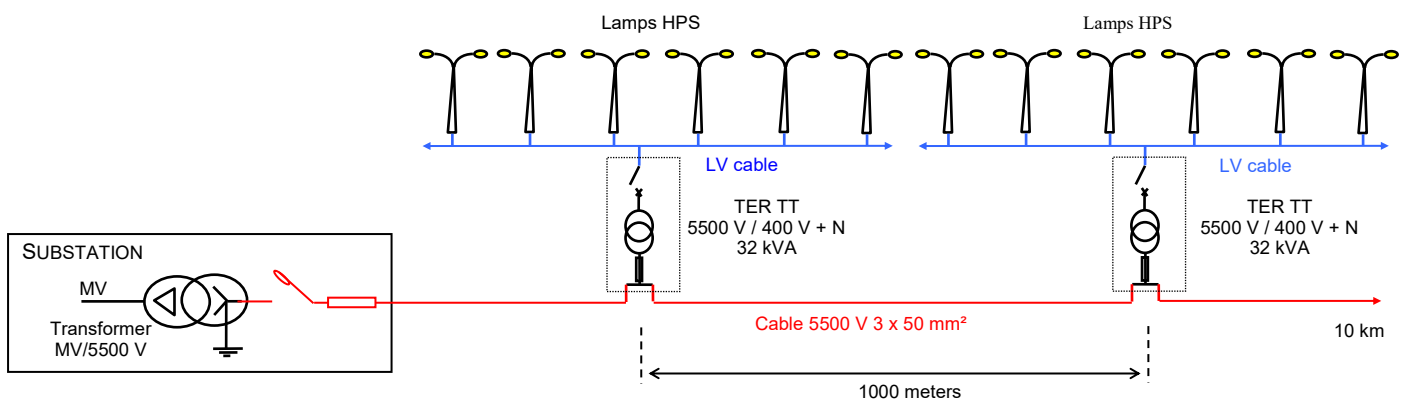
Power supply engineering works

Customer request

To achieve the power supply for lighting of a bridge, no energy source available on the bridge and on the surroundings located in marshy area. Total length of the civil work structure : 10 km, with only one energy source located at one extremity.

AUGIER Solution

Power transportation in 5500 V from only one substation. The watertight transformers, 5500 V / 400V, are installed under the bridge closer to the poles. The cross-section of low voltage cable is minimized.



Supply of AUGIER materials

- 8 watertight, three phases transformers, IP68, TER TT 32 kVA 5500 V / 400 V + N
- 2 watertight, three phases transformers, IP68, TER TT 80 kVA 5500 V / 400 V + N



Watertight transformers, IP68, installed under the bridge

Power supply for lighting of a bridge 1600 kVA - 15,6 km - 5500 V

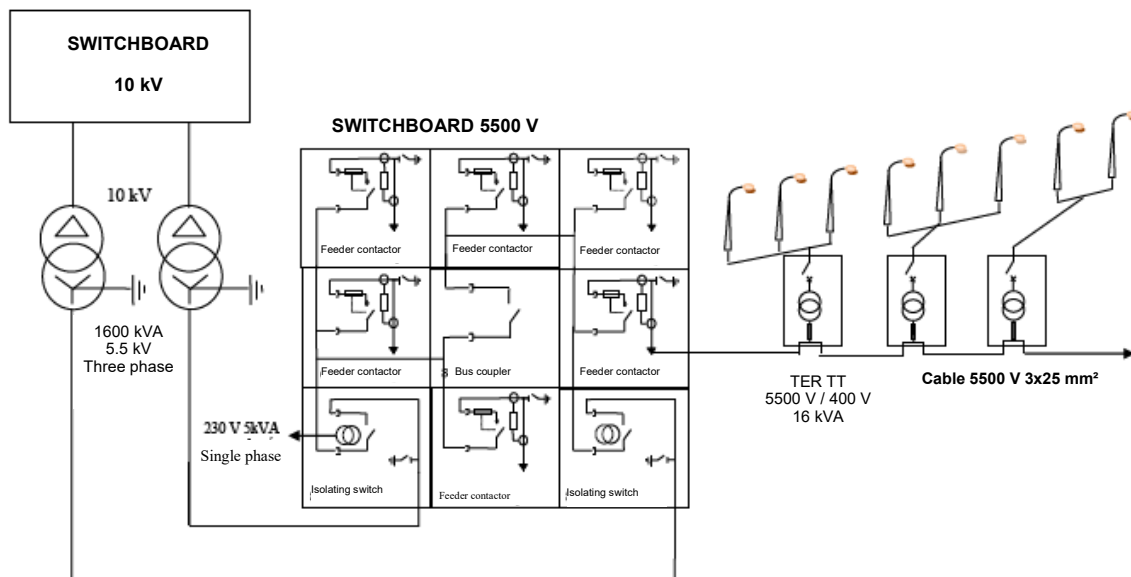
Power supply engineering works

Customer request

To achieve the power supply for lighting of one of the biggest cable-stayed bridge.
To achieve the power supply of video cameras and message panels for river navigation support.
Total length of the civil works : 15,6 km, 4,8 km on the river. No energy source available on the bridge.

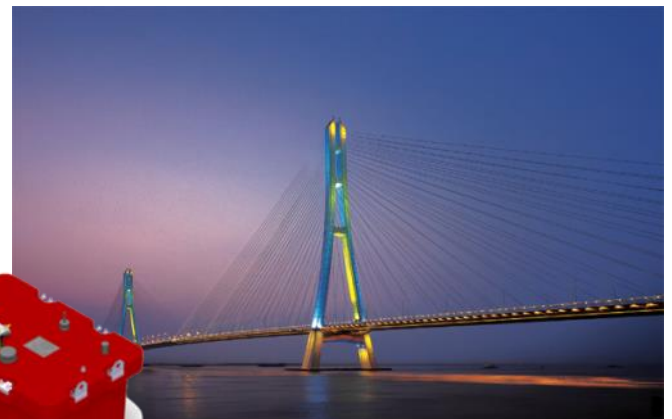
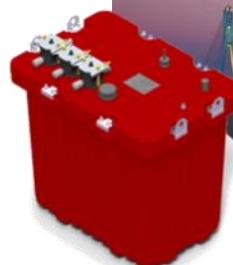
AUGIER Solution

Power transportation in 5500V from a substation equipped with two transformers 1600 kVA 10 kV / 5500 V.
The switchboard, with six feeder contactors, supplies the watertight step-down transformers installed in pits, close to the lamps to supply. Power supply of the transformers with cable 5500 V three pole 3x25 mm².
The whole installation can be supplied from one of the two transformers 1600 kVA.



Supply of AUGIER materials

- A 5500V switchboard containing two isolating switches, one bus coupler and six feeder contactors 5500V
- 32 transformers TER TT 16 kVA 5500 V / 400 V
- 4 transformers TER TT 50 kVA 5500 V / 400 V
- 8 transformers TER TT 100 kVA 5500 V / 400 V



Lighting of a bridge, total length 15,6 km

Lighting supply of the docks on a port

2x1000 kVA - 1100 meters - 5500 V

Power supply of large site

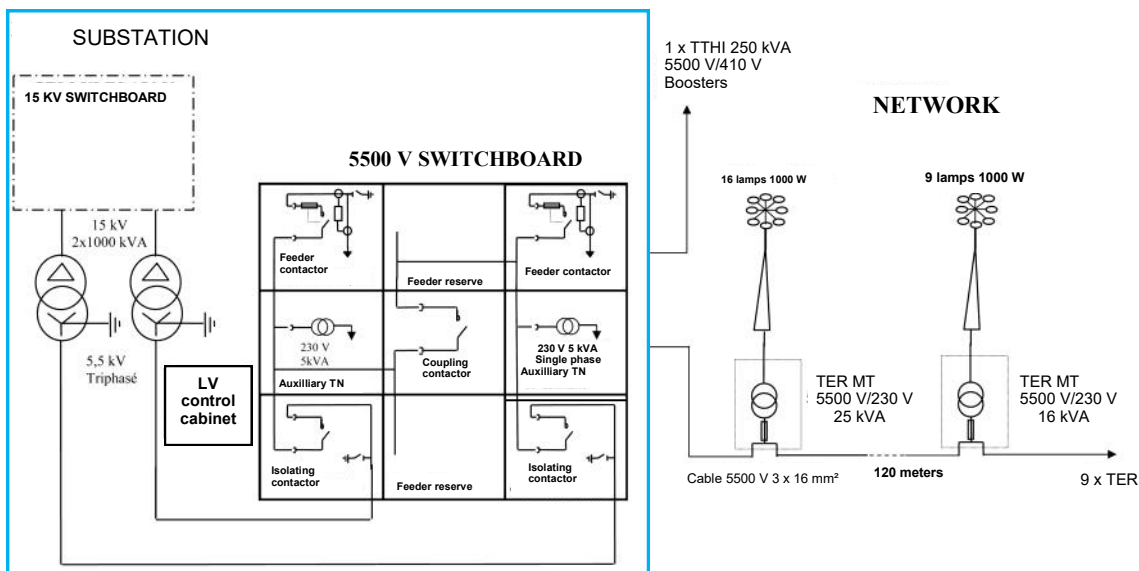
Customer request

To achieve the power supply for lighting of nine big lighting masts and boosters on the docks of a port.

AUGIER Solution

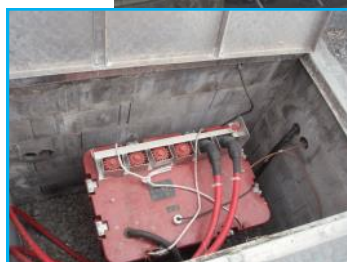
Power transportation in 5500 V from only one substation. The substation, with two feeders contactors, supplies on the one hand the step-down watertight transformers installed in pits, close to the lamps to supply, and on the other hand a transformer which supplies the boosters.

The redundancy of the 1000 kVA transformers ensures the lighting supply.



Supply of AUGIER materials

- One switchboard 5500 V comprising 2 isolating contactors, 2 feeders contactors, 2 feeder reserves, 2 auxiliaries transformers and one coupling contactor
- One LV lighting control cabinet
- One power transformer 250 kVA 5500 V/400 V
- 7 transformers type TER MT 16 kVA 5500 V/230 V
- 2 transformers type TER MT 25 kVA 5500 V/230 V



Transformer TER MT



Substation with 5500 V switchboard

Supply of security and buildings fences on an airport 630 kVA - 16 km - 5500 V

Power supply of large site

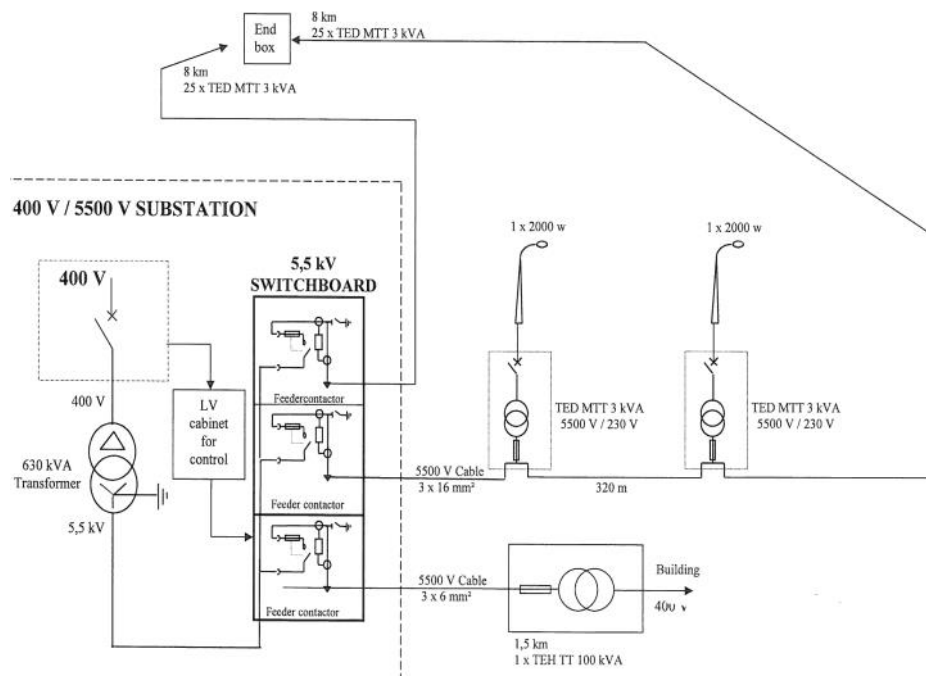
Customer request

To achieve the electrical power supply for the lighting of security fences on an airport, in difficult conditions of temperature (+55°C).

Total length : Two outputs of 8 km, one 2000 W SHP lamp at each 320 meters and one output of 1,5 km for one building.

AUGIER Solution

Power transportation in 5500 V from a substation equipped with one transformer 630 kVA 400 V/5500 V. The switchboard, with three feeder contactors, supplies the watertight step-down transformers installed in pits. Each transformer supplies a 2000 W lamp, no LV network. Power supply of TER MT transformers with cable 5500 V 3x16 mm².



Supply of AUGIER materials

- One outdoor transformer 630 KVA (+55°C) 400 V / 5500 V
- One 5500 V switchboard containing 3 feeder contactors
- 50 watertight, single phase, transformers TER MT 5500 V / 230 V 3 kVA (+55°C)
- 1 watertight, three phase, transformers TER TT 5500V / 400 V 100 kVA (+55°C)



Supply of highway lighting

5x1000 kVA - 74 km - 6600 V

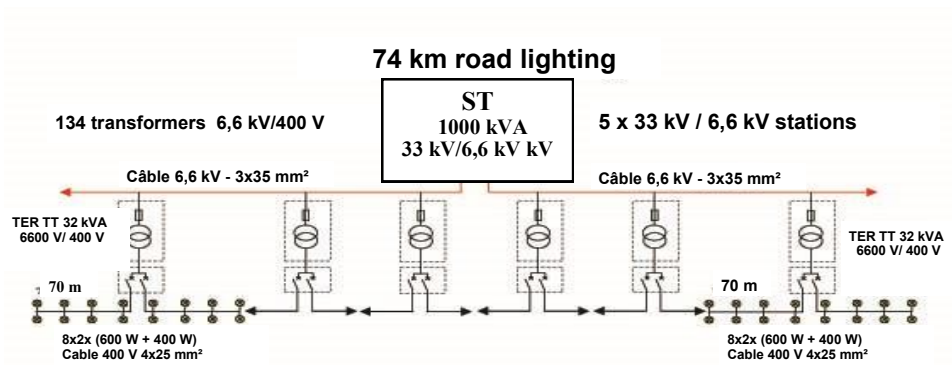
Outdoor lighting

Customer request

To transport electrical power for the lighting on an highway, length 74km. More than 1000 poles (2 lamps of 400 W and 2 lamps of 600 W) to supply : no energy available along the highway.
Save electrical energy during certain time.

AUGIER Solution

To transport the electrical energy in 6600 V from five sub-stations. Each substation supplies watertight transformers 6600 V / 400 V by using cable 6,6 kV - 3x35 mm² on 16-17 km. Each transformer supplies 8 poles equipped with lamps 2 x (600 W + 400 W), via a low voltage network 400 V 4x25 mm².
the energy saving will be achieved by the installation of two dimmers 6,6 kV.



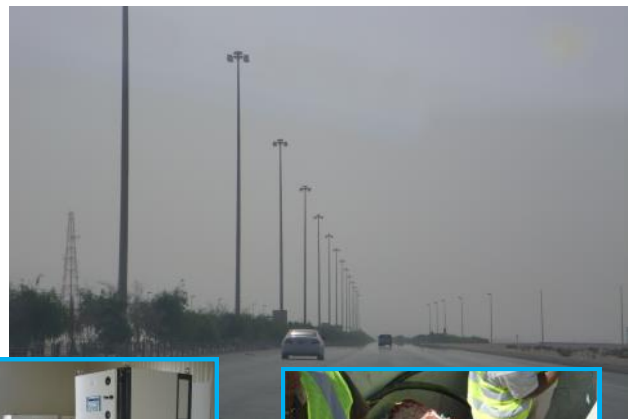
Supply of AUGIER materials

Substation Material

- 5 switchboards CEP13 are each composed of one general incomer contactor, one dimmer incomer contactor, two feeder contactors for lighting supply and one feeder to protect an auxiliary 100 kVA transformer
- 5 transformers type TER TT 100 kVA 6600 V/400 V

Network material :

- 134 transformers installed in pits, transformer TER TT 32 kVA 6600 V/400 V



Substation equipped with
6,6 kV switchboard



Pit with TER transformer 32 kVA

Power supply of 120 well sites

From 25 to 100 kVA - up to 12 km - 5500 V

Oil & Gas

Customer request

To achieve the power supply of 120 well sites Oil & Gas, spreaded in a 2500 km² area.

AUGIER Solution

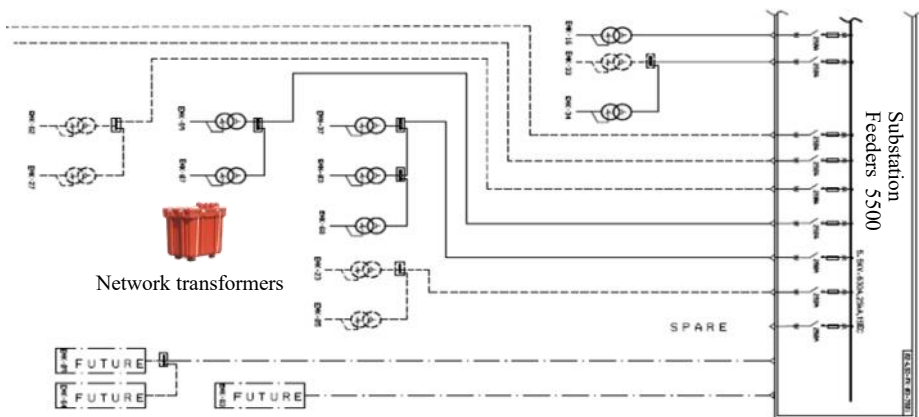
Power transportation in 5500 V to supply the 120 well sites (gas, oil, water).

Ten substations (70 feeders 5500 V) supply 1 to 3 network transformers with cable 5500 V 3 x35 mm².

The maximum distance between a substation and a well site is 12km.

On each well site, the transformers will decrease the voltage from 5500 V down to 400 V and be connected to LV panels.

The typical loads are pumps, electrovalves, HPU motors and control panels.



Supply of AUGIER materials

120 watertight transformers, IP68, three phase, TER TT 25 kVA (+55°C) 5500 V/400 V.



TER TT in a pit



TER TT 25 kVA

Definition of your installation

Your project

General datas

- Project name :
- Location :
- Standard temperature : -15°C +40°C Other temperature :
- Altitude : < 1000 meters Other altitude :
- Project description :

On departure from the installation - Source of electrical energy

- Available voltage ☐ Three phase ☐ Single phase
☐ 230 V ☐ 400 V ☐ 20 kV
- Position of the power supply in function of the consumers location
☐ At the start of the network ☐ In the middle of the network

 Please supply a scheme or a drawing of the network

- Location of the equipment:
☐ Indoor ☐ Outdoor

Electric power distribution network

The voltage distribution, BTM/MV cross section cable, power rating transformer, will be defined by AUGIER, unless they are imposed by the customer

- Supply to an outdoor lighting network (If the network to be powered is not linear, please provide a poles location drawing)
☐ Length of the network : km
- Supply to a remote consumer
☐ Length between the supply point and the remote consumer to feed : km
- Supply to several remote consumers
☐ Please provide a drawing showing the location of the remote consumers

Electrical receivers - Network step down transformer

• Installation of the step down transformers



Indoor in one substation



Outdoor in one pit



Outdoor in one cabinet

• Receivers to be powered

Type :

Power supply voltage :

Power rating :

Operation :



Permanent



Temporary

• Outdoor lighting: The step down transformers will be installed inside one pit

Type of lamps :

Number of lamps per pole :

Power rating lamps :

Average of distance between 2 poles :

Power supply voltage : 230 V

Position of the poles :



One side



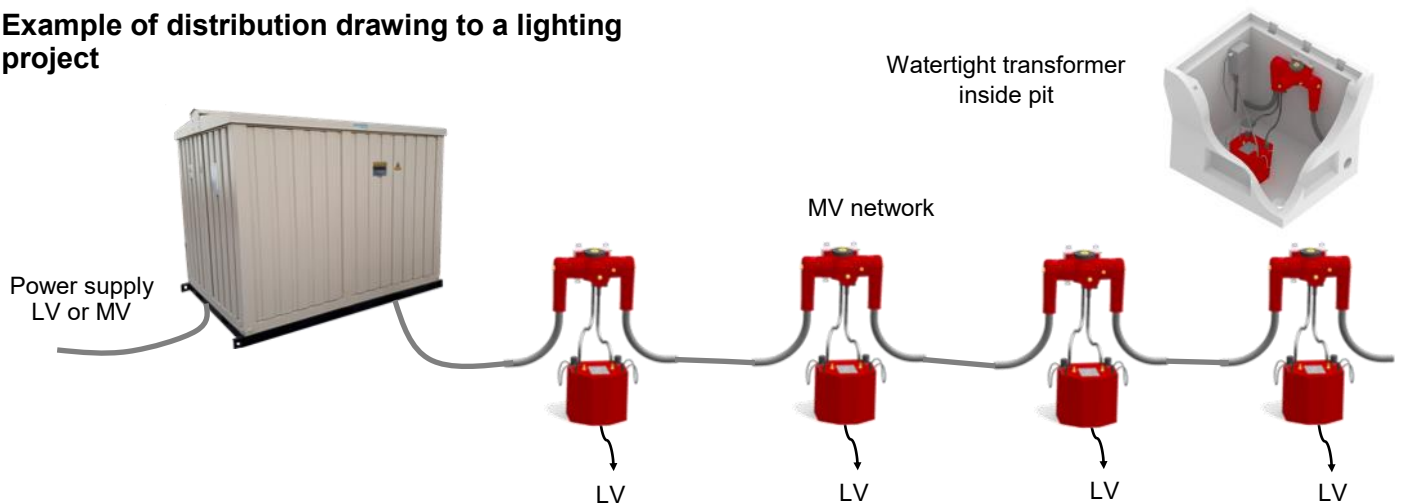
Both side

Other information

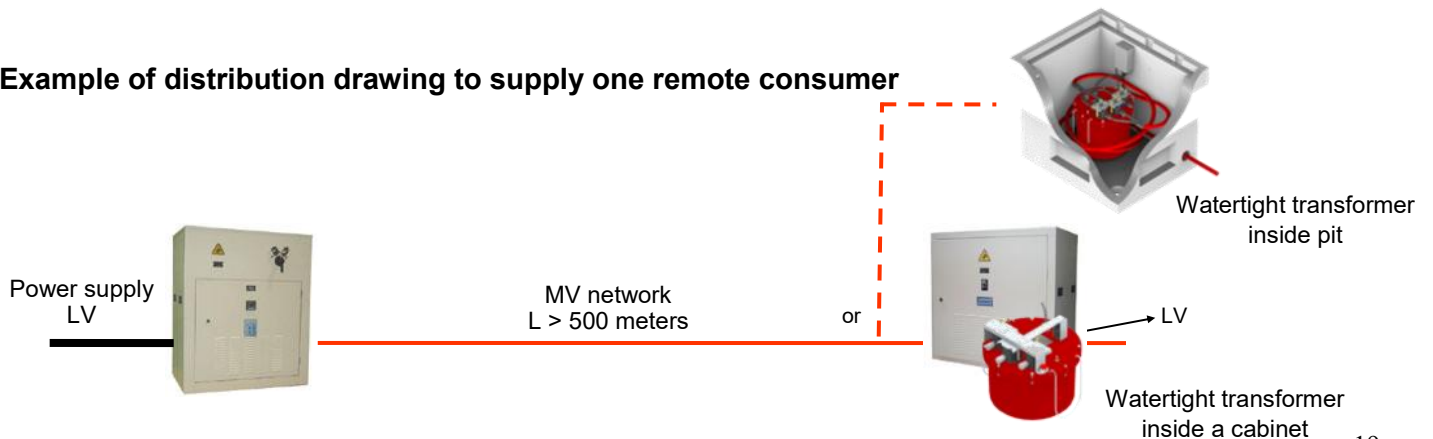
- Maximum voltage drop ? % (example, 8% for road lighting according to NFC 17200)
- Particular constraints ? (example, marine environment)

Example of distribution drawing

Example of distribution drawing to a lighting project



Example of distribution drawing to supply one remote consumer



AUGIER EST CERTIFIÉ ISO 9001 DEPUIS 1995



AUGIER
energy

With constant improvements, the manufacturer may alter information without prior warning