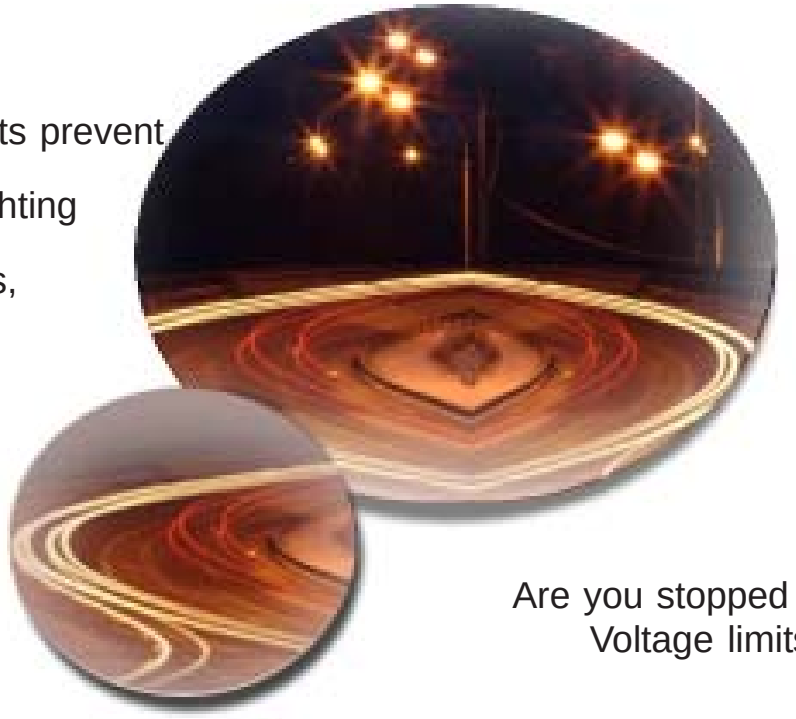
Medium Voltage

For extra-urban street lighting projects …

Do electrical constraints prevent you to achieve your lighting projects such as roads, motorways, sites ?



Are you stopped by Low Voltage limits ?

Achieve your projects with a technology universally adopted

<u>YOURS CONSTRAINTS</u> :
No availability of electrical sources closed to the course to light ; the low voltage is quickly limited

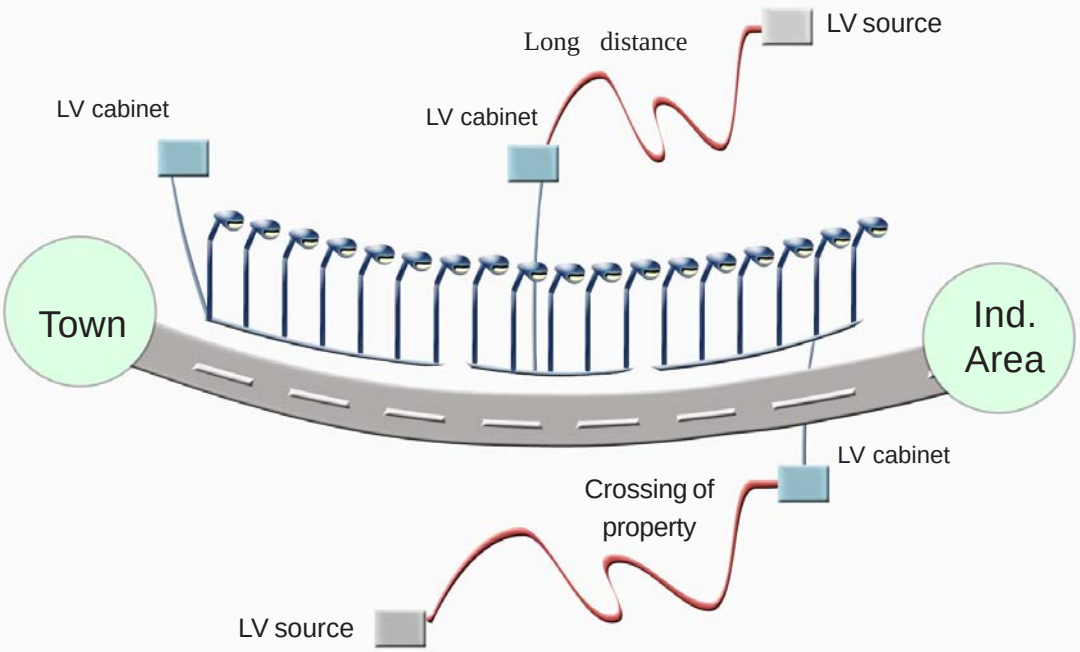
<u>OUR SOLUTIONS</u> :
Only one electrical source and one energy transport in 3200V or 5500V.

60 11381 - 31/05/07

YOUR EXISTING CONSTRAINTS

Example 1

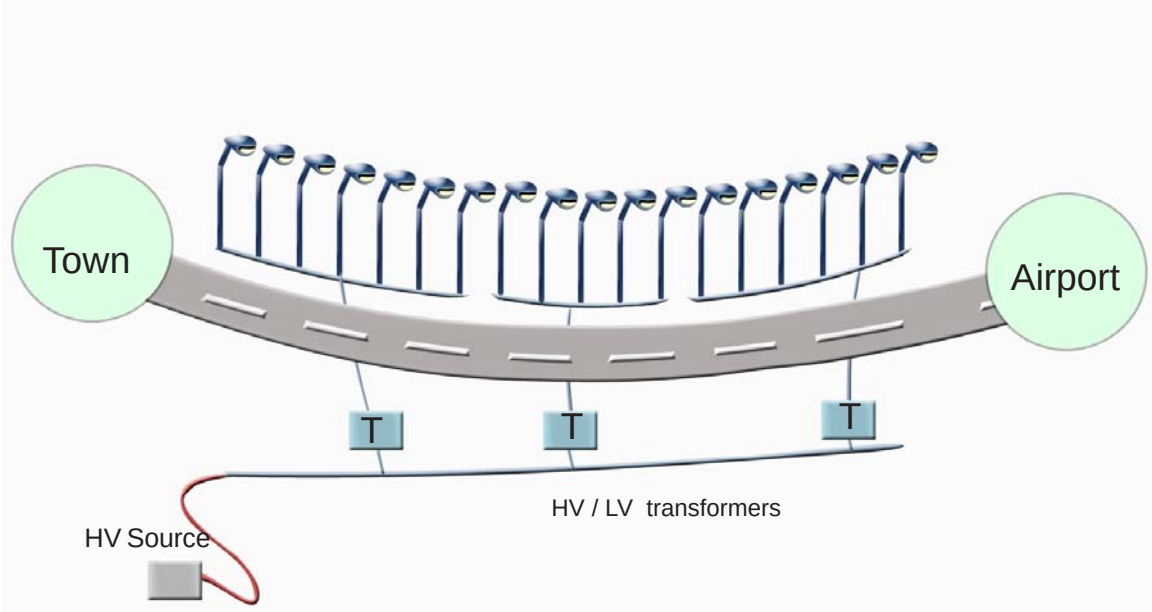
FROM LV EXISTING ELECTRICAL SOURCES : Transport the LV to the cabinets



Is this feasible? Will you find these sources in the vicinity? What will be the cost of large cross- section cable which will carry energy to the course ? Will it be easy and cheap to manage the administrative formalities and the authorizations?

Example 2

FROM A HV ELECTRICAL SOURCE **: creation of a HV and LV network**

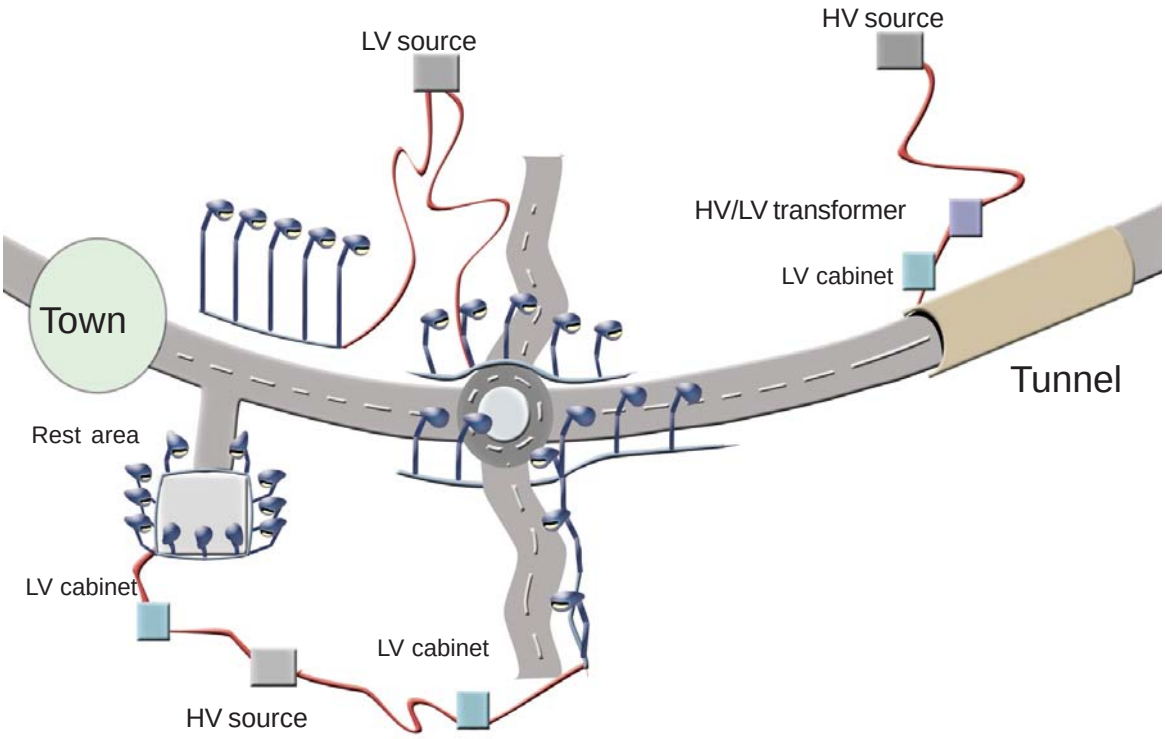


Is this feasable to tranport the HV along the course? What will be the cost? Do you control the deadlines? Isn't this luxurious for a simple lighting?

YOUR EXISTING CONSTRAINTS

Example 3

MOTORWAY CASE : Intersection - Tunnel - Rest area.



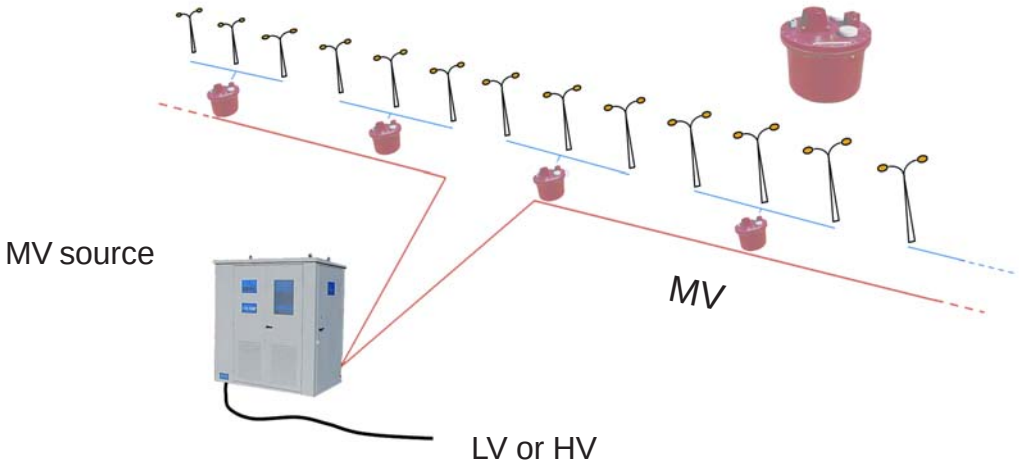
Will you be able to tranport energy to each place to light? Which administrations and owners to contact ? Will you have the right to cross the properties? How much will that cost?

You must ignore these constraints and find your solution adapted to the project

YOUR VOLTAGE BECOMES : Medium Voltage

This solution brings the autonomy of study, of work and of work management at an undervalued total cost .

From only one Low Voltage (400 V) or High Voltage (20 KV) electrical source , we advise you to create a MV voltage which allows the energy distribution along the course on average and long distances (from 2 to 20 Km).



We study with you and for you all the design of the step-up or step-down cabinet. We are a manufacturer of this kind of systems **"MV sources": 3200 or 5500 V.**

This Voltage is transported by adapted cable (6 kV). Transformers burried closed to the lighting column restore the LV voltage 230 V or 400 V.

We produce those transformers, real « step-down mini-station».Those cable and transformers will be installed by your contractor.

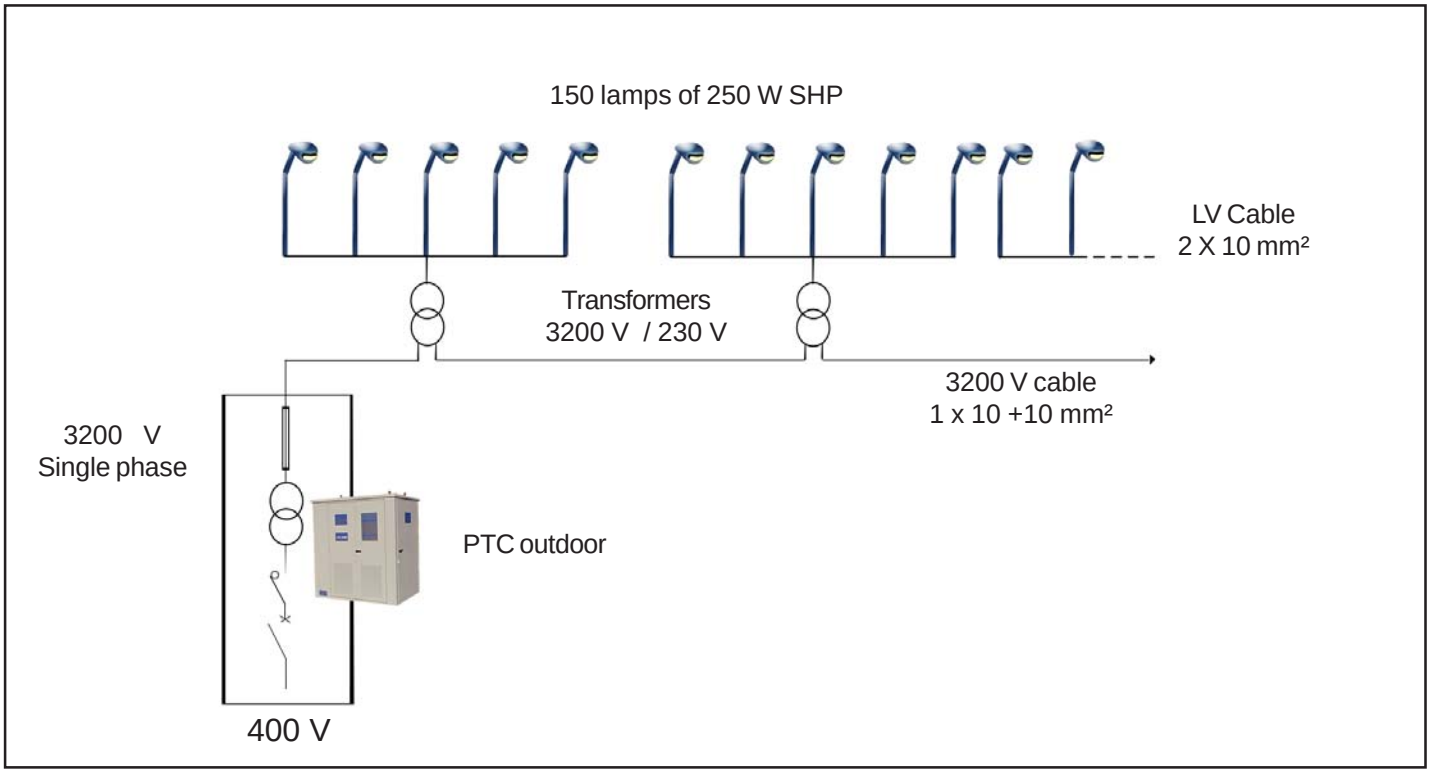
The MV allows you autonomy with a reduced budget from 15 to 30% but will also bring you the possibility to add other advantages :

- To forecast future extensions
- To save energy at rest time
- the telemanagement by STEP

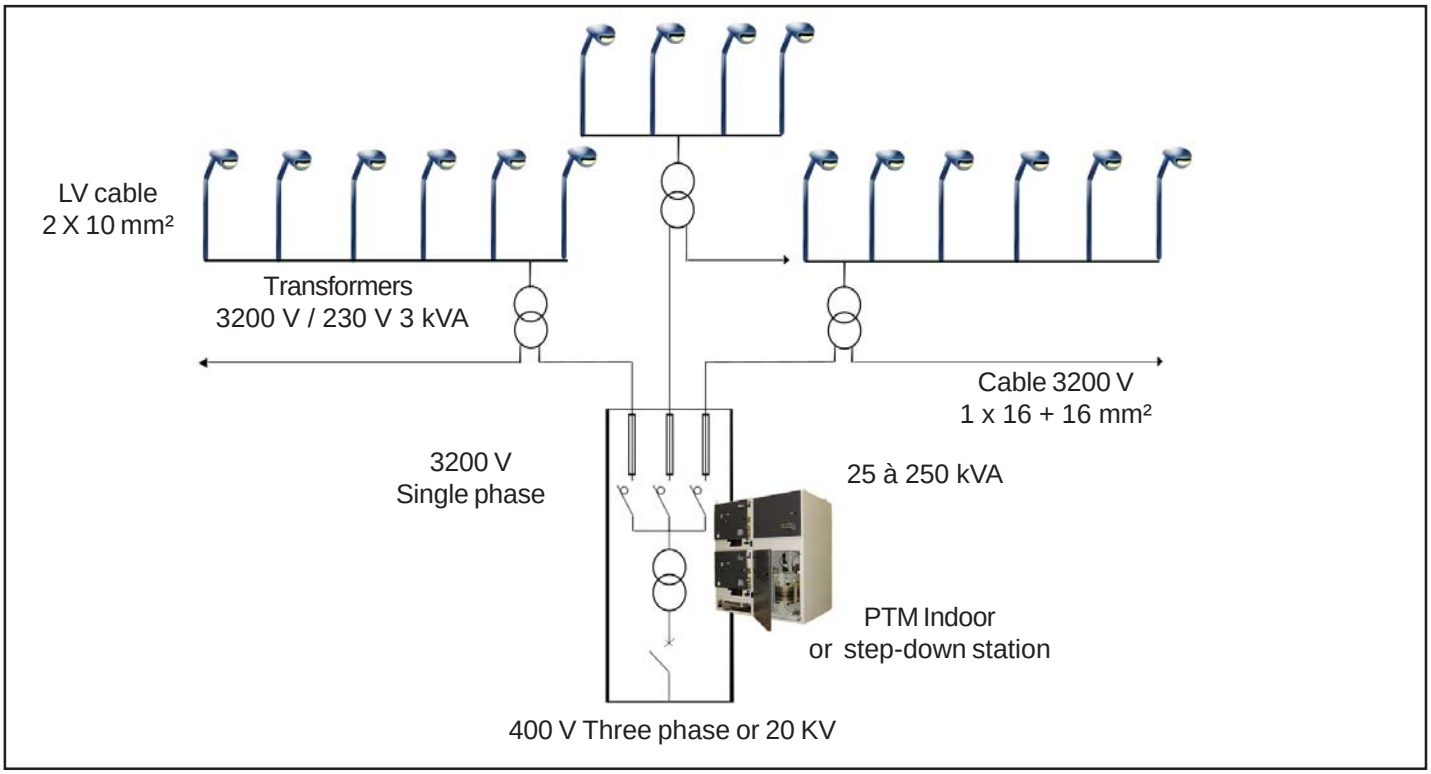
All relative procedures and rules are respected

Some Examples

Example 1 : ROAD LIGHTING
3200 V single phase network – Length 4500 meters – Electrical source at the beginning

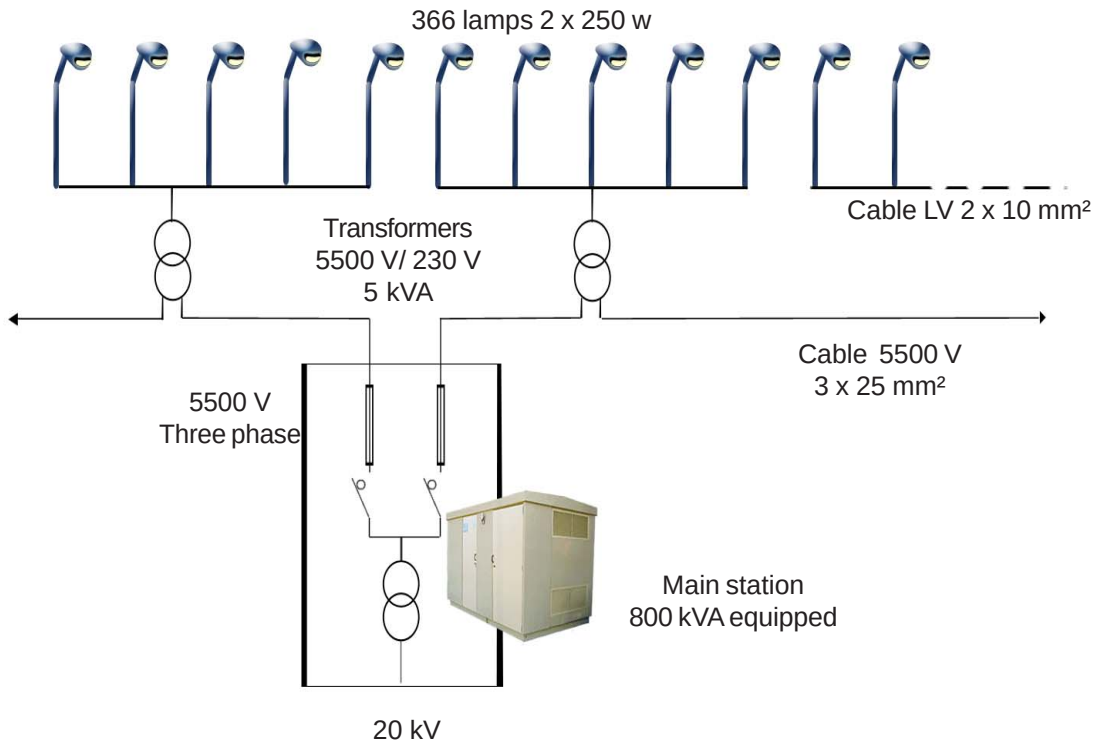


Example 2 : ROAD LIGHTING + EXCHANGER
3200 V single phase network– 3 network output feeders

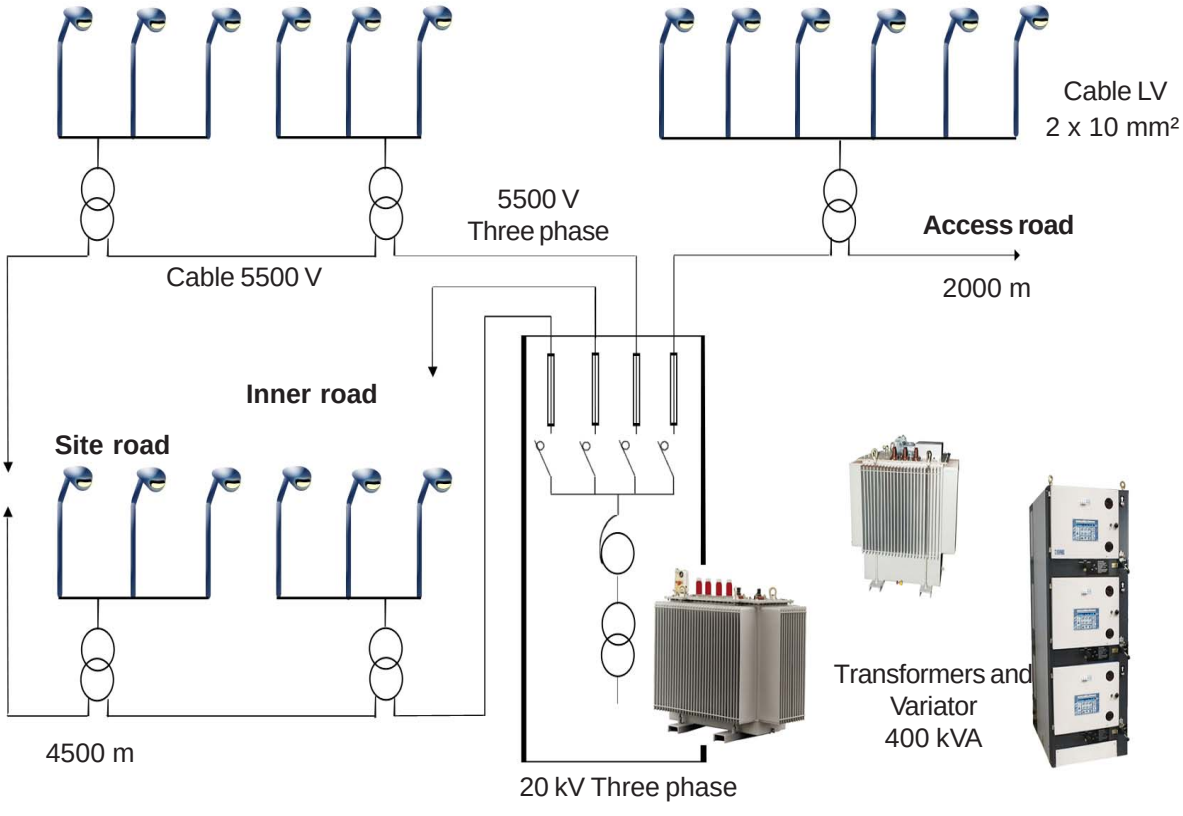


Some examples

Exemple 3 : MOTORWAY LIGHTING
5500 V three phase network– Length 22 000 m – Electrical source in the middle.



Example 4 :
GREAT SITE LIGHTING - 5500 V three phase network.



ROAD LIGHTING

INDICATIVE TABLE TO CHOOSE THE TRANPORTATION VOLTAGE

Cross-section of calculated for a drop voltage of : 5% for 950 V network, 3 % for 3200 V et 5500 V network. Power rating uniformy spread

Network length (km)	SHP lamp power rating (w)	SHP lamp power rating (VA)	Interlighting column distance (m)	Total lighting power rating(kVA)	Supply source type	Source position	Transportation voltage	transportation cross-section cable (mm²)	Sub network low voltage	Transformer type
2	150	195	30	13	LV	Middle	950 V	2 x 6	Not applicable	VOLTAMAX
						Extremity		2 x 16		
			40	10		Middle		2 x 6		
						Extremity		2 x 10		
	250	320	30	21		Middle		2 x 6		
						Extremity		2 x 25		
			40	16		Middle		2 x 6		
						Extremity		2 x 16		
3	150	195	30	20	LV	Middle	950 V	2 x 10	Not applicable	VOLTAMAX
						Extremity		3 x 16		
			40	15		Middle		2 x 6		
						Extremity		2 x 25		
	250	320	30	32		Middle		2 x 16		
						Extremity		3 x 25		
			40	24		Middle		2 x 10		
						Extremity		3 x 16		
5	150	195	30	33	LV	Middle	950 V	2 x 25	Not applicable	VOLTAMAX
						Extremity	3200 V	2 x 16	applicable	TED MTT
			40	24		Middle	950 V	2 x 16	Not applicable	VOLTAMAX
						Extremity	3200 V	2 x 10	applicable	TED MTT
	250	320	30	53		Middle	950 V	3 x 16	Not applicable	VOLTAMAX
						Extremity	3200 V	2 x 25	applicable	TED MTT
			40	40		Middle	950 V	3 x 16	Not applicable	VOLTAMAX
						Extremity	3200 V	2 x 16	applicable	TED MTT
8	150	195	30	52	LV	Middle	950 V	3 x 25	Not applicable	VOLTAMAX
						Extremity	5500 V	3 x 6	applicable	TED MTT
			40	39		Middle	950 V	3 x 25	Not applicable	VOLTAMAX
						Extremity	3200 V	2 x 25	applicable	TED MMX
	250	320	30	85		Middle	3200 V	2 x 16	applicable	TED MMX
						Extremity	5500 V	3 x 10	applicable	TED MTT
			40	64		Middle	3200 V	2 x 10	applicable	TED MMX
						Extremity	5500 V	3 x 10	applicable	TED MTT
8	2 x 250	640	30	171	HV	Middle	5500 V	3 x 6	applicable	TED MTT
						Extremity		3 x 25		
			40	128		Middle		3 x 10		
						Extremity		3 x 16		
12	150	195	30	78	LV	Middle	3200 V	2 x 25	applicable	TED MMX
						Extremity	5500 V	3 x 16		TED MTT
			40	59		Middle	3200 V	2 x 16		TED MMX
						Extremity	5500 V	3 x 10		TED MTT
	250	320	30	128		Middle	5500 V	3 x 6		TED MTT
						Extremity	5500 V	3 x 25		TED MTT
			40	96		Middle	3200 V	2 x 25		TED MMX
						Extremity	5500 V	3 x 16		TED MTT
12	2 x 250	640	30	256	HV	Middle	5500 V	3 x 10	applicable	TED MTT
						Extremity		3 x 50		
			40	192		Middle		3 x 10		
						Extremity		3 x 35		
15	150	195	30	98	LV or HV	Middle	5500 V	3 x 6	applicable	TED MTT
						Extremity	5500 V	3 x 25		TED MTT
			40	73		Middle	3200 V	2 x 25		TED MMX
						Extremity	5500 V	3 x 16		TED MTT
	250	320	30	160		Middle	5500 V	3 x 10		TED MTT
						Extremity	5500 V	3 x 35		TED MTT
			40	120		Middle	5500 V	3 x 6		TED MTT
						Extremity	5500 V	3 x 25		TED MTT
15	2 x 250	640	30	320	HV	Middle	5500 V	3 x 16	applicable	TED MTT
						Extremity		NON		
			40	240		Middle		3 x 16		
						Extremity		3 x 50		
Above 15 km	**5500 V step-down station and network - Possibility to supply to 30 km of network from one station**									

For information :

* In a project, 2 step-up stations can replaced by one step-down station
* In each case, posibility to add an energy saver variator
- For the step-up cabinets : VE to 60 kVA and THR 38 from 80 to 160 kVA
- For the step-down stations : THR 550 from 160 to 630 kVA

MATERIAL FOR STATION
&
EQUIPPED STATION

Switchboard 5500 V

Simplified cabinet
PTS 32

Modular substation PTM

Power transformer

Compact minisubtation PTC

NETWORK TRANSFORMERS

TED

Modulobloc

TEC

Augier SA is certified ISO 9001

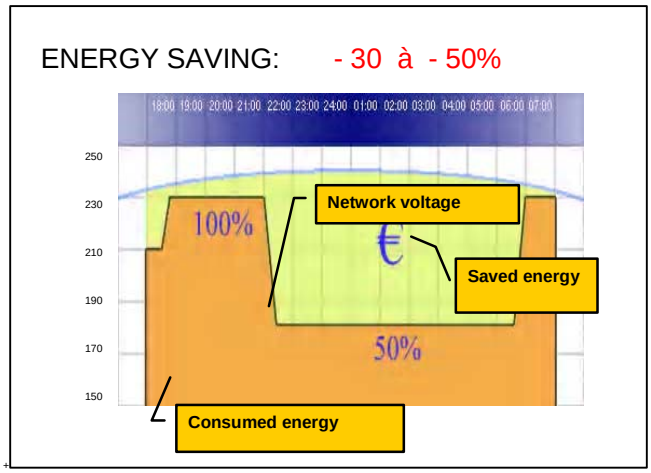
YOU DECIDE TO SAVE ELECTRICAL ENERGY

In the electrical station HV / MV or LV/ MV, it is possible and recommended to add a voltage variation/regulation device . To the hours choosen by the owner, the consumed power will be reduced and will continue to ensure the site safety.

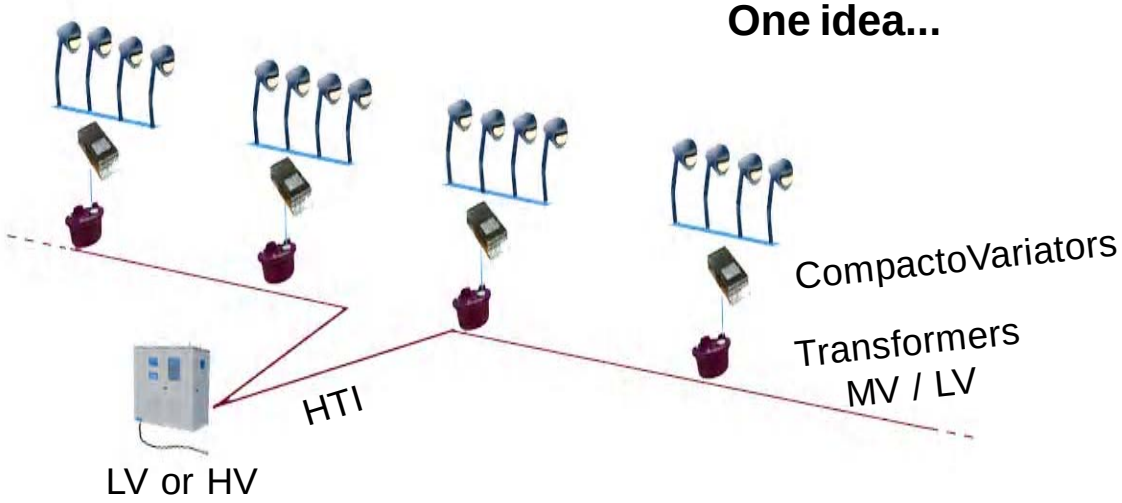
«LV Variator COMPACTO»

«LV Variator in cabinet»

Dayly cycle of variation



One idea...



Functions and further services for MV

The STEP is a remote control and (or) monitoring system by power carrier line technology on the MV networks.

Advantages : No additional cables, the controls are choosen by the owner.

Aim : To light on and off each part on request.

Transformation main station

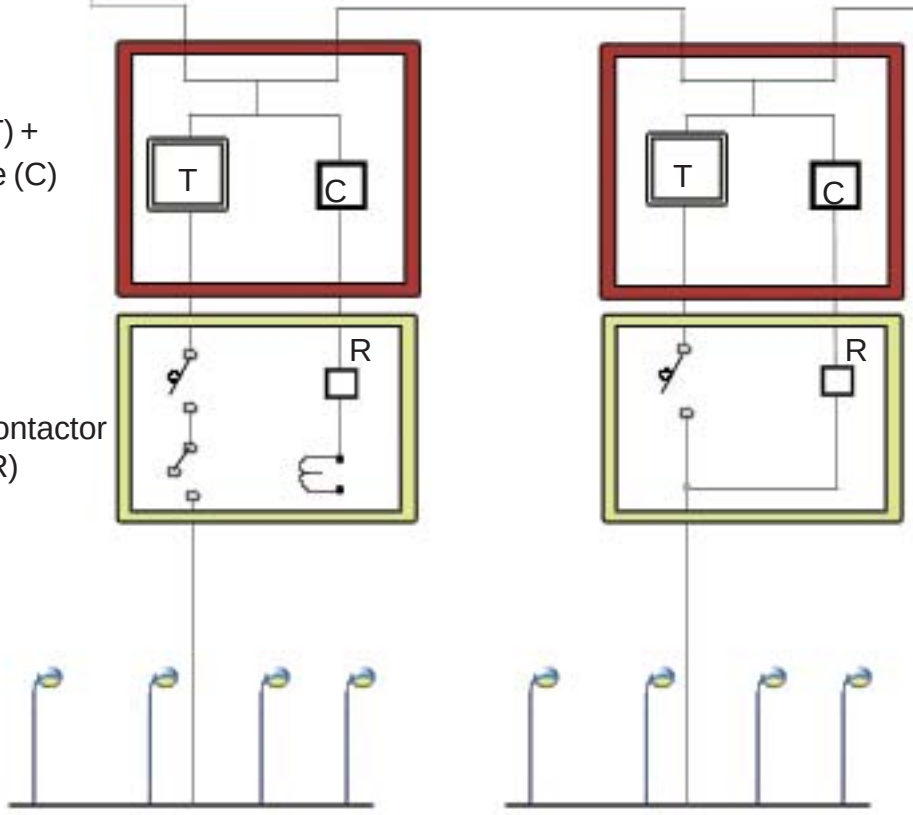
E. Source
Transformer
Emitter and receiver unit
MV swithboard
Control cabinet

MV + power carrier line

On the network

Transformer (T) + Coupling device (C)

Circuit breaker+ Contactor + Receiver(R)



Remote control

Monitoring

Remote control / signalling of the network : the STEP

The coupling device allows the order or information transmission from the LV to MV network and inversely.

In the station

The coupling device

The emitter unit

On the network

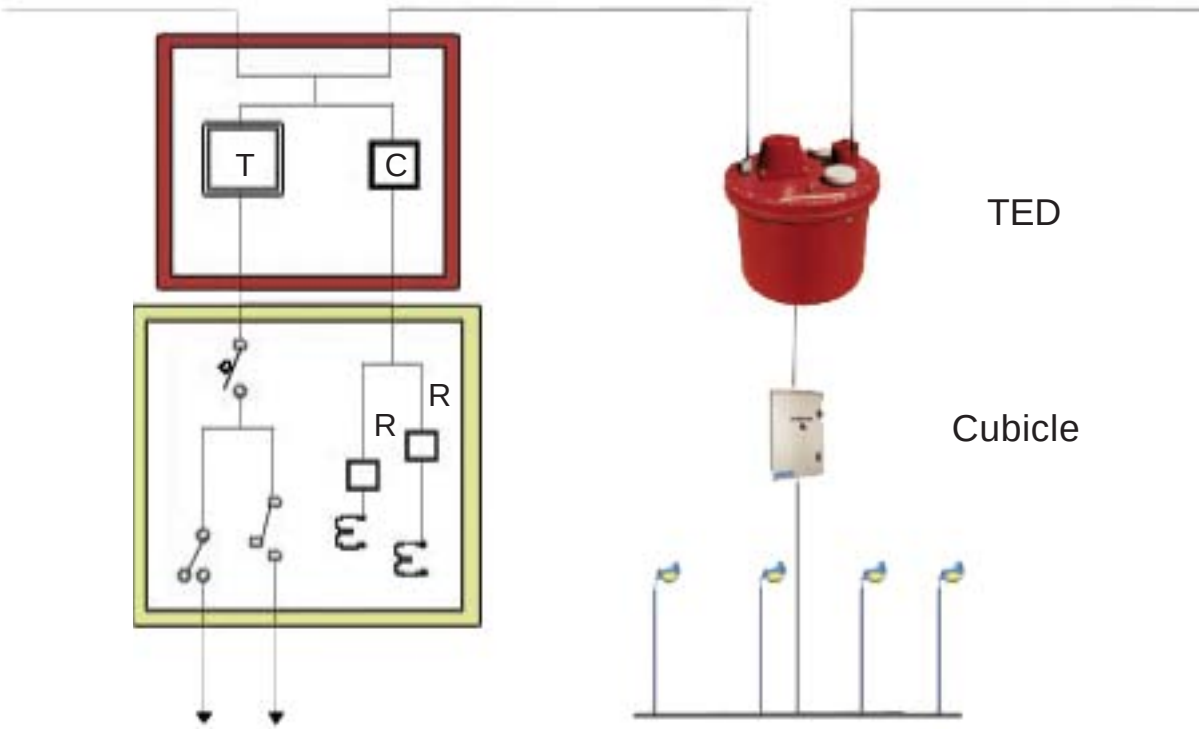
The receiver unit

The indoor coupling device

The outdoor coupling device

On the network, 2 types of coupling device :

-Coupling device installed in the transformer
-Coupling device independent of the transformer



Lamps A / B :

- 1 lamp on 2,
- 2 indoor, 2 outdoor,
- Columns with many lamps ...

- The MV for the 3200 and 5500 V network.
- Discover also our solutions for the 950 V network from 1 to 5 km.

AUGIER IS CERTIFIED ISO 9001 SINCE 1995

AUGIER ® SA
BP 131 – 06513 CARROS Cedex
France
Tel +33 (0)4 92 08 62 00
Fax +33(0)4 93 29 01 40
home@augier.com
www.augier.com