Smart & digital grids | Green generation & storage | Green mobility | Sustainable buildings & infrastructures

ormazabal velatia

LOW VOLTAGE SOLUTIONS

optima.smart

Improving low voltage grid management



Due to the fact of economy decarbonization (growing electric cars, heat pumpers, distributed sources of photovoltaic energy), new quality and service issues (current phases unbalances and neutral current flow) are appearing in the low voltage grid.

These load unbalances, mean events of simultaneous over and under voltage along the entire low voltage line.

The actions taken to solve these asymmetrical one-phase current unbalances at the transformer station are not sufficiently effective.

These real-time deviations that are fluctuating permanently make the optima.smart, with active control, a perfect device to improve the low voltage grid management as well as the ratio benefits/costs.

Features

- Digital native solution
- Power electronics core technology
- Grid connection in derivation
- Compatibility with transforma.smart

Benefits

- Real time and active balancing controllability
- Flexibility and scalability in terms of power and investment
- No impact in low voltage protection coordination

Enhancements

- Voltage events
- Grid hosting capacity
- Technical losses

Applications

- LV overhead lines
- LV underground lines

Characteristics

optima.smart		
Electrical characteristics		
LV Grid System	[V_{AC}]	400 (3P+N)
Frequency	Hz	50/60
Output Voltage Strategy	[V_{AC}]	Configurable
Continuous rated current (phase/neutral)	[A]	50/75
Mechanical characteristics		
Grid connection		Derivation
Installation type		Pole- / Wall- / Pad-mounted
Dimensions (h x w x d)	[mm]	1300 x 830 x 360
Weight	[Kg]	≤ 115
Degree protection		IP55
Cooling system		FA
Optionals		
Communication, Webserver, Q control & THD control		

Case study

Challenge

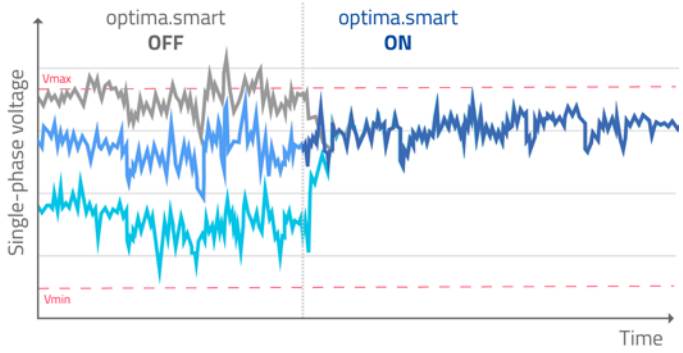
Unbalanced overhead LV grid with different single-phase voltage events located in Spain with more than 40 connected customers along the line.

Solution

One optima.smart placed near the center of gravity of the users for optimal balancing.

Results

Once optima.smart was activated, all single-phase voltages were balanced at the same level. In this way, all phases operate under normal conditions, unlike the previous scenario.



Otherwise single-phase line currents fed by the transformer station were balanced reducing the neutral current as well as its technical loses.

Conclusions

After the activation of the optima.smart the customers located in the action radius of the equipment did not have voltage events and the customers near the transformer station reduce the number of the events in more than 99 %.

optima.smart **OFF**
102 events/day



optima.smart **ON**
0.58 events/day



● Customer **WITHOUT** voltage events
● Customer **WITH** voltage events

More info

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