SDM-group

We are leaders in the development and implementation of mission-critical applications

Less Energy Consumption

Renewable energy

Operational reliability

High efficiency and low TCO

Health and support

POWER IN CONTROL

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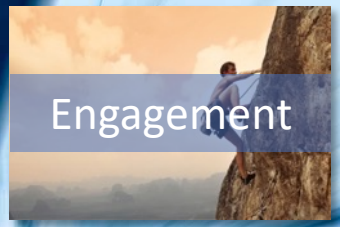
SDM-strengths



50 years of experience in energy critical installations

POWER IN CONTROL

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SDM-worldwide

- Covering the whole world
- Market leader in Belgium
- Strong in Africa and Asia
- Headquarters in Belgium
- Control panels factory in Belgium
- Development in Germany
- Programming in Belgium
- Salesmen in Europe and Asia
- Inventor of the UPD

SDM-activities

Our activities and products

Total solutions
Critical energy
Power Plants

Power and
Control Panels
OEM Cabling

Engineering
Retro fitting
and Service

UPD Universal
Power Device
Microgrid

DEIF Controlers
Energy management

POWER IN CONTROL

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SDM-Power quality specialists

- SDM responds to the growing need for adaptable and reliable energy solutions.
- SDM has an unparalleled experience in custom design and manufacturing of critical power supply devices
- SDM-Group introduce a revolutionary system:
- The Universal Power Device or UPD


Healthcare


Industry


Data & Banking


Airport Aviation


Micro grid

UPD Universal Power Device

- A revolutionary new quality tool for mission-critical applications
- This is an innovative system that
  - Reduces your energy costs
  - Optimizes production capacity
  - Guarantees continuity and high operational efficiency, even with grid failures.
- The UPD is a modular system that can be adapted to your wishes and needs

UPD Universal Power Device

- Up to 98% efficiency at full load
- Up to 40% input voltage correcting
- No air conditioning required up to 40°C
- Very Low TCO, no moving parts
- Absorbing and generating kVAr
- Cancelling harmful harmonic content
- Improving power factor
- Energy storage with Caps, Lithium batteries, Flywheel and more
- The most versatile protection ever made

UPD The various functions

No moving parts
Up to 98% efficiency
Up to 99% in V-mode
No air conditioning up to 40°C
Low TCO
Unique & versatile

SDM UPD
The most versatile protection ever made

Universal Power Device 250 kVA up to MW's

Tx mode
UPS – NOBREAK function. For critical applications

230V - 690V up to 20kV

FC-Tx mode
Voltage and frequency conversion

230V - 690V up to 20kV

Vr mode
Grid Voltage conditioner corrects the grid voltage according to the new European regulations

UPD DEMO

V mode
Corrects V up to 40% from the nominal voltage.

Fuel saving Green Power solution

F mode
Frequency and Voltage Stabilizer

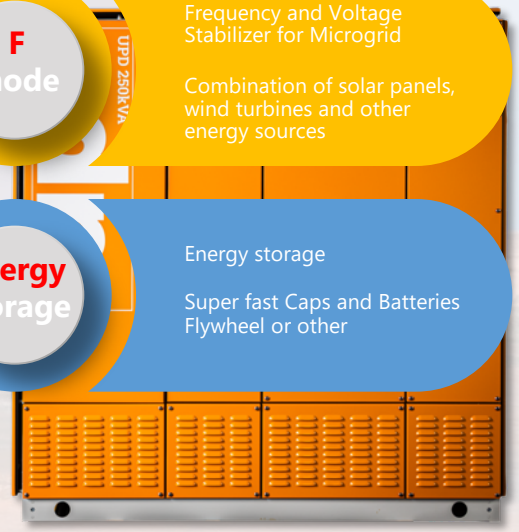
Can bridge a mains failure by discharging different storage systems

F mode
Frequency and Voltage Stabilizer for Microgrid

Combination of solar panels, wind turbines and other energy sources

Energy storage
Energy storage

Super fast Caps and Batteries Flywheel or other



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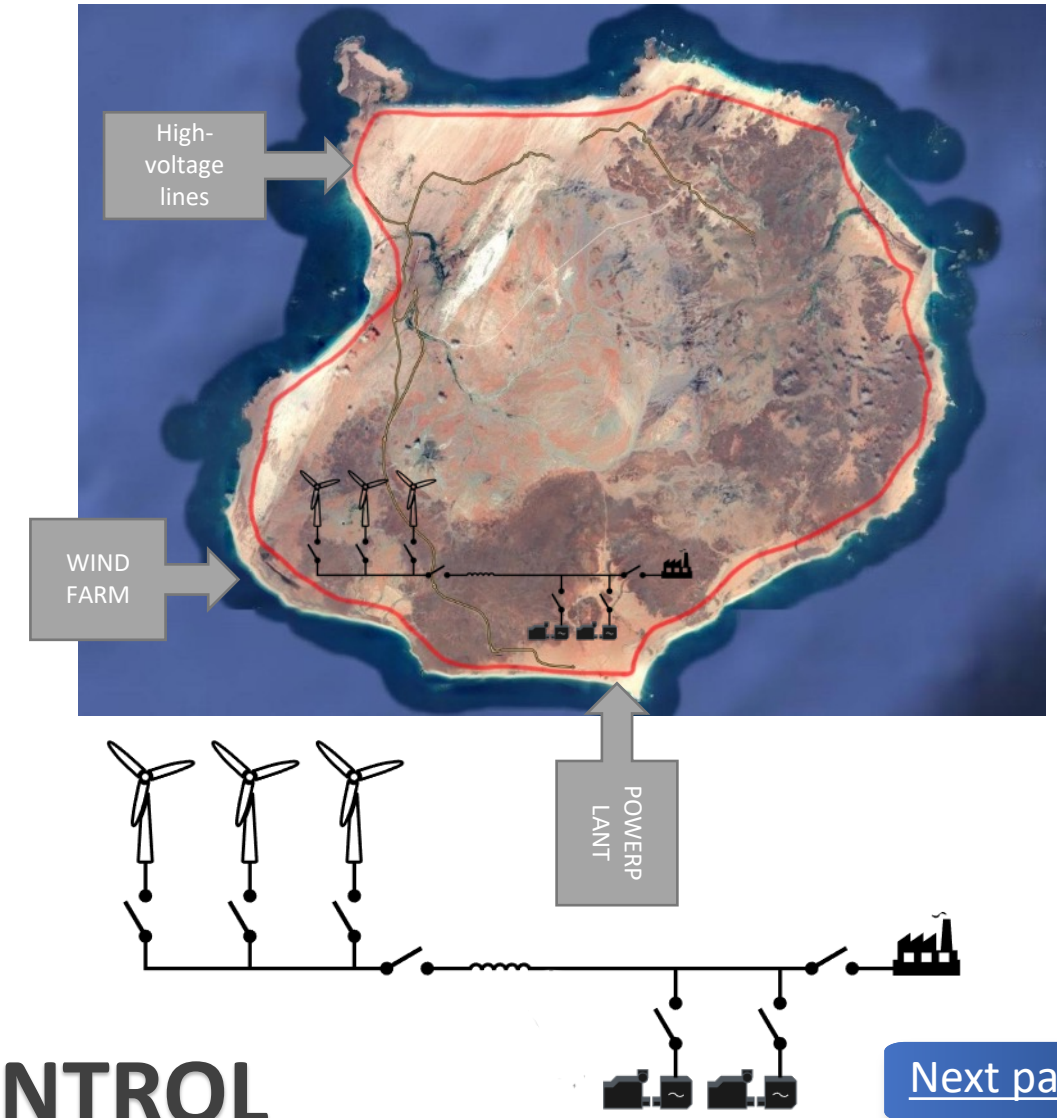
UPD CASE 1.

- V-mode on an island

UNIVERSAL POWER DEVICE

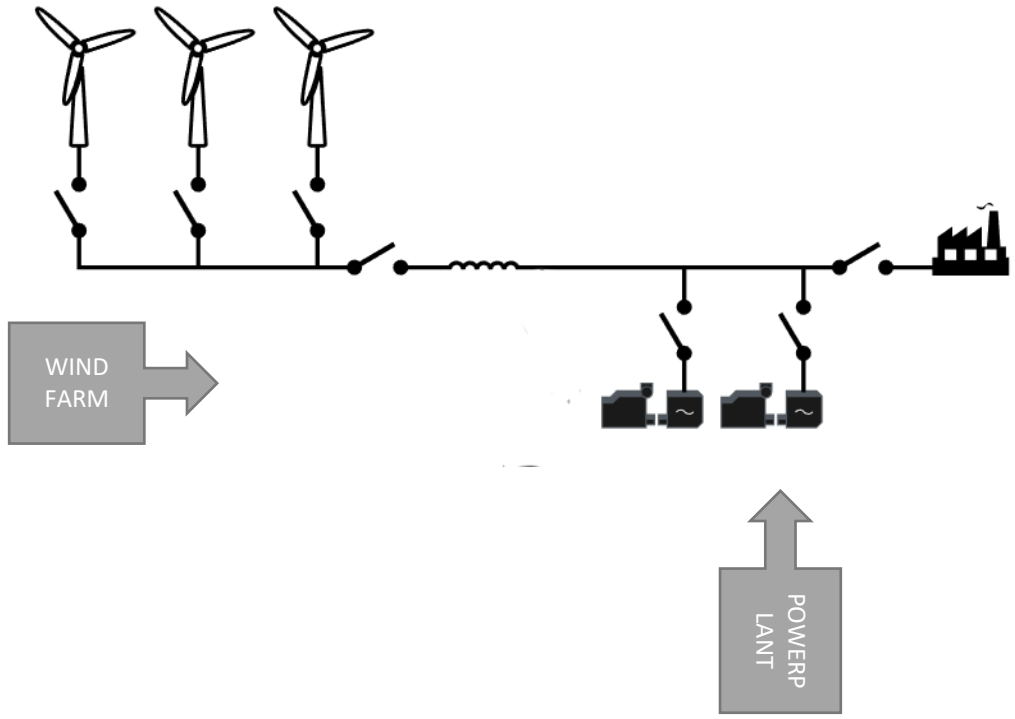
UPD Island energy production improvement

- The situation problem
  - This island has no electrical connection with the main land
  - The electricity on the island is produced by windmills and generator sets.
  - A long high-voltage circuit around the island connects all the villages.



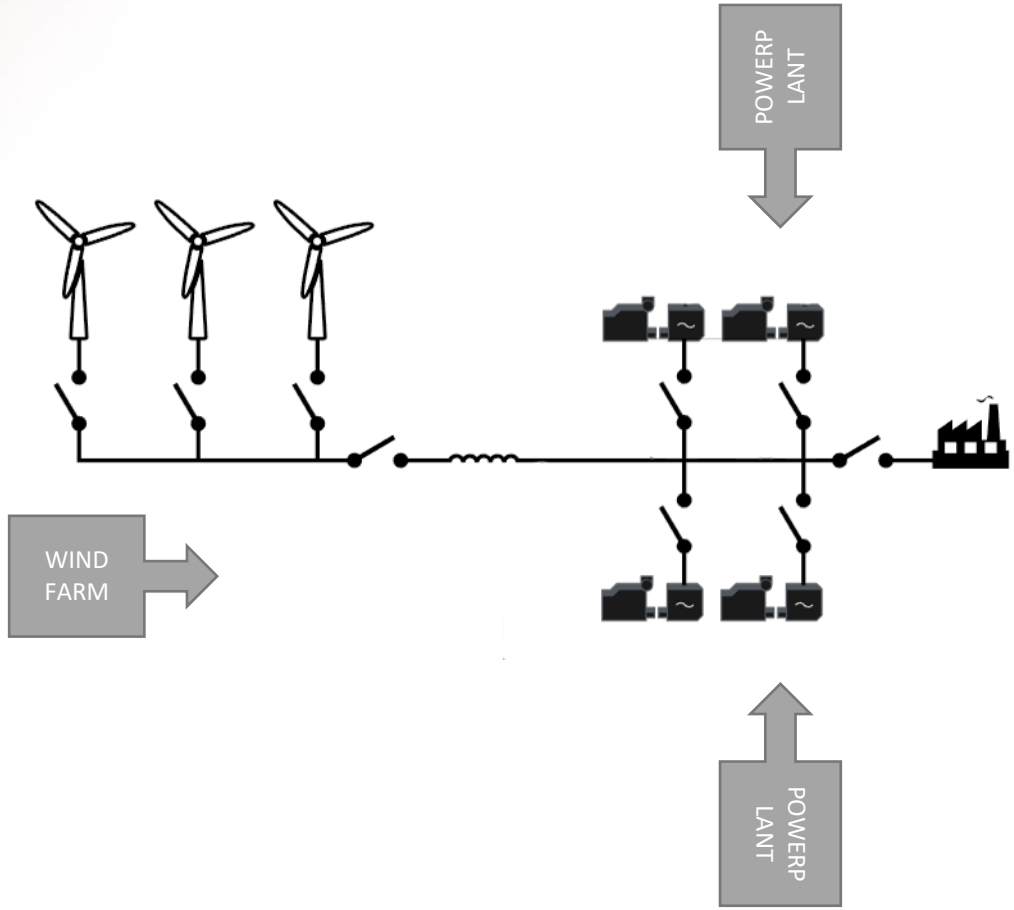
UPD Island energy production improvement

- The problems
  - The underground high-voltage power lines act like capacitors and cause an overvoltage on the island grid.
  - A second problem is wind instability. The wind turbines can suddenly go from full power to zero power. As a result, the gensets are overloaded and shut down. This causes a total power outage on the island.



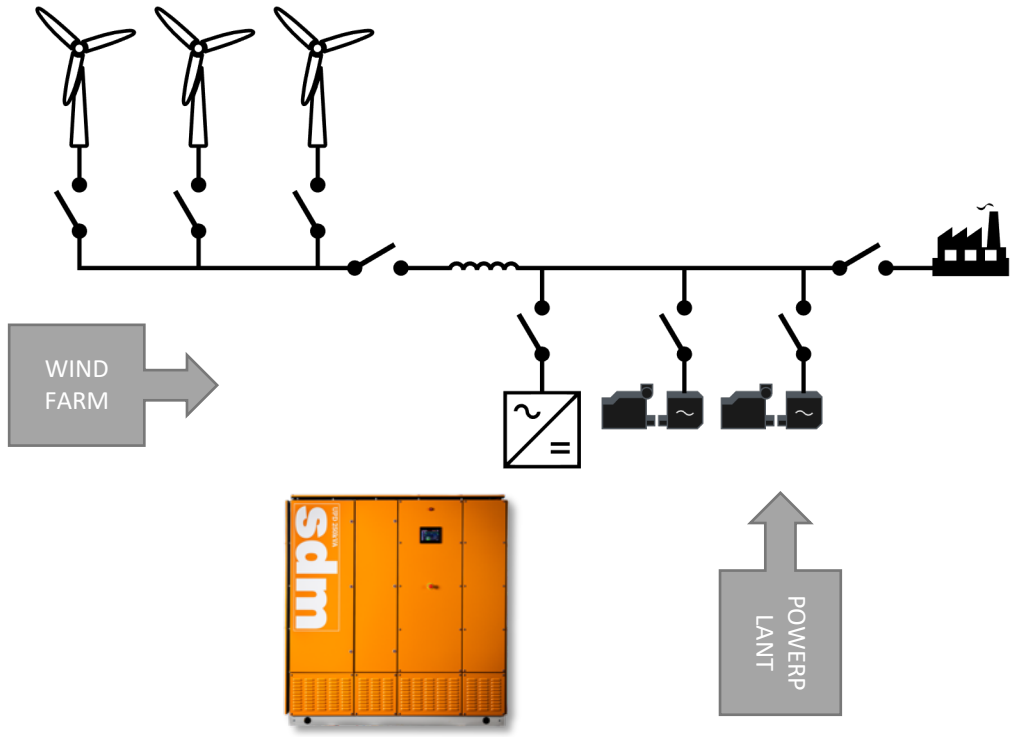
UPD Island energy production improvement

- Is there a solution?
  - Installing more diesel generators
  - Using even more generating sets is a very expensive solution and requires a large investment and high fuel cost.
  - This also does not solve the problem of overvoltage caused by the long underground high-voltage lines.



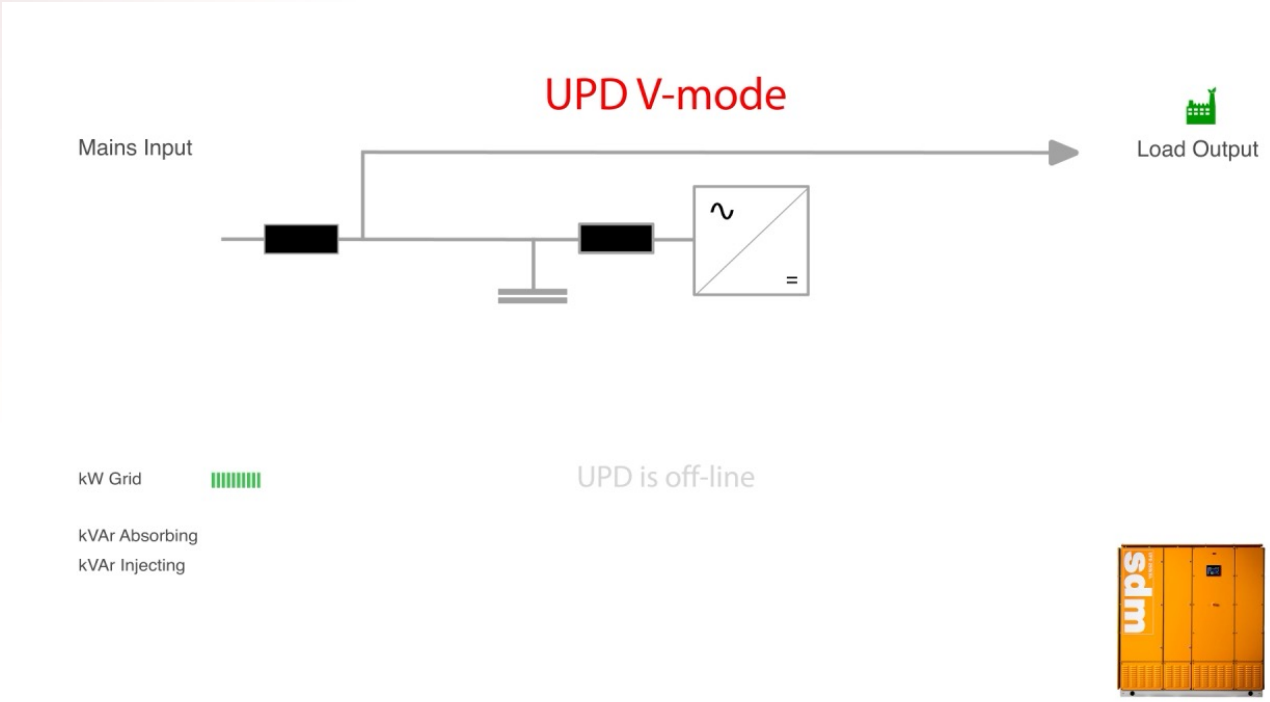
UPD Island energy production improvement

- The best Solution
  - A modular UPD system with reactive power absorption or injection to stabilize the voltage on the island
  - The benefits for the customer are
    - Stable voltage on the grid
    - The diesel generators have to run much less
    - No unnecessary grid failures



UPD V-mode Consumer Voltage conditioner

- The UPD can correct V that deviate up to 40% from the nominal voltage.
- A typical application for the areas where the mains voltage can be very unstable. Africa, Asia or ….
- The UPD ensures that the factories can continue to be supplied by the unstable public grid without having to switch to an emergency power plant.



Video is starting

UPD CASE 2.

- EUROPEAN GRIDCODE OBLIGATION

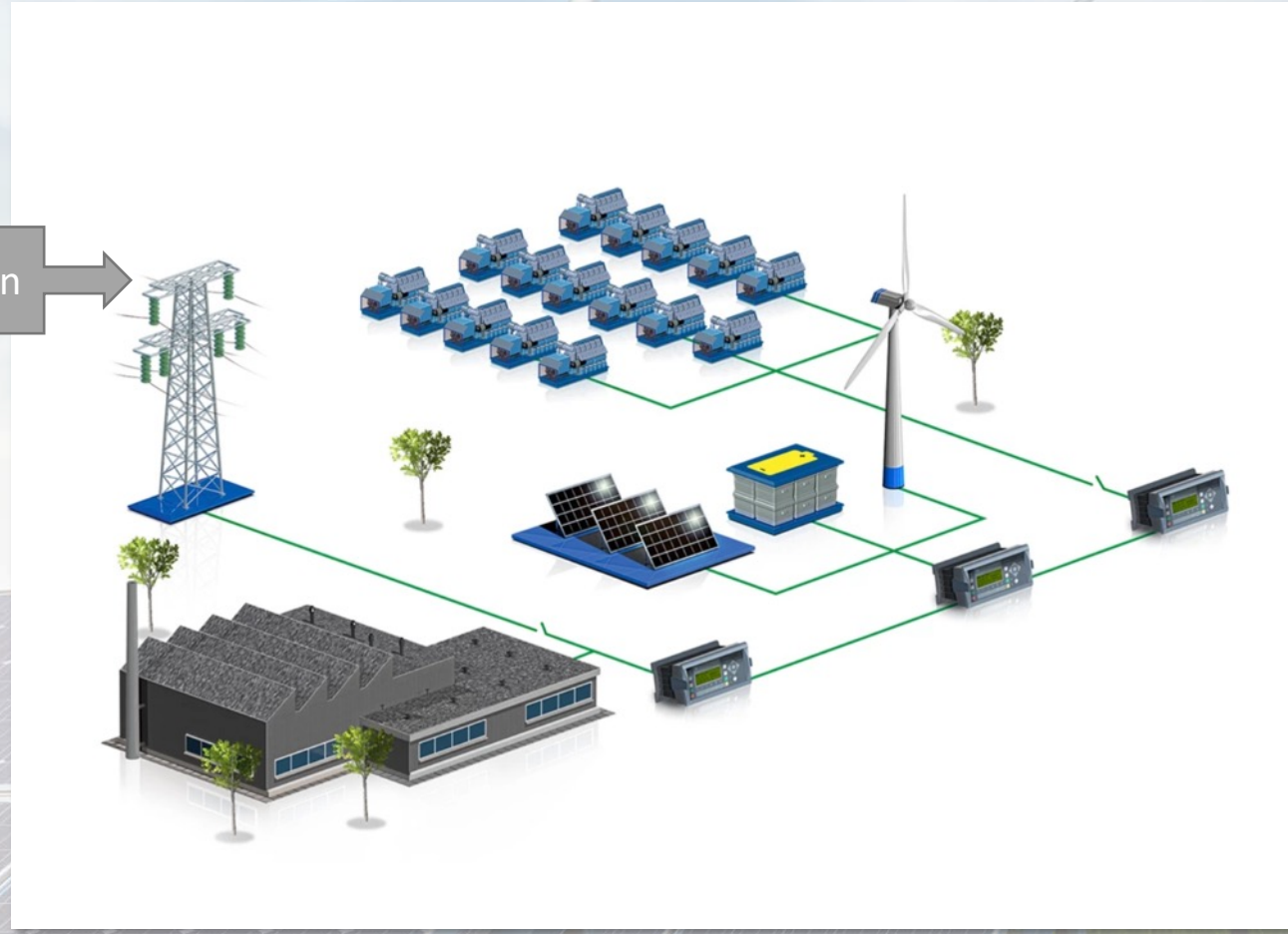
UNIVERSAL POWER DEVICE

UPD EUROPEAN GRIDCODE OBLIGATION

- **Microgrid** application
  - A new European grid code has recently come into application for major electricity consumers
  - This major electricity customers have an obligation to monitor and to improve the quality of the grid themselves.
  - **The consumers have the obligation to control the grid voltage and the frequency**
  - **Usually these large customers also have solar panels and therefore also have problems with the fluctuating solar energy.**

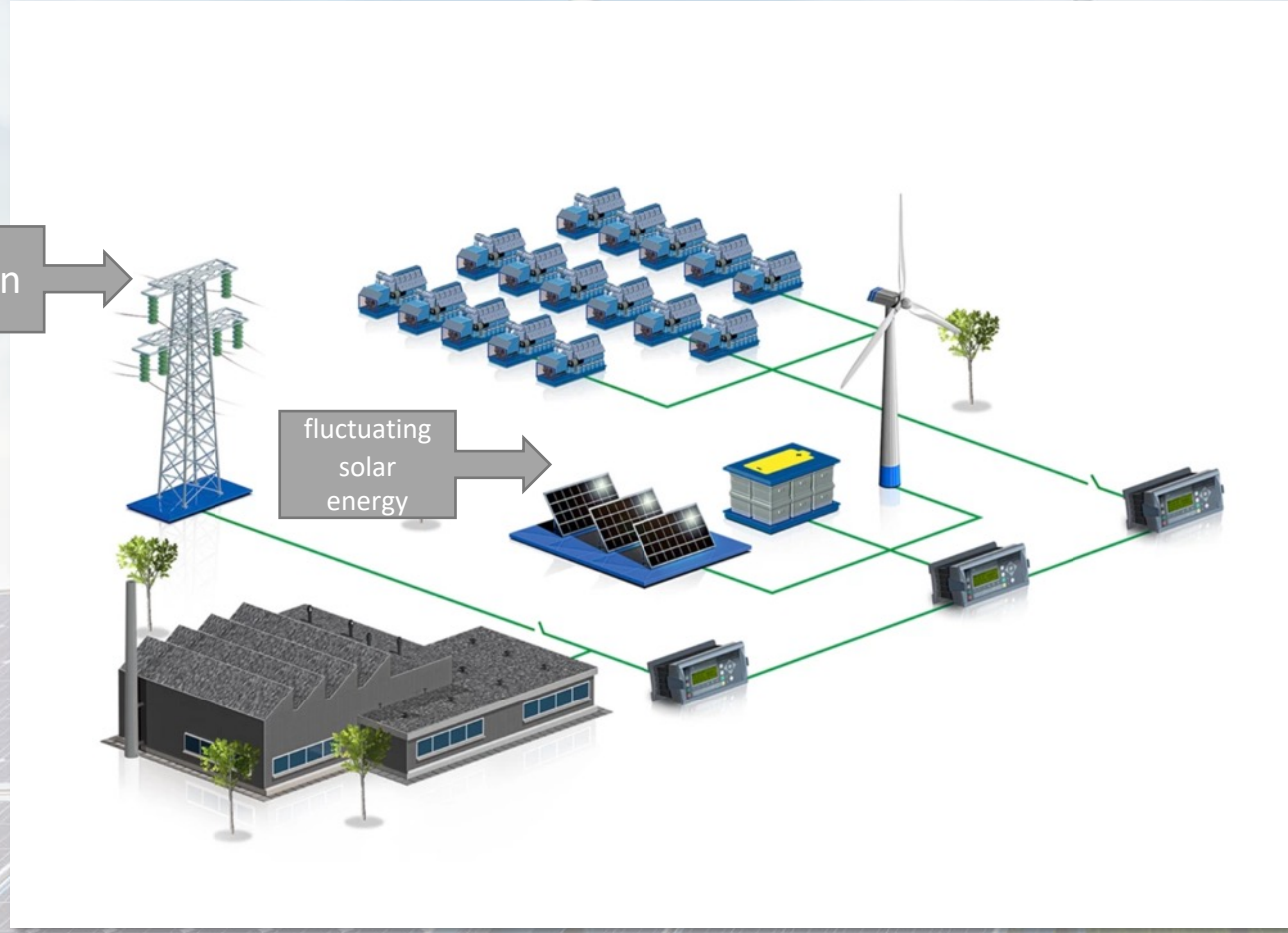
UPD EUROPEAN GRIDCODE OBLIGATION

- The new European grid code has recently come into application for for major electricity consumers
- They have to ensure that both the voltage and the frequency on the grid side (not on their consumers' side) is stable.
- This means that they must be able to increase the voltage if it drops on the grid side and decrease it if it rises on the grid side.



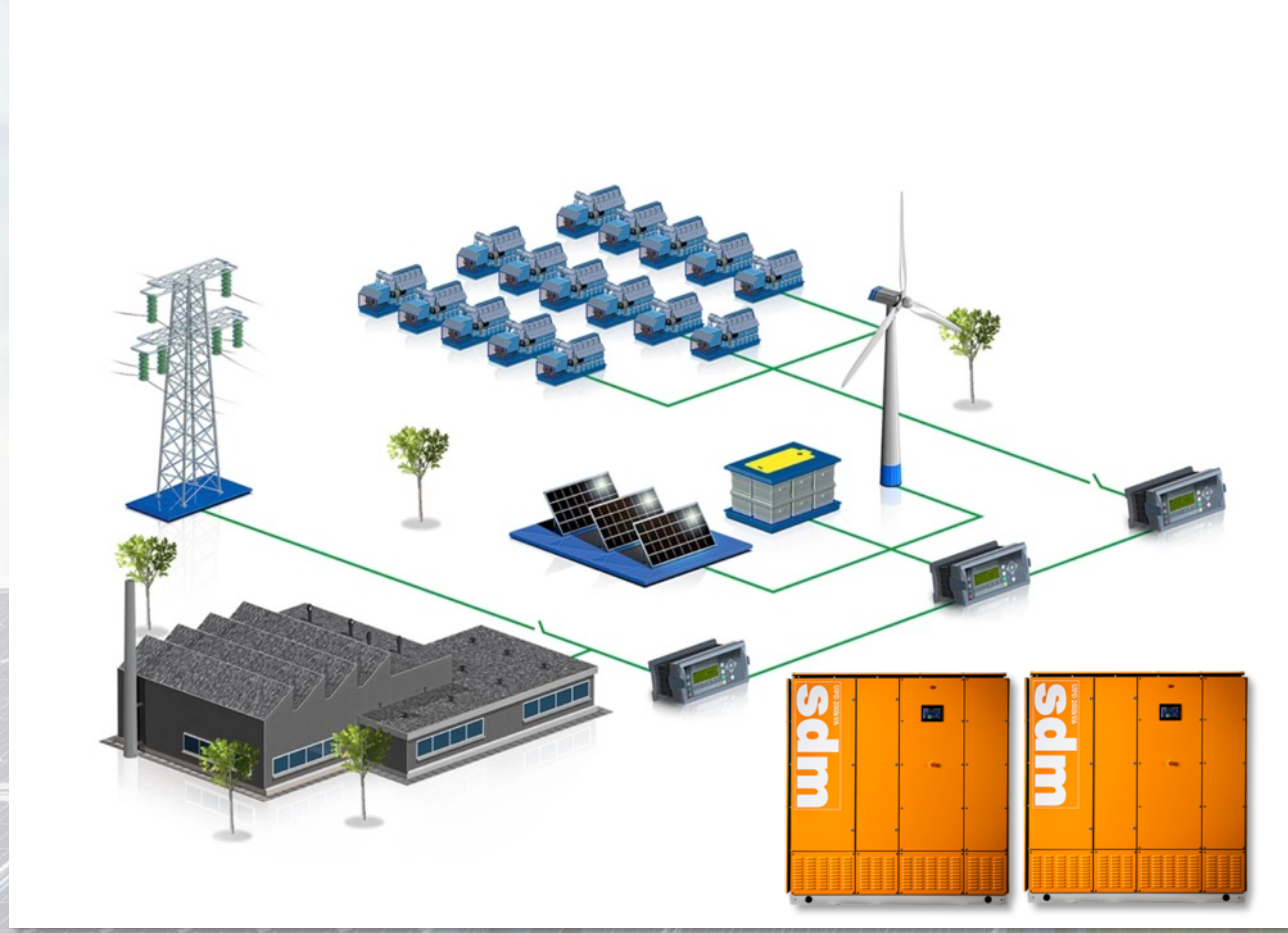
UPD EUROPEAN GRIDCODE OBLIGATION

- If, for example, there is suddenly less sun, a large part of the solar energy is lost and the voltage on the grid side may drop.
- At that moment, the consumer has to inject reactive power kVAr.
- If the grid voltage rises due to a lot of sun, the consumer must be able to absorb the kVAr.



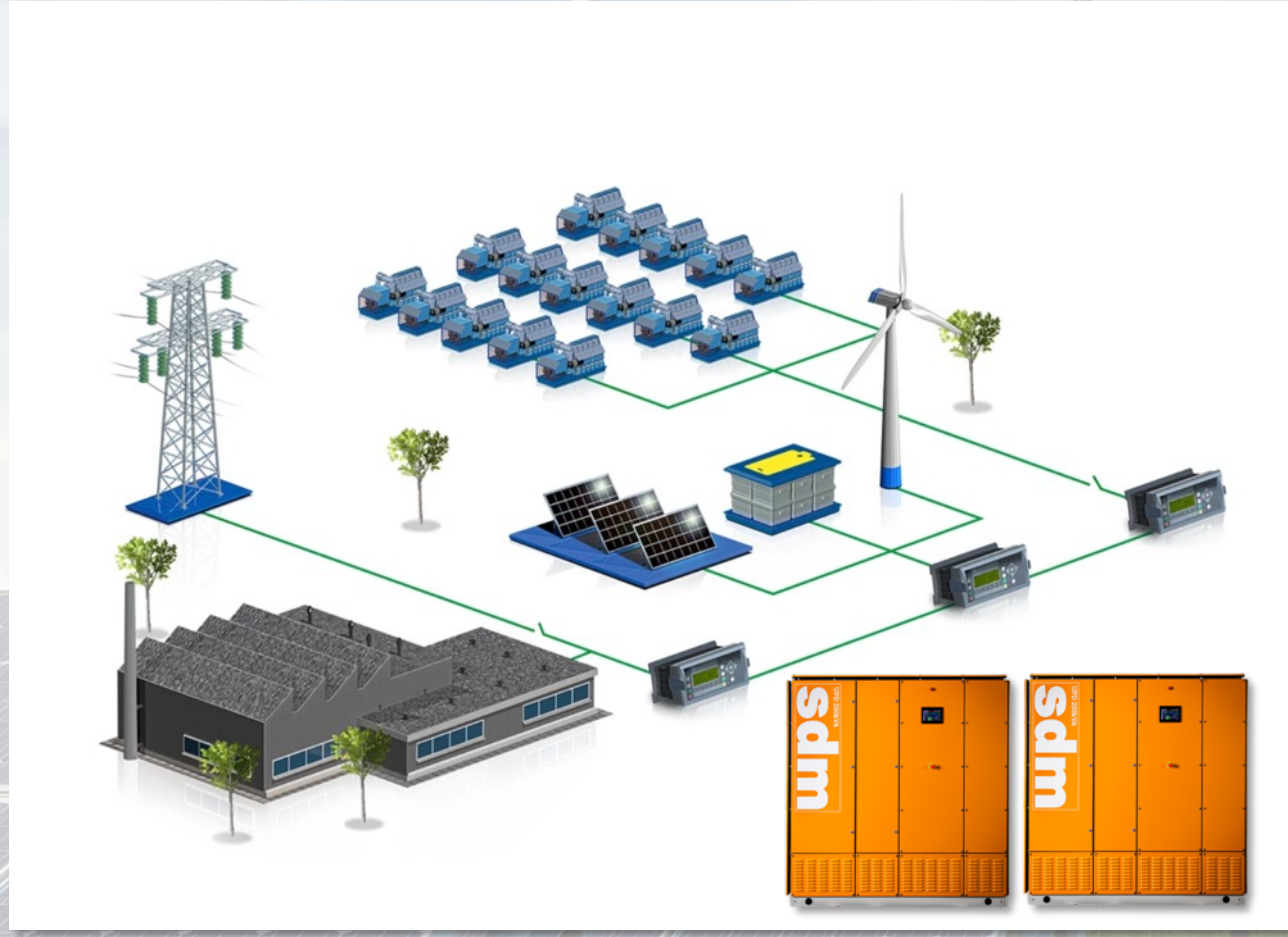
UPD EUROPEAN GRIDCODE OBLIGATION

- In many large companies, for example, there are capacitor blocks to generate the kVAr that the consumers need. Just as their motors and machines need kVAr to work.
- But capacitors cannot absorb kVAr and so cannot be used when the voltage on the grid side is rising. Our UPD can.
- We provide
  - A modular UPD system with kVAr absorption / injection to stabilize the grid voltage



UPD EUROPEAN GRIDCODE OBLIGATION

- Large companies with e.g. a lot of solar panels also have a lot of small inverters that inject the voltage of the solar panels.
- In theory, it is possible to control each of these inverters to stabilise the grid. But there is a big but.
- The older inverters do not have the software to do that.
- Another problem is controlling all those individual units.
- Cabling etc.



UPD EUROPEAN GRIDCODE OBLIGATION

- But the losses in the network are considerable as the local small inverters inject low voltage.
- A bigger problem is the maximum capacity that those inverters have to make or absorb kVAr because at a certain moment the yield of solar energy will drop and they will get less power than what they need for their certificates.
- We connect our UPD to the high voltage grid of 36 kV and inject or absorb reactive power directly.

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UPD Vr-mode Grid Voltage conditioner

Grid Voltage conditioner

Corrects the grid voltage according to the new European regulations

Vr mode

UPD Vr-mode

kW Grid

kVAr Absorbing

kVAr Injecting

In Europe, the UPD can be used to make wind and solar production parks grid compliant

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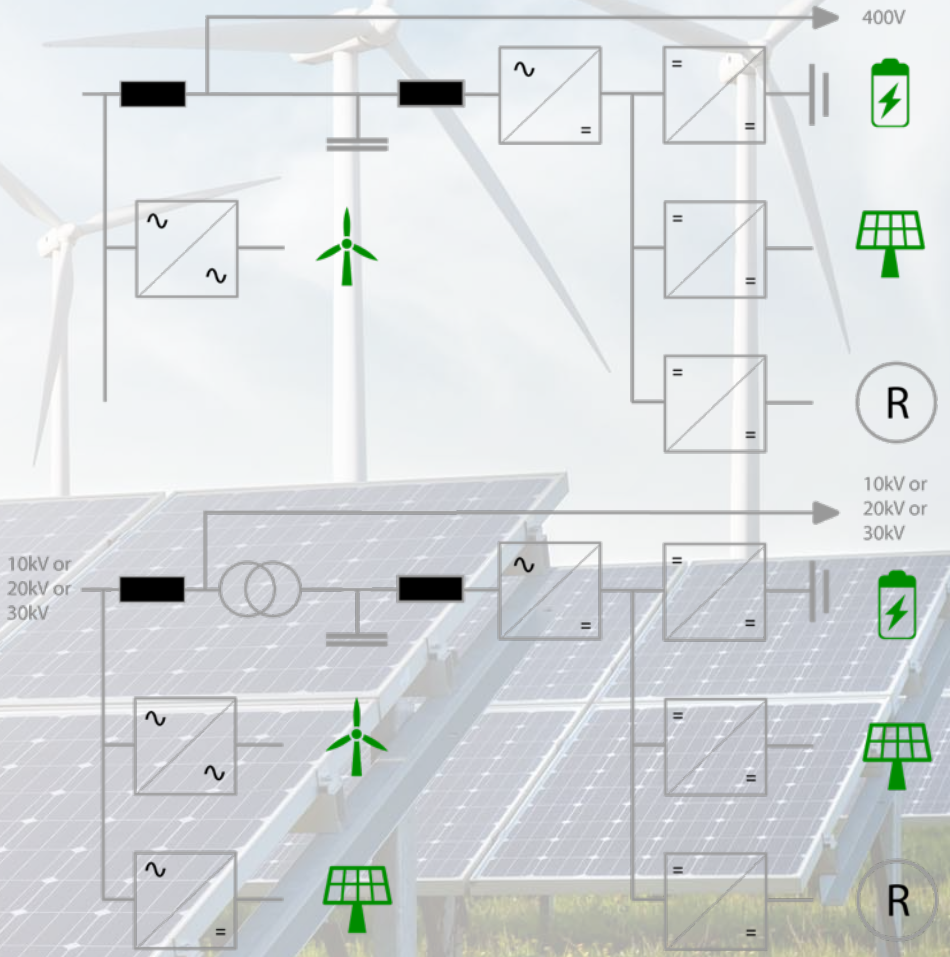
UPD F-mode Frequency and Voltage Stabilizer for Microgrid

Stabilizer for Microgrid Frequency and Voltage

Stabilizer can bridge a mains failure by discharging different storage systems

F mode

- In hybrid microgrid with multi production assets such as Windpower, PV, CHP, the UPD is used to compensate for the unbalance between production and consumption of active and reactive energy on a millisecond basis.
- The UPD keeps the output voltage constant and can bridge a mains failure by discharging the different storage systems on a DC bus
- The different energy sources can charge batteries or powercaps
- All possible types of Energy storage systems which are available on the market can be connected to the DC bus of the UPD.
- This can be done on a DC bus as well as on low voltage or on high voltage via a DC/DC, an AC/DC or an AC/AC converter depending on the installation and the application.



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