



# ***Smartgrid Demonstrator Relne***

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# Smartgrids, new kid in town ?

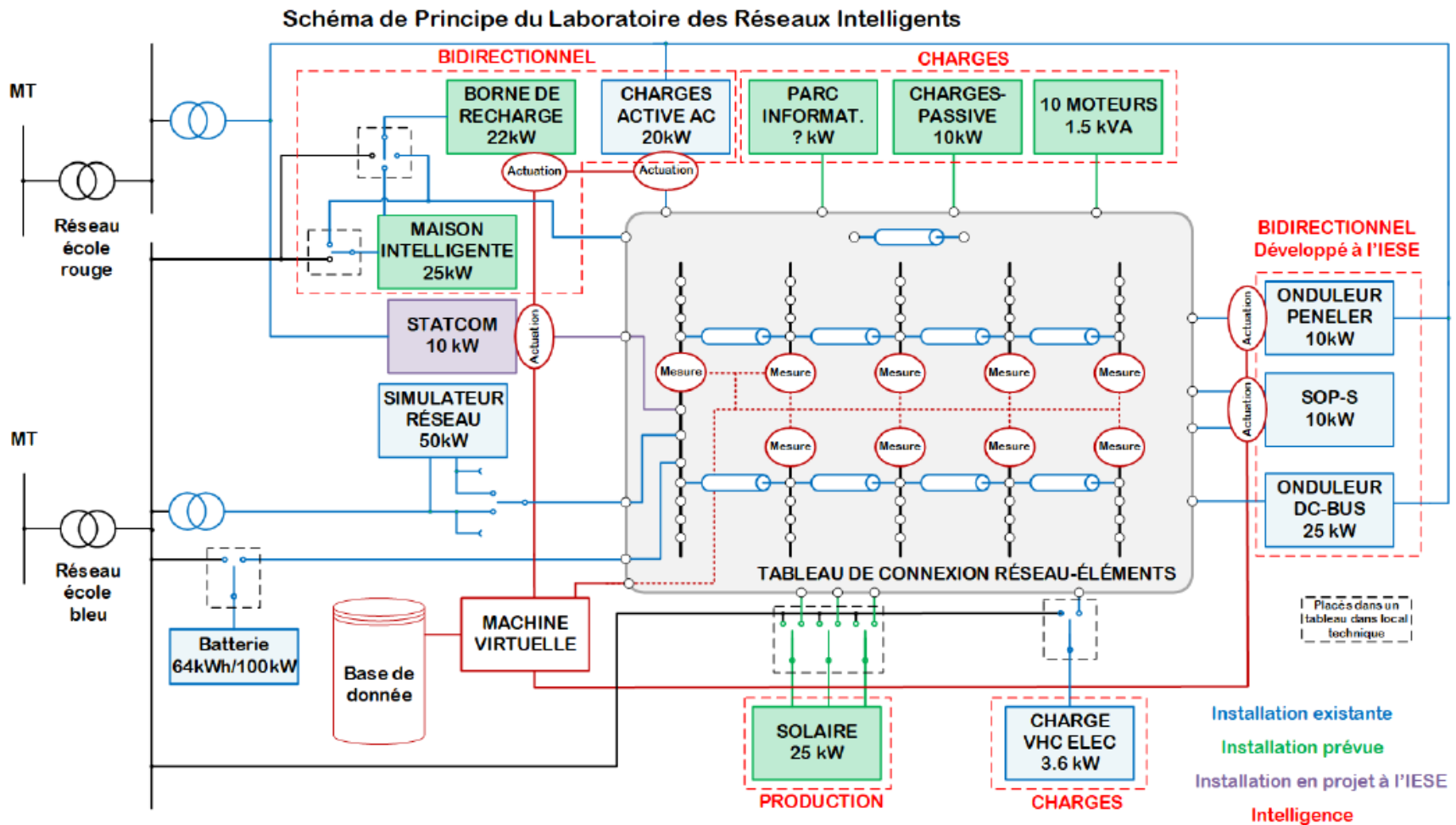
- The electricity grid is presently exposed to a whole spectrum of new technologies, methodologies and market mechanisms, summarized as «**Smartgrid**».
- The Smart Grid can be defined as an **electric system** making use of:
  - **Information,**
  - **Bidirectional and cyber-secured communication technologies,**
  - **Computational intelligence** integrated in the **production, transmission, and substations units**, as well as in all the components of electricity **distribution and consumption**

As to implement a **clean, sure, secured, reliable, resilient, efficient and sustainable electric distribution system.**

- The smartgrid is an ongoing process and there will not be an abrupt transition from «non-smart grids» to «smart grids»
- Challenges in terms of major impact on electricity distribution grids originate from:
  - **Massive** penetration of **renewable electricity generation,**
  - **Energy efficiency measures,**
  - Introduction and reinforcement of **electricity market liberalization,**
  - Increasing requirement in terms of **voltage reliability and quality,**
  - Increase of network **transport capacities.**

# ReIne Demonstrator

## Overall Structure

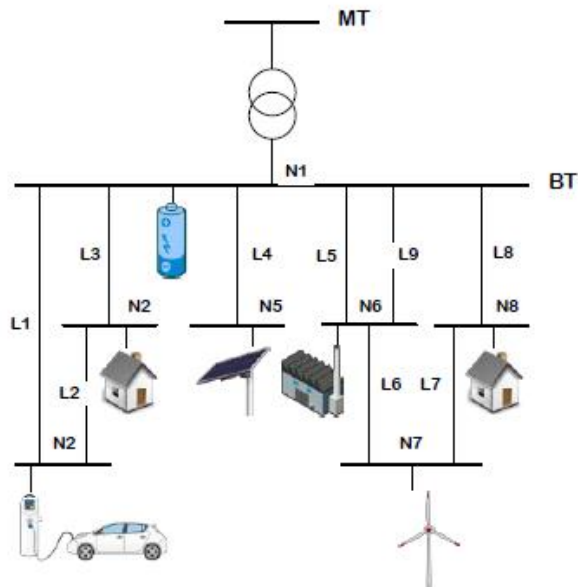


# ReIne – Utilities as users

## All possible network configurations

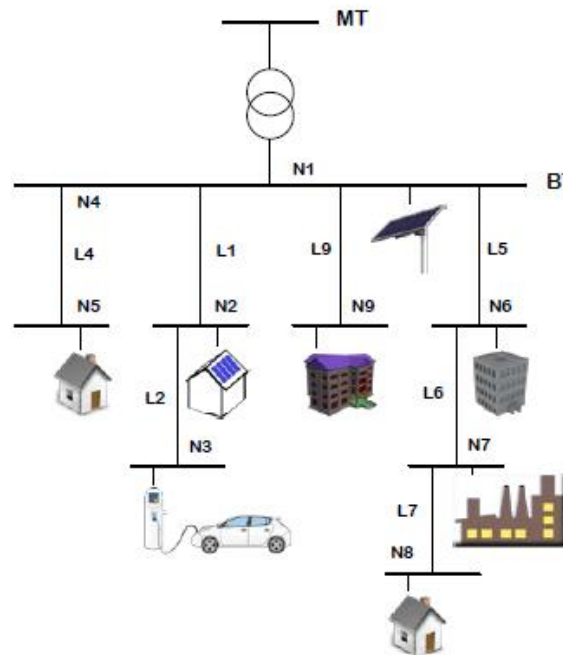
Examples of implementable network topologies for tests mandated by utilities

Exemple 1 - Réseau partiellement maillé

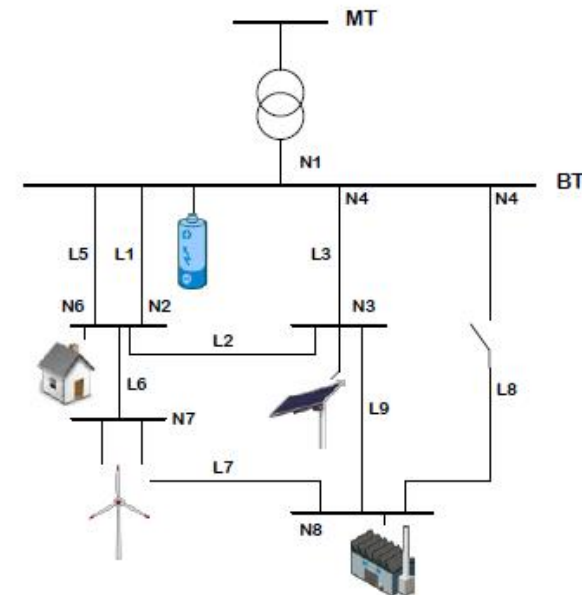


Réseau maillé : réseau où les nœuds sont reliés entre eux par plusieurs lignes

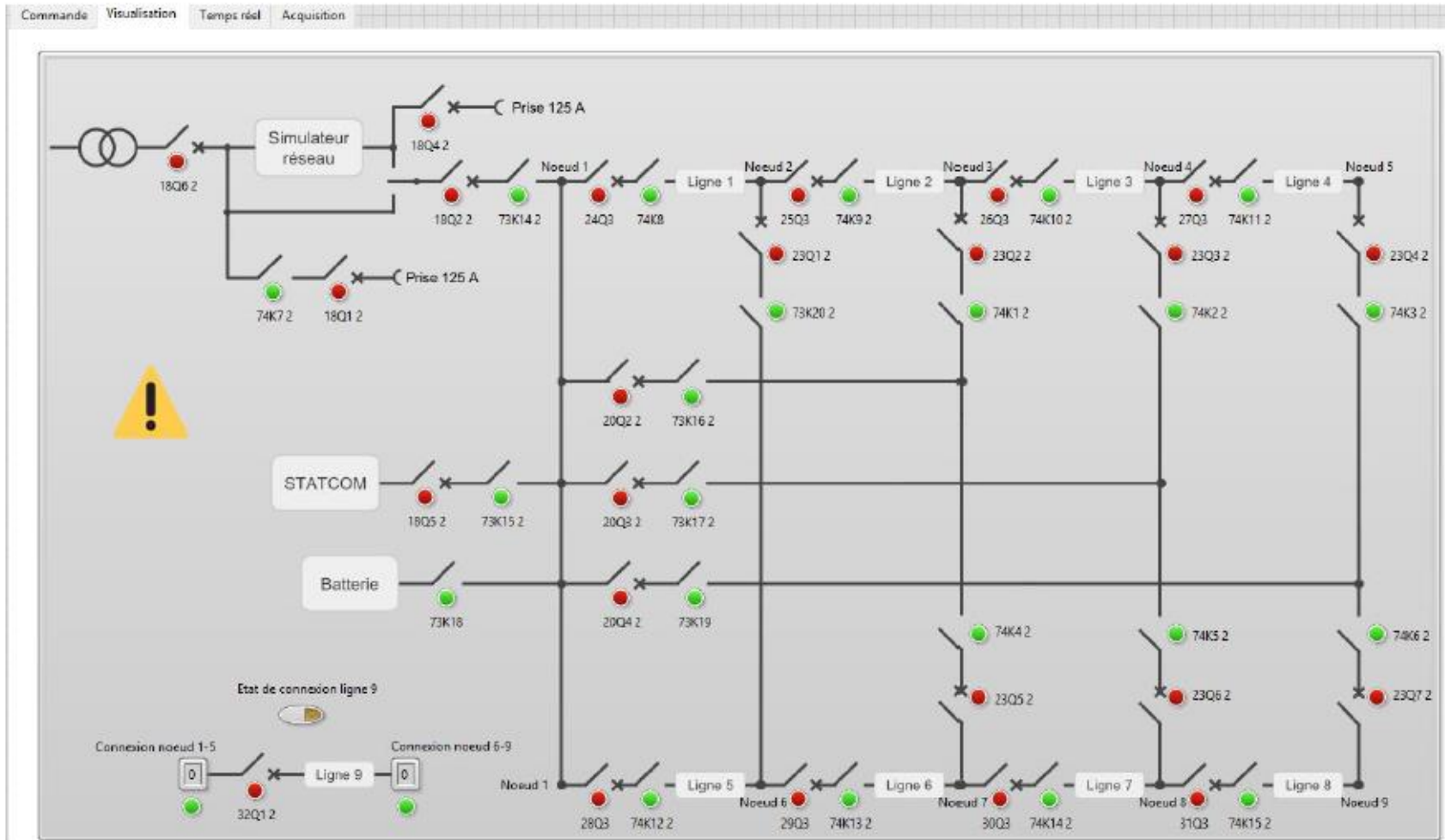
Exemple 2 – Quartier



Exemple 3 - Réseau maillé 1



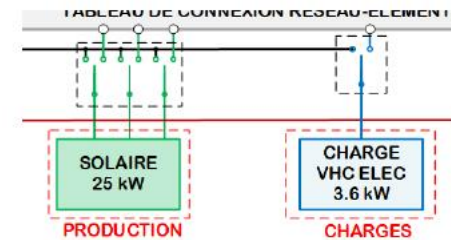
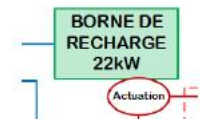
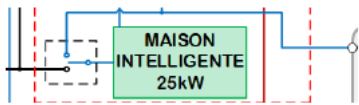
# ReIne – As reproducible as possible SCADA control system





# ReIne – As flexible as possible

## Production and consumption



# ReIne Demonstrator - Summary

## The six key point of the du ReIne demonstrator:

- **Flexible structure**
- Capability to reproduce **concrete scenarios** and situations
- Ability to implement and test all the **perturbations** that can take place on a low-voltage distribution grid
- Perfectly adapted to the **characterization, study and validation of all typpes of equipment related to production, storage and conversion of electric energy**
- Intrinsically designed for the **smart management of low-voltage distribution grid and smartmeters** (hardware and software).
- Operational starting on January 1<sup>st</sup>, 2019



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# Thank you for your attention



## ... Questions welcome !