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# Field Tests on Actual Microgrids

George Kariniotakis Head of Renewable Energies Group CEP, ARMINES/MINES-ParisTech Coordinator of WP-F in More-Microgrids







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## **Demonstration cases in More-Microgrids Project**



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#### **Demonstration cases in More-Microgrids Project**

Types of microgrids :

- 3 urban/commercial
- 1 rural
- 2 islands
- 2 labos





### Objectives of field demonstrations (1/2)



Experimental validation of various actual Microgrids in different operating modes. In particular the following objectives were set :

•Evaluate different operating modes : :

- interconnected
- islanded evaluate long term operation, (i.e. fault level, parallel operation of inverters, harmonics etc)
- transitions from interconnected to islanded mode and vice versa.
- automatic isolation and reconnection
- zero energy flow with main grid
- black start capability





- Evaluate different control strategies :
  - Centralized
  - Decentralized (agents)
- Assess power quality aspects from the integration of DG & RES units.
- Study issues related to awareness and acceptability of customers

Further, in a complementary project (INCO)

Evaluate the integration of new RES technologies like biogas.









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#### Also 2 large laboratories considered for "risky" tests



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### **Overview & perspectives**



- The relative small size of the demonstrations permits to draw mainly qualitative conclusions => main lessons learnt concern the "how to" :
  - Proof of concepts (i.e. decentralised control) in real systems
  - Technical feasibility (i.e. islanding)
  - Monitoring/observation of microgrid operation
  - Assessment of cooperation with customers (i.e. acceptability)
  - Knowledge about costs, deployement, operation of microgrids
- The next step could be "large-scale" demonstrations to assess effects of scale (i.e. load shaving, CO2 savings etc).



## Thank you for your attention!

