MOTIVATION

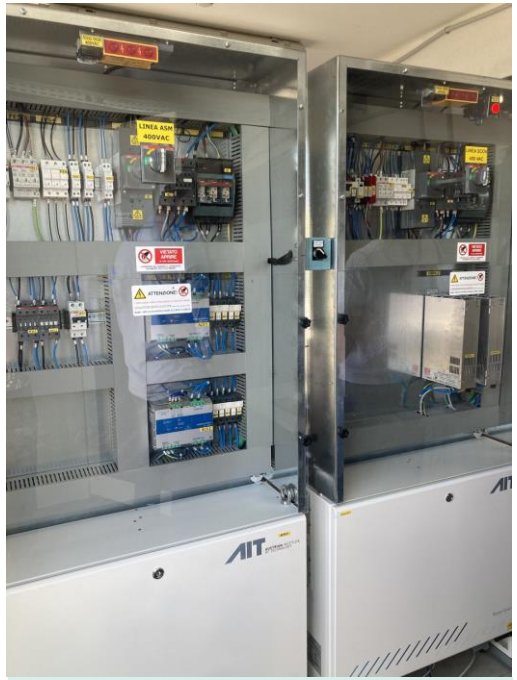
Why to go DC in electricity distribution?

- Simplify system coupling of renewable energies
- Increase energy efficiency, e.g. in energy communities, charging infrastructure for electric vehicles, industrial energy supplies
- Increasing electric strength of power electronics components
- DC systems allow higher capacity than AC systems with same insulation limits
- DC will not replace AC in existing applications, but has strong potential in new installations

PUBLIC DIRECT CURRENT DISTRIBUTION NETWORK IN TERNI, ITALY

HYPERRIDE
THE FUTURE OF POWER DISTRIBUTION

- The Terni demonstrator of the HORIZON EUROPE Project HYPERRIDE is one of the first public low voltage networks operated with direct current (LVDC) integrating photovoltaics, battery storage, and vehicle charging.
- The demonstrator proofs the feasability of latest DC technology and reveals open research questions
- **Advantages of DC are better utilisation of cables, less conversion stages and higher efficiency.**
- AIT coordinates the project and provides the two active frontends on both sides of the LVDC feeder



AIT Smart Grid Converters as DC Active Frontend in field since 06/2024

DSO grid ASM TERNI
(Terni, Italy)
400V

AIT DC LABORATORY

Testing of DC components and systems

- DC systems up to 75 MW
- Surge tests with up to 80 kA
- 110 kV public grid connection
- Flexible voltage range 0,1-4 kV