

D_NA-4.3: Fact sheets on specific JRA results - Part 1 - JRA 2: Filling the gap in testing and characterization for DER power components

JRA 2 aims at clarifying the performance criteria and the associated characterization methods for DER components to be connected to smart electricity grids.

Among the many different types of DER components, this JRA will focus on the two ones for which the largest gaps have been identified:

Grid connected storage

Through their unique specificity of being at the same time power supplies and load management systems, electricity storage systems are key components to enable the transition towards higher shares of DER in the electricity grids.

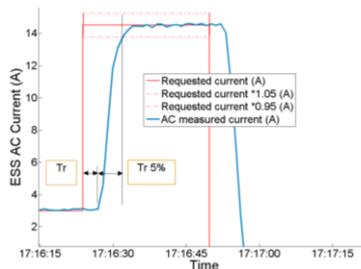
Among the huge number of applications that could be requested to storage systems, we selected a large panel representing the different business model cases and we then cluster them from a storage point of view. This analysis allowed us to identify three main categories and their associated requirements:

- Energy time shift that need
 - ✓ High energy abilities (low time constant)
 - ✓ Low losses

- Power balancing
 - ✓ Frequent switch between charge/discharge
 - ✓ Fast response

- High power ancillary services
 - ✓ Very fast response
 - ✓ Very high time constant

Starting from the requirements, we defined the criteria to be measured on the storage systems. Then, using a technology neutral approach, the associated procedures have been created and already applied to one storage system.



Large scale RES inverters

Thanks to the rapid development and significant cost reduction of power electronics in the recent years, DER inverters have been growing significantly in capacity as well as in functionality. However, testing infrastructures are in many cases still lacking capacity and capabilities to fully assess the performance and function of the devices. To overcome this gap, a comprehensive inventory has been made, including all facilities available in the DERRi network.



KEMA Flex Power Grid Laboratory

These results improve and expand the DERRi offer towards large RES inverters, keeping pace with the market developments. The existing test and research facilities available at the laboratories are ready to be used for testing and research of large scale inverters.



Results of JRA 2:

- Standard storage systems profiles identified
- First procedures applied to an Energy Storage System
- Inventory of laboratory test facilities available in the DERRi network suitable for full-scale testing of DR inverters with a rated capacity above 100 kVA.

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