

PvTool

Development of tools for effective control of large PV power plants

Project duration: from 09.2018 to 07.2021

Report submitted: 07.2019

Publishable Summary

The important proliferation of medium and large size PV power plants in Europe and worldwide is raising the attention to its important role in providing support to the electrical network. Large PV power plants need to ensure a smooth injection of the generated renewable power into the grid where they are connected, while providing the required ancillary services. Depending on the grid nature, such requirements can differ considerably, ranging from frequency or voltage support for PV power plants connected to power systems based on conventional synchronous generators, to grid-forming capability in systems or microgrids where PV is the main generation source.

The project proposal aims at developing relevant control architectures and control algorithms to ensure optimal performance in different kinds of systems. Such control schemes will take into account the distributed nature of the different elements and the necessity of control coordination. The interactions between power converters and different system elements will be investigated in order to develop methodologies and tools that ensure the overall system stability. The potential resonances and instabilities will be carefully analysed and the key quantities and elements that can trigger them will be identified. The developed methodologies will be applied to selected realistic case studies. The project aims at developing and implementing tools to allow PV power plant engineers to design the controllers of large PV power plants in a systematic way.

Project consortium

Coordinator and all contact details:

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Participating countries and financing:

Country	Number of organisations involved	Project costs in EUR	Public funding in EUR
Spain	2	740'029	464'014.50
Sweden	1	547'848	547'848
<i>Total</i>	3	<i>1'287'877</i>	<i>1'011'862.50</i>

Funding agencies involved and contracts

Funding Agency	Contract N° and Title
MINECO	PCI2018-092882
CDTI	EXP - 00108617 / SERA-20181007
Energimyndigheten	2017-008246 (44998-1)