

MIGRATE

Project ID: 691800

Funded under: [H2020-EU.3.3.4. - A single, smart European electricity grid](#)

Massive InteGRATion of power Electronic devices

From 2016-01-01 **to** 2019-12-31, ongoing project

Project details

Total cost:	Topic(s):
EUR 17 855 205	LCE-06-2015 - Transmission grid and wholesale market
EU contribution:	Call for proposal:
EUR 16 733 998,75	H2020-LCE-2015-3 See other projects for this call
Coordinated in:	Funding scheme:
Germany	RIA - Research and Innovation action

Objective

By 2020, several areas of the HVAC pan-European transmission system will be operated with extremely high penetrations of Power Electronics(PE)-interfaced generators, thus becoming the only generating units for some periods of the day or of the year – due to renewable (wind, solar) electricity. This will result in i) growing dynamic stability issues for the power system (possibly a new major barrier against future renewable penetration), ii) the necessity to upgrade existing protection schemes and iii) measures to mitigate the resulting degradation of power quality due to harmonics propagation. European TSOs from Estonia, Finland, France, Germany, Iceland, Ireland, Italy, Netherlands, Slovenia, Spain and UK have joined to address such challenges with manufacturers (Alstom, Enercon, Schneider Electric) and universities/research centres. They propose innovative solutions to progressively adjust the HVAC system operations. Firstly, a replicable methodology is developed for appraising the distance of any EU 28 control zone to instability due to PE proliferation and for monitoring it in real time, along with a portfolio of incremental improvements of existing technologies (the tuning of controllers, a pilot test of wide-area control techniques and the upgrading of protection devices with impacts on the present grid codes). Next, innovative power system control laws are designed to cope with the lack of synchronous machines. Numerical simulations and laboratory tests deliver promising control solutions together with recommendations for new PE grid connection rules and the development of a novel protection technology and mitigation of the foreseen power quality disturbances. Technology and economic impacts of such innovations are quantified together with barriers to be overcome in order to recommend future deployment scenarios. Dissemination activities support the deployment schemes of the project outputs based on knowledge sharing among targeted stakeholders at EC level.

Coordinator

TENNET TSO GMBH
BERNECKER STRASSE 70
95448 BAYREUTH
Germany

Germany

EU contribution: EUR 2 997 500

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)

Participants

SCOTTISH POWER ENERGY NETWORKS HOLDINGS LIMITED United Kingdom
OCHIL HOUSE HAMILTON INTERNATIONAL PARK
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United Kingdom
EU contribution: EUR 1 699 932,50

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)

RTE RESEAU DE TRANSPORT D ELECTRICITE SA France
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France
EU contribution: EUR 1 145 187,50

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)

RED ELECTRICA DE ESPANA S.A.U. Spain
PASEO DEL CONDE DE LOS GAITANES 177
28109 ALCOBENDAS - MADRID
Spain
EU contribution: EUR 714 040

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)

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EU contribution: EUR 294 106,25

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)

AMPRION GMBH Germany
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EU contribution: EUR 845 750

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)

EIRGRID PLC Ireland
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EU contribution: EUR 306 147,50

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)

ELERING AS Estonia
KADAKA TEE 42
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Estonia
EU contribution: EUR 326 875

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)

FINGRID OYJ Finland
LAKKISEPANTIE 21
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Finland
EU contribution: EUR 107 762,50

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)

TERNA RETE ITALIA SPA Italy
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Italy
EU contribution: EUR 185 225

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)

LANDSNET HF GYLFAFLOT 9 112 REYKJAVIK Iceland	Iceland
	EU contribution: EUR 397 776,25
Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)	
SCHNEIDER ELECTRIC INDUSTRIES SAS RUE JOSEPH MONIER 35 92500 RUEIL MALMAISON France	France
	EU contribution: EUR 1 007 937,50
Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)	
Gottfried Wilhelm Leibniz Universitaet Hannover Welfengarten 30167 Hannover Germany	Germany
	EU contribution: EUR 361 812,50
Activity type: Higher or Secondary Education Establishments	
TECHNISCHE UNIVERSITEIT DELFT STEVINWEG 1 2628 CN DELFT Netherlands	Netherlands
	EU contribution: EUR 1 864 216,25
Activity type: Higher or Secondary Education Establishments	
University College Dublin Belfield Dublin 4 Dublin Ireland	Ireland
	EU contribution: EUR 492 050
Activity type: Higher or Secondary Education Establishments	
THE UNIVERSITY OF MANCHESTER OXFORD ROAD UNIVERSITY OF MANCHESTER OFFICE OF DIRECTOR OF FINANCE M13 9PL MANCHESTER United Kingdom	United Kingdom
	EU contribution: EUR 1 250 927,50
Activity type: Higher or Secondary Education Establishments	
TALLINNA TEHNIKAULIKOOL Ehitajate tee 5 19086 TALLINN Estonia	Estonia
	EU contribution: EUR 229 875
Activity type: Higher or Secondary Education Establishments	
ECOLE NATIONALE SUPERIEURE D'ARTS ET METIERS BOULEVARD DE L HOPITAL 151 75013 PARIS France	France
	EU contribution: EUR 651 327,50
Activity type: Higher or Secondary Education Establishments	
Eidgenössische Technische Hochschule Zürich Rämistrasse 8092 Zurich Switzerland	Switzerland
	EU contribution: EUR 0
Activity type: Higher or Secondary Education Establishments	

FUNDACION CIRCE CENTRO DE INVESTIGACION DE RECURSOS Y CONSUMOS ENERGETICOS
CALLE MARIANO ESQUILLOR GOMEZ 15
50018 ZARAGOZA
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EU contribution: EUR 921 337,50

Activity type: Research Organisations

UNIVERZA V LJUBLJANI
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1000 LJUBLJANA
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EU contribution: EUR 246 237,50

Activity type: Higher or Secondary Education Establishments

TECHNISCHE UNIVERSITAET BERLIN
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Germany

EU contribution: EUR 450 562,50

Activity type: Higher or Secondary Education Establishments

Elektroinstitut Milan Vidmar
Hajdrihova 2
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Slovenia

EU contribution: EUR 138 612,50

Activity type: Other

CONSORZIO INTERUNIVERSITARIO NAZIONALE PER ENERGIA E SISTEMI ELETTRICI
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Italy

EU contribution: EUR 98 800

Activity type: Research Organisations

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