

A decorative graphic consisting of several overlapping, curved, ribbon-like shapes in shades of green and blue, positioned to the left of the title.

MIGRATE – Massive InteGRATION of power Electronic devices

The objective of MIGRATE is:

- to develop and validate innovative, technology-based solutions in view of managing the pan-European electricity system experiencing a proliferation of Power Electronics (PE) devices involved in connecting generation and consumption sites. This overarching goal is split into two components combining two time horizons:
- in the short to medium term, incremental technology-based solutions are needed to operate the existing electric HVAC system configuration with a growing penetration of PE-connected generation and consumption, based on novel methods and tools,
- in the long term, breakthrough technology-based solutions are needed to manage a transition towards an HVAC electric system where all generation and consumption is connected via 100% PE, based on innovative control algorithms together with new grid connection standards.



Expected Impact

- Maximisation of the amount of Renewable Energy Sources installed in the system while keeping the system stable.
- Anticipation of future potential problems and challenges.
- Clarification of the need of new control/protection schemes and possibly new connection rules to the grid.

MIGRATE will provide requirements for future measures, methods and tools for a secure operation of the upcoming converter dominated power system.

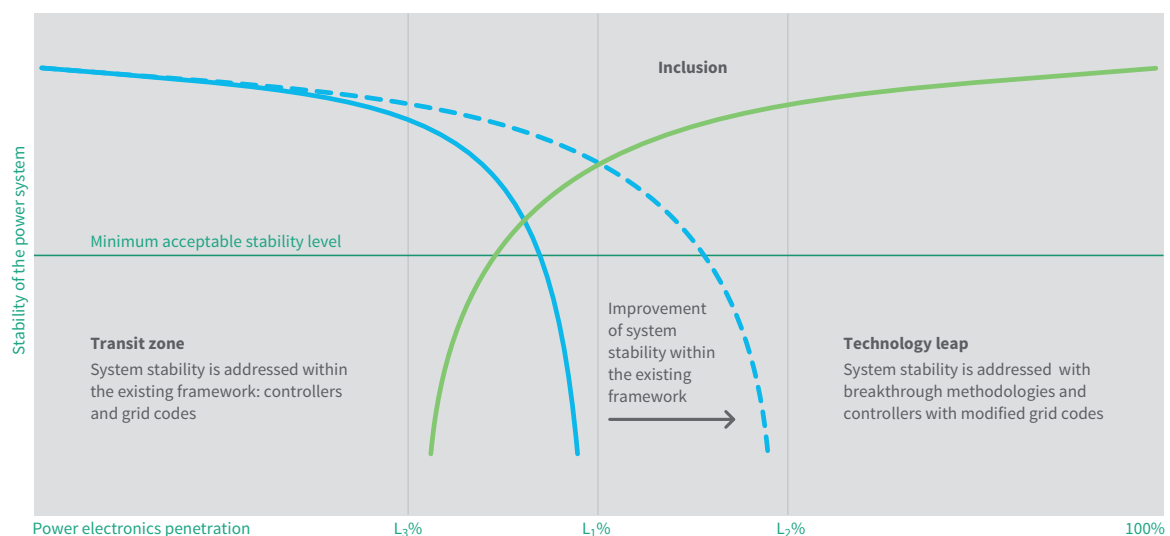
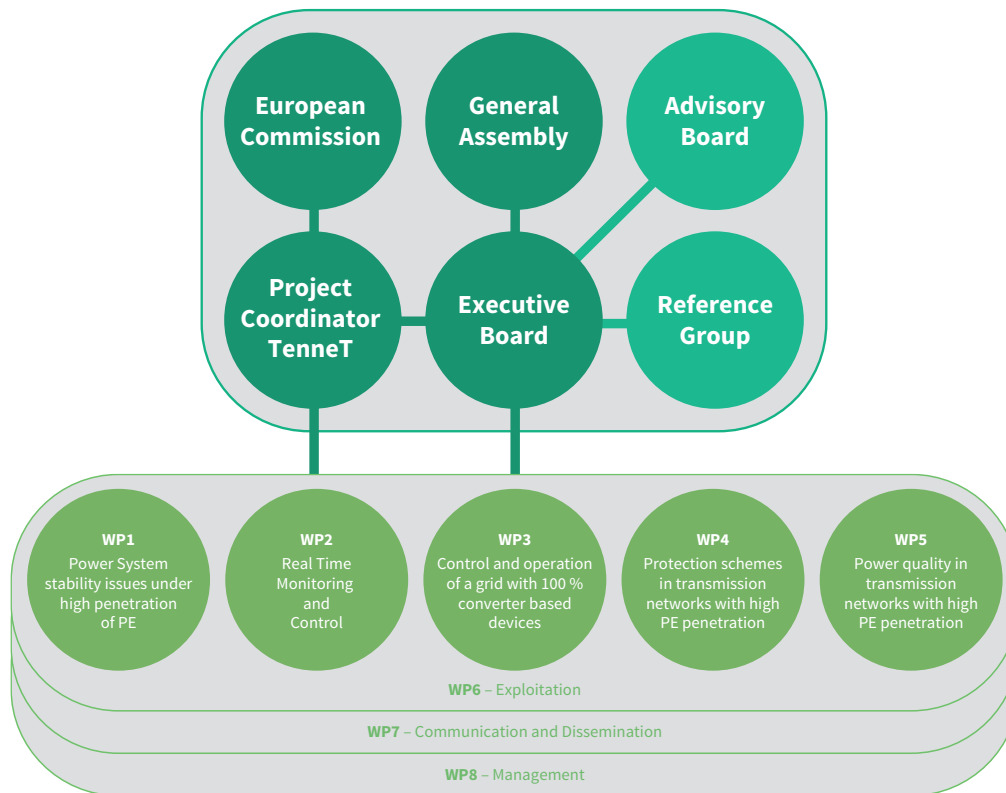


Illustration of the main concept of the MIGRATE project. The abscissa represents the PE penetration where L_1 and L_2 are asymptotes where severe stability problems could be met within the existing framework. The ordinate axis represents a generic stability index



Project Organigram

WP Objectives

WP1: The development of mitigation approaches in order to address power system stability issues under high penetration of power electronics

WP2: To demonstrate that the solutions created are capable of maintaining a high level of accuracy and reliability for a range of different power systems, beyond those they were originally envisioned for, and as such are ready for pan-European application.

WP3: To develop new controls and management rules enabling the operation of a grid with 100 % converter-based devices and keeping today's level of reliability

WP4: To provide a detailed insight of the behaviour of present protection practices in scenarios of high penetration of PE based generators and propose evolutions of the design and implementation of protection systems during the transition period

WP5: The development of appropriate models, modelling platform and advanced methodologies and to study and improve power quality in power-electronic rich hybrid power networks of the future ensuring secure operation of the network and appropriate quality of supply to network users

WP6: To demonstrate that the envisaged technical solution towards a 100% penetration of PE can be proposed by manufacturers and implemented by TSOs at affordable costs based on novel connection standards described in the future version of the transmission grid codes.

WP7: To enable smooth communication, dissemination and knowledge sharing among the targeted stakeholders at EC level

WP8: To adequately coordinate and organise the project at strategic level

Estonia	 elering	
Iceland	 LANDSNET	
Finland	 FINGRID	
Germany	 Taking power further   	
Scotland (UK)		
England (UK)		
Ireland	 	
Netherlands	 Taking power further 	
France	  	
Switzerland		
Slovenia	  	
Italy	 	
Spain	 	

The Consortium

Facts

Horizon 2020 – LCE-6:	Transmission Grid & Wholesale Market
Funding Scheme:	Collaborative project
Type of Action:	Research & Innovation
Duration of project:	48 month (Jan. 2016 – Dez. 2019)
Budget:	Total € 17.9 million with € 16.8 million Horizon 2020 funding

**SUBSCRIBE
NEWSLETTER**

migrate@tennet.eu
www.h2020-migrate.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691800.