

Interdisciplinary and intersectoral research on digitalization of energy sector

Developing tools addressing the life-cycle of both cyber and physical infrastructure.

WORK PACKAGES	SECTOR					DISCIPLINE	
	Offshore oil & gas	Renewable generation	Transmission grid	Distribution grid	Information & measurement		
WP1, Aquisition		ESR1			ESR2	ESR3	Data & Information Science
WP2, Management		ESR4			ESR5		
WP3, Application		ESR6		ESR8	ESR9	ESR10	Energy system Engineering
WP4, Symbiosis		ESR7	ESR11	ESR12	ESR13		
WP5, Planning		ESR14			ESR15		Social, economic & policy

InnoCyPES at a glance

Project facts

10 4 years (Jun 2021 - May 2025)
15 early stage researchers (ESRs) enrolled in PhD programs. Budget ~4.2m euro.
11 beneficiaries, 10 partner organizations.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 956433.

Research goal

Deliver a decision-making tool to enable energy companies to optimally design and utilize the ICT infrastructure and develop digital solutions, considering the end-to-end data lifecycle.

Training goal

Technical skills in data acquisition, processing, management, ICT and renewable energy areas. Transferable skills in innovation, research, education, and lifelong learning.

Tools to be developed in the project

ESR	Tools developed	WP	Leading beneficiary
1	IoT data acquisition system design tool	1	UU
2	Information model for data exchange	1	EDF
3	Intrusion detection technology	1	TUD
4	Multiple source energy data management tool	2	UNILE
5	Energy data preprocessing technology	2	TUD
6	Data driven control technology for hybrid energy hub	3	NTNU
7	High fidelity flowing data processing tool	3	NTNU
8	Data aided CPES stability assessment tool	3	ICL
9	Distribution grid condition monitoring tool	3	DE
10	Statistical data assessment tool	3	ICL
11	Data aided design platform for power converter control	4	AIT
12	Data augmented testing method for wind turbines	4	SGRE
13	CPES simulation of power grids	4	THIL
14	Decision support CPES planning tool	5	DTU
15	Policy summary for incentivizing digitalization	5	DTU



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CUTTING EDGE RESEARCH AND TRAINING FOR DIGITAL TRANSFORMATION OF THE ENERGY

The increasing volume, velocity, and variety of data from a massive number of dispersed “Internet of things” sensors in the energy system offers opportunities for improved operational efficiency and reliability – but it also results in threats in the form of computational burden and cyber-attacks.

The transformation towards a fully digitalized energy system requires substantial improvements in coordinated design of cyber and physical systems, end-to-end data processing tools, and enabling changes in policy, incentive and regulatory mechanisms.

Their absence acts as a barrier for the energy industry in translating the fast-accumulating data into actionable knowledge. The 15 ESR projects will target key bottlenecks for this digital transformation.

