

Introduction of COST

What is COST?

COST – European COoperation in the field of Scientific and Technical Research – is the oldest and widest system for research networking in Europe. It is based on intergovernmental framework for cooperation research agreed following the Ministerial Conference in 1971. From the outset, a commitment to a “wider” Europe was demonstrated as this agreement involved 19 countries. Starting from a limited number of domains, COST has now grown into a system of research collaboration covering 34 Member States plus one cooperating state, Israel. COST is supported by a specific part of the EU Framework Program.

What is the mission of COST?

The mission of COST is to strengthen Europe in scientific and technical research through the support of European Cooperation and interaction between European researchers. It aims to maximize European synergy and added value in non-competitive and pre-normative research.

COST is active in 13 scientific domains: Biomedicine and Molecular Biosciences, Food and Agriculture, Forest and their Products and Services, Materials + Physical & Nanosciences, Chemistry and Molecular Science & Technology, Earth System Sciences & Environmental Mgt. (ESSEM), Information and Communication Technology, Transport & Urban Development, Individuals + Society + Culture & Health. Current Actions are monitored by the Domain Committees through the presence of Domain Committee “Rapporteur” at Action meetings and by annual reports and presentations by Actions to their representative Domain Committees.

How to apply for a COST action?

COST operates a Continuous Open Call for proposals for new Actions using two stage processes. Preliminary proposals (up to 3 pages) will be assessed by the relevant Domain Committee(s). Authors of successful preliminary proposals are then invited to submit full proposals for further assessment by the Domain Committee(s).

COST Action ES1002 is one of the Actions under the research Domain ESSEM.

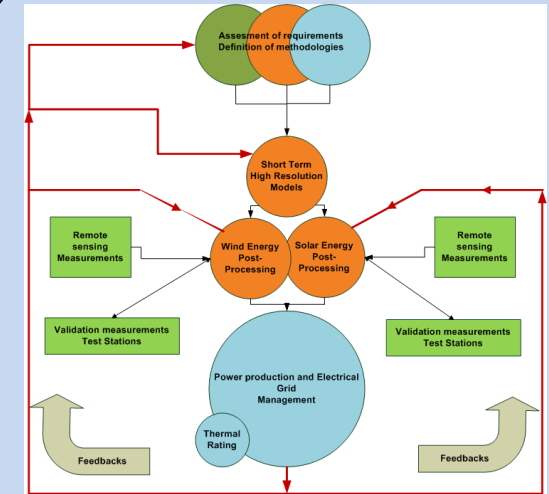
Due to climate change and shrinking fossil resources, the transition to more and more renewable energy shares is unavoidable. But, as wind and solar energy is strongly dependent on highly variable weather processes, increased penetration rates will also lead to strong fluctuations in the electricity grid which need to be balanced. Proper and specific forecasting of ‘energy weather’ is a key component for this.

Therefore, it is timely to scientifically address the requirements to provide the best possible specific weather information for forecasting the energy production of wind and solar power plants for the next minutes up to several days ahead. Towards such aims, this Action will have two main lines of activity: first, to develop dedicated post-processing algorithms coupled with weather prediction models and measurement data especially remote sensing observations; second, to investigate the difficult relationship between the highly intermittent weather dependent power production and the energy distribution towards end users.

The second line of activity will raise new challenges as this will require from the energy producers and distributors definitions of the requested forecast data and new technologies dedicated to the management of power plants and electricity grids.

The work of the COST Action ES1002 is carried out in three Working Groups:

In order to refine the requested output of the power industry, a State of the Art workshop will be organized in the very beginning of the Action in order to bring together the scientific and industrial communities and to assess the requirements issued by the power plant managers, the operators and the electrical grid specialists. This meeting will help to characterize and assess the methodologies which will be applied later during the Action and to prepare the structure and content of the State of the Art report to be prepared during the first year of activity. The workshop will also enable an integrated view of the current issues for the manager and user communities through a harmonized approach.



WG1: Modeling and post-processing

- Contribute to the chapters of the State of the Art report which are relevant for post-processing in collaboration with WG2 and WG3
- Develop existing and new methods for post-processing taking into account the required output parameters (wind speed, solar radiation, cloud information, temperature, humidity...) and the relevant forecasts ranges as defined by WG3
- Integration of real-time observations for post-processing based on data provided by WG2, with specific focus on remote sensing information
- Validation of forecasts and determination of uncertainty in collaboration with WG2. Feedback to WG3
- Close collaboration with the power industry through WG3



BSRN station at CENER (SP)

WG2: Measurements and validation

- Contribute to the chapters of the state of the art report relevant for measurements in collaboration with WG1 and WG3
- Provide real-time measurement data to be implemented in the post processing schemes in collaboration with WG1
- Specify a number of existing test sites (meteorological weather stations, solar power plants, wind parks) which will be used for the validation of the forecasts in collaboration with WG3
- Provide validation data for Task T2.1 in collaboration with WG1. Create a database containing all the available measurements in a format suitable for WG1. Make the data accessible in the restricted area of the Action website
- Support WG1 for the validation study of the new post-processing tools obtained in the course of this Action

WG3: Applications – Power industry

- Contribute to the chapters of the state of the art report relevant for power industry in collaboration with WG1 and WG2
- Define the necessary outputs from the numerical weather forecasting / post-processing to be delivered as expected input into the green power plant energy production schemes
- Evaluate the capacity of weather forecast models combined with post-processing to increase the efficiency and quality of management of the renewable energy production sites
- Analyze the impact of variable renewable energy input on existing electrical grids and future power networks with a large penetration of decentralized renewable energy sources
- Support WG2 to gather additional data for validation purposes.

Participation

The participants of COST Action ES1002 come from 25 (+1) different countries.

Signatories

Austria, Belgium, Bosnia & Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Spain, Switzerland, *Turkey*, United Kingdom.

Non-European members: Australia, Japan, USA.

Executive members of COST Action ES1002

Chair: Alain Heimo, Meteotest, CH

Vice-chair: Anna Maria Sempreviva, ISAC, IT

WG1 Chair: George Kariniotakis, Mines-ParisTech, FR

WG1 Vice-chair: David Pozo Vazquez, UJA, ES

WG2 Chair: Foeke Kuik, Telvent, NL

WG2 Vice-chair: Bertrand Calpini, MeteoSwiss, CH

WG3 Chair: Gregor Giebel, Risø DTU, DK

WG3 Vice-chair: Lourdes Ramirez, CENER, ES

Action Secretary: Alessandra Liberto, Telvent, NL

Grant Holder: René Cattin, Meteotest, CH

Action Rapporteur: Zoltan Dunkel, OMSZ, HU

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Mt-Soleil/Mt-Crosin (CH)



WIRE

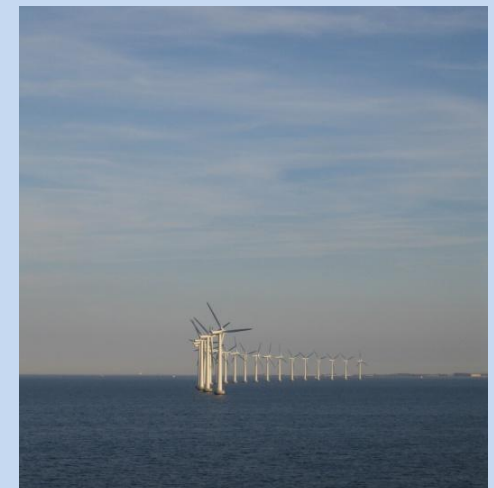
Weather Intelligence for Renewable Energies

Short-Term High Resolution Wind and Solar Energy Production Forecasts

COST Action ES1002



Amareleja (PT) – Solar Park



Courtesy Risoe-DTU

