

OPEN INNOVABILITY® CHALLENGE – 03 April 2023

Title

Easy to use systems to promptly diagnose the health condition of Utility Poles and Supports

URL: <https://openinnovability.enel.com/challenges/call/2023/3/systems-to-promptly-diagnose-health-condition-of-Utility-Poles-and-Supports>

Subtitle

Enel Grids are seeking solutions to provide an easy-to-use and objective health check of poles and supports.

Reward

Collaboration with Enel Grids

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03/06/2023

Abstract

How can we at Enel Grids better ensure our operators are safe when working at height? Supporting our people with a reliable, objective, quantitative method for measuring pole and support condition will help keep operators safe and improve network management. We invite your proposals for effective, easy-to-use, non-invasive systems that can benefit our operators globally.

Do you have a solution, technology, or method for an objective and fast health check?

This is an electronic Request-for-Partners (eRFP) Challenge; the Solver will need to submit a written proposal to be evaluated by the Seeker with the goal of establishing a collaborative partnership.

Description**OVERVIEW [visible on Wazoku Challenge Center]**

As part of ongoing health and safety initiatives across the Group, Enel Grids is searching for a solution that can provide an **objective** and **fast health check** of a pole/support, to be added to the current visual inspection.

Current practices are often subjective, depending on tester experience and sensibility. Providing operators on the ground with a fast, easy-to-use, and universal understanding of relevant and objective information will support the assessment of the pole/support condition and therefore if this is suitable for operator climbing and, more generally, for network service.

The Enel Group is therefore looking for proposals around the best available solutions to improve health checks of poles and supports. In partnership with Enel Grids, your **reliable**, **quantitative** and **objective** measurement approach will benefit operator safety and network management.

This Challenge contributes to the following [UN Sustainable Development Goals](#):

- SDG 3: Good Health and Well-being
- SDG 8: Decent Work and Economic Growth
- SDG 9: Industry, Innovation and Infrastructure

SCENARIO

When working at height in any industry, safety regulations and requirements must be followed. We need to ensure any equipment used or support climbed must be verified to be safe before climbing. According to Enel Grids standards on work at height, when operators are working on a pole or support, it is critical to determine its condition before an operator climbs it.

Poles that are unsuitable for climbing operations are also unsuitable for network service. The network maintenance plan, in particular the periodic inspections, provides for the reporting of unsuitable poles/supports on which their replacement or stabilization must be planned. Adding to the routine visual checks and testing, Enel Grids is seeking innovative solutions to perform reliable, objective and quantitative health checks of these poles and supports.

Before starting any activity at height, pole and support integrity (presence of damage, buckling, corrosion etc), mechanical requirement and stability have to be verified on site - in order to assess that it may sustain the stresses from the work. These stresses, including operator weight, equipment and tool weight for use or installation, and other working stresses (e.g. removal or tensioning of conductors), may lead to the failure of a defective pole/support or one not designed to handle these stresses.

For instance:

- Wood poles usually fail by breaking at the point of their penetration in the ground - often due to internal rotting that weakens the material. For these wood poles, the focus would be more on the pole integrity than the methods of stabilization, e.g. ground consistency, considering these poles usually have not a foundation block.
- However, for reinforced concrete or metallic poles, they tend to fail due to an ineffective stabilizing effect. This happens when the pole is at the incorrect penetration depth, or when this depth reduces over time.

THE CHALLENGE

Enel Grids is searching for proposals that offer a solution that can provide an **objective** and **fast health check** of a pole/support, to be added to the current visual inspection.

Current practices are qualitative and subjective, depending on tester experience and sensibility. Your reliable, quantitative and objective measurement will help keep operators safe and improve network management.

This test and health check must be non-invasive, and could be based on diagnostic technologies of any kind. The scope of innovation in your solution and its universal potential is important - your solution could use physical, mechanical, thermographic, ultrasonic, magnetoscopic, hygrometric diagnostics, a combined approach, or any other relevant and successful.

The inspection approach and its conditions change dependent on the type of pole/support, their material, and then on their specific dynamics of failure. This also will have to take into account other factors: presence/absence of a foundation block, depth of penetration into the ground, the type of soil itself.

Ideally, your proposed solution will also allow for the recording and reporting of data, and including a connection to a database. This will help prepare for future health checks and provide more opportunity for future analysis and program work.

SOLUTION REQUIREMENTS

In general, the solution needs to satisfy the following **must-have** requirements:

- Effectiveness of checking the health of pole/support whenever this is required;
- Not impair the pole/support integrity, stability, or create other/further risk situations;
- Be easy and fast to be deployed or installed on the pole/support, and also non-invasive;
- Be universal as far as possible, i.e. flexible to use on poles/supports of different materials, sizes, kind; solutions for only one type of material will also be considered;
- Easily transportable by users and company fleet;
- Be user-friendly in order for users to take a quick decision;
- Require minimum maintenance;
- Be easy to implement, both in time and distribution;
- Be compliant with current normative of the countries of the Enel group or be possible to adapt to local normative with a limited effort.

Nice-to-have requirements

- Be able to record the check results for reporting purposes, and also allow remote recording in a database.

PROJECT DELIVERABLES

The partner proposals for this Challenge will be **assessed by EGRIDS on the basis of the criteria below**:

1. Compliance with the Challenge's request and the quality of the solution, including must-haves and nice-to-haves, as specified on the Open Innovability® Challenge's page;
2. Degree of innovation;
3. Solutions that are not generally known or easily accessible to experts in the sector;
4. Technical and normative compliance;
5. Replicability in different contexts and countries; and
6. Economic and realization feasibility.

The **submitted proposal** should consist of a detailed technical description including:

- Examples of technology application or prototypes and reference industry if any;
- Advantages and weaknesses of the proposed solution compared to the current way of working;
- Constraints or technological gaps for the solution adoption;
- Data, case studies, patents and journal references or any additional material that supports the proposed solution;
- Cost estimation and Technology readiness level (TRL) of the proposed solutions;
- Description of the most suitable use-cases accordingly to the performance and characteristic of the proposed solution.

The final award for this Challenge is contingent upon satisfactory completion of the verification process, including acceptance of the Challenge-Specific Agreement (CSA) that is the regulation for this Challenge. The verification process includes obtaining the following from the Solver: signed affidavit (based on the CSA), employee waiver (if applicable), proof of identify, and Counterparty Analysis Questionnaire (CAQ).

If your eRFP response is selected, you negotiate the terms of the contract (including scope of work, tasks and duration) directly with the Seeker. This Challenge type does not require Intellectual Property (IP) transfer. However, sometimes Seekers request that certain IP arrangements be made should a partnership be formed.

Challenge rules

All proposers are invited to read carefully the challenge and the **Regulation** of this challenge, **attached below in the Attachments section**, before submitting a solution.

By submitting a solution they automatically accept the attached Regulations other than the Terms of Use of this platform.

Explain your proposal clearly in English, attach documents (max 5 files, 25MB total size, ZIP, JPG, PDF format) if needed.

Challenge, award, IP rights, deadlines

This is an electronic Request-for-Partners (eRFP) Challenge; the Solver will need to submit a written proposal to be evaluated by the Seeker with the goal of establishing a collaborative partnership.

This Challenge type does not require Intellectual Property (IP) transfer. However, sometimes Seekers request that certain IP arrangements be made should a partnership be formed.

The proposals will be admitted until May 30, 2023 and the evaluation will start after this date.

Late submissions will *not* be considered.

Specific regulation attached at the bottom of this page.

What happens next?

After the Challenge deadline, the Seeker will complete the review process and make a decision with regards to the Winning Solution(s). All Solvers that submit a proposal will be notified on the status of their submissions.

Enel will evaluate the proposal using the following criteria:

- Overall scientific and technical feasibility of the proposed solution;
- Economic potential of concept (e.g. Total Cost of Ownership);
- Business potential for Enel;
- Novelty and not obviousness;
- Potential for proprietary position (i.e., is the technology novel or protectable);
- User's capabilities and related experience;
- Realism of the proposed solution;
- Maturity level of the proposal.

If the reward includes the opportunity to collaborate with Enel, once one or more suitable solutions have been identified, Enel will reserve the opportunity to start a collaboration, by way of example, on all or part of the following activities:

- Test execution;
- Supply of prototypes (if the solution includes equipment);
- Installation and site tests;

- Follow up and monitoring of the proposed idea behavior.

At the end of the assessment, you will receive feedback.

In case of success, an Enel contact person will get in touch with you to discuss the next steps.