

I. **Project (phase) name**

Laboratory for tracking and erosion tests on composite insulators

Project class / Phase name

P-CONFORM / Execution of the testing equipment. Commissioning and experiments. Drawing up the Quality Management System (QMS) and submitting the accreditation documentation to RENAR

Phase no.: III

Planned objectives:

- Execution of the functional model of the mechanical equipment for tracking and erosion tests on composite insulators
- Execution of the functional model of the electric equipment for tracking and erosion tests on composite insulators. Laboratory arrangement
- Mechanical and electric experimentations for determining the technical performances of the functional model
- Drawing up the quality system documents necessary to the new tracking and erosion test on composite insulators

I. **Description of activity** (performed within the phase, using key words and DESCRIPTORS):

Activity III.1 Execution of the functional model of the mechanical equipment for tracking and erosion test on composite insulators

Within this activity, the assembly of insulator rotating system, the tank for preparing the salt solution and the laboratory enclosure were carried out, according to the technical execution documentation.

Got results (the quantifiable results/technical, economic, social indicators etc. should be indicated - economic effects recorded at the RD institution):

Functional model of the mechanical equipment for tracking and erosion tests on composite insulators - 1 pc., composed of:

1. Assembly of insulator rotating system -1 pc.
2. Tank for preparing the salt solution – 1 pc.
3. Laboratory enclosure formed by the testing room and control room– 1 pc.

Stage of planned objective achievement/completion form (of the activity within the phase):

The planned objective was achieved and finalized as: „Functional model of the mechanical equipment for tracking and erosion tests on composite insulators”

Activity III.2

Execution of the functional model of the electric equipment for tracking and erosion test on composite insulators. Laboratory arrangement

Within the activity, single-phase step up power transformer, voltage measuring circuit, current measuring circuit, temperature measuring circuit, driving cabinet and test software were carried out.

Got results (the quantifiable results/technical, economic, social indicators etc. should be indicated - economic effects recorded at the RD institution):

Functional model of the electric equipment for tracking and erosion tests on composite insulators - 1 pc., composed of:

1. Single-phase step up power transformer 0.230/31 kV-25 kVA, TITMu 0.23/31-25
2. Voltage measuring circuit formed of :
 - Capacitive voltage divider
 - Peak voltmeter
3. Current measuring circuit
4. Temperature measuring circuit
5. Driving cabinet
6. Testing software

Stage of planned objective achievement/completion form (of the activity within the phase):

The planned objective was achieved and finalized as: „ Functional model of the electric equipment for tracking and erosion tests on composite insulators”

Activity III.3

Mechanical and electric experimentations for determining the technical performances of the functional model

Within this activity, adjustments and experimentations on composite insulators with creepage distance of 658 mm - from SC IPROEB SA Bistrita - were performed using the component equipment of the laboratory.

Got results (the quantifiable results/technical, economic, social indicators etc. should be indicated - economic effects recorded at the RD institution):

1. Test report no. 1/ 09.11.2007

Stage of planned objective achievement/completion form (of the activity within the phase):

The planned objective was achieved and finalized as: „Mechanical and electric experimentations for determining the technical performances of the functional model”- Test report no.1/ 09.11.2007”

Activity III.4

Drawing up the quality system documents necessary to the new tracking and erosion test on composite insulators

The documentation necessary for submitting the accreditation request to the body empowered for this (RENAR) was drawn up, namely QUALITY MANUAL MC – 11, GENERAL PROCEDURES PG-I-11.01 - PG-I-11.23, TECHNICAL PROCEDURE PT-I-11.01.

At the internal audit performed by the audit team of ICMET Craiova, no non-conformity was found, according to the Audit Report no. 28/12.11.2007.

Got results (the quantifiable results/technical, economic, social indicators etc. should be indicated - economic effects recorded at the RD institution):

Quality Manual – MC – 11	1 pc.
General Procedures PG-I-11.01 - PG-I-11.23	23 pcs.
Technical Procedure PT-I-11.01	1 pc.
Accreditation request	1 pc.
Audit report	1 pc.

Stage of planned objective achievement/completion form (of the activity within the phase):

The planned objective was achieved and finalized by submitting to RENAR the documentation necessary for initiating the accreditation process.

NOVELTY ELEMENTS

Patent

Scientific paper

Scientific communication

(novelty elements should be described, specifying the patent, paper or scientific communication title, as the case may be)

METHOD FOR CAPITALIZING ON THE RESULT APPLICATION AND ECONOMIC EFFICIENCY

(field, customer and/or specific activity, economic effects got by the economic agent which benefits from the results should be described)

The main objective of the project is getting the accreditation certificate of the laboratory for tracking and erosion tests on composite insulators and completing the list of accredited tests with a view to assuring the composite insulator assessment according to the new European Norm EN 62217.

Composite insulators have the advantage of a weight lower than the classical insulators - the ceramic or glass ones; this fact made them easily mountable and cost-effective in achieving the circuits from the National Power Grid. Besides, they become not easily polluted and, consequently, the number of breakdowns is much decreased. They have the drawback of a more elaborated manufacturing technology, which should be verified by design tests including also the tracking and erosion test.

The economic efficiency of project result application is determined by:

- possibility of performing in Romania the tracking and erosion tests on composite insulators;
- capability of ICMET Craiova laboratories to broaden the testing range, simultaneously with setting up the laboratory for the above mentioned test;
- alignment of the laboratories in Romania to the highest research, development and testing EU level

OUTLOOKS

(possibilities of broadening the result application to many customers and/or in other fields should be emphasized)

By finalizing the laboratory for tracking and erosion tests on composite insulators, the testing infrastructure necessary in Romania for carrying out in the country all the tests required by European Norms for composite insulators is assured.

Throughout the world, there is a trend for replacing the ceramic and glass insulators by composite insulators. This trend is dictated by technical and economic reasons. In Romania, the replacement process began by using imported composite insulators, and since the last years, companies such as: SC IPROEB SA Bistrita, SC EXIMPROD GRUP SA Buzau, SC RECOMPLAST SA Buzau, MAIRA MONTAJ

Bucharest have been active on the market. These companies need to be technically supported by the assurance of the testing infrastructure.

Requests for tracking and erosion tests were received from SC IPROEB SA Bistrita and MAIRA MONTAJ Bucharest

II. Records

(documents to be annexed for supporting RD:, execution documentation, measurement/test/analysis reports, business plans, diagnoses, assessments, prognoses etc. should be specified)

The following documents are annexed:

- Scientific and technical report "LABORATORY FOR TRACKING AND EROSION TESTS ON COMPOSITE INSULATORS"
- Test report
- Technical procedure
- Accreditation request
- Audit report
- Analysis report of QMS at the highest level