D & D Protection Engineering Ltd.

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ELECTROMAGNETIC COMPATIBILITY (EMC)

LIGHTNING STUDY

ELECTRICAL STUDY

ASSISTANCE IN EXECUTION CONTROL

COMPLIANCE VERIFICATION

TRAINING

ELECTROMAGNETIC COMPATIBILITY (EMC)

All the equipment operating with weak currents (automation, alarm and detection centers, communication equipment, etc.) has a convincing sensitivity to its electromagnetic environment.

The direct or indirect effects of electromagnetic fields can be a source of malfunctions or destruction of the components of this equipment.

Whether at the level of the acquisitions or the routing of the wiring to which they are connected, it is necessary to take this pollution into consideration, then to apply the implementations described by the relevant standards.

The latter take into consideration the induced and conducted effects of 50 Hz and even high-frequency interference currents, the source of potential disturbances.

Investigation tracks

At the acquisition center level, observations are made regarding :

- The screens and shields in which the electronic boards are installed,
- The connections of the system to the ground network of the masses,
- Connections of the cable shields entering the earth ground network,
- The separation of areas and paths in which strong and weak current flows,

At the level of the cable trays, observations are made regarding:

- The environment in which they move,
- The electrical continuity of the various sections from their origin to their completion (connected devices) and the imperative application of the equipotential rule,
- Their connection to the earth's network of the masses,
- The separation of conductors from strong currents and low currents,
- Configurations with a risk of coupling

LIGHTNING STUDY

The ARF (Lightning Risk Analysis – IEC 62 305) including the on-site visit :

- Review and evaluation of existing protective devices
- Measurements of hearth resistivity, equipotential, earthing, structures and metallic parts of apparatus, masses, shields and meshes of all kinds.
- Characterisation of the nature of the soil (resistivity).
- Examination of the immediate environment of the site (proximity of electric towers, rail lines, watercourses, etc ...).
- Examination of networks, strong currents and weak currents
- Examination of areas at risk (explosive atmosphere, etc ...)
- Consideration of the equipment essential for safety
- Training and briefing of the staff concerned
- Verbal report at the end of the visit
- The report shall contain illustrations, diagrams and photographs showing the site in its general environment, the sensitive points, materials, the measurement sites and their values.

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ELECTRICAL STUDY

EXPERTISE (Including photovoltaic installations connected to the grid or autonomous)

ANALYSIS OF ELECTRICAL RISKS ELECTRIC ARC. ARC FLASH STUDY FOR WORKER PROTECTION according to NFPA 70 E and IEEE 1584

THERMOGRAPHY (Fluke TI400 or équivalent). Thermography report in compliance with the specifications D19 (apsad repository, CNPP).

ENERGY MEASUREMENTS ACCORDING TO NF EN 50160 (FEBRUARY 2011). RESEARCH OF DISTURBANCES ON LV NETWORKS (FLUKE 435 SERIES 2) AND PROPOSALS FOR SOLUTIONS

- Voltage, current, frequency, power factor
- Voltage variation (dips and overvoltages)
- Harmonics of voltage and current
- Power and energy
- Energy loss calculation
- Inverter efficiency (especially for photovoltaic applications)
- Imbalance between phases
- Flicker
- Transients
- Call current
- Monitoring the quality of the electrical network. Recording mode

DIMENSIONING AND STUDY OF ELECTRICAL EQUIPMENT (STRONG AND LOW CURRENT)

- LV / LV Transformer and HV / LV
- Protections
- Electrical conduits
- Capacitor banks
- Engines
- Drives
- Rectifiers
- Filters
- Wiring diagrams
- Photovoltaics

ELECTRICAL STUDY

CALCULATION NOTES AND STUDY OF SELECTIVITY ON LOW VOLTAGE NETWORKS

CALCULATION NOTES AND STUDY OF SELECTIVITY ON HIGH-VOLTAGE NETWORKS FOR HV / LV TRANSFORMER CHANGES

SENSORS (FLOW, SPEED, PRESSURE), CONTROL PART, CABLE LOGIC ...

LOGIC MODULES (SCHNEIDER, CROUZET) AND AUTOMATES (SCHNEIDER TSX 37)

PROGRAMMING ON LOGIC MODULES (SCHNEIDER, CROUZET) AND AUTOMATES (SCHNEIDER TSX 37)

ELECTRICAL PLANS UNDER CANECO BT (THIS CAN BE MADE UNDER SEE ELECTRICAL, IT IS ALSO POSSIBLE TO MAKE ELECTRIC PIPELINE ROUTING IN 3 D FROM DWG 2 D PLANS WITH THE SOFTWARE CANECO

STUDIES FOR COMPLIANCE OF THE ELECTRIC CABINETS

RISK ANALYSIS

ELECTRICAL ENERGY STUDIES WHICH MAY BE RETURNED IN THE CONTEXT OF A GENERAL ENERGY AUDIT. THE METHODOLOGICAL MEANS AS REQUIRED ON THE EN 16247-1 SEPTEMBER 2012)

ESTABLISHING ENERGY SAVING SOLUTIONS

DRAFTING OF A SPECIFIC TECHNICAL CLAUSES (including for grid-connected or autonomous photovoltaic systems).

ASSISTANCE IN EXECUTION CONTROL

Project management

- HV, LV and very low voltage electrical installations
- Photovoltaic systems connected to the grid or autonomous
- Implementation of protection against lightning
- EMC compliance

COMPLIANCE VERIFICATION

- HV, LV and VLV electrical installations
- Photovoltaic systems connected to the grid or autonomous Report prepared according to the specifications D18 and D20 (apsad reference system; CNPP)
- Implementation of protection against lightning
- EMC compliance

TRAINING

- Low voltage electrical power requirements (France only)
- Standard NF-C15 100, NF-C13 200 and NF-C 13 100, NF-C14 100, guide UTE C 15-712-1 and 15-712-2 (photovoltaic specificities)
- CANECO BT electrical design software
- Electrical engineering and automation
- Basics of electromagnetic compatibility
- Lightning protection