



EMC Compact Consultancy

RISK ASSET MANAGEMENT

FOR INDUSTRIAL INSTALLATIONS

Risk Evaluation and Protective Measures Identification

Electromagnetic phenomena, such as disturbances in the power grid, lightning strokes and electromagnetic fields, can corrupt the operation of automation and control systems, or even damage the installed equipment in Industrial Plants.

The works proposed by **TKPS** are the study of such facilities within the scope of Electromagnetic Compatibility (EMC) under a Compact Consultancy approach, including Earth/Ground analysis, Power Quality measurement and Lightning Protection Systems evaluation for identification of critical situations and the elaboration of a Technical Report with the necessary recommendations for those corrections.

The **EMC Compact Consultancy** proposed in this document represents an objective diagnostic of risk situations for industrial plants, whose consequences are often disastrously both for people safety and for production costs, to be carried out in a basis of 2 days work in the Plant for Field Survey followed by the EMC Analysis and Technical Report.



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Work plan proposed by TKPS to the study of electromagnetic disturbances and the settling of protective measures.

1 – INTRODUCTION

The preservation of signals and equipment are generally characterized by the term Electromagnetic Compatibility (**EMC**), whose essence will translate in its own grounding system.

The protection of automation and control systems in industrial plants against electromagnetic disturbances, including the protection against lightning and its effects (LEMP and surges), requires the coordination of various specific aspects, in particular the electromagnetic environment (EM field intensity, power quality, lightning activities, etc.) and the EMC characteristics of the equipment and its premises (emission and immunity levels, earth/grounding system topology, cabling routing, etc.).

The proper EMC improvement in the installation of automation and control systems ensures a significant reduction of the risks and costs associated with failure of equipment, whose consequences can be disastrous.

2 – WORK PLAN

The concept of "**EMC Compact Consultancy**" for a given installation represents the realization of an objective work focused on assessment of the existing situation and the subsequent study of the protective measures required to guarantee an EMC configuration, and it includes:



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a) EMC Survey

To be held on site, for measurements and studies of existing facilities.

- **EMC System Topology**, including the study of the earth/grounding system, the cabling layout, the protective measures which are already implemented, the historical of interference problems and/or equipment damages;
- **Power Quality Evaluation** regarding its main characteristics (voltage, frequency, voltage surges) in reference to European standard EN50160, based on a exploratory measurement;
- **Measurement of Electromagnetic Field** intensity in most representative points of the installation:

- Electric and magnetic fields at 50/60 Hz
- High-frequency electromagnetic field

b) EMC Study

- **EMC Analysis** of the existing situation to identify the mechanisms involved that could cause electromagnetic interference or damage in sensitive equipment, and the protective measures for their solutions.

c) Technical Report

The results of the measurements and EMC studies will be presented in a **Technical Report**, where it is developed an analysis of the values found regarding the possibility of causing electromagnetic interference and/or damage to equipment installed, concluding with the Settling of protective measures and procedures to be deployed for the solution of critical situations identified.