# ADVANCED ELECTROMAGNETIC COMPATIBILITY FOR SYSTEMS (EMC SYSTEM)

## NEW APPROACH AND SOLUTIONS APPLIED FOR THE VAL - METRO DE LILLE

[1]Daniel Soleil, [2]Jean-Marc Destailleur, [3]Alain Alcaras

[1]EMC-Engineering, - 13 Senas - France
[2]TRANSPOLE - 59 Villeneuve d'Ascq - France
[3]Thales – 92 Colombes - France

**PURPOSE OF THE PAPER**

The paper presents the reflections made about electromagnetic compatibility studies and protections seen through a new EMC concept specifically adapted for large and complex systems: the "zero method".

The principle of this method consists of eliminating all stress in the surroundings of sensitive equipment.

The positive results achieved in the field, opened up the new concept "Zero Method" that is an accessible and easy process to control the industrial electromagnetic interference, the radio and phone cells effects, and lightning protection.

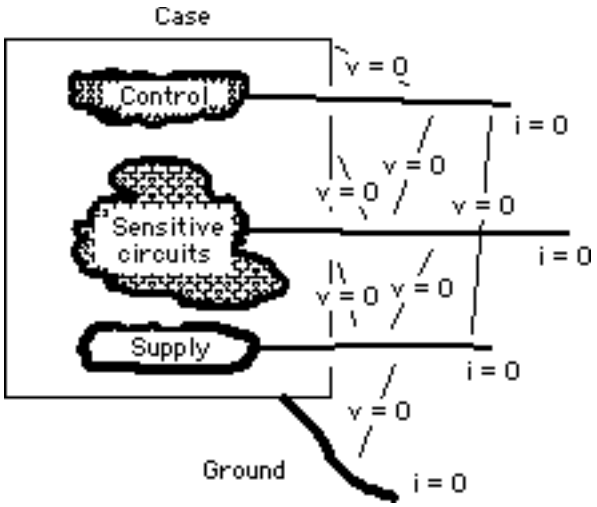
In conclusions, will be presented by TRANSPOLE economic and technical good results for important protection works against electromagnetic interferences, localized into the VAL-Metro de Lille studies with this method confirmed since ten years ago.

This new concept has been experimented with successful for many others applications: hydraulic and nuclear power plants, pipe stations and refineries, laboratories, hospitals…

**« ZERO METHOD », AN EXPERIMENTAL APPROACH FOR EMC SYSTEMS**

The zero method is an innovation which allows for solving EMC problems in large sophisticated electrical installations. Its principle is « a sensitive equipment can not work correctly in a complex installation if its own references are not electromagnetically clean".

This simplistic concept involves the HF equipotentiality where there is no HF voltage between 2 references (v = 0 for grounds, energies, signals etc …) and there is no HF current in these reference connections (i = 0), this is by experimenting in the industrial range 10 KHZ to 10 MHZ, as in all other range of frequencies for particular applications (DC to GHz).




The Zero Method wants i = 0 & v = 0

The zero method is coherent with the EMC standardizations for equipment and unit systems, and facilities and personnel safety. It helps in making good choices when apparent incompatibilities are observed.

The application of the zero method then entails "Zero failure" for the exploitation, against the auto-interferences or against the lightning effects, observed immediately with the setting of the corrections, and confirmed in long term by experience.

Generally, the foreseen protections objective is to eliminate these voltages and to derive the lightning currents towards inert circuits, out of the sensitive system. The difficulty is not to displace known problems, with all consequences of the come back.

This method is easy to understand, rapidly set up, without current injection into the system and is also inexpensive. This method is especially beneficial to electricians, who are mostly in demand and enable them to resolve this modern problem.

-o-o-o-