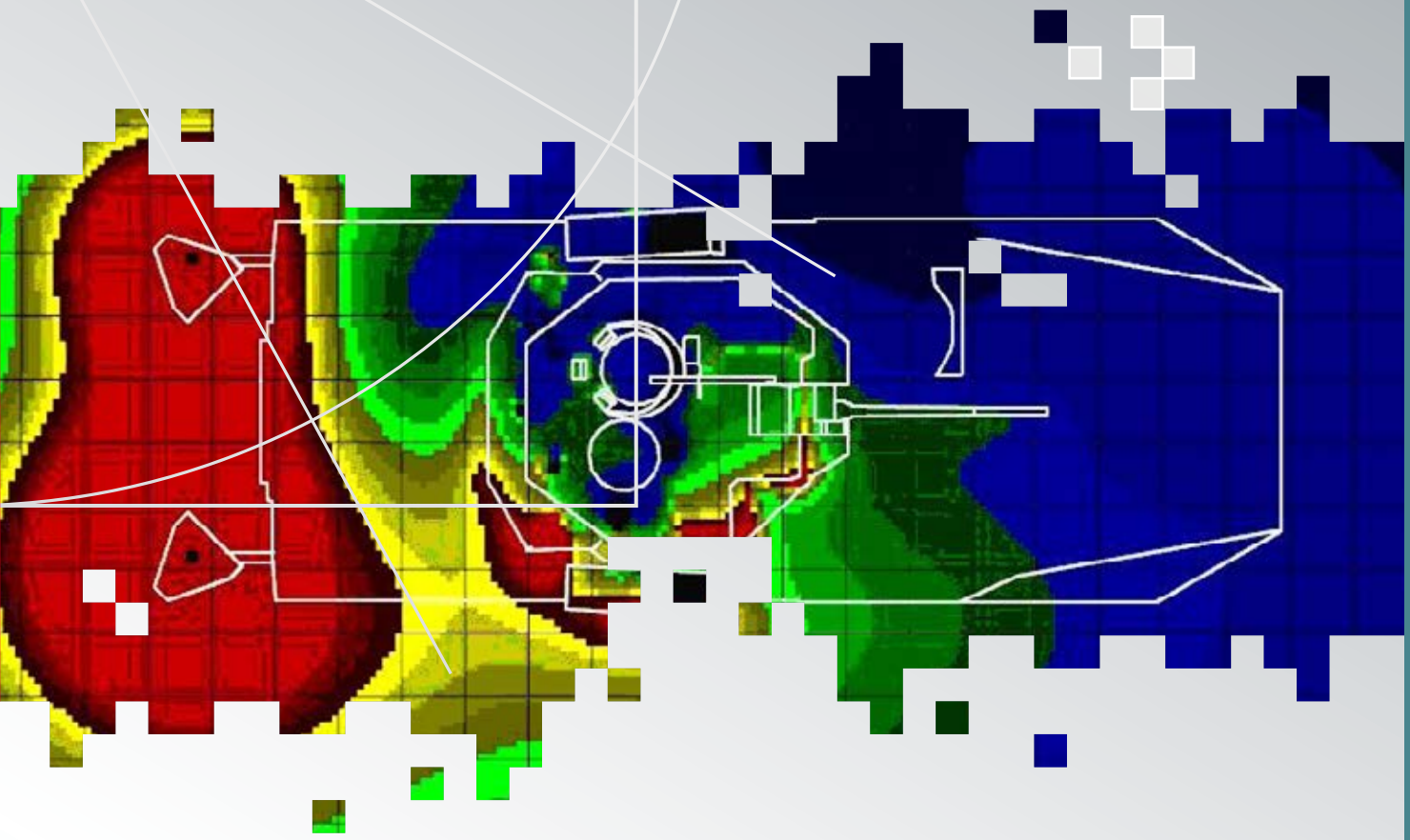
ELECTROMAGNETIC SOLUTIONS



LEONARDO
LAND & NAVAL DEFENCE ELECTRONICS

ELECTROMAGNETIC SOLUTIONS

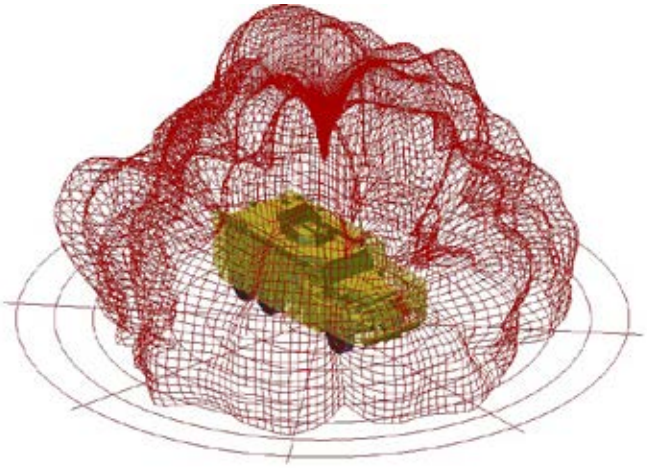
The company has a proven capability in providing Electromagnetic (EM) solutions to resolve antenna installation issues in a cost-effective and efficient manner.

Its expertise encompasses a range of platforms, which is reflected in a pedigree of success across many NATO countries.

A complex platform, such as a military vehicle, often contains a wide range of communications (including satellite communications), electronic countermeasure and electronic warfare systems. Each has antennas, all of which are competing for real estate on the same roof space.

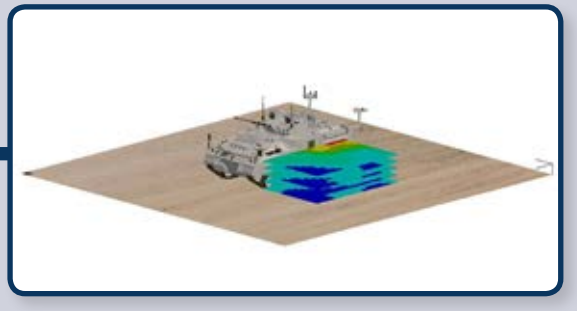
As a result, the coupling/interference of nearby antennas and the presence of complex physical structures can have a significantly detrimental effect on the installed performance. Simply mounting new antennas on the nearest available ground plane cannot take into consideration this coupling.

Furthermore, the addition of an antenna can have a negative EMC/interference effect on electronic equipment. A systems approach is required. The vehicle and its immediate environment need to be assessed as a whole system to optimise the antenna layout.



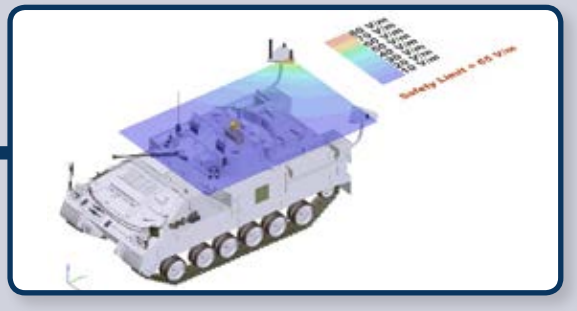
SYSTEM DESIGN USING ELECTROMAGNETIC SIMULATION

Radiation patterns



Near fields close to the ground

Mutual interference



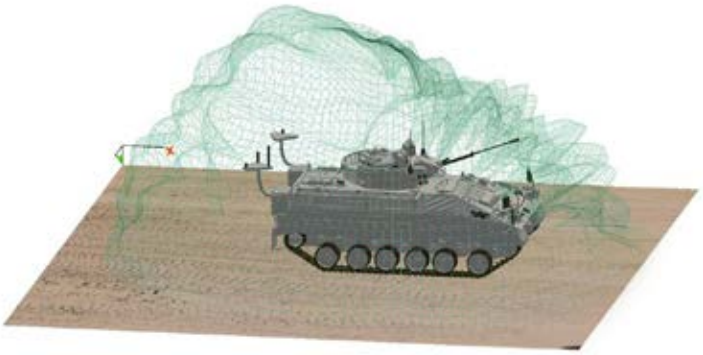
Radiation hazards

Electromagnetic Solutions

- Reduced number of antennas
- Improved ECM - comms interoperability
- Optimum antenna installation layout
- New antenna solutions

This can be done by repeated physical measurement and the iterative re-siting of antennas. But this is both expensive and time consuming, and obtaining repeatable measured data is a challenge in itself.

Recent increases in the accuracy and efficiency of electromagnetic simulation software provides significant cost and time savings.



Furthermore, a virtual measurement eliminates the risk of working within a high powered radiation environment.

These applications have been extensively and independently validated against real measurements:

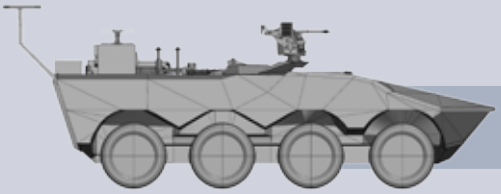
- Radiation patterns
- Antenna gain
- Interference/mutual antenna coupling
- Radiation hazards and their compliance with safety standards
- Near fields close to the vehicle.

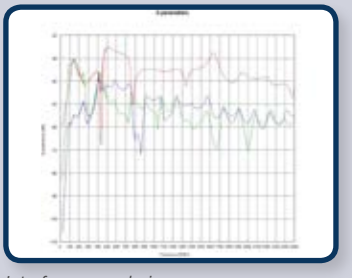
However, simulation is only one part of the capability on offer. With over 30 years of designing and manufacturing antennas for military platforms, the company applies this experience in using this data to supply and install a comprehensive range of vehicle antenna solutions.

The EM Integrated Antenna Solutions capability provides a set of solutions, including reducing the number of antennas and optimising the layout.

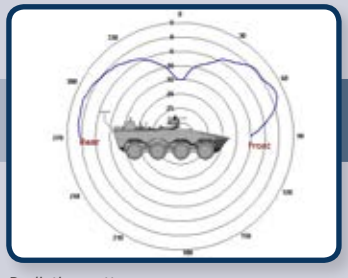
CASE STUDY - A NATO MILITARY VEHICLE

Problem Definition: co-site interference between High Capacity Data Radio (HCDR) and Software Defined Radio (SDR) antennas.

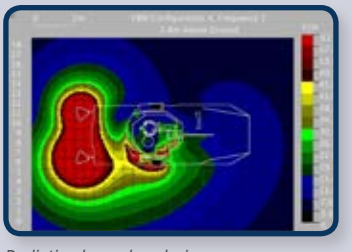




Interference analysis



Radiation patterns



Radiation hazard analysis

SOLUTION

Solution
Replace two antennas with one new composite antenna.

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