

RFI & EMI

API TECH SUPPORT - TS1020

Electrical interference, or noise, is an unwanted electrical signal that can cause intolerable error in, or complete disablement of an electronic control or measurement systems. Interference or electrical noise is broken down into two somewhat overlapping categories: Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI). Some of the more commonly encountered sources of interference are:

- Mobile and stationary radio, television and hand-held transmitters such as walkie-talkies
- Cell phones
- Fluorescent lights
- Radar
- Weather-related electrical discharges such as lightning
- Static discharges
- Induction heating systems
- High-speed power switching elements such as SCRs and thyristors
- High AC current conductors
- Large solenoids or relays
- Transformers
- AC or DC motors
- Ultrasonic cleaning or welding equipment
- Welding equipment
- Engine ignition systems

The effects of Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI) can cause unpredictable and non-repeatable degradation of instrument performance and accuracy, and even complete instrument failure. This can result in reduced process efficiency and production, plant shutdowns, and sometimes dangerous safety hazards.

There are two basic approaches to protecting an electronic system from the harmful effects of radio frequency and electromagnetic interference. The first is to keep the interference from entering the system or instrument using special shielding, designs and terminal filters. The second is to design the system or instruments circuitry so that it is inherently immune to RFI/EMI.



EMI and RFI interference can be accounted for by designing the system so that it is inherently immune to RFI/EMI. The API and Cecom engineering teams are available to assist you with your project design.