GAVEN

RF & ELECTROMAGNETIC SHIELDING EXPERTS

SHIELDING SOLUTIONS FOR DATA CENTERS

Shielding solutions to ensure the reliable and secure operation of data center facilities and equipment.

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DATA CENTER PROTECTION FROM ELECTROMAGNETIC & RF INTERFERENCE

Data Centers are no strangers to physical security concerns. However, protection plans are often an afterthought when it comes to E-threats (energy threats or electromagnetic threats). There are several forms of E-threats that can result in data destruction, often referred to as Radiation-based Data Destruction or RBDD. While geo-diverse redundancy can accomplish some level of data protection, the protection of data and equipment in real-time is at risk from several possible threats.

ABOUT US

When designing a data center, electromagnetic and radio frequency interference protection is a crucial consideration to ensure the reliable and secure operation of critical IT systems from the potentially damaging effects of RF, EMI, and IEMI. Gaven designs, constructs, and maintains shielding solutions customized to fit the needs of any shielding requirement, including shielded data racks/cabinets, prefabricated rooms, shielded structures, module facilities, shielded backup power, power filters, and shielded doors and points of entry.

For nearly 40 years, Gaven has established itself as the leader and expert in complex shielding, specializing in HEMP, EMP, RF, and IEMI protection. We offer a wide range of standard structure and shelter solutions as well as enclosure products. Additionally, our expertise cuts the guesswork out of complex shielding needs, whether large or small.

DESIGN & CONSULTATION

- In-house drafting and modeling
- Products designed to meet and exceed test standards
- Lifecycle survivability analysis
- A/E & prime contractor partnership
- Complete BIM coordination

TESTED & VERIFIED STANDARD PRODUCTS

- Acceptance & Verification test capabilities
- Lifecycle capabilities such as preventative maintenance services and Hardness Maintenance, Hardness Surveillance

INSTALLATION, INTEGRATION, & CONSTRUCTION

- Project management
- Construction management
- Trade-partner coordination
- Onsite installation specialists and quality management

DATA CENTER VULNERABILITIES

DATA THEFT, ELECTROMAGNETIC INTERFERENCE, & EAVESDROPPING

Electronic theft occurs when a bad actor illegally gathers or manipulates data via radiated information. Using commercially available equipment, radiated data can be interfered with or captured from hundreds of meters away - this puts critical and confidential data at an exceptionally high risk of theft and manipulation.

INTENTIONAL ELECTROMAGNETIC INTERFERENCE (IEMI) & LOCALIZED EMP DEVICES

IEMI and EMP burst devices have been a threat for years. However, this threat has grown exponentially in the last ten years as devices have become increasingly available. A small, man-portable EMP or IEMI device can be left near facilities, generating powerful electromagnetic field waves. A single burst can be enough to damage servers, critical control and communications equipment, and other microprocessor-based systems.

Electromagnetic waves from these devices have no problem passing through concrete, RF paint, or sheetrock. Additionally, facilities are at further risk from IEMI via conducted emissions. Conducted EMI emissions clamp to and travel across power and data cabling and pipes through shielding, allowing EMI to be re-radiated within the shielded volume. Therefore, protective measures such as filters and waveguides must be designed into a shielded facility.

SOLAR FLARES, LIGHTNING, & UNINTENTIONAL MAN-MADE EMI

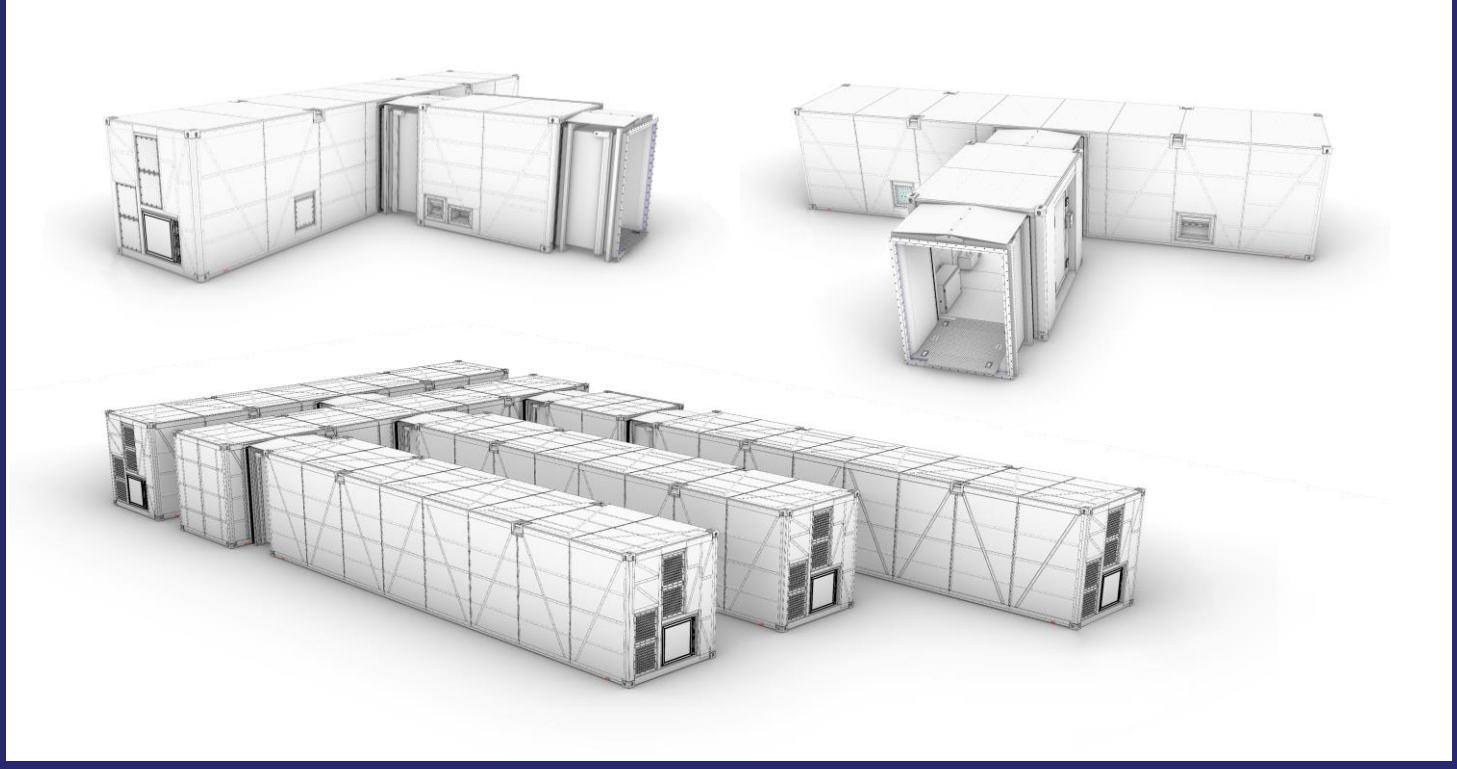
Geomagnetic disturbances (GMD) such as solar flares or coronal mass ejections (CME) have a 12% risk of a direct strike on Earth that cause extreme disruptions in the Earth's magnetosphere. These solar storms can damage equipment much in the same way as a high-altitude electromagnetic pulse (HEMP). There are several real-world examples of this, such as the Carrington Event of 1859, an indirect hit that affected the Canadian power grid in 1989, or the near miss of Earth in 2012.

Additionally, man-made devices such as power lines, radio communications, and simple electronics can interfere with the efficacy and operation of computing devices. We already shield these devices on a small scale; however, even computers near each other or large-scale antenna arrays can interfere with computing devices.

ELECTROMAGNETIC PULSE THREATS

An electromagnetic pulse can be generated by detonating a nuclear weapon at a high altitude (HEMP) or a lower altitude via non-nuclear (NNEMP) means. The event simultaneously generates multiple waveforms that vary in timing, duration, power, and wavelength.

This simple detonation causes a complex engineering riddle to be solved. Complicating matters, for nuclear detonations at 19 miles or above the Earth's surface, the direct effects of the EMP spread exponentially. In this case, an adversary could disrupt the entire power grid and nearly all electronics across North America (depending on overall altitude). While this is less likely, it is far more plausible than an all-out nuclear war.



SHIELDED CONTAINERIZED DATA CENTER UNITS

Gaven's HEMP-shielded Modular Enclosure System is designed to rapidly deploy a HEMP-shielded structure or enclosure that is proven to exceed the requirements of MIL-STD 188-125-1A/2. The system is designed to be as large or small as required while maintaining transportability. The fast installation and mobility of the system make it more cost-effective and agile in many cases than a traditional stick-built or mechanically fastened solution.

The Modular Enclosure System uses three main components to assemble a facility system that is scalable to mission or operational needs such as workspaces, communications facilities, command facilities such as C2 or C4ISR / C5ISR, data and computing centers, and operations centers such as SCADA rooms.

ENCLOSURES

- Available in 20' and 40' options
- Designed with HVAC & Cable Waveguide
- Includes power filters, shielded door, and egress hatch

CLEAN-ENTRY VESTIBULE

- Includes power and wiring infrastructure
- Air Seal door with access control integration
- Door interlock capability

FLEXIBLE CONNECTING LINK

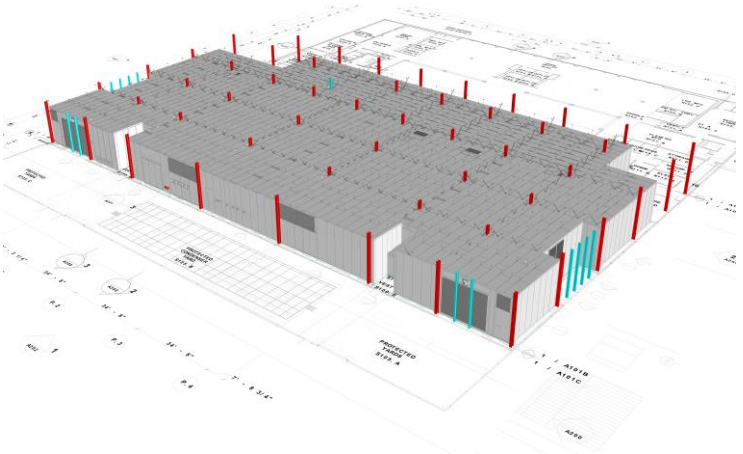
- Mitigates small movement and shifting foundation on non-level placement
- Field deployable for permanent or temporary locations
- Includes floor plating for a sturdy interior surface

SHIELDED FACILITIES & ROOMS

The installation of shielding for an entire facility after the envelope is complete can take significant time. The traditional stick-build method is both costly and time-consuming on-site. Gaven's approach is a prefabricated system that can integrate the shielding directly into the envelope itself, so when the facility envelope is complete, the shielding is also complete. This approach, using steel-form tilt-up panels utilizes methods that are familiar to many general contractors and adds a welding step for seams of the tilt-up panels to integrate the shielding with adjacent walls, floors, and ceiling panels.

PREFABRICATED SHIELD SYSTEM

- Can be designed to achieve up to 100 dB of shielding effectiveness
- Fastest construction time solution with simple tilt and weld on-site design
- Available in multiple panel sizes for height and width
- Used in current project sites with over 30,000 square feet of shield volume
- Can be installed at new facility sites as well as into existing structures
- Complete room kits in 8'x8'x8' to 32'x32'x8'



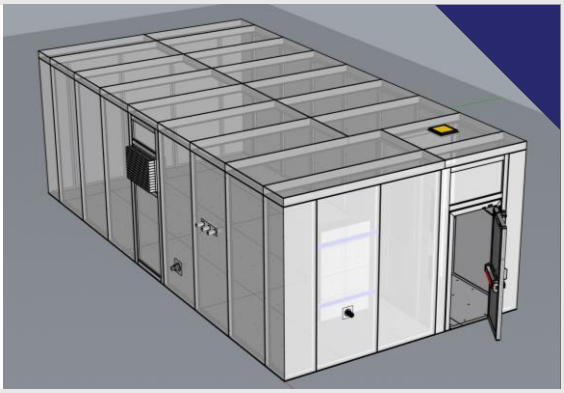
DATA CENTER SHIELDED SOLUTIONS

DATA RACKS & CABINETS

Gaven offers shielded 19” rack solutions available in two tiers to cover both IEMI and EMP threats. Both options are designed to be placed in data centers to EIA standards. The first level provides basic EMI/IEMI protection. The second level provides MIL-STD 188-125-1A/-2 protection from HEMP-level threats with over 100 dB of attenuation.

PREFABRICATED ROOMS

Gaven’s pre-fabricated rooms are designed to take make integration and procurement of a shielded room a simplified process. Including entry points, shielding, waveguides, filters, and penetrations. Gaven's room kits can be installed in existing facilities as well as new builds. Room kits are available in pre-configured sizes with multiple selectable options for shielding from 8'x8'x8' up to 32'x32’x8.



SHIELDED STRUCTURES & FACILITIES

Gaven’s prefabricated shielding panel system for fixed-site installations provides the highest quality HEMP/EMP shielding available. These panels are designed and tested to exceed MIL-STD 188-125. Additionally, they are manufactured in Gaven’s state-of-the-art production facility to ensure consistency and quality of the shields before they are installed on-site.

MODULAR FACILITIES

Gaven's Modular Enclosure System is designed to rapidly deploy an EMI/RFI or HEMP shielded structure or enclosure. The system is designed to be as large or small as required while maintaining transportability. The fast installation and mobility of the system make it more cost-effective and agile in many cases than a traditional stick-built or mechanically fastened solution.

SHIELDED BACKUP POWER

Gaven offers multiple power generator options that are HEMP protected with filtered power. Gaven's standard offering of both transportable and semi-permanent fixed-site Tier 4 Final generators are available from 60 Kw to 600 Kw. We also offer custom solutions for even smaller generators and have routinely shielded 1 MW generators.

POWER FILTERS

EMI power filters are devices designed to reduce electromagnetic interference in electronic circuits that are sensitive to such disturbances. Gaven's EMI power filters are designed to ensure the proper functioning of electronic circuits and prevent interference from affecting other critical equipment and components.

SHIELDED DOORS & POINTS OF ENTRY

Gaven's RF and EMP/HEMP-Shielded Doors are designed to meet and exceed applicable shielding standards, including MIL-STD 188-125. This makes our doors the best in the industry in performance. Additionally, Gaven's standard series Air Seal doors are lightweight, easy to operate, and require very little maintenance. All seams on the 304 Stainless Steel construction are fully welded for optimal shielding effectiveness.

Shielding & Build Specifications

- MIL-STD 188-125
- NSA 94-106
- IEEE-299
- MIL-STD 285
- ICD 705, including RF shielding for 60 dB from 30 MHz to 6 GHz

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CONTACT US

As leaders in the RFI, EMI, EMP, and HEMP shielding industry, we pride ourselves on our expertise in shielding and knowledge of protection against complex risks and vulnerabilities. Gaven Industries offers complete end-to-end turnkey solutions that include consultation, design, manufacturing, installation, testing, and maintenance. Let us help with your next project.

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Our Clients

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