FALSTROM COMPANY

Passaic, New Jersey

Integrated Electronic Enclosure Systems

and

Precision Welded Structures

January 2017

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Falstrom Company

- Electronic Enclosure & Electromechanical Assembly Contract Manufacturer
- Systems Engineering & Integration
- Small Business – Privately Held Company
- Established1870
- 50+ Years DoD customer experience
- 45 Employees
- 65,000 ft^2 facility (10% Office)
- Location: 1 Falstrom Court, Passaic, NJ

FALSTROM COMPANY
-- Product Applications --

Falstrom provides electronic enclosures used to integrate mission critical equipment used primarily in major US Navy systems

- **Shipboard Power Control Equipment**
- **Shipboard Control Consoles**
- **Shipboard Data Processing Equipment**
- **Carrier Electromagnetic Aircraft Launch Systems**
- **Radar, Sonar and Power Systems**
- **Flight deck test and training systems**
- **Ruggedized Automatic Test Equipment**
- **Communication Equipment**

Falstrom electronic enclosure systems are used in major US Navy platforms for the highest mission critical applications

Virginia Class Sonar, Power and Control Systems

Aircraft Carrier Electromagnetic Launch Systems (EMAL) & Power Systems

Arleigh Burke Power and Control Systems

Ohio Replacement Program Power Systems

Falstrom History

--- Since 1870 ---

Proud Heritage and Future Vision

Accomplishments and Mission

- **50 years of DoD experience**
- **Major US Navy Programs**
- **Tier One prime customers**
- **Continuing to serve our warfighters with the highest reliability products and solutions**

Falstrom Customers

Falstrom has been recognized for its quality and performance by Tier one DoD primes. Our electronic enclosure systems and electromechanical assemblies are used in major United States military systems including Navy and Air Force mission critical platforms. We maintain our customers because of our technical capabilities, management skills and customer service.

NORTHROP GRUMMAN

BAE SYSTEMS

LOCKHEED MARTIN

L3 communications

DRS Technologies
A Finmeccanica Company

Raytheon

ADVANCED ACOUSTIC CONCEPTS

NAVSEA
CRANE
Surface Warfare Center Division

Rockwell Collins

CURTISS-WRIGHT

ITT EXELIS

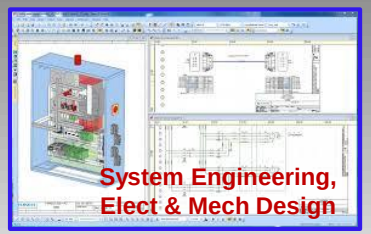
Industry Recognition

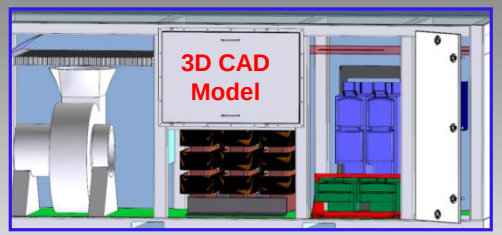
Lockheed Martin honors Falstrom Company as its 2010 Small Business of the Year for its performance on DDG modernization. Falstrom CEO Cliff Lindholm and Bill Caudle accepting award.

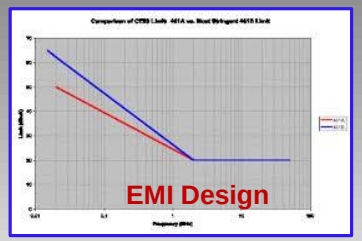
Northrop Grumman Corporation Electronic Systems recognizes Falstrom Company for "Raising the Bar in Performance". Falstrom CEO Cliff Lindholm and Frank Vucci accepting award.

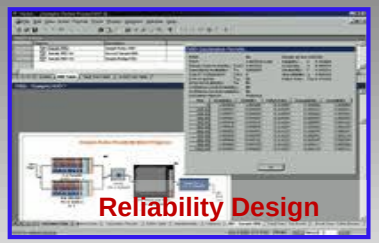
New Jersey Manufacturing Awards : Falstrom Company awarded the Small Business Manufacturer of the Year award for 2016
Northrop Grumman: "Preferred Supplier" From 1999 to present. Strategic Supplier Award - 2008
Rockwell International: (Awarded "Top Supplier" 1992, 1994, 1996, 1997, 2000, 2003, 2004, 2005, 2006"Subcontractor of the Year" 1993, 1998 & 2002)
Lockheed Martin: Awarded "Certified Supplier" 1995, "Small Business Subcontractor of the Year" 1996, 2010. STAR Supplier – 2010
DRS: Letter of appreciation: 2002

Falstrom Development, Integration and Manufacturing









Systems Engineering	Electrical, Mechanical and EMI/EMP Design	Structural, Thermal, Environmental, EMI and Reliability Analyses	Enclosure Manufacturing	Systems Integration and Tests

Falstrom Systems Engineering Capability Offers High Value and Low Risk Solutions for Complex Challenges

Electromechanical Assemblies

Electronic Integration

Integrated Electronic System

Falstrom Continues To Maintain Industry Leading Manufacturing Capabilities

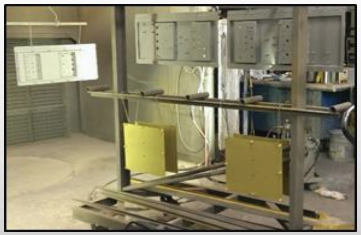
Certified Welding Capabilities

Falstrom **certified welders** have experience over a broad spectrum of applications. Our certifications include:

- Fusion Welding Aluminum, Steel, Stainless Steel, and HY80 Steel
- MIL STD 248/271/278
- MIL STD 1370/2219
  - AWS D1.1
  - AWS D1.3
  - AWS D17.1
- Resistance Welding: MIL W 6858
- Processes weldments **weighing up to 10,000 pounds**
- High precision rack-mount chassis specifications

Manufacturing

Painting and Finishing



Mil-Spec Surface Treatments

- Painting
- Epoxy Coatings
- Water-borne Coatings
- Air Dry and Baked Finishes
- Large Cleaning and Processing Tanks
- High Temperature Pressure Washing
- Chemical Film per Mil-C-5541
- Iron Phosphate Coating
- Flame Spray/Metalizing

Falstrom Designed and Manufactured Systems

Integrated Data Link System

Shipboard Primary Power System

Navy Nuclear System

Falstrom Integrated Subassemblies

- Cable Assemblies
- Connectors
- Power Supplies
- Transformers
- EMI Gaskets
- EMI Filters
- Transient Suppressors
- Thermal Management Systems
- Fans
- Shock Mounts

Navy Power Interface System With Integrated Electronic and Power Components

Shipboard, Submarine & Surface Enclosure Systems

Submarine Primary Power System

Navy Power Interface System
With Electromechanical Assemblies

Navy Communication System
With Electromechanical Assemblies

Navy Nuclear System

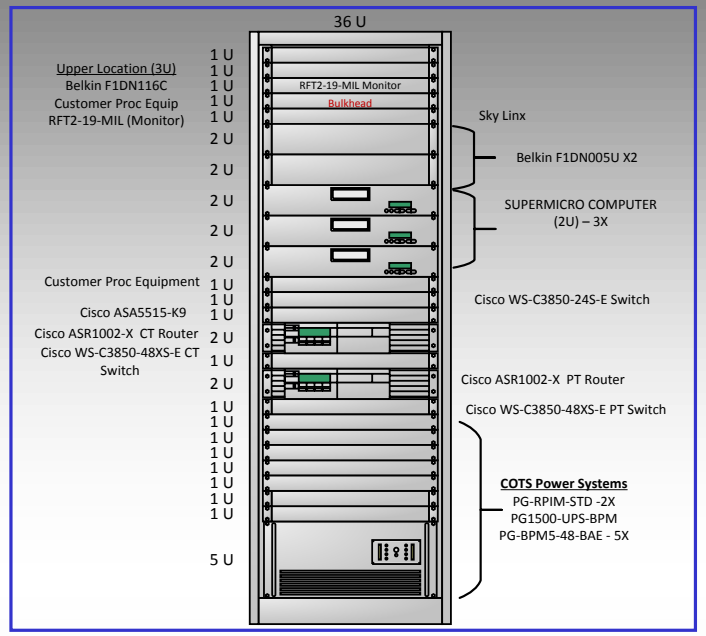
Electronic & Electromechanical Assemblies

- Cable Assemblies
- Connectors
- Power Supplies
- Transformers
- EMI Filters
- Transient Suppressors
- Fuses
- Fans
- Shock Mounts
- Wire Harnesses
- Junction Boxes

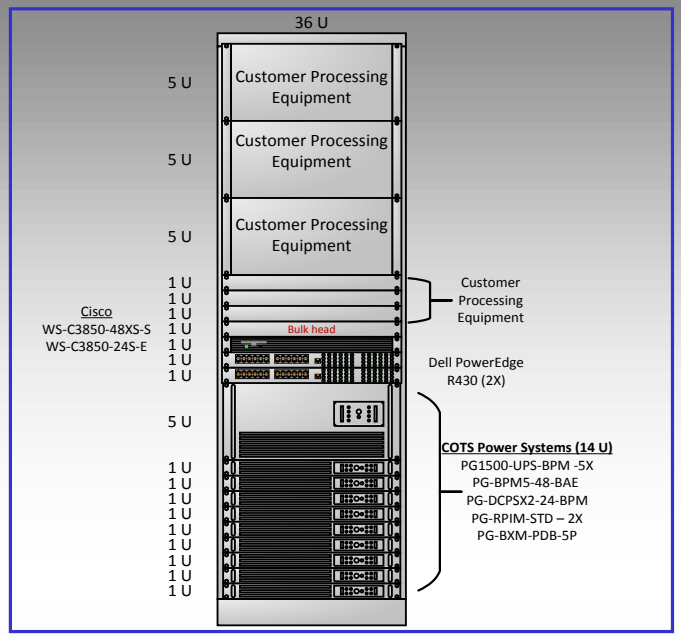
Laboratory equipment to complex and fully integrated production Enclosures

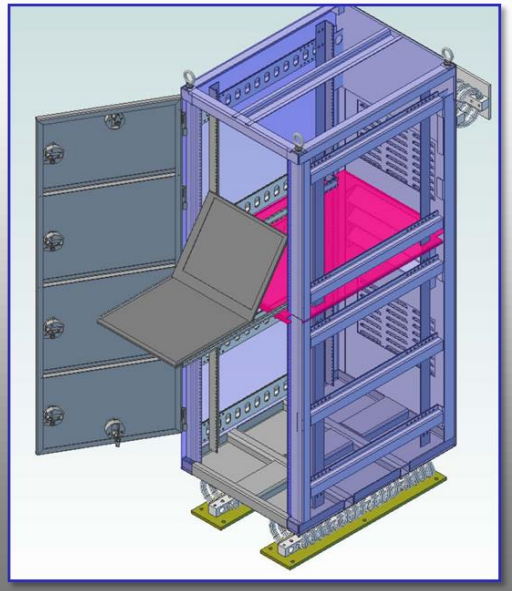
Submarine Primary Power System Enclosure

Falstrom Selected to Design, Integrate, Manufacture and Test the Next Generation US Navy Data Link System (NTCDL)



Dual enclosure system designed for vibration, shock, thermal, TEMPEST and EMI requirements

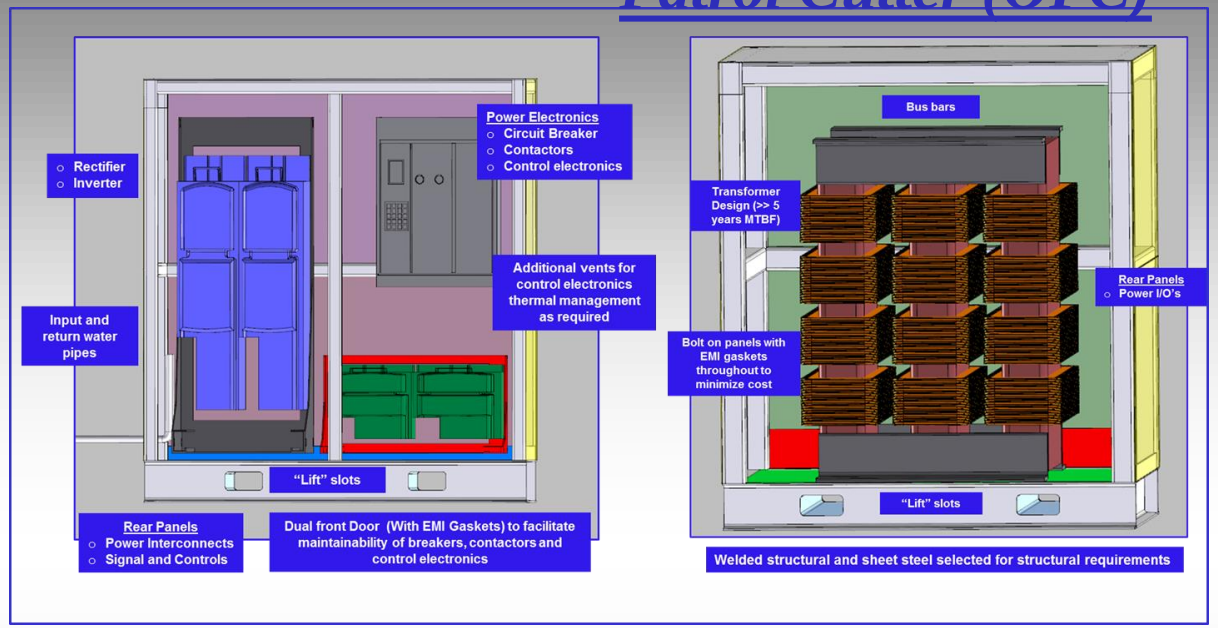




Falstrom Design, Integration and Tests

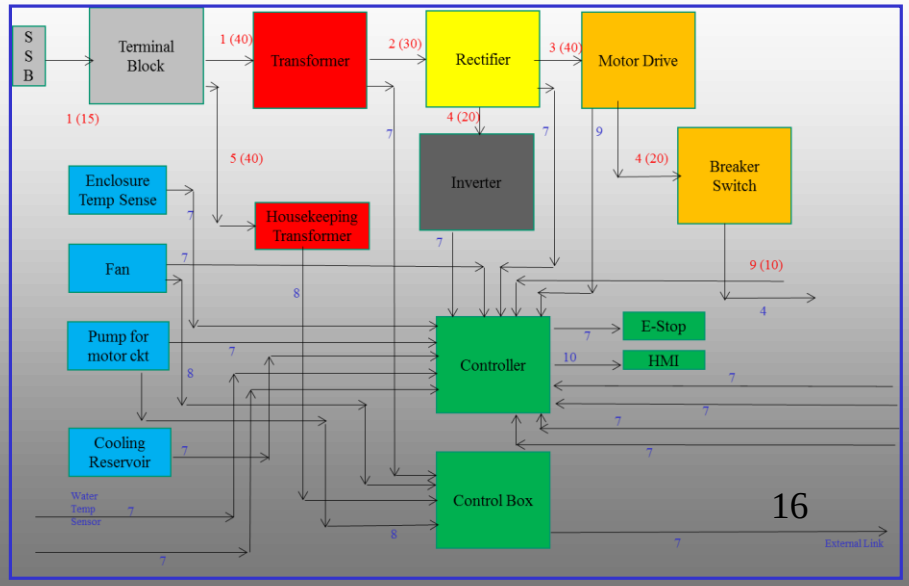
- Systems Engineering
- Harden and Integrate Cisco Servers and Processors
- Harden and Integrate power supplies and power distribution systems
- Systems Survivability, Reliability and EMI Design
- Fiber optic cable design and installation
- Thermal Management System
- EMI, Vibration and environmental tests
- Enclosure design and manufacturing

Falstrom Selected to Design and Integrate Power Distribution and Management System for USCG Offshore Patrol Cutter (OPC)



Dual enclosure system designed for vibration, thermal and EMI requirements

- Systems Engineering
- Integrate transformers, rectifiers, inverters and thermal management system
- Enclosure electrical and mechanical designs
- Design and integrate intrasystem cable assemblies
- Enclosure manufacturing
- EMI and environmental tests



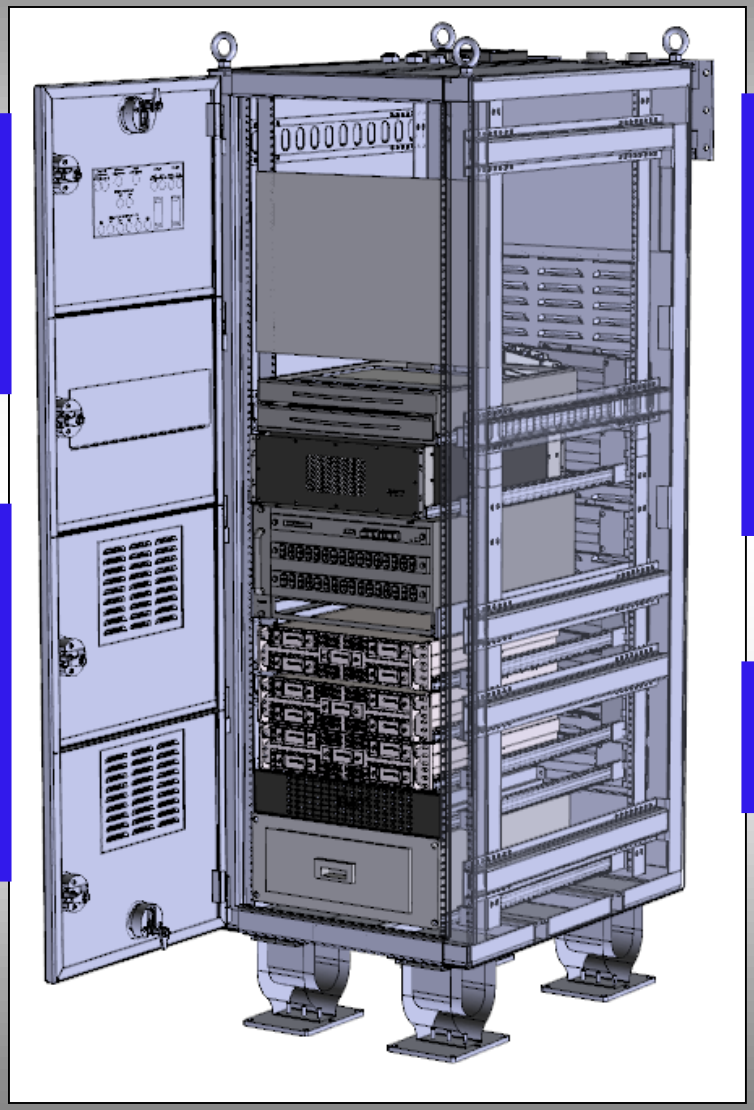
Submarine Network Management System

Systems Performance

- Cisco network electronics
- Hardened COTS approach
- Hardened for reliable mission life
- TEMPEST certified monitor
- Cost effective COTS Power Supply approach
- Fiber Optic cables

Survivability and Reliability

- Ruggedized Welded Aluminum Enclosure design
- EMI/EMC design features include gaskets, Power Supply filtering, air vents with integral EMI filters
- Power Supply input transient protection
- Thermal management for electronic reliability
- Bottom and rear shock isolators



Interface and Human Factors

- Slide racks with access to rear electronic connectors
- Cable retractors
- Door Lock with power interlock
- Power panel with power on indicators
- Power Supply Front panel access circuit breakers
- Transportation facilitated with lift rings and reinforced enclosures base supporting fork lift
- KVM in a slide out 2U design. Can be operated with the enclosure door closed

Manufacturing and Risk Reduction

- Based on Falstrom MIDS enclosure design
- 275+ MIDS enclosures delivered with continued 2017 orders

Submarine Processing & Control System

Survivability and Reliability
- Ruggedized Welded Aluminum Enclosure design
- EMI/EMC design features include gaskets, Power Supply filtering, air vents with integral Environmental/EMI filters
- Input power transient protection
- Thermal management for electronic reliability
- Electronic component derating
- Bottom and rear shock isolators

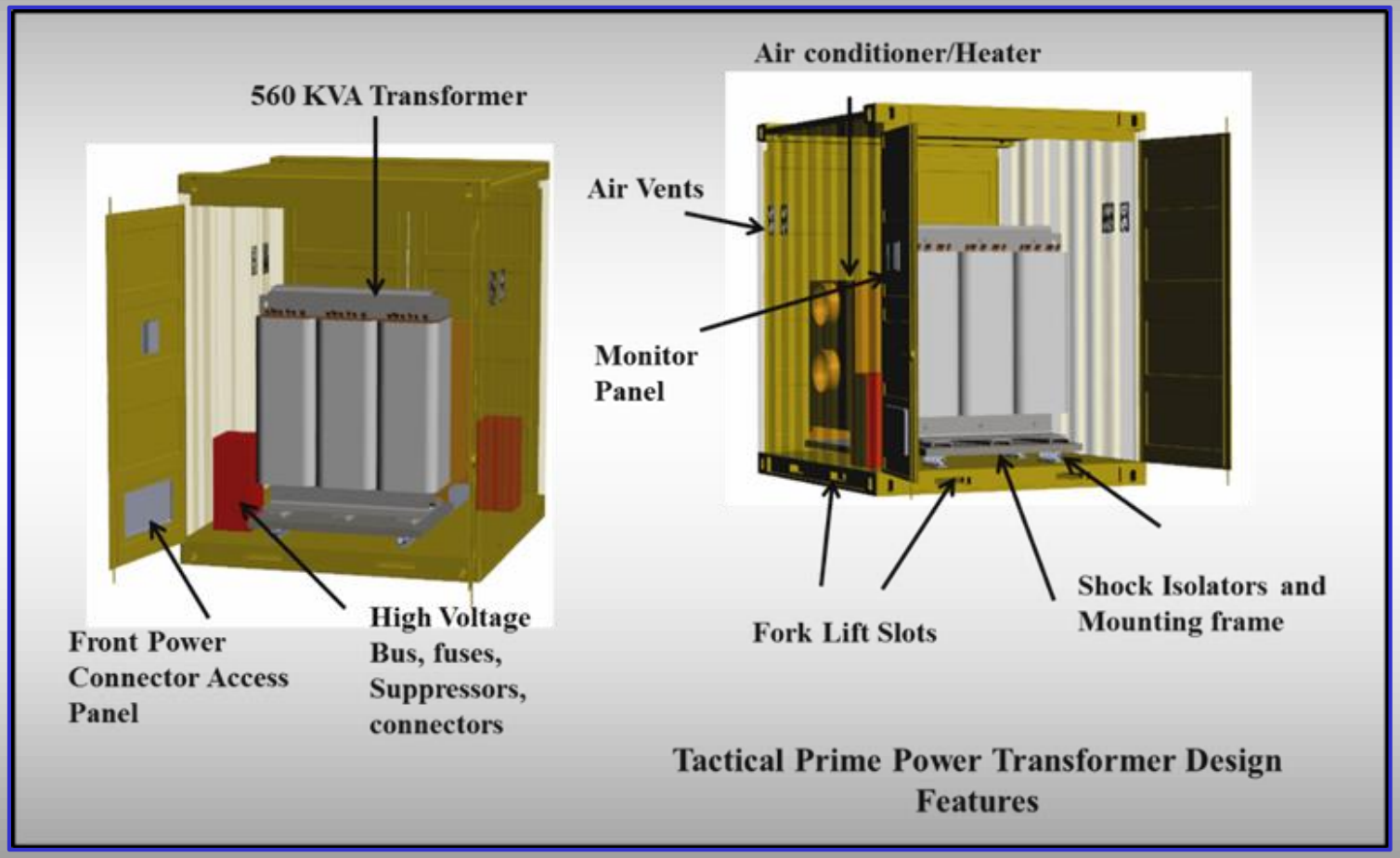
Engineering and Design
- Wiring Panel integrates all processor, Ethernet and I/O electronics
- Utilize COTS processing and power electronics
- Hardened for reliable mission life
- Design scalable for future missions and obsolescence

Systems Performance
- Hardened COTS approach
- COTS interface and power modules
- COTS Power Supply

Manufacturing
- Fully welded enclosure
- Shock isolator and cable management design

Interface and Human Factors
- Top entry connector panel
- Locking Hinged Upper Panel houses circuit breakers, indicator lights and primary power switches.
- Removable lower front door provide access to Processor, Ethernet, I/O electronics and power supply
- Transportation facilitated with lift rings and reinforced enclosures base supporting fork lift

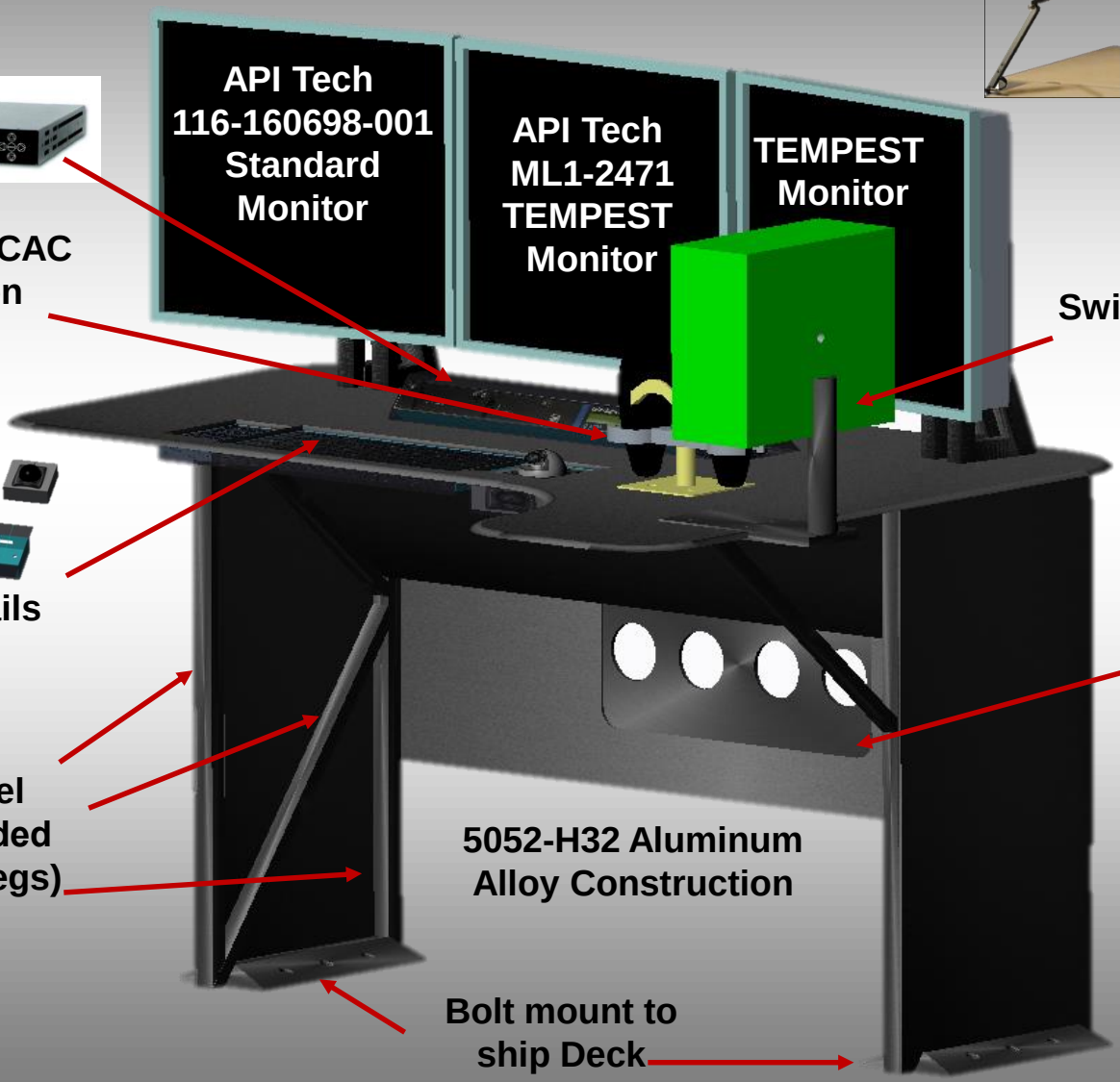
Falstrom US Army Tactical Prime Power Transformer Concept



Maritime Console Concept

Low power LED
User Directed light
(behind monitors)

ThinkLogical and CAC
Card Installation



Swivel Display

Keyboard Details

Interface Panel
with Prime
Power EMI
Filter

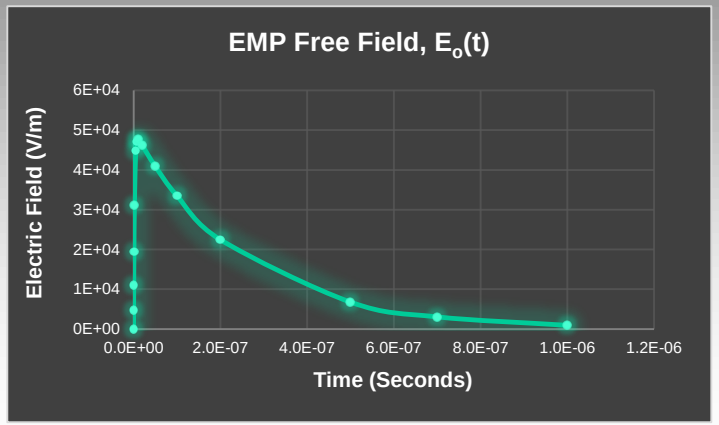
Aluminum panel
legs with 1” welded
stiffeners (both legs)

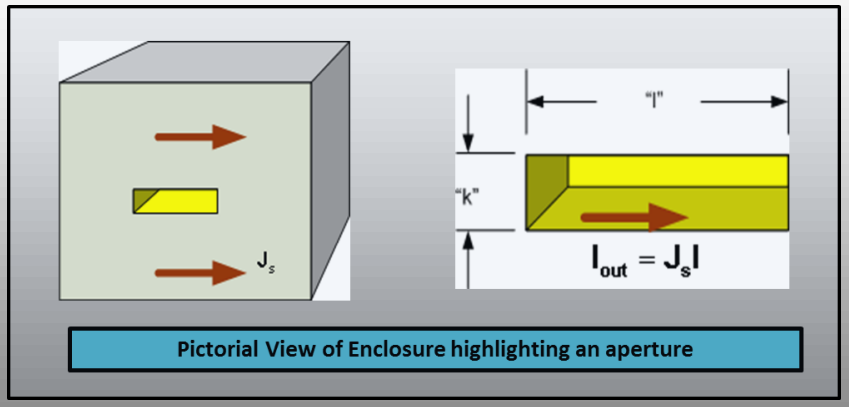
5052-H32 Aluminum
Alloy Construction

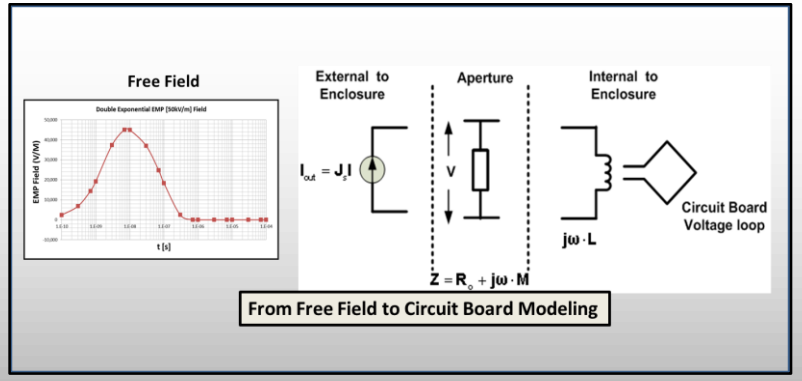
Bolt mount to
ship Deck

Electromagnetic Environmental Effects (E^3) Design

- Systems EMI/EMC/EMP Engineering
  - Systems Requirements Flow Down and Allocation
  - Systems Architecture and Modeling
- EMI and EMP Analysis and Design
- Free Field Modeling
- Coupling of electromagnetic fields into electronic enclosures
- Mil-Std-461F Conducted Emissions and Susceptibility Analyses
- Mil-Std-462F EMI tests
- TEMPEST Design
- Circuit susceptibility and survivability models



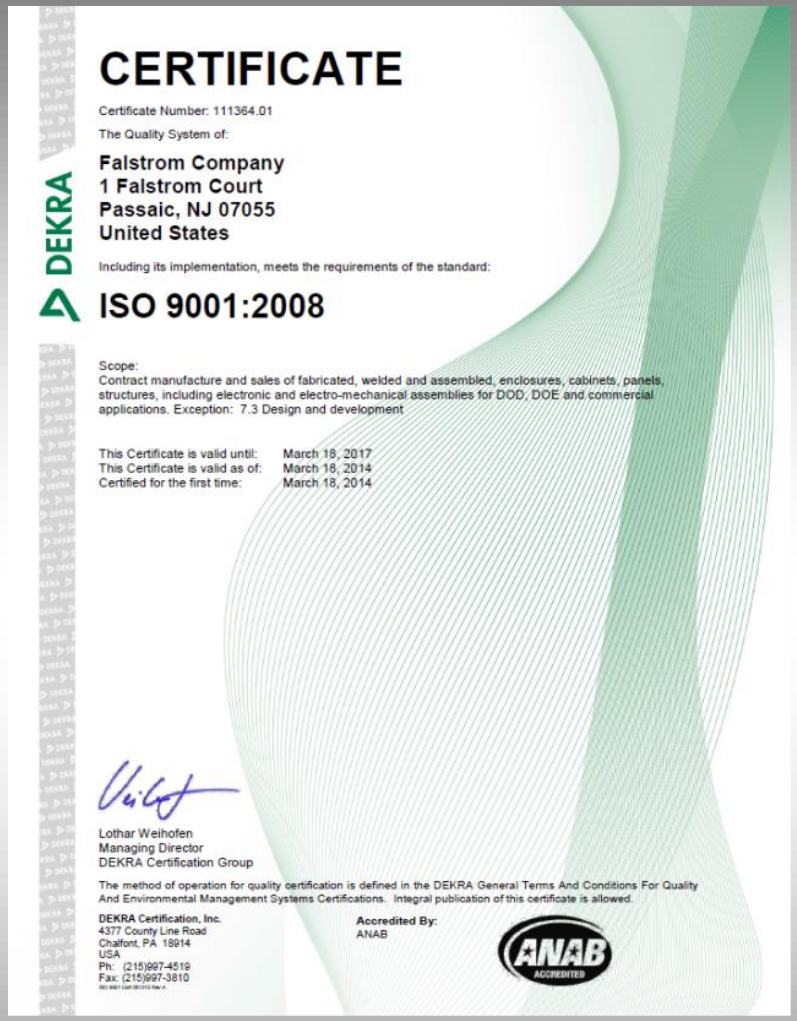




Compliance

- ITAR
- EAR
- Executed Nondisclosure

ISO 9001:2008 Certified



CERTIFICATE

Certificate Number: 111364.01

The Quality System of:

Falstrom Company
1 Falstrom Court
Passaic, NJ 07055
United States

Including its implementation, meets the requirements of the standard:

ISO 9001:2008

Scope:
Contract manufacture and sales of fabricated, welded and assembled, enclosures, cabinets, panels, structures, including electronic and electro-mechanical assemblies for DOD, DOE and commercial applications. Exception: 7.3 Design and development

This Certificate is valid until: March 18, 2017
This Certificate is valid as of: March 18, 2014
Certified for the first time: March 18, 2014

Lothar Weihofen
Managing Director
DEKRA Certification Group

The method of operation for quality certification is defined in the DEKRA General Terms And Conditions For Quality And Environmental Management Systems Certifications. Integral publication of this certificate is allowed.

DEKRA Certification, Inc.
4377 County Line Road
Chalfont, PA 18914
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Ph: (215)997-4519
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Accredited By:
ANAB

DEKRA

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