

Overview Energy Initiatives

Providing Systems and Solutions for Over 50 Years to Civil and Defense Customers.

Lockheed Martin is the world's leader in providing safety-critical nuclear instrumentation and control (I&C) systems for naval submarines, aircraft carriers and surface warships for over 50 years. For the past 30 years, Lockheed Martin has incorporated digital technology making I&C systems much more reliable, with finer controls, increased efficiency and longevity. Our systems are currently operating aboard all U.S. Navy nuclear submarines and aircraft carriers deployed worldwide.

Nuclear Instrumentation Systems

Systems that provide operator information and safety systems input relative to the neutron population within the reactor are identified as Nuclear Instrumentation Systems. Both in-core and ex-core monitoring equipment are included in this category. Lockheed Martin provides custom Nuclear Instrumentation Systems fit for purpose.

Safety System Hardware & Logic Design

- Providing systems that protect the environment, personnel, community and investment
- Over 50 years maintaining an excellent safety record

Primary Instrumentation & Control Systems

- Monitors and controls plant parameters such as water temperature, flow rates, water levels and plant pressures
- Performs autonomous analysis to alert operators
- Provides inputs to protective systems in off-normal conditions

Total Plant Control Solutions (ISM-X™)

- New generation of control and automation with innovative Intelligent System Manager
- Provides a fully integrated total plant control solution
- Employs open software architecture and distributed processing to reduce the labor and material costs of implementation while improving overall system performance
- Provides a variety of decision support applications for operators such as damage control automation and data trending and analysis



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Secondary/Steam Generator Control Systems

- Monitors and controls the water level in the PWR steam generator within optimal range
- Protects both the main turbine and steam generation systems from damage or malfunctions that may occur at water level extremes

Highly Integrated Operator Control Rooms

- Integrates operator control rooms with modern protective, control and monitoring information to maintain safe, reliable plant operations under all conditions
- Uses state-of-the-art human factors and human performance engineering to effectively address human resource needs
- Delivers the entire solution including engineering, manufacturing, installation and support
- True turn-key operation

Specialized Valve & Motor Control/ Control Rod Drive Electronics

- Custom systems designed to interface the control systems to plant components that require highly specialized and accurate control signals
- Provides command and control to move control rods in and out of the reactor core
- Valve and motor controllers are integral to the efficient and safe performance of the power plant
- Driven by primary I&C systems, these specialized systems provide valuable information to assist in performance enhancement and preventive maintenance strategies
- Provides solutions to unique and difficult problems encountered in both new plant construction and technology insertion retrofit activities

Specialized Integrated Sensors

- Employed in modern facilities to sense parameters as water temperatures and pressures, neutron population in the core, control rod position and containment integrity
- Specialized sensors that can be used in various systems allowing state-of-the-art answers to specific needs
- Uses devices such as high fidelity, ultrasonic, measuring systems allowing precision control
- Allows data fusion by information gathered from these innovative sensors and allows superior trending and proactive, predictive maintenance strategies

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Independent Verification & Validation (IV&V)

- Comprehensive IV&V services
- Verification and validation of mission critical systems
- In accordance with U.S. NRC Reg. Guide 1.168 and IEEE STD 1012-1998
- Planning and execution at all life-cycle design phases
- Activities are performed by an independent authority

Simulation & Training Services

- Immersive, collaborative and distributed simulation training experience
- Extends existing control room simulators to include the entire facility
- Interactive and realistic scenarios
- Visualization and planning for operations, construction and retrofits
- Engages single or multiple students in real-time activities
- Flexible for ease of updating and maintenance
- Runs on commercial off-the-shelf hardware and software

Cyber Security

- Security design, architecture and engineering
- Security risk assessments
- Red teaming and penetration testing
- Manage Security Operations Centers
- Security awareness and education
- Secure Code reviews
- Disaster recovery services

Training & Logistics

- Critical training and logistics operations performed to ensure safety and affordability
- Simulation-assisted engineering capabilities used to test manufacturing, production and workflow configurations
- Professionals prepared to make critical decisions and take the right actions to minimize risk

Intelligent Microgrid Solutions

- Efficient, reliable and secure energy system that integrates existing power generation assets with new or existing renewable power sources and manages energy demands
- Plug-n-play integration of wide variety of sources and loads
- Multi-mode options allow reconfiguration as assets or missions change
- Seamless fault coordination and recovery
- Automated centralized and distributed control