



Case Study

INDUSTRY

Aerospace

RESULTS

- Restored Reliability
- Improved Safety
- Operational Insight
- Reduced Costs and Risks
- Preserved National Asset

120ft

Centrifuge Arm Diameter

30 g

Maximum Acceleration

5K

Payload Capacity
(lbs)

60 +

Years of Service

Modernizing NASA's High Capability Centrifuge

NASA's Goddard High-Capacity Centrifuge (HCC) in Greenbelt, MD stands as a one-of-a-kind national monument built in the 1960s to support the Apollo space program. This facility simulates extreme launch and landing loads for spacecraft testing.

The Problem

Due to the antiquated legacy systems of the HCC, NASA faced increasing difficulty sourcing replacement parts, and the outdated controls lacked modern diagnostic tools or the ability to update software. The long-term reliability, maintainability, and safety of the HCC were at risk if NASA did not act quickly.

Our Solution



PLC Upgrade

Replaced the Automax system with a Siemens S7-1500 PLC, providing modern, flexible, and easily supported controls.



Operator Interface

Integrated a Siemens WINCC HMI that gives operators real-time visibility, intuitive controls, and details of fault diagnostics.



Motor Control Modernization

Installed Siemens DC drives to replace the antiquated DC field control system.



Safety Enhancements

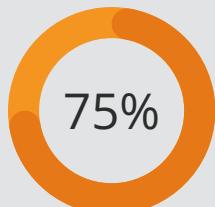
Implemented automatic shutdown protocols and advanced alarming to monitor safety and performance.



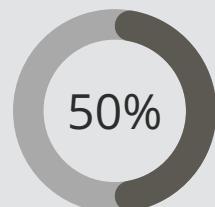
Case Study



System Uptime
Improvement



Diagnostic Time
Reduction



Maintenance Cost
Savings

TECHNOLOGY STACK

- **Siemens S7-1500 PLC:** Industrial-grade programmable logic controller
- **WINCC HMI:** Advanced human machine interface
- **Siemens DC Drives:** Precision motor control systems
- **Safety Monitoring:** Automated protection protocols

Results & Impact



Restored Reliability

Fully supported, modernized system eliminates uncertainty of obsolete hardware and ensures mission readiness



Enhanced Safety

Automated shutdowns and advanced monitoring protect personnel and valuable test payloads during operations



Operational Excellence

Detailed diagnostic information enables efficient troubleshooting and preventative maintenance strategies

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