

IRON BIRD

TEST SYSTEMS

IRON BIRD TEST SYSTEMS:

WHAT THEY ARE & WHY THEY MATTER

Iron Bird Test Systems are full-scale ground-based test platforms designed to validate and verify aircraft critical systems and their integration to each other in a controlled, repeatable environment. Known for their non-flying nature, these systems simulate real-world flight and ground conditions to ensure critical system, subsystem performance and integration before the first flight.

Key Capabilities & Features :

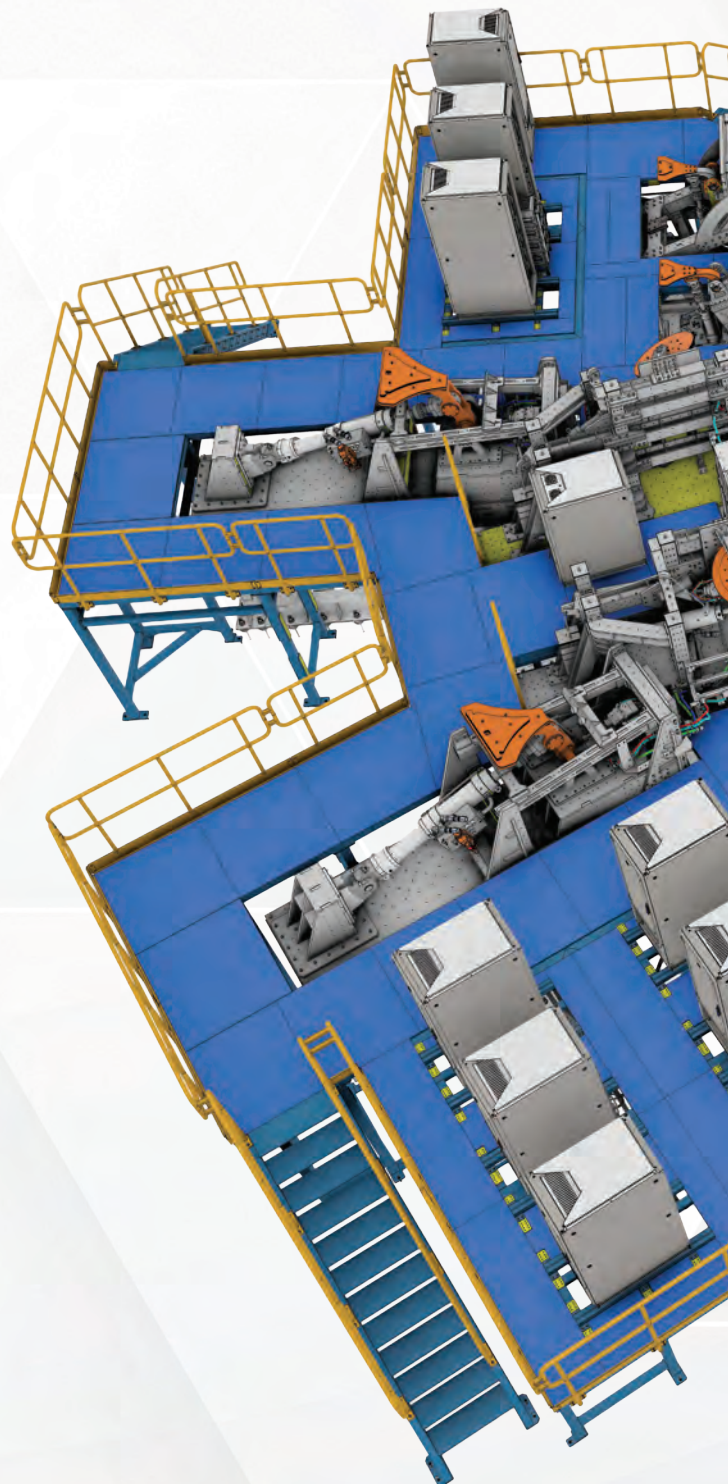
- 1. System Validation and Integration Testing :**
 - Validate and verify key systems such as hydraulic power, flight controls, landing gears, and utility systems.
 - Ensure seamless operation of interconnected systems, mitigating risks and minimizing delays.
- 2. Advanced Simulation :**
 - Replicate aerodynamic loads, environmental effects, and mission profiles.
 - Real-time insertion of hydraulic, electrical, and software failures to assess system resilience.
- 3. Real-Time Monitoring & Data Acquisition :**
 - High-fidelity instrumentation to capture hydraulic dynamics, electrical transients, and structural responses.
 - High-resolution data for pulsation, vibration, switching transients, temperature, and structural responses to ensure system accuracy.
- 4. Customizable Testing Tools :**
 - Pilot-in-the-Loop and closed-loop simulations tailored to test scenarios, with adaptability to evolving program needs.
 - User interfaces can be tailored to different test scenarios and user requirements.
- 5. Accelerated Development with Risk Mitigation :**
 - Supports faster development cycles while maintaining safety and reliability standards.
 - Reduces risks, costs, and delays by detecting and resolving issues early.

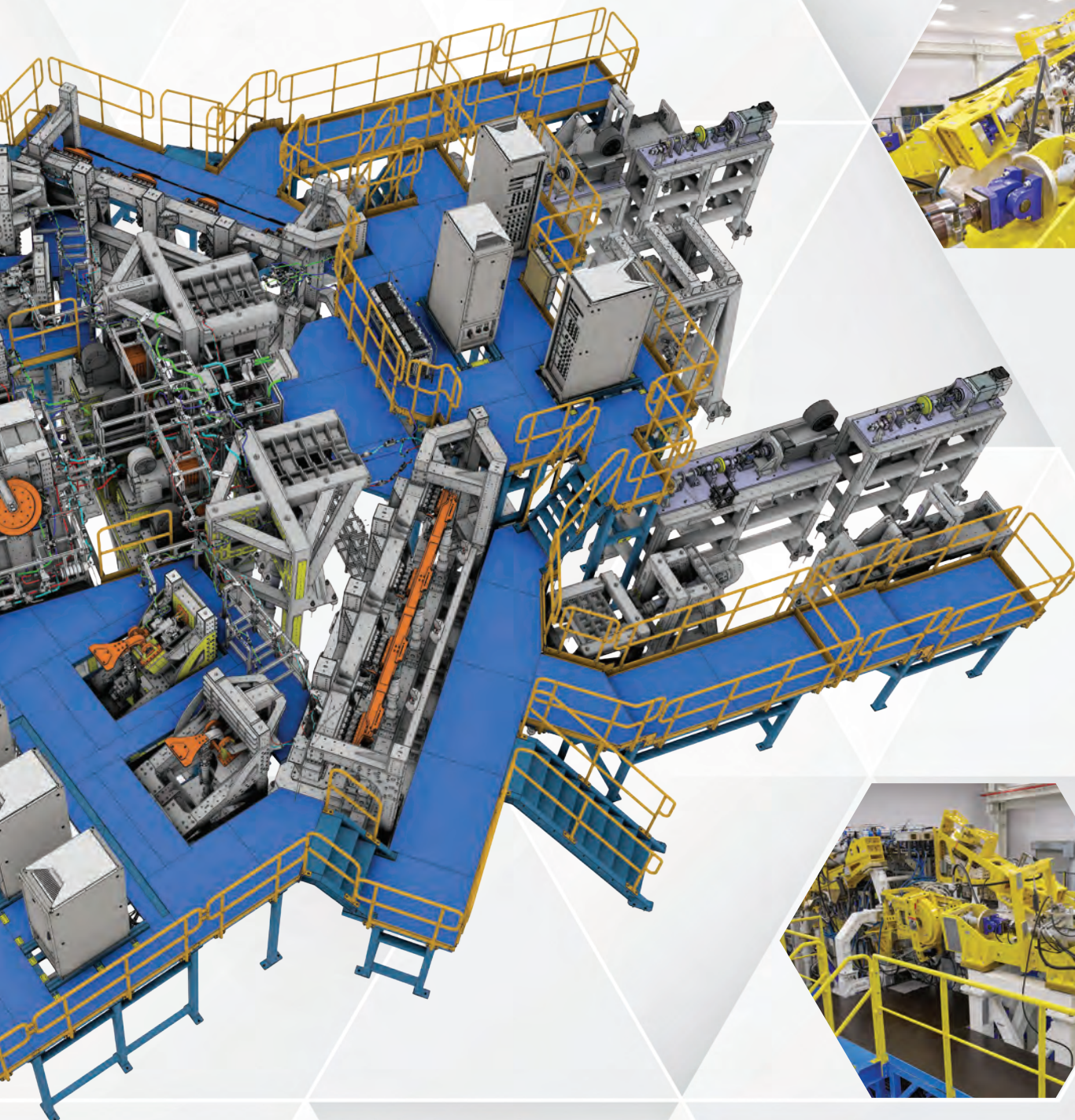
HOW IRON BIRD WORKS

Iron Bird platforms consist of major working components installed in their relative locations found on the actual aircraft, often constructed on a skeletal framework. With components exposed, they allow easy access for analysis and validation. Pilots “fly” the Iron Bird using computer simulations or mockup cockpit enabling comprehensive evaluations under various conditions.

Application Areas / Usage Scenarios

- Aircraft Development & Certification
- Advanced Simulation & Stress Testing
- Pilot-in-the-Loop Evaluation
- Cost-Effective Risk Mitigation
- In-Service Support & Upgrades





Detailed Test Programs :

The Iron Bird Test System supports a wide array of tests to validate individual components and integrated systems:

1. Hydraulic Power System Tests :

- Verification of pumps, valves, and actuators as an integrated system.
- Functional and performance testing under full mission profiles.
- Pressure drop, pump ripple, and vibration assessments.
- Cold start, leakage, and failure mode simulations.

2. Flight Control System Testing :

- Open and closed-loop integration, redundancy management, and uncommand motion tests.
- Mission profile simulations and built-in test (BIT) development.

3. Landing Gear and Utility Systems :

- Extension-retraction functionality tests under various loading conditions.
- Proximity sensor failure simulation and sequence malfunction scenarios.

Why Choose Iron Bird Test Systems ?

1. Enhanced Safety and Reliability :

- Early detection of system faults by replicating real aircraft conditions, ensuring safer flight operations before prototype testing.
- Enhances overall reliability through comprehensive verification of hydraulic, electrical, and flight control systems under realistic mission scenarios.

2. Cost and Time Efficiency :

- Reduces development costs by uncovering design issues on the ground, minimizing expensive flight test iterations.
- Accelerates program schedules through parallel testing of multiple systems in a controlled and repeatable environment.

3. Comprehensive Validation :

- The ability to integrate and test multiple systems in one environment ensures a smooth transition from development to operation.

4. Continuous Role Beyond Certification :

- Iron Bird platforms remain valuable even after an aircraft enters service, supporting troubleshooting and testing of system upgrades.

SIMULATING THE SKIES, ENSURING THE FLIGHT EXPERIENCE !

SIGNIFICANCE IN MODERN AVIATION

Even in the age of advanced computer simulations, Iron Bird platforms retain their importance. Iron Bird Test Systems bridge the gap between isolated component testing and real-world performance, providing an indispensable tool for:

- Aerospace manufacturers aiming for rigorous validation.
- Aircraft operators seeking reliable in-service troubleshooting.
- Developers accelerating innovation while maintaining safety standards



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