

Case Study

Integrated Cold Bend Test Chamber for Wire and Cable

Combined environmental conditioning and mechanical bending in a single system for Aerospace & Defense applications

CHALLENGE



A leading supplier of advanced wire and cable solutions for the Aerospace & Defense industry required a custom cold test chamber to support growing production demand and increasingly stringent validation requirements. Its products are engineered for demanding, mission critical applications where reliable performance must be maintained across a wide range of harsh environmental conditions.

To ensure product integrity, the organization relies on environmental test chambers to conduct wire and cable cold bend testing, evaluating flexibility and mechanical performance at low temperatures. These tests require precise temperature control paired with controlled mechanical bending to deliver consistent, repeatable results across multiple cable constructions and configurations.

SYSTEM HIGHLIGHTS

- Large Internal Workspace: 94" W x 52" D x 95" H, supporting multiple samples and test configurations
- Temperature Range: -80°C to +85°C to support cold bend testing and environmental conditioning
- Integrated Cold Bend Test Configuration: Three (3) power-driven mandrel systems operating from 0.5 to 3.0 RPM, enabling controlled wire and cable bending within the conditioned environment





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SOLUTION



A custom cold bend test chamber for wire and cable applications was delivered as a fully integrated solution. Unlike standard environmental test chambers, this system is specifically engineered with integrated, power driven mandrel systems that enable controlled bending of wire and cable samples directly within the conditioned environment.

By integrating environmental conditioning and mechanical bending into a single platform, the system eliminates the need for external fixtures or secondary equipment, reducing complexity and setup time. As a result, the customer expanded cold bend testing capacity while maintaining consistent test methods, minimizing variability between runs, and improving overall testing efficiency and throughput.

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SYSTEM HIGHLIGHTS

- **Mandrel Flexibility:** Nine (9) interchangeable mandrel sizes to accommodate a range of wire and cable diameters and test requirements
- **Torque Capacity:** Mandrel drive systems provide 260-300 inch-pounds of torque, supporting consistent mechanical loading during testing
- **Internal Chamber Lighting:** Improves visibility for test setup and monitoring
- **3" Access Port:** Allows sensor routing and instrumentation without disrupting chamber conditions