



CRJ200 Regional Jet Receives World-Class Aftermarket Support

Location:

Jackson, Mississippi

Segment:

Commercial
Aerospace

Challenge:

Reliability issues were leading to migration of aftermarket business to third-party maintenance providers and PMA manufacturers.

Solution:

Design improvement was identified and an upgrade program was launched, demonstrating the effectiveness of tools, processes and critical measurements developed by the project team.

Results:

Deployment of the CRJ Engine Driven Pump program management process and the resulting program success have allowed Eaton to demonstrate world-class aftermarket support.

Background

In the 1980s, Eaton's Aerospace Group began supplying the engine-driven hydraulic pumps (EDP) for the Bombardier CRJ 100/200 regional passenger jets. (The EDP is mounted on the engine and is the main source of hydraulic pressure for the aircraft.) The new aircraft was well received by the civil aviation community, and Bombardier delivered 1,150 aircraft to various airlines around the globe.

As the aircraft fleet matured, aircraft system issues resulted in declining reliability for the EDPs. Soon reliability fell below the operators' acceptable level, resulting in significant operational and financial impact at the airlines. In addition to EDP performance issues, the levels of service and support, including price, part delivery performance, repair turnaround time and communications, led to a migration

of the aftermarket business to third-party maintenance providers and PMA manufacturers.

Challenges

Working directly with Bombardier's engineering team, Eaton launched an improvement program in 2007 for the Bombardier CRJ EDP. However, despite significant efforts by both Eaton and Bombardier, an agreement could not be reached to resolve the EDP reliability issue.

To resolve airline operators' concerns regarding EDP performance, Eaton moved forward and acquired the aircraft hydraulic system architecture and built a hydraulic circuit to simulate the aircraft system. Following extensive testing, Eaton was able to duplicate the pump failure mode experienced on the aircraft. This allowed Eaton's engineering team to identify a

product improvement that would improve pump reliability by tuning the pump to the aircraft system.

Working with Atlantic Southeast Airlines, Eaton successfully conducted an in-service flight test of the upgraded pump configuration. As Bombardier could not support the approval of the new design in a timely manner, Eaton sought and received FAA Designated Engineer Representative approval for the design.

Once the design improvement was in place, the Aerospace Group's main challenge was regaining the trust of customers by meeting their expectations for excellent customer support for repair services, including major improvements in turnaround times and on-time delivery.

With lifecycle cost and improved reliability as key selling points,



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the program's success depended on improvements implemented by the Aerospace Group's Hydraulic Systems Division in Jackson, Miss., where EDPs for the Bombardier CRJ are manufactured. Their challenge was to execute an effective program management plan.

Solution

As an extension of the Sales, Inventory, Operations and Planning (SIOP) process, a program-management team was formed with employees from operations, inventory forecasting, internal customer support and external customer sales.

The core team met at the onset to discuss pre-program launch infrastructure requirements, including support inventory forecast and internal capabilities and layout, as well as the program rollout of plans and actions, expected unit volumes and timelines. This was followed by communicating the requirements to each functional team at the site and obtaining their commitment to make the program a success.

The upgrade program was successfully launched with several large CRJ operators, demonstrating the effectiveness of tools, processes and critical measurements developed by the project team.

"This improvement was a result of the ownership and passion of the direct team and every employee at the site to make the program a great success," said Lee Miller, division aftermarket manager of the Aerospace Group's Hydraulic Systems Division. "Since the launch they've continued to produce results that delight our customers."

Results

The new program approach, coupled with vastly improved product performance and reliability, resulted in an effective strategy to recoup Eaton's EDP business for the Bombardier CRJ.

Since the onset of the first receipt in October 2007, Eaton's Hydraulic Systems Division in Jackson, Miss., has sustained an on-time delivery performance exceeding 98%. By the end of 2010, the Jackson, Miss. facility had upgraded 650 Vickers™ brand PV3-044-48 model pumps across the CRJ fleet, with an average 11-day turnaround time.

Since program launch in October 2007, Eaton has recaptured lost EDP business through significant improvements in component reliability and customer service and support solutions. Eaton revived the revenue stream for EDP business for the Jackson, Miss. facility, along with associated component repair work, for greater than 60% of the worldwide fleet of CRJ 100/200 aircraft. Additional agreements are currently being negotiated with other airlines that operate these CRJ aircraft.

From a customer-support standpoint, Eaton consistently outperforms competitors by offering a seamless process for airlines that has resulted in improved time savings and customer satisfaction. On-time delivery and turnaround times are above the industry's 99th percentile.

The deployment of the CRJ EDP program management process and the resulting program success have allowed Eaton to demonstrate world-class aftermarket support. This success has led to new opportunities for

reliability improvements for AC motorpumps on the Bombardier CRJ fleet.

By applying the same program management processes to improve other repair and support programs, Eaton's Aerospace Group has reasserted itself as a leader in aerospace aftermarket support.

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