



Gulfstream



# Product Support Survey

by Matt Thurber

A bit of a shakeup took place in this year's **AIN** Product Support Survey for the aircraft manufacturers, with Gulfstream back on top in the combined overall average for newer and older aircraft. Gulfstream's 8.4 average (out of a possible 10) for its large-cabin models was 0.1 points higher than last year and vaulted it back into first place. Last year, Gulfstream's large-cabins came in second place.

Dassault Falcon and Embraer tied for second place at 8.3, representing a 0.2 jump for Dassault and a 0.1 drop for Embraer. Dassault has been making steady progress and moved up from third place last year to second place this year. Gulfstream's midsize jets scored an 8.2 overall average rating this year, up 0.2 from last year, putting them into third place.

Also moving up in the scores this year are Bombardier's Challengers, up 0.1 to 8.0 but in fourth place like last year, and tied with the Global jets. The company's Learjets remain at 7.7, but these moved up to fifth place from last year's seventh. Textron Aviation's Citations, while dropping 0.1 this year, tied for fifth place with Learjet, up from last year's sixth place.

There were many ties this year, and in sixth place this year for the overall average of newer



and older aircraft are Textron Aviation's Hawker and Premier/Beechjet/Hawker 400.

Maintaining their steady lead across the years, Mitsubishi's MU-2 series topped the turboprops' overall averages with a 9.1, down 0.1 from last year. Pilatus came in second with the same ranking as last year, at 8.2. Textron Aviation's King Airs managed a 0.2 climb to 7.4 this year.

Daher's TBMs did not receive the minimum number of ratings to be included in the final turboprop results.

The helicopter manufacturers are also in the same order as last year, with Bell in the lead but down 0.1 to 7.1, followed by Airbus Helicopters (also down 0.1, to 7.0) in second place. Leonardo remains in third place at 6.9 (down 0.1), but Sikorsky is closing the gap with a large jump from last year, up 0.5 to 6.8.

## Newer Jets

For jets that were delivered in the past 10 years, Dassault and Gulfstream large-cabins tied for first place, ranked at 8.5. This number is a slight drop from Gulfstream's 8.6 last year, but a larger 0.2 move up for Dassault, which was in third place last year.

In second place, Embraer scored a rating of 8.4, exactly matching last year's number and ranking. Gulfstream's midsize jets came in third place at 8.2, up 0.2 from last year.

Bombardier's Challengers moved up significantly in this year's rankings, to fourth place and 8.1, up 0.3 from last year's sixth place. The company's Globals ranked in fifth place, down 0.2 to 8.0 from fourth place last year.

Textron Aviation's Citations maintained the 8.0 overall average from last year, ranking in fifth place, also the same as 2017, and tied this year with the Globals.

In sixth place were Bombardier Learjets at 7.6 (up 0.3), followed by Textron Aviation's Hawkers at 7.2 (down 0.5).

## Older Jets

Gulfstream large-cabins received the top score, an 8.2, in the older jets' overall average, a 0.6 jump from last year's fourth-place ranking. Embraer secured a second place finish with 8.1 (it wasn't listed on last year's chart due to not receiving enough responses). In third place in the older jets category were Bombardier's Globals, at 8.0, up slightly from last year's 7.9 but at the same time down from last year's second place.

With a 7.8, the Learjets came in fourth place, down 0.2 from last year and also a drop from first place in the 2017 rankings. Dassault Falcon tied for fourth place this year, scoring the same as last year but down one place from third in 2017.

With a 7.7 (down from 8.0 last year), Bombardier's Challengers ranked in fifth place; last





year this marque scored first place along with its Learjet siblings.

Textron Aviation's Citations and Premiers/ Beechjets/Hawker 400s both saw scores drop from last year, down 0.3 for the Citations and 0.8 for the out-of-production light jets. The regular Hawkers saw a 0.3 increase.

## Newer Turboprops

Pilatus remains the leader in this category, bumping up its overall ranking from last year's 8.1 to 8.2. Textron Aviation's King Airs garnered the same 8.0 and second place as last year.

## Older Turboprops

In the older turboprops category, there were no surprises this year, with perennial favorite Mitsubishi's MU-2s holding their big lead at 9.1 (down 0.1 from last year), followed by Textron Aviation's King Airs (7.2, up 0.4 from last year). ■

### Survey Rules and Methodology

As with AIN Publications' previous annual Product Support Surveys, the objective this year was to obtain from the users of business jets, turboprop airplanes and turbine-powered helicopters statistically valid information about the product support provided by business aircraft manufacturers over the last year and to report this information to our readers. The ultimate goal of the survey is to encourage continuous improvement in aircraft product support throughout the industry.

This survey was conducted via a dedicated website, created by **AIN** from the ground up to provide improved ease of use and to encourage greater reader participation. **AIN** emailed qualified readers a link to the survey website and also sent a postcard invitation with login credentials to the survey website.

The survey website was open from May 3 to June 9. Respondents were asked to rate individual aircraft and provide the tail number, age (less than 10 years old or more than 10), primary region of service and whether they used factory-owned or authorized service centers, or both. Respondents were also asked to rate, on a scale from 1 to 10, the quality of service they received during the previous 12 months in the following categories:

- » **Factory-owned Service Centers**—cost estimates versus actual, on-time performance, scheduling ease, service experience.
- » **Authorized Service Centers**—same as above.
- » **Parts Availability**—in stock versus back order, shipping time.
- » **Cost of Parts**—value for price paid.
- » **AOG Response**—speed, accuracy, cost.
- » **Warranty Fulfillment**—ease of paperwork, extent of coverage.
- » **Technical Manuals**—ease of use, formats available, timeliness of updating.
- » **Technical Reps**—response time, knowledge, effectiveness.
- » **Overall Product Reliability**—how the product's reliability and quality stack up against the competition.

This year we removed the category for Maintenance Tracking Programs as most tracking is now done by third-party providers.

Respondents were also asked to recognize individuals who have provided them with exceptional product support and service. The full list of these people is available online at [www.ainonline.com/above-beyond-2018](http://www.ainonline.com/above-beyond-2018).

The 2018 AIN Product Support Survey results for aircraft are published in this issue, avionics will be featured next month and engines will follow in October. ■





# What Have You Done For Me Lately?

## Highlights of product support news from aircraft OEMs during the past year

### Airbus Helicopters

Airbus Helicopters has added new digitalized options in its HCare service. These include Digitize, which includes new applications and data-as-a-service packages focused on safety management, maintenance, and operations; Optimize, “includes data analytics services such as helicopter flight data monitoring to identify the exposure to risks in flight, or a parts and stocks forecast for optimizing costs”; and Achieve, where Airbus’s data-analysis experts help identify product improvements or develop solutions according to customer-set targets.

Airbus Helicopters and Astronautics have developed the Astronautics Air Ground Communications System (AGCS), which provides cybersecurity protection of critical avionics from non-authorized access.

All new Airbus rotorcraft delivered in the U.S. and Canada will include Traxxall’s aircraft maintenance-tracking and inventory-management system.

Twenty-five Airbus Helicopters customer centers worldwide are now authorized to sell and install BLR Aerospace’s FastFin, which is also available as an option on factory-new Airbus H125s.

Safran has extended the TBO on its Arriel 2D engines that power Airbus H125 and H130 models by 25 percent to 5,000 hours. For H125s and H130s delivered in 2018, engine warranty is now three years and 2,000 hours, up from two years and 1,000 hours.

### Bell

Bell is continuing to develop a more streamlined product support experience for customers after reorganization of the company’s commercial business began earlier this year. Bell intends for the reorganization to result in higher levels of integration, network partnership, and customer satisfaction. One method for improving communication will be to consolidate customer feedback data through features such as chat rooms where customers will be able to log in and share their input.

Bell’s factory-owned service centers in Miami and Piney Flats, Tennessee, received FAA Part 145 certification for Bell’s newest helicopter, the 505 Jet Ranger X.

To expand service options, Bell is helping international MROs become authorized





Category & Overall Average Ratings by Newer and Older Aircraft	Overall Average 2018	Overall Average 2017	Rating Change from 2017 to 2018	Factory-owned Service Centers	Authorized Service Centers	Parts Availability	Cost of Parts	AOG Response	Warranty Fulfillment	Technical Manuals	Technical Reps	Overall Aircraft Reliability
<b>Newer Business Jets</b>												
Dassault (Falcon)	<b>8.5</b>	8.3	0.2	7.6	8.3	<b>9.0</b>	7.1	<b>8.9</b>	<b>9.1</b>	8.6	9.2	<b>9.0</b>
Gulfstream (G300-G650)		<b>8.6</b>	-0.1	8.0	7.7	8.6	6.8	<b>8.9</b>	9.0	8.9	9.1	<b>9.0</b>
Embraer (Phenom, Legacy, Lineage)	8.4	8.4	0.0	6.8	8.1	8.0	<b>7.6</b>	8.4	8.8	<b>9.0</b>	<b>9.3</b>	<b>9.0</b>
Gulfstream (G100-G280)	8.2	8.0	0.2	7.5	<b>8.4</b>	8.0	7.1	8.2	8.5	8.5	8.8	8.9
Bombardier (Challenger)	8.1	7.8	0.3	7.4	8.2	7.9	7.4	7.9	8.3	8.3	8.9	8.8
Bombardier (Global)	8.0	8.2	-0.2	8.0	8.2	7.9	6.5	8.3	8.0	7.9	8.6	8.6
Textron Aviation (Citation)		8.0	0.0	7.5	8.3	7.8	7.0	7.7	8.4	8.4	8.7	7.9
Bombardier (Learjet)	7.6	7.3	0.3	<b>8.6</b>	8.3	6.6	6.0	7.3	7.3	7.6	8.2	8.7
Textron Aviation (Hawker)	7.2	7.7	-0.5	7.1	7.7	6.4	5.7	7.3	7.4	7.4	8.1	8.2
<b>Older Business Jets</b>												
Gulfstream (GII-GV)	<b>8.2</b>	7.6	0.6	<b>8.0</b>	7.4	8.2	6.0	8.3	8.3	8.9	<b>9.2</b>	<b>9.2</b>
Embraer (Phenom, Legacy, Lineage)	8.1	N/A	N/A	6.4	6.5	<b>8.5</b>	<b>7.3</b>	<b>8.7</b>	8.0	<b>9.2</b>	8.8	9.0
Bombardier (Global)	8.0	7.9	0.1	7.4	<b>8.0</b>	8.0	6.5	8.1	<b>8.6</b>	8.2	9.0	8.5
Bombardier (Learjet)	7.8	<b>8.0</b>	-0.2	7.1	7.1	7.8	7.2	8.1	7.8	8.3	8.3	8.3
Dassault (Falcon)		7.8	0.0	6.4	7.9	8.2	6.0	7.9	7.7	8.3	8.7	8.5
Bombardier (Challenger)	7.7	<b>8.0</b>	-0.3	7.4	7.7	7.4	6.1	7.7	7.8	7.9	8.3	8.7
Textron Aviation (Citation)	7.3	7.6	-0.3	6.6	7.4	7.6	5.9	7.0	7.1	7.9	8.1	8.4
Textron Aviation (Premier, Beechjet 400/400A, Hawker 400XP)	6.6	7.4	-0.8	6.1	6.4	6.5	4.8	6.8	5.4	7.3	7.1	8.5
Textron Aviation (Hawker)	6.4	6.1	0.3	5.6	7.1	5.4	5.4	6.3	5.8	7.0	7.0	7.9
<b>Newer Turboprops</b>												
Pilatus (PC-12)	<b>8.2</b>	<b>8.1</b>	0.1	<b>8.5</b>	6.2	<b>8.3</b>	<b>7.3</b>	<b>8.2</b>	<b>8.5</b>	8.4	<b>8.8</b>	<b>9.6</b>
Textron Aviation (King Air)	8.0	8.0	0.0	8.2	<b>7.8</b>	7.8	7.0	7.5	8.2	<b>8.5</b>	8.1	8.7
<b>Older Turboprops</b>												
Mitsubishi (MU-2, Solitaire, Marquise)	<b>9.1</b>	<b>9.2</b>	-0.1	<b>9.3</b>	<b>9.0</b>	<b>8.7</b>	<b>8.0</b>	<b>9.1</b>	<b>8.8</b>	<b>9.4</b>	<b>9.7</b>	<b>9.7</b>
Textron Aviation (King Air)	7.2	6.8	0.4	6.7	6.7	7.7	5.3	7.7	7.1	7.3	6.8	8.7
<b>Rotorcraft (all age Rotorcraft)</b>												
Bell	<b>7.1</b>	<b>7.2</b>	-0.1	4.9	6.1	<b>6.8</b>	<b>5.7</b>	<b>7.1</b>	<b>6.8</b>	<b>8.1</b>	<b>8.1</b>	<b>8.1</b>
Airbus Helicopters	7.0	7.1	-0.1	<b>7.0</b>	<b>7.2</b>	6.7	<b>5.7</b>	6.8	6.7	7.5	7.8	7.6
Leonardo	6.9	7.0	-0.1	6.3	<b>7.2</b>	6.7	<b>5.7</b>	<b>7.1</b>	6.6	7.3	7.3	7.8
Sikorsky	6.8	6.3	0.5	6.6	6.5	6.7	5.2	7.0	6.5	7.2	7.5	7.7

Listed in order of 2018 overall average. Ties are listed alphabetically. **Bold** indicates highest number in each category.





maintenance centers (AMC). Launch customers for the new AMC network were Rocky Mountain Rotors of Belgrade, Montana, and China's Reignwood Investments.

Customer Advantage Plan members now enjoy extended warranty coverage for CAP products, to three years and 2,000 hours and up to three years for labor.

## **Bombardier Business Aircraft**

New Smart Services allows operators of Bombardier jets to customize a cost-per-flight-hour program to fit their needs. Smart Services is available for new jets and those up to 20 years old and bundles Smart Parts with optional landing gear overhaul, cabin systems components, scheduled labor, and unscheduled labor due to part removals from normal operation, according to Bombardier.

New parts depots opened in Miami and Tianjin, China.

Bombardier has added a Challenger 300 to its mobile response team, and the jet will be headquartered in Frankfurt, Germany. This jet joins a mobile response Learjet 45 based in Chicago. Bombardier's total mobile response truck fleet now numbers 23, and it has added six new line maintenance stations in Europe, along with opening maintenance control centers in Wichita, Kansas, and Linz, Austria.

Bombardier service centers now offer new engine service capabilities for Challenger 300 and 350 operators, through an agreement with Turbine Engine Specialists.



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## **Daher**

Daher's new Me & My TBM Android and iOS app, available for owners and operators of 2018 and later TBM 910 and 930 single-engine turboprops, simplifies downloading flight data and updating Camp Systems maintenance-tracking and facilitates sending information to Daher's TBM Care support team. The app automatically sends aircraft counter updates, as well as trend and report data files, to Camp. The ability for TBM Care to view and analyze flight parameters less than an hour after conclusion of a flight furthers Daher's support capabilities, the French aircraft manufacturer said.

## **Dassault Aviation**

Dassault Falcon Services celebrated its 50-year anniversary in 2017.

Maintenance intervals have been extended on most models. On the Falcon 7X, the A inspection is now 12 months/800 flight hours (matching the 8X intervals). The 50/50EX A inspection interval is now 12 months/500 flight hours. Both the 900 and 2000 series A inspections are now 12 months/800 flight hours.

In late 2018, Dassault's new spares warehouse will open. The facility is located between Le Bourget and Charles de Gaulle airports and will replace the existing Le Bourget facility.

Dassault added Aero-Dienst in Vienna, Austria, as an authorized service center. Aero-Dienst







can thus provide line maintenance, AOG support, and other services for the Falcon 900 and 2000 series as well as the 7X and 8X. Also joining the Dassault authorized service center network was Skyservice Toronto, which is authorized for line service on the 900EX EASy and 2000EX EASy series.

Technicians learning to service Falcon jets have been able to use its 3D immersive practical training technology at the Dassault Training Academy in Bordeaux-Mérignac, and now technical representatives at the St. Cloud Command Center can also put this technology to work.

## **Embraer**

Last December, Embraer merged its service and support activities into a single business unit. Embraer Service & Support is a unified organization that now looks after all Embraer aircraft, bringing together support operations for the commercial, defense, and executive jet segments.

Embraer based a team of technicians from its Singapore Hawker Pacific authorized service center at Subang Airport in Malaysia to support business jet growth there. The Australian company is Embraer's longest-running authorized center in the Asia-Pacific region. Its facility at Singapore Seletar Aerospace Park is certified to service the whole range of Embraer's business jets.

Embraer selected Aero Baires as its first authorized service center in Argentina, based at Aeródromo de San Fernando in Buenos Aires. Argentina's local aeronautical authority, ANAC, certified the service center for scheduled and unscheduled maintenance for the Embraer Phenom 100 and 300.







Embraer selected West Star Aviation for full landing gear support to include warranty repair, overhauls, and AOG and engineering services at its Grand Junction, Colorado, and Chattanooga, Tennessee facilities.

## **Gulfstream**

Gulfstream has rebranded its product support organization to Customer Support, a move that the Savannah, Georgia manufacturer says better emphasizes its focus on the customer. The organization encompasses more than 4,700 people, 30 factory-owned and authorized maintenance facilities worldwide, and a spare parts inventory valued at more than \$1.6 billion. Gulfstream notes its continual expansion in this arena with new products, pointing to the recently introduced Aircraft Ownership Service maintenance and operations program. This program is tailored to the customer's requirements, and could include support, operations, and maintenance.

To further support Gulfstream operators around the globe, the company established a center dedicated to the resolution of aircraft-on-ground (AOG) issues. The technical operations contact center is located within the Gulfstream Savannah service center.

Gulfstream is expanding its customer support presence in Europe, adding a new factory-owned service center at TAG Farnborough Airport to operations at London-area Luton and Stansted airports.

Gulfstream is building a 202,000-sq-ft service center on the east side of Savannah/Hilton Head International Airport, complementing its existing 679,199-sq-ft main Gulfstream Savannah Service Center. Completion is expected in the second-quarter of 2019.

The Gulfstream service center at Beijing Capital International Airport has expanded operating hours, with a second shift from 3:30 p.m. to midnight Monday through Friday to better support Gulfstream operators in the region.

## **Leonardo**

The AW139 fleet of more than 900 helicopters has logged more than two million flight hours. The helicopter is built both in the U.S. and Italy, serving a customer base that includes offshore transportation, EMS, search and rescue, government agencies, and VIP operators.

## **Mitsubishi**

Mitsubishi Heavy Industries America (MHIA) launched its Aircraft Product Support Division 20 years ago, taking over MU-2 support from Beechcraft/Raytheon. The Japanese manufacturer continues strong support of the 260 MU-2s that are still operating,





even though production ended more than 30 years ago.

More than 40 MU-2s and 249 attendees came to MHIA's free Pilot's Review of Proficiency seminar in April. The next PROP is scheduled for 2020.

The support division established a safety committee to address "current demands of the aircraft and flight training."

In addition to upgrades such as an MU-2 angle-of-attack indicator, MHIA is enhancing spare parts availability "by optimizing the supply chain."

## **Piaggio Aerospace**

Improvements to the P.180 Avanti airframe that led to the new EVO model are being offered for older Avantis, including a new Magnaghi landing gear with a 15-year, 15,000-landing TBO.

Avanti operators can now trial the new customer web portal in Piaggio's customer relationship management software. This will allow users to access Piaggio's support team and monitor status of requests.

Piaggio has renewed its service center agreement with Banyan Air in Fort Lauderdale,





Florida. Banyan is host to the Piaggio America South Florida customer support division, which also houses a warehouse with more than 16,500 parts.

EVO buyers have the option of signing up for a new per-flight-hour airframe maintenance program, Forward Wing Care.

## **Pilatus Aircraft**

Pilatus has extended scheduled maintenance intervals on its PC-12 turboprop to 300 hours from 100 to 150 hours. The extension is expected to lower scheduled maintenance labor time by about 20 percent for operators that fly 300 hours per year. This could reach 40 percent for PC-12s that log more than 800 hours per year.

Pilatus appointed Cutter Aviation's Denver base as a Pilatus sales and service center for the Southwest U.S.



## **Sikorsky**

Sikorsky has focused on improving helicopter availability by reducing AOG turn times. In 2016, AOG turnaround time dropped 66 percent and total AOG volume dropped 72 percent. Since then, turnaround time has dropped a further 20 percent thanks to improved parts forecasting and stocking.

Last year, Sikorsky added Thai Aviation Services to its authorized service center ranks, bringing the total worldwide to 23.





S-92 major inspection intervals have grown to 1,500 hours, up from 1,250, thanks to customer input to the maintenance steering group and HUMS data.

Sikorsky has relocated and expanded its Brazilian forward stocking facility, from Multiterminais to Barra da Tijuca, near Jacarepaguá Airport, which puts the facility closer to Brazilian operators and is expected to reduce the parts receiving turnaround time from 24 hours to less than two. Also in Brazil, Sikorsky is adding rotor blade repair capability for the S-92, which will be done by Composite Technology do Brasil, a joint-venture between Sikorsky-owned CTI and Líder Aviação.

Combined Overall Average Ratings of Newer and Older Aircraft	Overall Average 2018	Overall Average 2017	Rating Change from 2017 to 2018
<b>Jets</b>			
Gulfstream (GII-GV, G300-G650)	<b>8.4</b>	8.3	0.1
Dassault (Falcon)	8.3	8.1	0.2
Embraer (Phenom, Legacy, Lineage)		<b>8.4</b>	-0.1
Gulfstream (G100-G280)	8.2	8.0	0.2
Bombardier (Challenger)	8.0	7.9	0.1
Bombardier (Global)		8.1	-0.1
Bombardier (Learjet)	7.7	7.7	0.0
Textron Aviation (Citation)		7.8	-0.1
Textron Aviation (Hawker)	6.7	6.9	-0.2
Textron Aviation (Premier, Beechjet 400/400A, Hawker 400XP)		7.5	-0.8
<b>Turboprops</b>			
Mitsubishi (MU-2, Solitaire, Marquise)	<b>9.1</b>	<b>9.2</b>	-0.1
Pilatus (PC-12)	8.2	8.2	0.0
Textron Aviation (King Air)	7.4	7.2	0.2
<b>Rotorcraft</b>			
Bell	<b>7.1</b>	<b>7.2</b>	-0.1
Airbus Helicopters	7.0	7.1	-0.1
Leonardo	6.9	7.0	-0.1
Sikorsky	6.8	6.3	0.5

\* Listed in order of the 2018 overall average. Ties are listed alphabetically.

**Bold** indicates highest number in each category





## **Textron Aviation**

Textron has launched an upgraded warranty claims processing website, designed to provide a simple experience for customers. Upgrades include improved claims processing and post-purchase support.

Textron Aviation has removed charges on rotatable parts for overhaul, which reduces unexpected charges for the customer.

The support organization has hired 50 engineers to support mobile service unit (MSU) teams that are part of Textron Aviation's 1Call support center. When two MSU technicians drive to the location where an aircraft is grounded, the engineers assigned to that particular team dig into the problem and help troubleshoot. By the time the technicians arrive at the aircraft, they should know enough about the problem to implement an immediate repair without having to spend more time troubleshooting.

This year marks Textron Aviation's fifth year in its investment strategy for Europe product support efforts, which ramped up in 2012 with the opening of facilities in Doncaster, UK; Dusseldorf, Zurich; and Valencia, Spain. The company has opened a new



Textron Aviation





line-maintenance station at London Biggin Hill Airport, putting its services closer to operators of Cessna Citations, Beechcraft King Airs, and Hawkers based at, or visiting, the fast-growing business aviation airport. A team of four mechanics has been delivering drop-in, AOG, and minor scheduled maintenance support since earlier this year. ■

<b>By the Numbers 2018</b>	
Respondents who rated aircraft	941
Respondents who completed the survey in its entirety	826
Aircraft rated	2,761
Aircraft models receiving ratings	146
Minimum ratings required to be included in the data	20

**The following respondents were randomly selected as winners of \$500 Amazon gift card for participating in AIN's Product Support Survey.**

<b>Name</b>	<b>Title</b>
Russell Appleton	Chief pilot
Craig Carey	Captain
Peter Milan	Pilot
Thomas Greff	Chief pilot
David Moore	Captain