Stringers and Frames
Northrop Grumman is an industry leader in high-quality, automated composite manufacturing. A technology built for the next generation commercial aircraft, Northrop Grumman’s patented automated stiffener forming machine (ASFM) provides lower cost, higher quality stiffeners, with superior compaction and repeatability compared to those produced using the previous industry-standard, hand lay-up process. Northrop Grumman ASFM technology is also unique in the flexibility of its design. Providing both a linear and radial option, the ASFM can fabricate stringers and the frames, which make up the skeleton of a commercial aircraft fuselage shell, at production rates of nearly 10 times that of the traditional lay-up process.

Facts at a Glance

- Northrop Grumman makes 60% of frames and 100% of stringers for the Airbus A350 XWB
- Northrop Grumman’s patented Automated Stiffener Forming (ASF) process is utilized to manufacture 40 km (25 miles) per month at a 12 rate
- Northrop Grumman uses more than 4,930 individual tools to manufacture stringers and frames for the A350 XWB -900 & -1000
- 100% of stringers and frames are inspected using Northrop Grumman’s designed and patented NDI systems
Composite Fan Cases
Northrop Grumman delivers affordable innovation that drives next-generation commercial engines. A world-leader in the design, development and production of automated processes for large diameter composite structures, Northrop Grumman applies this expertise to the next-generation commercial aircraft engine market. Northrop Grumman provides a light-weight option to traditional metal structures in the production of composite fan containment cases and composite aft cases as demonstrated on the GEnx™ and Rolls-Royce Trent XWB engines. The benefit of weight reduction provides greater fuel efficiency, increased payload capacity and extended range of the aircraft.