



believes there is a market for a new 90-seat turboprop, and is already developing an engine suitable for such an aircraft.

“P&WC has confidence in the 90-passenger regional turboprop market and we will be ready when an aircraft is launched,” says Richard Dussault, vice president of marketing at P&WC. “We are completing the demo programme for our new Next Generation Regional Turboprop (NGRT) engine and will continue to look at technology insertions.

“The NGRT engine will incorporate our latest technologies to serve as a fully integrated powerplant system platform for a 70-100 plus passenger turboprop,” continues Dussault. “The market wants significant improvements in performance and reliability over current engines. A clear differentiator is competitiveness and maintaining a fuel burn advantage over the next generation jets. Our NGRT will be a totally new centreline engine, which we believe will deliver well over 20% fuel burn improvement over today’s next generation regional jets.

“A key step in our technology demonstrator programme is the testing of the compressor for the NGRT engine,” adds Dussault. “The high-efficiency compressor is a core element of the new engine. The first phase of testing has been completed successfully and the second is almost complete. Our analysis has shown opportunities for optimisation in terms of propeller system integration, air bleed extraction and electrical loading. We are also working with new manufacturing technologies that require more elaborate planning, high-tech tooling and more extensive development.”

A new turboprop engine might require a new propeller system.

Aircraft Propeller Service is a

commercial propeller maintenance and repair organisation (MRO).

“It is likely that a 90-seat turboprop would need a larger engine than currently available, but the propeller system would not necessarily have to be more complex,” says Dennis A. Santare, vice president of sales and marketing at Aircraft Propeller Service. “If the new engine required more blades, or was much larger, the maintenance costs would grow somewhat linearly in line with blade count, and less than linearly with the size of internal materials.”

Potential demand

About 75% of ATR72s and Q400s operate in Europe, North America and the Asia Pacific.

2015 schedule data from these regions have been analysed to identify the possible level of demand for a 90-seat turboprop. This is assessed by identifying the number of airport-pairs that have appropriate sector lengths and an aircraft size that indicates the need for a notional 90-seat turboprop.

For the purposes of this analysis, qualifying airport-pairs are those with sector lengths of up to 500nm and an average capacity of 85-95 seats in both directions of travel.

Most turboprops operate on routes of up to 300nm, but some have higher cruise speeds allowing them to remain competitive with RJs over longer distances. It is possible that a new 90-seat design would have similarly high cruise speeds, which is why slightly longer sectors of up to 500nm are included here.

Any new 90-seat turboprop is likely to have a variety of cabin configuration options. In this case a potential capacity

An ATR72 can currently accommodate up to 74 passengers. ATR is developing a 78-seat configuration. On a 250nm sector, ATR72-600’s operating costs per trip can be 30-40% less than those of similar-sized in-production RJs.

range of 85-95 seats was considered realistic. Any airport-pairs with average aircraft size at the lower end of this scale will therefore also be suitable for extra capacity Q400 services.

Schedule data from 2005 and 2010 have also been analysed to identify any growth trends in the number of airport-pairs suitable for a 90-seat turboprop over the past 10 years.

Europe

Since 2005, there has been a 15% growth in available seat capacity on shorter European routes with sector lengths of up to 500nm. One potential factor in this growth might be the opening of new routes, and the extra capacity introduced as result of the expansion of the European Union (EU). Airlines based in EU member countries are permitted to operate services between two member states outside of their home country, and to operate domestic services in member countries outside of their home state.

In 2015, more than 501 million seats will be available on internal European routes of up to 500nm. The capacity provided by turboprops and widebodies has decreased since 2005, while the available seat-miles (ASMs) provided by narrowbodies and RJs has increased.

The largest origin markets for flights of up to 500nm are Germany and the United Kingdom (UK).

Turboprops will account for more than 56 million seats on routes of up to 500nm in 2015. That is, about 11% of all capacity. In turn, about 90% of these turboprop seats are provided on routes shorter than 300nm.

Turboprop capacity on routes of up to 500nm actually decreased by 7% from 2005 to 2015. During the same period, the average turboprop size increased from 50 to 59 seats.

This was partly due to an increase in the seats provided by ATR72s and Q400s. There are 129 ATR72s and 129 Q400s in active passenger service with European airlines.

The largest European Q400 operators are Flybe (45), Austrian (18), Air Berlin (17), Air Baltic (11), and Wideroe (11). Prior to 2015, Austrian’s Q400’s were operated by its subsidiary Tyrolean. The two carriers officially merged in April 2015.