

# Killer Instinct



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Embraer's new E-Jet E2 series has rightly earned its 'Profit Hunter' nickname

Brazilian regional jet manufacturer Embraer's new E-Jet E2 series has a striking nickname: the Profit Hunter. *Addison Schonland* examines its performance to date and assesses its future prospects

In 1997 Embraer revealed they were working on a larger family of aircraft. Before this, Embraer was focused on regional jets. The new E-Jets (E-170, E-190 and E-195) covered the market from 72 seats to 124. The decision to enter this segment was brave, given that the "crossover jet" segment above 100 seats had turned into a graveyard for Fokker, AVRO and others.

On the lower side, the E-170 was upgraded to the stretched E-175, which seated 76. Of the E-Jets, the E-175 turned out to be a bestseller. This model has become the market leader among US regional airlines, which account for over 70 per cent of the world's regional airline flights.

The chart overleaf lists the E-Jet family in service as of this writing, using the ch-Aviation Fleet database. The principal takeaway is how quickly the market embraced the Embraer product.

Embraer tinkered with their E-Jets continuously, working closely with customers to deliver what they needed. This is especially the case with the E-170 family. The incessant refining of the range is almost certainly why this model became the most successful regional jet. Embraer had a version for any airline's needs. This meant it even had versions that could exploit the US Scope Clause to give mainline airlines a connection tool that is comfortable and efficient.

## E2 Announced

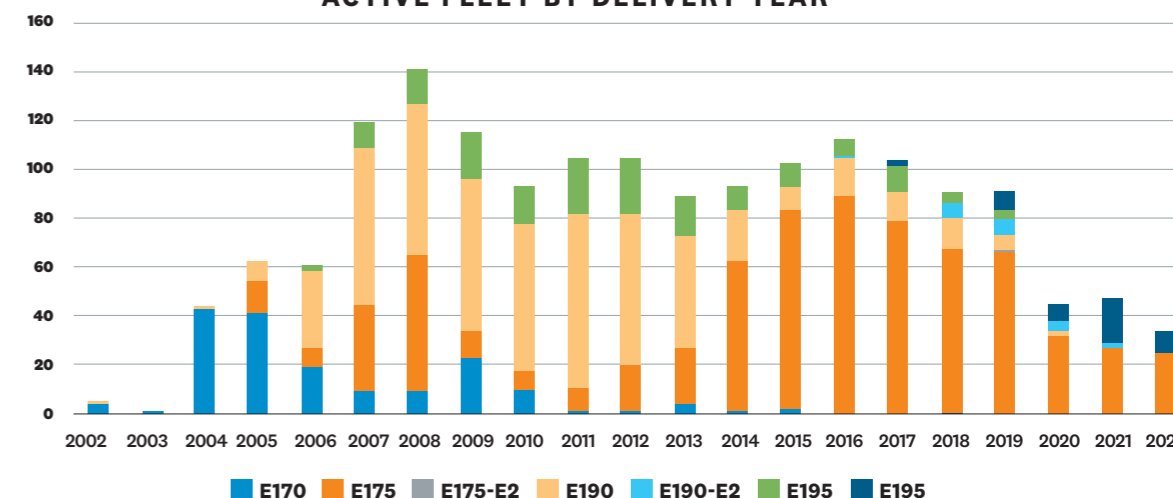
Embraer was doing great business with its E-Jets. But by 2010, its primary competitor Bombardier had gone through several years of ideas and settled on what would become the C Series. The C Series was a two-family model with 110 seats, like the E-190, and 130 seats – larger than the E-195.

Airbus saw the C Series CS300 as a threat to its A319. The CS100 was a threat to the E-190. Boeing largely ignored the CS models until United nearly ordered the CS300. Boeing scrambled to save the order by offering United a deal on 737-700s – none of which were delivered but converted to larger models. Meanwhile, a new competitor loomed in the form of the Mitsubishi Regional Jet (MRJ). Then, in 2011, Embraer announced its E2 family.

## Competition

While Bombardier was attracting the ire of Airbus and Boeing, Embraer wisely went to work on an E-Jet update. It won the 'last mover advantage' as a result. While the competitive environment was heating up, Embraer took

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its time and developed three E2 models. Each had a new wing. All three were to be powered by the P&W GTF engine.

The result was a lighter-weight aircraft with excellent economics. Embraer also updated the avionics and made other improvements. Meanwhile, in response to the C Series, Airbus announced its A320neo family, and Boeing announced its 737 MAX family.

At the lower end, Embraer was ready to take on the CS100 and MRJ. Unlike its competitors, Embraer had been trading in this space for years and knew the customers and what they wanted. Customers told Embraer not to touch the E-190 dimensions when creating the E190-E2.

For the E195-E2, a stretch was warranted over the E195. With the CS300 aiming at the 130-seat market, Embraer offered 120 seats in dual class and 146 in a single class layout. Both the CS300 and E195-E2 offered considerably better seat mile economics compared to the 737 MAX7 and the A319neo.

Whereas Bombardier fought with Airbus and Boeing, Embraer was not seen as a threat. Boeing flirted with Embraer in an aborted merger.

Embraer's engineers did a great job on the E2. Performance was better than expected. For example, the E190-E2 fuel burn was 17.3 per cent lower than the E190, which was predicted to be 16 per cent better. The E195-E2 saw a 24 per cent improved fuel burn over the E195. This meant the E2 family would have longer ranges than planned.

Indeed, early customer Helvetic Airways shared the following: "Embraer's factory E2-specifications regarding savings in fuel consumption and CO<sub>2</sub> emissions compared to the E1 are around 17 per cent. On our Helvetic routes we can exceed these figures with savings of at least 20 per cent (fuel and CO<sub>2</sub>).

"The E2 is not only an ideal aircraft for Helvetic Airways in terms of fuel consumption and CO<sub>2</sub> emissions but also because of its operational possibilities. In particular, it can be used at smaller

airports with short runways, such as London City or the Swiss airports of Sion and Bern. We can offer the Bern-Larnaca route and fly it with a full load."

The market looked great for Embraer – Bombardier was in the duopoly crossfire. Boeing and Embraer were talking about a combined business.

### Black Swan

Black Swan events are rarely good things. For the commercial aviation industry, the first glimpse of such an event was on 26 January 2018. The US International Trade Commission (ITC) dealt Boeing a stunning loss in its dumping claim against Bombardier – allowing Delta to keep its CS orders. The ITC case froze Bombardier's CS sales efforts. Bombardier could not recover and was bleeding cash.

Then in October 2018, the first MAX crashed, followed by a second in March 2019. Boeing was reeling as the MAX was grounded. The Embraer deal was cancelled for what seemed like implausible reasons, and Embraer sued. That case is ongoing.

The broken deal between Boeing and Embraer caused consternation in Brazil. Embraer had separated its commercial

division from the rest of the company. Now, these two parts had to be reassembled.

Boeing's bad karma from the ITC court ruling swept Embraer into its vortex.

At the time of writing, Embraer has recovered from the Boeing debacle. But the market has also changed. The C Series is now known as the A220 and is an Airbus programme, while Bombardier has returned to its business jet roots.

### Market opportunities

The globe was hit by a pandemic that curbed air travel. Yet amid this, demand for deliveries for the A220 did not waver. The 'crossover jet' proved to be what the market wanted – a small aircraft with excellent economics and a useful range – although 99.6 per cent of all A220 flights are under 2000nm, suggesting a significant weight penalty to achieve ranges rarely required. Helvetic offered the Swiss government the means to pick up stranded Swiss citizens in Africa. Their E2 had the right costs and range to accomplish the mission.

Airbus's move into the crossover jet space was a threat to Embraer. Airbus was deploying a one-two punch at every opportunity. Airbus offered customers an A220/A321 combination that proved irresistible in key campaigns. Boeing and Embraer could not respond. Important deals like JetBlue, Qantas and Air France went to Airbus.

Where Embraer faced off against the A220 directly, with no other aircraft in combination, it was doing well. It won deals with Air Peace and follow-on orders at Widerøe. It also won a crucial campaign at KLM.

Embraer had previously seen its E-190 as the more popular of its larger models. In the case of the E2, it is the E195-E2 that is twice as popular. Recent approvals

in China are likely to open that huge market for Embraer.

As we look across the market, the A220 and E2 are in one of the hottest market segments. Airbus sold a few A319neos. Boeing has seen a lukewarm response to its as-yet uncertified MAX 7. Airbus has seen an excellent response to the A220, and Embraer has also outsold the MAX 7 and A319neo.

Looking at the market opportunities, Embraer is in a great place. Airbus has a long backlog in the A220. With all its marketing power and financial incentives, Airbus cannot create more A220s. For operators looking for a crossover jet in the under 150-seat segment, the quickest solution is the E2.

The E2 offers competitive economics to the A220. Some argue it has better economics – the over two-ton difference in weight however cannot be argued. But the biggest advantage Embraer has is earlier delivery slots. This is a significant market advantage as airlines clamor for newer aircraft with greener credentials.

Moreover, as a lighter aircraft, the E2 has not suffered the same engine issues as the A320neo or A220. Embraer's commercial president noted that coming to the market later has been a benefit as they have not had the same challenges Airbus faced.

The upset and disruption following the failed deal with Boeing allowed Airbus to move ahead of the E2 in the sub-150-seat segment. But now Airbus has run into supply chain challenges, as has Boeing. Boeing also has certification hurdles to overcome. For Embraer, it's clear skies ahead – it has the right product with better delivery slots than anyone else. <sup>1</sup>

**1, 2 and 3.** Embraer commissioned handpainted liveries for its E2 demo series, featuring animals including a tiger, an eagle and a striking black and gold 'tech lion'.

