



Corsair cuts fuel consumption by optimizing flight trajectories

Nicolas Moraes, Airbus A330 Line Captain, Instructor and Examiner at Corsair, offers an insight into how Thales' FlytOptim is helping the airline to be more fuel efficient



In this case study, we examine how Corsair is benefiting from Thales' FlytOptim to enhance operational efficiency and reduce CO₂ emissions by leveraging AI-powered trajectory optimization that crews can trust.

IN FOR THE LONG-HAUL

As a mainly long-haul operator, Corsair can gain significantly by optimizing flight trajectories to improve fuel efficiency. The France-based airline was formed in 1981 and has a fleet of nine

Airbus 330-900neo aircraft that fly to multiple overseas destinations in the Caribbean and Indian Ocean, as well as Africa, see figure 1.

Who are we?



Company Profile

Long Haul Flight Company
created in 1981.
1,100 Employees
150 Cockpit Crew Members



Modern Fleet

9x Airbus A330-900neo Max
Take-Off Weight: 251 Tonnes
Modern & Efficient



Configuration

3 Class Configuration
5x A330 with 352 Seats
4x A330 with 343 Seats



FIGURE 1

Corsair is also a pioneer in environmental efficiency, and our project with Thales aimed to reduce fuel consumption by being more accurate with the vertical profile, especially when flying for lengthy periods in cruise mode.

FlytOptim

Boost your flight efficiency effortlessly!

Optimize fuel, time, and climate impact with nowcast data.

Save Up to 2.5% of fuel

Powered by **THALES**

Plan smarter. Fly better. Save more.

- ✍ Reduce flight planning workload
- 🕒 Save fuel and time with smart recommendations
- 📏 Improve operational efficiency

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CHALLENGES TO FUEL SAVING

Previously, we used the optimum altitude suggested by our FMS (Flight Management System), but we wanted to be more accurate in identifying optimal flight trajectories. The FMS only provided limited data that was low-resolution because it was in a grid of about 500 nautical miles, with wind and temperature information that could be two to six hours old, which is quite a lot (figure 2).

The challenge: save fuel during our long cruise phases by using FMS



1. Limited Data

The FMS relies on input data that lacks the granularity needed for true optimization:

- **Low Resolution:** Wind and temperature charts are based on broad 500NM grids.
- **Old Data:** Wind and temperature charts can be several hours old by the time it is used in calculation.



2. Simplified Profiling

Onboard calculation power and logic are limited compared to ground-based servers.

Waypoint Gaps: Optimization is often calculated only at widely spaced waypoints.

Missed Opportunities: "Step climbs" between waypoints are frequently overlooked.



FIGURE 2

Furthermore, the onboard system had limited power compared to a ground-based computer. We could have around 300 nautical miles between waypoints, so optimization was a challenge and we suffered missed opportunities if 'step climbs' between waypoints were overlooked.

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THALES SOLUTION

We chose Thales because we have had a great relationship with them since 1998; so we trust their expertise and data. FlytOptim is based on a new FMS algorithm that provides real-time data in grids of around 50 nautical miles (figure 3).

The solution: FlytOptim by Thales

Corsair relies on Thales for its FMS.

Powered by PureFlyt's latest FMS algorithms, FlytOptim provides real-time, cloud-driven optimization that extends the capabilities of the onboard FMS.

- ✓ **Performance:** Use of real-time data and 50NM grids on ground.
- ✓ **High Accuracy:** Precise fuel estimation compared to EFOB.
- ✓ **Crew Confidence:** Reliable data builds trust.
- ✓ **User Friendly:** Clear proposals by acars when it matters.
- ✓ **Cyber-secured by Thales**

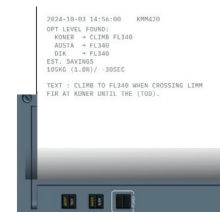


FIGURE 3

Using FlytOptim is six times more accurate than the data we had on board before. The application is also more efficient because it is simple to use, as we receive messages directly on board with ACARS (Aircraft Communications, Addressing and Reporting System) and on the printer. Our crews are confident using FlytOptim because the data is reliable.

“Using FlytOptim is six times more accurate than the data we had on board before.”

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was another optimum altitude afterwards, which is called a 'step out', where we could save 740kg and reduce the flight time by one minute. With that information, the crew decided to fly this second proposal.

Fuel savings

Looking at the aircraft data from the flight (figure 6), the blue line is the real fuel consumption and the real vertical flight path we had, and the yellow line is the information that was initially on the OFP (Operational Flight Plan).

Case Study: Results

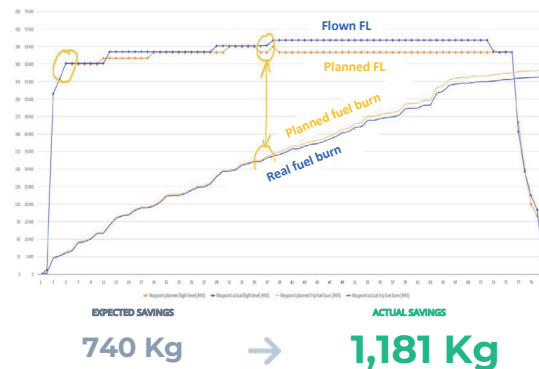


FIGURE 6

Initially, the crew climbed at 360, then flew what was told to them by FlytOptim. The real fuel consumption was the same as expected in the initial flight plan, arriving at a point where the proposal told the pilot to climb to flight level 400. After that, the real fuel burn was less than the planned fuel burn. At the end of the flight, we had saved 1,181kg of fuel when we expected to save only 740kg.

Crew initially climbed to FL360, following the OFP.

The first half of the cruise phase is in line with the OFP calculation.

The crew followed FlytOptim's flight-level recommendations at several waypoints during cruise and climbed up to FL400 for the remainder of the flight.

Due to instructions from ATC, the flight remains at FL390 before being approved to climb to FL400.

Note on ATC: Results could have been even better if French ATC had permitted the flight to maintain FL400 longer before descent (instead of descending to FL380).

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POSITIVE RESULTS

Looking at our results using FlytOptim across Corsair (figure 7), 61% of 1,605 flights received a proposal from the system.

Global Results and User Acceptance

PERFORMANCE & ADOPTION

61%

Of flights with proposal (979/1605 flights)

78%

Pilots adoption

MEAN ACHIEVABLE SAVINGS PER FLIGHT

209 Kg

In fuel savings

OVER A YEAR

FLEET INCLUDED

9 aircraft



ACHIEVABLE FUEL SAVINGS PER YEAR

300 Tons

In fuel savings

FIGURE 7

Sometimes, we don't receive a proposal because there's no more optimization available other than the initial flight line. User acceptance has been quite high, with 78% of our pilots following the Thales proposal. Over a year, our mean achievable fuel savings were about 200kg per flight, which totals 300 tonnes of achievable fuel savings per year.

LISTENING TO FEEDBACK

Initially, it was a little difficult for some crew members to get to grips with FlytOptim, but once we understood it, we gained confidence using the system. By encouraging our colleagues, we created a positive chain reaction across our crews about using FlytOptim.

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Initial Feedback from crews had been encouraging but nuanced: while many appreciated its simplicity, others initially approached external optimization tools with caution—particularly regarding over-reliance or potential conflicts with FMS guidance.

Dedicated simulator sessions for less-engaged pilots helped close that gap and reinforced trust in the technology.

BALANCING AUTOMATION AND HUMAN DECISION

Beyond pure efficiency, FlytOptim also raises an interesting operational question: how far should pilots rely on automated optimization in dynamic airspace environments? At Corsair, we treat it as a decision support system, not a directive one. The final decision remains with the flight crew, based on operational context and ATC feasibility.

This cultural balance—between human judgment and algorithmic precision—has been crucial to the system's successful adoption (Figure 8).

Operational Feedback

Crew Attitude

- + **Strong Engagement:** 78% adoption after 6 months.
- + **Simplicity:** Little training needed, clear messages.
- + **Trust:** High confidence in Thales algorithms.
- **Challenge:** Flying “blind” is difficult for some pilots.

ATC Factors

- + **FlytOptim takes static ATC constraints into account**
- **Limitation:** Flight Level changes in NAT Airspace not considered.
- **Difficulty:** Negotiating optimum profiles in busy areas remains complex.

Improvements in progress

- **Simulator training:** flying at optimum profile
- FlytOptim proposals inside our **EFB (Mission +)**
- **New Thales FMS (PureFlyt):** secondary flight plan

Improvements in progress

- **ATC acceptability rate:** FlytOptim will anticipate ATC acceptance

FIGURE 8

Two points stood out from the operational feedback provided by our crews. Firstly, there has been a strong adoption of FlytOptim because the application is simple to use, with a clear message and no need for training. We trust the data and are confident about what Thales sends us. We have run simulator sessions for the 22 percent of pilots who didn't show strong engagement with FlytOptim. Pilots can find it quite difficult to fly blind, for example, if the instrument doesn't tell them to climb — you have to trust the data.

The second point relates to ATC factors. Negotiating optimum profiles in busy spaces is complex. Thales is making improvements here, with work to anticipate ATC acceptance of FlytOptim proposals.

LOOKING AHEAD

Having taken on board vertical profile optimization, we recently started a lateral optimization project with the FlytOptim in the OCC (Operations Control Center), see figure 9.

Next challenge: improve our route planning with FlytOptim in the OCC.

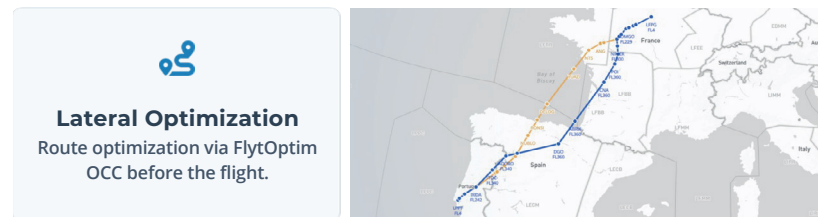


FIGURE 9

This will enable the OCC to give us more efficient routes to follow before we take off.

NICOLAS MORAES



Nicolas Moraes is an Airbus A330 Line Captain, Instructor and Examiner at Corsair, France's second-largest long-haul airline and a pioneer in environmental efficiency. With over 20 years of experience in various international airlines, he combines strong operational expertise with a passion for innovation and training. Nicolas actively contributes to innovation projects and leads flight tests on new aircraft as well as on those returning from heavy maintenance.

CORSAIR

CORSAIR France-based airline Corsair was formed in 1981 and is a predominantly long-haul flight operator. Its fleet of nine Airbus 330-900neo aircraft flies mainly to overseas destinations in the Caribbean and Indian Ocean, as well as Africa. Corsair has 1,100 employees and 150 cockpit crew members. The airline is France's second-largest long-haul airline and a pioneer in environmental efficiency.

THALES

THALES Thales Green Operations is a Thales venture focused on making aviation more sustainable through FMS and ATC expertise. The company provides digital solutions that optimize flight routes in real time and analyze fuel consumption and environmental impact — including CO₂ and non-CO₂ emissions — after each flight.

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