

Delta Replaces Engine Units in Effort to Address Toxic-Fume Surge on Planes



Delta Air Lines is replacing power units on more than 300 of its Airbus jets in an effort to stem cases in which toxic fumes have leaked into the air supply and led to health and safety risks for passengers and crew.

The move is one of the most aggressive efforts by a major U.S. airline to address what in recent years has increasingly become [a hidden hazard of modern air travel](#).

The airline is about 90% of its way through the process of upgrading the engines, a type known as the auxiliary power unit, on each of its Airbus A320 family jets, according to a spokesman for Delta. The airline operates 310 of the narrow-body type, including 76 of the latest generation models as of the end of June.

The APU is typically a third engine that sits in the tail of an aircraft and is used to generate electricity and pump air into the cockpit and cabin when the two primary engines aren't running, and for example, often during taxiing. A leak in the APU can also contaminate the

air even when it isn't in use, according to maintenance specialists and internal troubleshooting documents.

Airbus has previously identified the APU and how it is integrated on the A320 as a leading cause of toxic fumes contaminating the so-called bleed air system. A fume event typically occurs when oil leaks into the engine or power unit's compression chamber and is vaporized at extreme temperatures, releasing unknown quantities of neurotoxins and other chemicals into the cockpit and cabin air.

The Wall Street Journal reported earlier this month that fume events have been surging in recent years, driven in large part by incidents on the Airbus A320 family, and that they have led to brain injuries and other illnesses in both crew and passengers.

Delta hasn't previously disclosed the APU replacement program, which began in 2022.

Replacing the APU, which can become more prone to fume events with age, mitigates some of the risks from toxic leaks but doesn't address them entirely. Airbus last year found that most cases on the A320 were linked to leaks entering the APU via an air inlet on the aircraft's belly.

Another separate cause is leaks in the jet engines themselves, which provide most of the bleed-air supply when active.

Delta and other U.S. carriers have seen a surge of incidents across A320 family aircraft that has outpaced the number of reported fume events on other Airbus and Boeing aircraft, according to [the Journal's analysis](#) of reports to the Federal Aviation Administration.

Over the past year, APU-related fumes on Delta's A320 jets have led to emergency diversions and abandoned takeoffs, pilots donning oxygen masks, and an instance of passenger vomiting, the analysis showed.

It is difficult to assess whether some carriers have more of those incidents than others because not all fume events are flagged by the crew, and airlines have different standards when reporting to the FAA.

A Delta spokesman said that though fume events are rare, the company treats each seriously as it does for all safety matters. "Nothing is more important than the safety of our customers and people," he said.

An Airbus spokeswoman referred to a previous statement that the company was working with airlines and regulators to enhance its aircraft and ensure "the best possible cabin environment for passengers and crew." That statement also said: "Airbus aircraft are

designed and manufactured according to all relevant and applicable airworthiness requirements.”

Delta declined to comment on costs associated with the replacement program or to identify the manufacturers of APUs on its A320 fleet, but records filed to the FAA show that Delta operates models made by Honeywell and RTX’s Pratt & Whitney.

Both Honeywell, which dominates the APU market, and Pratt & Whitney have had issues with models deployed on the A320 family for years, according to internal maintenance and company documents, engineering specialists, and legal complaints. The issues have spanned defects with gearboxes and cooling fans, but predominantly affected seals meant to protect against oil lubricants leaking into the air supply. Pratt & Whitney introduced three separate fixes in 2019 and 2020 for its APU model on the A320 family, according to an internal Airbus presentation, while Honeywell has developed new upgrades to address defects, including for the APU’s load compressor seal.

The Honeywell fix—the company’s third attempt to address problems with that seal since 2007—was announced late last year. In a marketing document at the time, the company listed as a primary benefit of the upgrade: “An improved passenger experience thanks to reduced possibility of odor in cabin events.”

American Airlines has separately been upgrading its Honeywell APU load compressor seals across its A320 fleet since April 2023, a spokeswoman said.

A similar version of Honeywell’s APU is also used on Boeing’s 737 family of jets.

Honeywell and Pratt & Whitney declined to comment.

The increase in incidents follows changes to maintenance requirements that Airbus began approving from 2017, which allowed airlines to regularly send aircraft back into service after a fume event had occurred. Two years after the change, Airbus and Honeywell issued a “good practices guide” to help airlines mitigate APU-driven fume events. That included extensive weekly visual inspections of the power unit and a suggestion that pilots wait three minutes after turning on the APU before activating the bleed air to give the APU seals time to adjust to the temperatures and start working properly.

The companies also suggested that airlines consider operating flights with the APU air supply turned off—removing air conditioning on the ground—if conducting maintenance might cause disruption to their flight schedules.

“Corrective maintenance action can be planned at a better opportunity,” Airbus and Honeywell wrote in the March 2019 joint presentation. They also reminded airlines that the precautions for mitigating fume events were only an optional guide to help operators

suffering from repetitive fume events. Internal maintenance and other documents show that Airbus and Honeywell have been aware of fume-related issues with load compressor seals in the APU for over two decades.

An internal Airbus email from 2019 showed staffers debating how best to address a request from American Airlines, which had asked for specific data on root causes of fume events. The Airbus team found an internal study conducted over 20 years ago that identified issues with that specific seal.

“Don’t officially give them the report because it identifies the airline and aircraft, etc, and mentions APU load compressor seal oil leakage (back in 2003 !!),” the Airbus staffer wrote, according to the email exchange reviewed by the Journal. An airline's internal maintenance document shows that Airbus was aware of the issue even sooner. The plane maker notified customers in November 2001 that one operator had experienced “significant oil fumes in the cabin” during a flight due to a worn load compressor seal in the Honeywell APU.

A lawsuit filed Sep. 3 on behalf of three former JetBlue flight attendants against the airline, Airbus, and Honeywell cites incidents between 2022 and last year in which oil had leaked from Honeywell APUs and caused noxious fumes to enter the cabin. The suit alleges that the exposure led to lasting symptoms, including heart palpitations, tremors, and physical and cognitive impairment.

In one example from September 2022, fumes led to passengers complaining of nausea, a child suffering a nosebleed, and four JetBlue flight attendants in the hospital. The suit alleges the same aircraft had been diverted two days earlier due to a passenger who was struggling to breathe. The three companies that are defendants haven’t yet replied to the lawsuit. In a presentation to airlines last year, Airbus acknowledged that upgrades to seals and other faulty components within the APU would solve only a portion of reported fume events.

Airbus, as part of an internal program called Project Fresh, reviewed instances of fumes from 2016 to 2021 and found 12% related to oil leaks internal to the APU. The remainder were caused by the APU ingesting oil through its air inlet at the bottom of the aircraft. That includes leaks from overfilling of oil reservoirs, landing gear hydraulic fluid or de-icing liquids. Airbus outlined three fixes, including the most radical, a design change that moved the position of the inlet to the top of the aircraft, and which Airbus said would reduce “smell” events by 85%. That fix will only apply to new aircraft. For older aircraft, Airbus proposed other changes that it said are less effective.