

# How Etihad Engineering innovates through uncertainty

Like many players in an industry seeking to innovate its way out of a crisis, [Etihad Engineering](#) has been rigorously researching and developing safety solutions to support the industry through the pandemic. As vaccinations continue to help the industry progress toward a restart, the company is dedicated to helping passengers feel safe in the sky. This includes a number of COVID-19 solutions designed for use in the aircraft cabin, such as social distancing and disinfecting products, protection kits and cargo equipment.



These solutions were developed at Etihad Engineering's facility in Abu Dhabi near the airport

Etihad Engineering turned challenges into opportunities, investing in new technologies to protect the business. It devised customized solutions and work arrangements to ensure projects remain on track and customers continue to be served.

Yes, there are vaccines, but the solutions should still be on the table because they will encourage passengers to fly, Ahmad Rajei, Vice President Design, Engineering and Innovation at Etihad Engineering tells *PAX Tech*. "We don't see that the pandemic is disappearing soon. [With these innovations], passengers will [view] the cabin in a way that builds confidence," he says.

Rajei has more than 30 years' experience in aircraft cabin retrofitting and engineering modification. He joined Etihad Engineering in 2013 and before this held the position of Director of Engineering at Alsalam Aircraft Company in Saudi Arabia and earlier was a lead engineer at Continental Airlines (now [United Airlines](#)), and before was Manager Engineering Services with [Qatar Airways](#). His career began

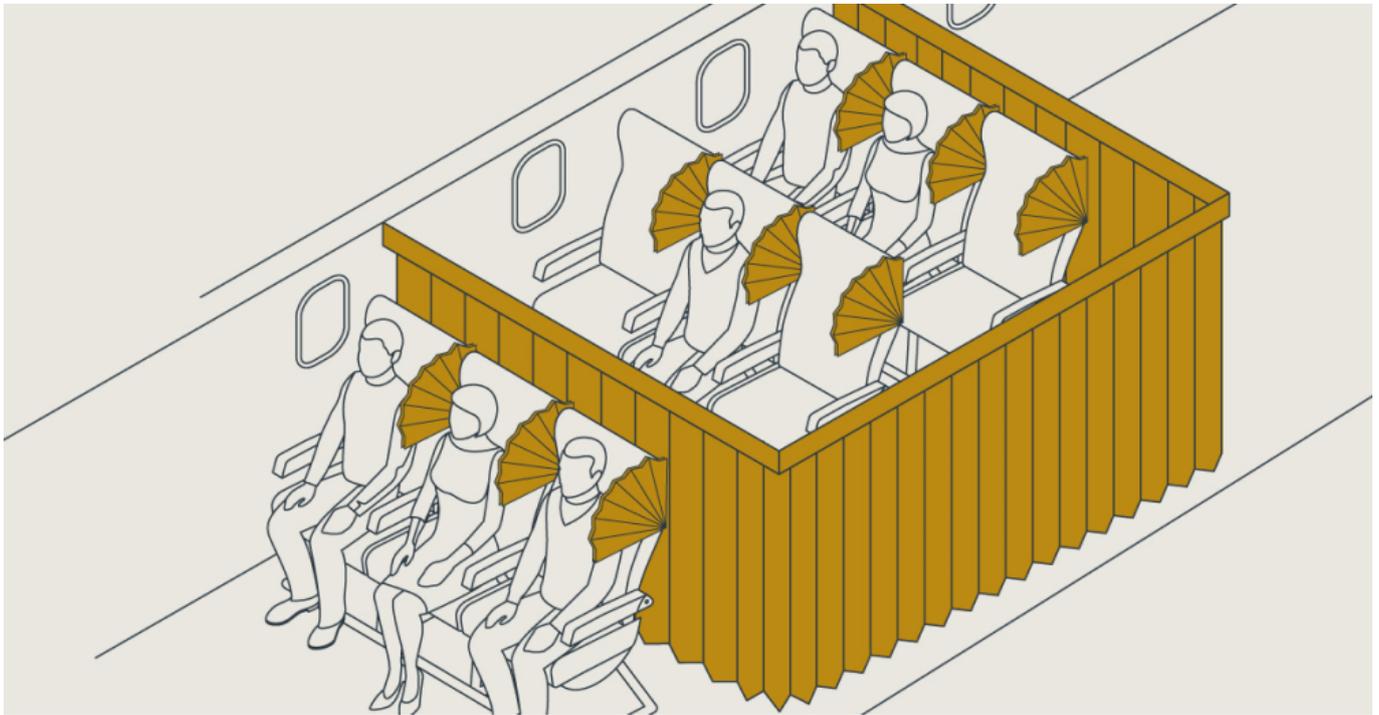
in Jordan in 1986 with Royal Jordanian Airforce.



Ahmad Rajei, Vice President Design, Engineering and Innovation, Etihad Engineering

### **Separation and disinfection solutions**

Etihad Engineering has created physical partitions to socially distance passengers during flight. The partition can be installed on the across-the-seat armrest, headrest, and seat box or antimacassar, separating passengers' faces. It takes approximately 15 days from signing the contract to install the modification, depending on the option that is chosen and the layout of passenger accommodations (LOPA).



### Distancing solutions from Etihad Engineering

The company also has Economy and Business Class social distancing curtains to create a quarantine zone. The easy on-off minor modification can be installed 10 days from signing the contract, with implementation depending on LOPA.

The area can be used for people who have symptoms or who are sick, and it can be easily restored back to the regular configuration, Rajei says.

For crew disinfection, airlines can convert lavatories to decontamination chambers with Etihad's hydrogen peroxide atomization (fog) unit. Implementation depends on LOPA and operations acceptance, but takes only five days from signing the contract. It offers onboard crew disinfection convenience, is a lightweight solution and can be refilled and recharged on the ground.

### **Universal protection**

Specifically designed for post-COVID operations, the universal COVID protection kit is a lightweight toolkit filled with everything necessary for cabin crew while cleaning and to protect from exposure. The kits include personal protective equipment such as disposable apron, biohazard bag, gloves, face masks and shields, as well as sanitizers, odor eliminators, labels (for example, 'Do Not Use'), sharps container and thermometer. It conforms to IATA, ICAO and GCAA recommendations.

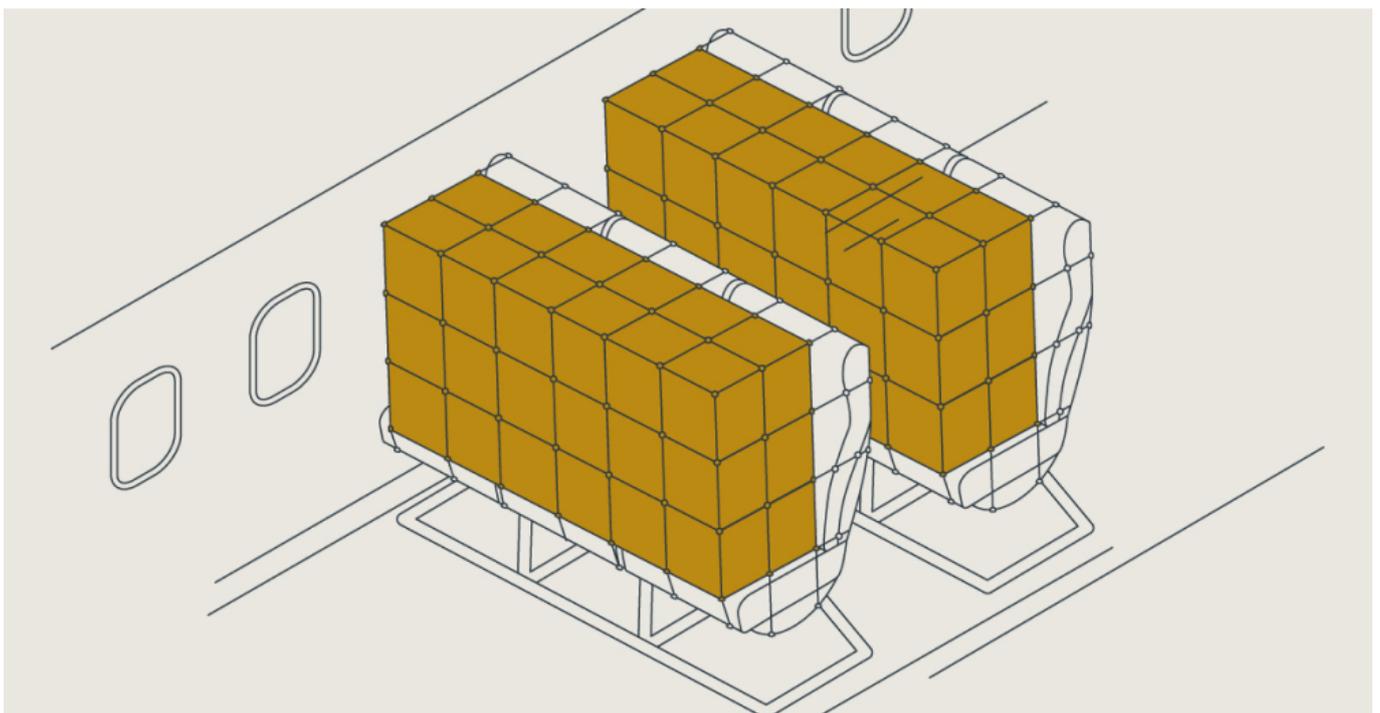


Crew protection kits from Etihad Engineering

The COVID solutions have been shared with Etihad Airways as priority and then with other customers, Rajei says. The solutions are suitable for all commercial Airbus and Boeing aircraft types, under EASA, GCAA, and FAA (TBD). Simple and low-cost options are available for some.

### **Cargo conversions**

Along with passenger innovations, Etihad Engineering also manufactures a number of cargo equipment aids to help airlines convert aircraft passenger cabin to cargo configuration, including cargo nets, straps and seat bags to secure items for passenger to freighter modifications. It also offers cargo tie-downs for floor loading once passenger seats are deinstalled, as well as cargo on pallets.



Etihad Engineering offers solutions for passenger to cargo conversion

Often times, these mods were accessed by airlines carrying pandemic-related cargo and medical supplies, Rajei says.

### **3D capability**

These solutions were developed at Etihad Engineering's facility in Abu Dhabi near the airport. With a dedicated 3D printing lab on site, the company can print solutions for testing immediately. The 3D-printed face shield for crew and passengers is manufactured using Etihad Engineering's EASA approval for 3D printing. The reusable and lightweight face shields can be customized with the airline logo and are available 10 days for 200 pieces after signing order contract.

Etihad Engineering uses the latest design software used by OEMs such as [Boeing](#) and [Airbus](#), Rajei says, including CATIA V5 "3D" imaging to show and simulate a complete design within the cabin. NATSTRAN/PATRAN is used to substantiate strength of installed items. The facility also houses a Flam Lab to test flammability and qualify the designed/installed items. This is to make sure design meets regulations required by EASA and other local authorities for the customer and to manufacturer it to the expected Etihad standard.

"At our facilities and hangars, people were scared more than ever at the beginning," Rajei says, looking back at progress that has been made in the last year. Etihad Engineering invested in the health and safety of its people by installing thermal scanners at entry points, carrying out regular disinfections and deep cleanings, introducing smart shift rosters, implementing social distancing protocols and manufacturing door-opening assists that allowed its personnel to open doors with elbows and arms instead of hands.

The company also invested in a disposable face mask manufacturing facility onsite with a capacity to produce 20,000 masks per day. Etihad Engineering has produced more than 2.8 million medical face masks with customized logos to support the aviation industry. The masks are three-ply and comply with EU standards, Rajei says.