

How airlines can generate more revenue by optimizing their lower deck cargo space

White Paper 2020

Florian Barjot



Because there is no other way to admire our planet than from the sky, we imagined EARTH BAY as being the best way to achieve the wish of many passengers. We believe this will unleash the potential of cargo bays, by bringing natural light in a new space for passengers. Replacing the a cargo door by an EARTH BAY product will be a real marketing asset for Airlines and will enable them to increase their revenue.

Summary

Executive summary	2
The context	3
Trends in the cargo sector	3
Lower deck solutions get the industry's interest.....	4
When are lower deck solutions complementary with the belly cargo activity?	5
Source	5
Determination of cargo loading parameter (CLP)	7
Classification	8
Study outcome	9
How does this translate for the market?	10
The EARTH BAY solution	11
The business cases	13
Forward cargo hold refurbishment.....	13
Afterward cargo hold refurbishment.....	13
Premium Suite.....	14
Business class	17
References	20
Contacts	20
Appendix 1: Example of data treatment.....	21
Appendix 2: Outcome by operator (masked)	23

Executive summary

In today's competitive landscape, commercial airlines have two ways to improve their benefits: by reducing their cost or by increasing their revenues. A lot has been written on how to optimize financial efficiency: scale effect, subcontracting, leasing, fuel price hedging, revenue & yield management. This study presents an innovative way to increase airlines' revenues and demonstrates its efficiency.

Today, airlines focus more and more on the passenger experience to grow their revenues. They know the importance of the “**whoa**” effect, especially on premium classes. Having a solution that can provide an outstanding experience and additional revenues would be a **strong competitive asset**.

We believe **EarthBay provides such an asset**. In a nutshell, this product is a reinforced window bay replacing a cargo door on widebody aircrafts. The idea is to reallocate a cargo hold to passengers (accessible during flight), bring natural light in and create **an outstanding view of Earth**. This will enable new cabin layouts and will generate **additional revenue streams**. Two study cases at the end of the document will illustrate how it could reach around **4M\$/year/aircraft**.

The manufacturers are currently interested in ways to take advantage of the lower deck. For example, **Safran and Airbus** develop jointly lower deck modules (beds and working/meeting spaces) and won a Crystal Cabin Award in 2019.

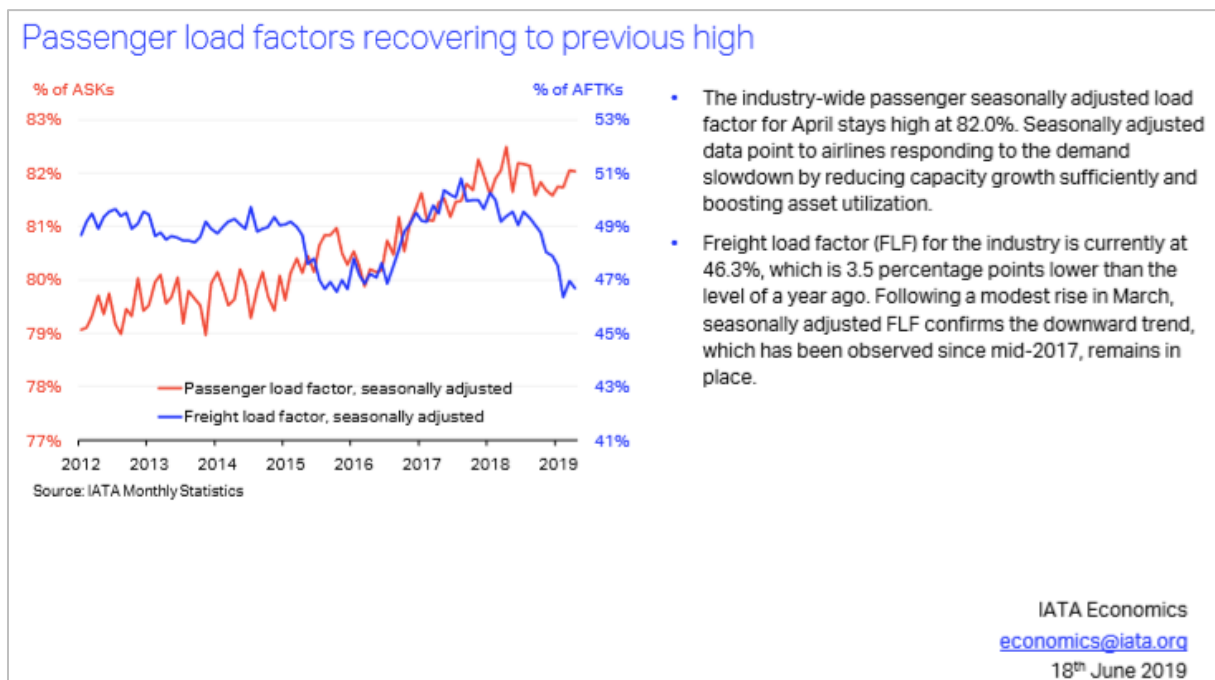
The cargo transported in the belly remains a strategic activity for commercial airlines, even in the current morose situation. They are not willing to embed solutions that could interfere with this source of revenue, that can reach 10 to 20 percent of their global income. **This study highlights that in 88% of the cases, the belly cargo can be transported in a unique cargo bay**, giving the opportunity to refurbish the other bay as a space for passengers with an exceptional view. Thus, the revenue streams generated by a lower deck solution like EarthBay, would be **in addition of the cargo activity** on a significant number of destinations, not in competition.

The context

The airline industry is evolving in a strong competition context. The main drivers for the passenger market are the prices for the economy class and the comfort for the premium classes (business & first). As a result, the cabin layout is designed to match the airlines' revenue strategy and brand position. An expression says that "a square meter is worth a million dollars". Therefore, **optimization of space is crucial for airlines**.

Trends in the cargo sector

The **cargo transportation is under pressure** due to low load factors, especially on passenger routes (fret filled in the lower cargo bays). In addition, this activity requires strong (and expensive) logistic means.



Comparison of passenger load factor with fret load factor (source ©IATA)

The graphic above, published by IATA, enables to understand that when the cabin is filled in at 80%, **the cargo bay beneath is less than half loaded**. Even if this is an average standpoint that needs to be balanced by operators and by routes, it indicates there is a potential to reallocate a portion of the cargo bay area to passengers and generate ancillary revenue **in addition to the cargo business**.

Today and since 2019, the air cargo sector faces a bleak period with the trade war initiated by the Trump administration, followed by the coronavirus threat. In the figures below, the transported merchandise (FTK) got reduced in 2019, while the capacity (AFTK) increased. This led to a degradation of the load factor (FLF).

December 2019 (% year-on-year)	World share ¹	FTK	AFTK	FLF (%-pt) ²	FLF (level) ³
Total Market	100.0%	-2.7%	2.8%	-2.7%	46.7%
Africa	1.8%	10.3%	10.0%	0.1%	36.8%
Asia Pacific	34.6%	-3.5%	2.8%	-3.4%	51.9%
Europe	23.7%	-1.1%	4.9%	-3.2%	53.0%
Latin America	2.8%	-5.3%	-3.1%	-0.7%	30.0%
Middle East	13.0%	-3.4%	1.9%	-2.6%	47.0%
North America	24.2%	-3.4%	2.1%	-2.2%	39.5%

¹ % of industry FTKs in 2019 ² Year-on-year change in load factor ³ Load factor level

(source IATA)

Lower deck solutions get the industry's interest

Some solutions exploiting the lower deck space on widebody aircrafts already exist. For example, crew rest modules allow to have beds for the pilots and the flight attendants, without penalizing the main deck space. The same rational applies for the lavatory blocks on Lufthansa's A340-600 which have been placed in the lower deck. It is worth noting that this is only possible on widebody aircrafts due to the height of the cargo bay, which is around 1m70 for this category, compared to 1m30 for single aisle aircrafts.

Aircraft manufacturers and suppliers are investigating the possibility to reallocate this space to passengers, like beds, meeting rooms, and others. The lower deck solution proposed by a partnership Airbus/Safran **won an award at the Aircraft Interior Expo 2019** in Hamburg.



© Airbus/Safran

Some space optimization solutions utilizing the cargo deck already exist and continue to be developed.

When are lower deck solutions complementary with the belly cargo activity?

This section summarizes the outcome of an EarthBay study on the cargo yields for 2018. It provides an overview of the available space in the lower decks.

Source

The data used has been provided by the International Commercial Aviation Organization (ICAO), a specialized agency of the United Nations. They continuously gather data from airlines, airports and countries, that is then made available for the industry.

The ICAO provided to EarthBay a spreadsheet of the Traffic by Flight Stage (TFS), for the period of 2018 and for all the operators and destinations for which reports were available. The data are not exhaustive but contain enough volume to make this study valid.

Targeted aircrafts

The data provide the type of aircraft utilized on a route; thus, it has been filtered in order to focus on the widebody category. Unsurprisingly, only models produced by Airbus and Boeing appear.

Hereafter the exhaustive list:

AIRBUS	BOEING
AIRBUS A300 B1	BOEING 767 300
AIRBUS A300 B4600	BOEING 767 300ER
AIRBUS A310	BOEING 767 400
AIRBUS A310 300	BOEING 767 400ER
AIRBUS A330 200	BOEING 777 200
AIRBUS A330 300	BOEING 777 200ER
AIRBUS A340 300	BOEING 777 300
AIRBUS A340 500	BOEING 777 300ER
AIRBUS A340 600	BOEING 787 8
AIRBUS A350 900	BOEING 787 9
AIRBUS A350-1000	

Represented airlines and limitations

The following airlines operate the aircrafts hereabove, according to ICAO data, but as outlined previously, the list is not exhaustive, and some operators are not represented in this study.

AIR ALGERIE	Indonesia AirAsia X	SAA
TAAG	LION AIR	AIR EUROPA
AEROLINEAS ARGENTINAS	IRAN AIR	EVELOP
LAN ARGENTINA	ARKIA	IBERIA
AUSTRIAN AIRLINES GROUP	EL AL	SRILANKAN AIRLINES
AZALAVIA HAVA YOLL.	ALITALIA	EDELWEISS AIR
GULF AIR	ALL NIPPON AIRWAYS	SWISS
JETAIRFLY	JAL	NoKScoot Airlines
SN BRUSSELS AIRLINES	ROYAL JORDANIAN	Thai AirAsia X
BOA-BOLIVIANA DE AVIACION	AIR ASTANA	THAI AIRWAYS
AZUL	KENYA AIRWAYS	ATLASJET
OCEANAIR	KUWAIT AIRWAYS	THY
TAM LINHAS AEREAS	MEA – AIRLIBAN	UKRAINE INTL AIRLINES
TACV	AIR MADAGASCAR	UTAIR-UKRAINE
AIR CANADA	AIRASIA X	BRITISH AIRWAYS
LAN CHILE	MALAYSIAN AIRLINES	JET2.COM LTD
CHINA ALL AIRLINES	AIR MAURITIUS	NORWEGIAN AIR UK
AVIANCA	AEROMEXICO	THOMAS COOK AIRLINES
CZECH AIRLINES	KLM	TUI Airways
AEROLANE	LAN PERU	VIRGIN ATLANTIC
TAME	TACA PERU	VIRGIN ATLANTIC INT.
ETHIOPIAN	LOT	AMERICAN
FINNAIR	EUROATLANTIC AIRWAYS	DELTA
LUFTHANSA	SATA INTERNACIONAL	HAWAIIAN AIRLINES
CATHAY PACIFIC	TAP AIR Portugal	UNITED
DRAGONAIR	ASIANA	UZBEKISTAN AIRWAYS
ICELANDAIR	JIN AIR	VIETNAM AIRLINES
AIR INDIA	KOREAN AIR	
JET AIRWAYS	Air Serbia	
GARUDA	AIR SEYCHELLES	

Available data fields

[...]

Get the full document (23 pages) for FREE.

- 1- Follow the link here below
- 2- Fill in the form to request the White Paper
- 3- The document will be sent to you

<https://www.earth-bay.com/grab-the-opportunity/>