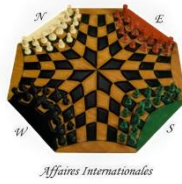# A321 [3+3] vs H21QR [1+3+1] in LCC superslim @ 28"
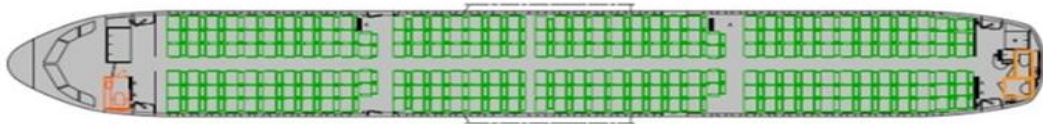

TwinAisleFeeders

Deterring Suzana Hrnkova's mystification : 236 seats in A321 ?

Here we are taking a closer look at A321 NEO [3+3] fitted with LCC-pitched superslim seats @ 28"
and SpaceFlex lavs in the tailcone … Suzana Hrnkova of Airbus contends this gives LCC 236 pax :

The LCC$_{SA}$ (Suzana Hrnkova's) utopia : A321 NEO @ 28" [3+3] SpaceFlex = 236 pax ?

To TwinAisleFeeders, such is pure agony, a utopia of distillated inhumanity adding sardine-box
promiscuity to claustrophobic terror, jammed with excessive (= unsafe) aisle pax density, of 0.62
sqft/pax. We call upon EASA/FAA Regulators' conscience to impose upon Airbus to demonstrate full
compliance with the Emergency Evacuation test in 90 seconds. We also call upon AFA to assess
compatibility of this 236-pax layout vs feeder in-flight service Union standards. Hrnkova's irony is
that she shortens seat pitch to a paroxysm without trading back an iota more transverse ease!

Whilst Hrnkova probably hopes to arrange EASA/FAA certification of her vision through mere cabin
compliance paperwork (?), she says nil concerning its chances for groundworthiness compliance :
what will be the airport turn-around performance of her utopia for fleet schedule planning purposes,
if the infamous "757 syndrome" is lurking – with its string of in-flight + ground service inefficiencies ?

The LCC$_H$ retaliation : the greater pax-appeal of twin aisled H21QR NEO @ 28" [1+3+1] = 199 pax
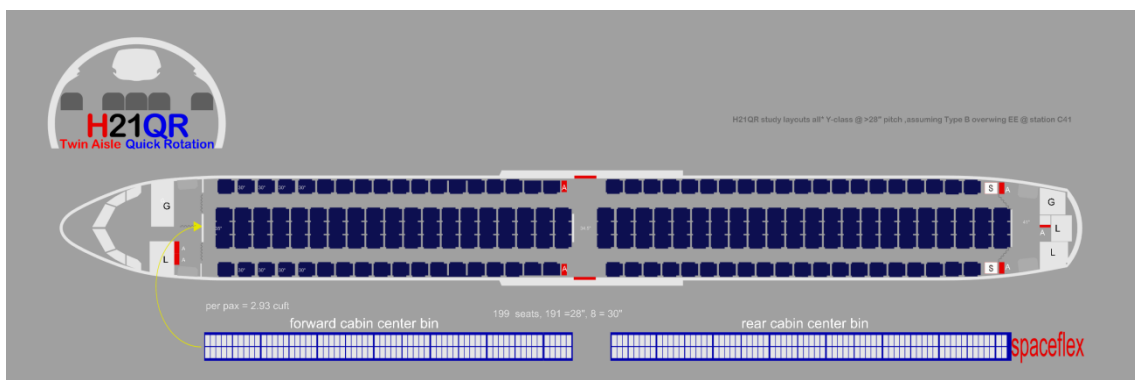
Here the aisle pax density is 1.48 sqft/pax, or 240 % better vs A321. Needless to say, whether with
the current A32X Series' "Enhanced" interior (cabin carry-on OHSV - overhead stowage volume = 405
cuft total in A321 or only 1.7 cuft/pax in Hrnkova's outraged 236-pax configuration) or with the ISIS
(Zodiac Aerospace) cabin interior option, @ peak-hour (≈ 100 %) cabin load-factors, eight out of the

total ten available underbelly AKH container positions are requisitioned for CIL (checked-in luggage), leaving only two AKH free to carry pay-freight. This compares with a total 580 cuft available cabin OHSV for the much more carry-on-friendly H21QR or 2.9 cuft/pax = 70 % better, whereby five (!!) AKH are left free to carry pay-freight ; this difference thrifty operators will turn into extra revenue :

Let R_{24h} = 24h revenue A321 [3+3] = (236 x CLF_{SA} + 2 x FLF_{cu} x ULD/φ) x NL_{SA} (resp. x NS_{SA}) x ATP

R_{24h} H21QR [1+3+1] = ([76 x 1.07 + 123 x 1.04] x CLF_H + 5 x FLF_{fc} x ULD/φ) x NL_H (resp. x NS_H) x ATP

Above R_{24h} revenue-equations — apart from accounting for the effect of product differentiation upon main deck revenue — propose that single-aisle LCC_{SA} applies the 'Crazy Uncle' neglecting or distracted airfreight marketing policy with a resulting low FLF_{cu} of 50 %, whereas twin-aisle LCC_H applies the much more aggressive 'First Concubine' airfreight marketing policy, achieving FLF_{fc} = 100 %; whether or not LCC_H will achieve a freight yield boost on top is debatable, we'll assume not. On Main Deck, the 76 singles of the LCC_H cabin fetch a P.E.O.P.L.E.®-generated ticket yield surplus of 7 % average vs the less pax-appealing [3+3] alternative, whilst the HQR cabin triples will fetch a 4 % average yield surplus vs ditto. Also, the HQR cabin proposal will attract a cabin load factor **four points better**, rising from average 0.79 for [3+3] to 0.83 for HQR [1+3+1]; in fine, setting ULD/φ = 10 :

R_{24h} A321 [3+3] = (236 x 0.79 + 2 x 0.50 x 10) x NL_{SA} (resp. x NS_{SA}) x ATP

R_{24h} H21QR [1+3+1] = ([76 x 1.07 + 123 x 1.04] x 0.83 + 5 x 1 x 10) x NL_H (resp. x NS_H) x ATP

Remains to be discussed the 24h (daily) productivity, based on a non-curfew lapse of 17 hours from 06h:00 till 23h:00 and with a schedule slack of 60' : we'll assume equal loads for the competing two operators : 118 kg x 236 + 1,134 kg x 1 + 400 kg[*] = 29,382 kg, vs 118 kg x 199 + 1,134 x 5 = 29,152 kg which is kif-kif. Therefore we'll assume identical flight time and trip fuel; for the ground rotations, we'll set (as a proposition, debatable) the airport slot time to 65' for LCC_{SA} vs 35' for LCC_H wherefrom we calculate with the equation 960' = [NL_{SA} − 1] x 65' + NL_{SA} x 90' (for 'L'onger feeder route networks), giving NL_{SA} = max 6 flights in each 24h-period, vs the equation 960' = [NL_H − 1] x 35' + NL_H x 90', which gives NL_H = 8 flights in each 24h-period !! For 'S'horter feeder networks (average flight time = 60'), the results are NS_{SA} = 8 (resp. NS_H = 10) !!

All-in-all, we find that our comparison does not depend on the average ticket price ATP and shows respective 24h-revenues of 1,178.64 x ATP for LCC_{SA} vs 1,789.35 x ATP for LCC_H or 52 % better revenue generation for the twin-aisle feeder solution, mostly due to the higher daily productivity from the much more efficient airport ground rotations, partly due also to good use of the H21QR's better pay-freight potential + product differentiation + cabin pax-appeal.

In terms of 24h NET yield, if C_{24h} = [$\sum$($Hourly_i$ + $Cyclic_i$ + $Fuel_i$) + NSOC] are the costs of operating all $legs_i$ in a day, then LCC_H spends $Cyclic_7$ + $Fuel_7$ + $Cyclic_8$ + $Fuel_8$ on top of whatever were the costs for LCC_{SA}; the extra cargo activity also occasions additional costs. Mark, the summations of hourly personnel costs add up to proportional figures for LCC_{SA} vs LCC_H, each one´s operative personnel having worked for the same active period … NB : in proportion to the respective cabin crew complements ! : whereas the H21QR cabin with 199 seats hits MOL's famous '<mark>sweet spot</mark>', Hrnkova's 236-seater needs extra cabin personnel, increasing the costs of operating the A321 type vs H21QR.

If going down into more details encore, subdivide $Hourly_i$ into hourly costs function of merely **time** (eg personnel costs) vs those function of the actual **flight time** of the aircraft, of 6 x 90' for LCC_{SA} vs 8

x 90' for LCC_H ; in a comparably detailed register, NSOC (Night Stop-Over Costs) are not strictly identical, as eg cabin crew per diem and hotel costs are less for LCC_H vs LCC_{SA}.

Concerning other revenue categories (CIL, COL (= ancillaries), frills, IFEC, …) the situation at large is either systematically favorable to LCC_H vs LCC_{SA} or neutral : frills sales for example depend mostly on the psychological nature of the pax-to-CA direct interface, with much better empathy at work in the [1+3+1] configuration than for [3+3], with on top more time to serve. Also, HomeCinema-sized video flat-screen advertising, an LCC_H exclusive, is a totally new source of feeder IFE revenue, inaccessible to LCC_{SA} due to adverse cabin geometry, not permitting installation of 44" x 25" flat-screens.

The above examples are displayed only to comfort observers hereof that if H21QR gives 37 less seats vs Hrnkova's proposal, in the reality of actual LCC service, or for feeder service in general, the **yield challenger** is the twin-aisle feeder H21QR, not Airbus' A321 … **a paradox come true ?** Not really, here's no trick : if you can fly 33% more trips per day and if doing this you win 52 % more revenue and nevertheless keeping constant crew costs, it has to show up in your Yields at the end of the day !

The LCC_H vs LCC_{SA} Cargo Story is overdone, you'll object ?! Not at all, our Cargo Story holds : if LCC_H kicks out 37 seats to shorten ground rotations whilst concurrently freeing five of his ten underbelly AKH positions to accept additional payfreight, you'd expect him to do something about his line freight strategy, in a way to compensate the lost revenues on main deck : LCC_H is **genuinely** interested in airfreight, whilst LCC_{SA} ostentatiously pack together the more pax the better – unreasonably many, given the available cabin OHSV, letting check in underdeck more hand-baggage than is warranted, spinning umbilical strings to the aircraft's underbelly in utter disregard of travelers' frustration who now need to queue at check-in counters or redelivery belts, envying the much more pleasant airport "walk-in/walk-out" travel experience of fellow travelers opting to fly with LCC_H – clearly LCC_{SA} are unconcerned by airfreight, it's their choice ! The difference in choice of LCC_{SA} vs LCC_H is stigmatized in adopting 'Crazy Uncle' vs 'First Concubine' line airfreight strategies.

But let's assume there is no airfreight demand in the market ? "Think realistically" is how defenders of bulk-loaded aircraft usually qualify this assumption, OK, so let's look at the two competing alternatives with cold eyes : assume the demand supports 179 pax for a given TODD (time-of-day departure) ? The respective CLF = 75.9 % for LCC_{SA} vs 90.0 % for LCC_H : who's making more money ? Assume now the demand raises to 189 pax : CLF = 80.0 % for LCC_{SA} vs 95.0 % for LCC_H … again, who's making more money ? Revenues for 199 pax [CLF = 84.3 % for LCC_{SA} vs 100.0 % for LCC_H] are :

$$R_{TODD} \text{ A321 } [3+3] = (199 + \text{zero cargo}) \times ATP = 199 \times ATP$$
$$R_{TODD} \text{ H21QR } [1+3+1] = ([76 \times 1.07 + 123 \times 1.04] + \text{zero cargo}) \times ATP = 209 \times ATP = + 5.2 \%$$

Only as from when TODD demands exceed 210 pax [CLF ≥ 89 %], LCC_{SA} starts collecting greater revenues vs LCC_H – in theory ! We contend that things turn out otherwise : the pressure to find a seat onboard LCC_H's more pax-appealing H21QR just increases, whereby LCC_H's sharp Retail Psychologists will collect (through their HQR-dedicated CRS-loop = P.E.O.P.L.E.®) even higher ticket premiums ! Why ? Simply because for these high time (rush hour) flights our passengers – always on a tight schedule – appreciate the "walk-in" boarding freedom of H21QR [1+3+1] : when all aisle-seat passengers are seated (that doesn't take long), 80 % of the cabin traffic is cleared in the twin-aisle cabin, vs only 33 % for A321 [3+3], with on top an adverse EMF (excuse-me factor) of 6 for the latter, vs only 0.5 (one half) for the former! In the event of a late boarding A or F passenger this means

havoc, the more so as already there's no more stowage room available for the poor devil's hand luggage … in the end the H21QR passengers will feel the relief of the push-back twelve to fifteen minutes before A321 ! And upon arrival, the happy H21QR passenger leisurely walks out with his carry-on luggage in safe control directly onto the next Flybus, gaining another fifteen minutes of precious time, a world of a difference in Well-Being – for which feeder travelers will sure pay !

If you ask me to be "realistic", I'll tell you this : the greater cabin capacity of A321 beyond today's 220 pax only exists on paper … in the real world, an A321 [3+3] @ 236 pax is a mirage that nobody will go for : of all the current A321 operators, who ever actually installed 220 seats – the current exit limit of this type ? Pushing up the seat count for the same cabin floor surface to 236 doesn't make sense, such a configuration kills the A321 : excessive cabin density, unbearable aisle jamming, excuse-me havoc, improper Lavatory coefficient, lack of Galley volume, what'd you expect ? Hrnkova knows she needs all the extra seats she can get **to withstand being pitched vs H21QR** but let's face it : forget her 236 seats, it is merely sand-in-the-eyes, a provocation, she's getting nowhere near that score !

<div align="center">

CONCLUSION :

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We have established full economic resilience of H21QR vs A321 in a 'zero cargo' scenario; we have also shown 236 seats is an exaggeration … only in Hrnkova's dreams will she be taken seriously : one cannot hope to pack down passengers pitch-wise to a paroxysm without giving something back in compensation in terms of Well-Being, transversally speaking – validating the equivalence axiom :

<div align="center">

[HQR (1+3+1) @ 28" pitch] Ξ [classic (3+3) @ 30" pitch]

(**equivalence** in terms of passengers' perception of "**comfort**" + "**freedom**" = cabin **Well-Being**)

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Summing up : non obstante – deterring – Hrnkova's mystification, the correct capacity gap H21QR vs A321 @ highest practical cabin density ends up near below 20 seats; we've used Δ = 19 seats before!

Based on this rectification, with/without line freight revenues from Lower Deck, with/without the revenue complement of Product Differentiation on Main Deck, H21QR (ceo or NEO) – on a per trip or per 24h basis – proves a resilient Yield Challenger vs A321 (ceo or NEO), establishing the end-user-friendly TAO (Twin Aisle Option) as the optimal contemporary feeder, legitimately restoring cabin safety, service ergonomics and passenger Well-Being aspirations at the very center of feeder service strategy decision-making, in full harmony with – equally legitimate – operator business objectives.

Indeed, if the trip cost side of the Trip Yield equation weighs markedly in favor of H21QR (from the quicker airport rotations) and if on top in terms of Trip Revenue H21QR has nothing to envy A321, whatever the market context, then obviously the preferred feeder solution is H2XQR Series, CQFD !

Toulouse, 10th January 2014

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(*) 400 kg is a conservative estimate of the OWE disadvantage of A321 vs the lighter H21QR