

Noise Exposure From A320 Family of Aircraft



Presentation To
LAX / Community Noise Roundtable

Petra Schneider

November 12, 2014

Noise From A320s

Opportunity

Mitigate a source of noise from older model, pre 2014, A318-A321 family of aircraft.

In 2005, complaints were heard at several major airports in Europe about a high pitched, annoying sound emanating from the A320 family of aircraft during landing approach. Subsequent investigations have identified the source of the noise.

Several aspects of this noise are unique:

- It is caused by air flowing across vent openings under the wing, not by the engine,
- Noise is composed of annoying tones, and
- it is heard relatively large distances pre runway as the aircraft is descending and approaching for landing but prior to landing gear and flaps being deployed.

A Potentially Significant Noise Source For LAX Communities

Noise From A320s

A Simple Solution At Hand

Called a 'vortex generator' , it is a small, less than 2 inches triangular piece of aluminum sheet metal that when mounted upstream of the air holes or vents on each wing is reported to eliminate the irritating, high pitched tone heard when the aircraft approaches for landing.

In addition, the German Aerospace Center, DLR, who performed the research and developed the vortex generator, reports an overall noise reduction from less than 2dB up to 6dB after installation of the device.

All new models delivered by Airbus as of early 2014 will have these devices pre installed before delivery. The vortex generator is also available as a retrofit from Airbus component suppliers such as the Supercraft Company.

Both Lufthansa and Air France have started installing vortex generators on their fleet of A320s.

Lufthansa

As of early 2014 Lufthansa started installing vortex generators on their existing fleet of about 150 A320s which consists of A319, A320, and A321 aircraft. Retrofits are expected to be completed by early 2015.

Air France

Starting in summer 2014, Air France is installing 'noise reduction kits' as part of their environmental policy. Noise reduction kits are expected to reduce noise by up to 8dB on their fleet of A320s which consists of A318, A319, A320, and A321 aircraft

Noise Source From A320s



A tiny device, shown here mounted upstream of a circular opening used to equalize the pressure in wing fuel tanks, reduces the whistling noise produced by the Airbus 320. [Photo courtesy of Lufthansa]



Close up of a vortex generator installed.
Several shapes exist as reported by Steve Alverson in Airport Noise Report: Volume 25, Number 37, November 1, 2013.

LAX A320 Arrivals

Time Period	Total Arrivals	A318-A321 Arrivals	A318-A321 Arrivals (%)
August 2010	24,864	3,808	15.3
August 2012	26,599	4,132	15.5
August 2014	28,074	4,883	17.4

17% of LAX arrivals in August 2014 consisted of A318-A321 aircraft.

August 2014					
Airline ID	Airline	A318-A321 Arrivals	Total Arrivals	% of Airline Arrivals	Size of A318-A321 Fleet
VRD	Virgin America	1200	1200	100%	53
UAL	United	821	3318	25%	152
AWE	US Airways	560	564	99%	265
AAL	American	447	3045	15%	49
DAL	Delta	381	2334	16%	126
JBU	JetBlue	311	311	100%	135
NKS	Spirit	279	279	100%	61
ACA	Air Canada	243	259	94%	70
ROU	Air Canada Rouge	186	186	100%	20
VOI	Volaris	181	181	100%	51
FFT	Frontier	123	123	100%	55(100%)
TAI	Taca International	106	106	100%	43
LRC	Lineas Aeras Costarricenses (LACSA)	31	31	100%	15
AAY	Alegiant Air	9	210	4%	11
GA	General Aviation	5	745	1%	

15 airlines make up those A318-A321 arrivals, and

80% of these arrivals were from 4 airlines.

In some cases, an airline's entire fleet consists of these A320s.

Recommendations

Creating Awareness and Supporting Action

- Reach out to LAX A320 operators, and share our findings, and
- Reach out to other airport noise groups/Roundtables

Looking for Additional Opportunities

- Review international sources on a regular basis for noise and sustainability opportunities,
- Develop an understanding how European 'Noise Alliances' function, and look for opportunities to adopt Best Practices to better serve and protect our communities and enhance economic vitality.

Information Sources

- Euractiv, 'Small is Beautiful, 16/07/2014
- ERCD, 'Tonal Noise from the Airbus 320 Aircraft Family', 16 October 2013
- Lufthansa website
- Air France website
- Airport Noise Report: Volume 25, Number 37, November 1, 2013
- Aviation News Noise Update to LAX Community Noise Roundtable, March 2014 with reference to atwonline.com/eco-aviation Air France reducing A320 noise emissions during airport approach phase
- Wiki for airline fleet information