

A question of change

Glenn Burack, Director of Aviation, Military and SoundComm Headsets at Bose, reflects on the company's heritage and how a simple question can change an industry.

In 1978, Dr Amar Bose was on a flight home after a business trip in Europe. He was looking forward to this flight, not simply because it was taking him home, but because this would be his first opportunity to use what were then new electronic headphones. Prior to their introduction, airlines used pneumatic tubes to deliver audio to their passengers, somewhat like a stethoscope; and, although electric headphones are now inexpensive and ubiquitous, they were novel at this time.

Nevertheless, as the flight took off and Dr Bose put the headphones on to listen to the audio, he was sorely disappointed. It's true that the headphones offered better performance than pneumatic tubes, but the designers evidently hadn't considered one important factor, the loud ambient noise in the aircraft's cabin. Wind noise and the drone of the aircraft's engines interfered with the audio experience, rendering these new devices only marginally better than the ones they replaced.

This caused Dr Bose to ask himself a question: why can't a headphone be developed that delivers the sound that you want while cancelling, or rejecting, the noise you don't want to hear? This seemingly simple question was the impetus for what would become a long and complex project at Bose, delivering ground-breaking technology that, arguably, changed an industry. Dr Bose, having calculated the equations on the back of a napkin, returned to the company's headquarters and assembled a team of engineers, resulting in a research project that would span 11 years before producing a viable commercial product.

Development

As research continued, the lead engineers for the noise cancelling project were provided further evidence of the need for the product via the round the world Voyager flight. It was 1986 and, in an effort to reduce weight, a decision was made to remove insulation from the Voyager. As a result, mission doctors had predicted that Dick Rutan and Jeana Yeager would lose approximately a third of their hearing due to the noise exposure that was expected as the acoustic environment would be extremely loud and reverberant. Though initially reluctant to include the weight of the fairly large and heavy Bose prototypes, Rutan declared the Bose prototype headsets mission critical after experiencing them first hand. The Voyager experience therefore confirmed the team's belief that this technology had real value and delivered real benefits to the user.

In 1989, Bose introduced the first commercially-available active noise cancelling headset. This product was so new and unique that Dr Bose wanted a clear panel on the back of each earcup so users could see the full extent of the electronics within them. The success of the Series I aviation headset encouraged the engineers at Bose to continue their development of even better products and in 1994, the Series II aviation headset was introduced, offering improved ergonomic designs and improved battery life.

Although there was really nothing else like it in the market, the headset team was not satisfied to rest on their earlier successes. The desire to always do better, deliver greater benefits to customers and to lead the way with innovative technologies resulted in the introduction of the Aviation Headset X (AHX) in 1998. This headset offered the same noise-cancelling performance as the previous, larger and heavier Bose headsets, but did so in a much lighter configuration with significantly lower clamping force. The key was TriPort® Acoustic Structure, a new, unique technology developed at Bose that allowed a smaller earcup to deliver the noise cancelling performance once thought only possible through large earcups. This meant Bose could design a smaller, lighter and more comfortable headset than before.

In 2010, Bose introduced the next and current iteration, the A20 Aviation Headset. The A20 built on the performance of the AHX, but utilised additional new technologies developed by Bose engineers. The A20 offered better performance in louder environments over an even broader range of frequencies. Instead of one microphone in each earcup to measure the ambient noise, Bose used two microphones which provided a more accurate measurement. A proprietary driver (speaker) in each earcup was designed specifically for use in aviation headsets and delivered greater audio clarity and reliability than before. The A20 also offered Bluetooth connectivity for use with portable audio devices like EFBs, iPads, portable GPS systems and others.

Glenn Burack, Director of Aviation, Military and SoundComm Headsets



BOSE

AVIATION

Next generation

The latest innovation from the aviation team at Bose came in 2018 with the introduction of the ProFlight Aviation headset. The ProFlight was designed with two goals in mind: to create a very lightweight, noise-cancelling headset for pilots flying turbine-powered aircraft, and to create a new category in the aviation headset market. The ProFlight is the industry's lightest and, arguably, most comfortable active noise-cancelling communication headset for pilots and, along with the A20 Aviation headset, is one of two models the company offers.

The result of years of research, the ProFlight is a headbanded, in-ear headset that delivers three user selectable modes of noise reduction, Bluetooth connectivity and a new feature called 'tap control for talk through communication'. Tap control allows the user to easily put either earbud into what is essentially a hear-through mode. It is intended for temporary use on the ground or in flight when, for example, a flight attendant or mechanic enters the flight deck and eliminates the need to remove an earbud when speaking with someone off intercom. Other innovations incorporated into the ProFlight headset include the ability to easily swap the boom microphone from side to side without a tool.

In July of last year, Bose introduced the ProFlight Series 2, which builds upon the success of the original ProFlight headset but offers some notable refinements. These include a thinner, more flexible down cable, improved tap control functionality, the availability of a non-Bluetooth version and a simplified carry case to make stowing the headset easier.

A desire to improve

In 1978, as a result of a disappointing experience, Dr Bose questioned the technology he was using and wondered why it couldn't be better. That curiosity and desire to improve and to not accept the status quo still permeates the culture at Bose. There is an unwavering desire to deliver real technology that improves the user's life in some meaningful way. Although Bose only recently introduced the ProFlight Series 2, its team is not standing still and without doubt, more innovative products can be expected from the company for years to come. ■



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