



# RESEARCH2REALITY

Shining a light on research & innovation.

## Considering Carbon Footprints in the Sky

An interview with Professor David Zingg  
Aerospace Engineer, University of Toronto

### What is the science behind airplane design?

The focus is a lot on sustainability and fuel efficiency. The demand for air travel grows about 4 or 5% a year and efficiency typically improves about 1% a year. So if we keep those the same, we're going to be emitting more and more CO<sub>2</sub>. So we have to reverse the trend, and hopefully not by reducing growth, but instead by improving efficiency.

Some of the new concepts that are on the drawing board include something called a blended wing body, where rather than having a distinct fuselage and wings, they're sort of blended. Another one is a joined wing, where there's a lower wing and an upper wing that join. And then there's a truss brace wing which sort of almost looks like the old fashioned but it has some potential, where there's a truss that supports the wing.

The industry is fairly risk averse, and they have short term interest, like shareholders, that keep them on their toes. So the type of thing we're doing, it fills a need that industry that can't do.

### What excites you about your research?

What's exciting is that there's more interest in novel aircraft now than there has been in the past 30 or 40 years. The process of bringing a plane to market is probably 20-30 years, but that process has started; we're not at ground zero in terms of these novel aircraft.

So I think this is a perfect example of something where there's a huge societal benefit. Society benefits from the movement of goods and people. I think air travel brings the world together. It's a big part of the global village. Yet it won't be sustainable if we just expect industry to make the investments. I think the government is investing on behalf of society to do something here that will benefit society greatly.