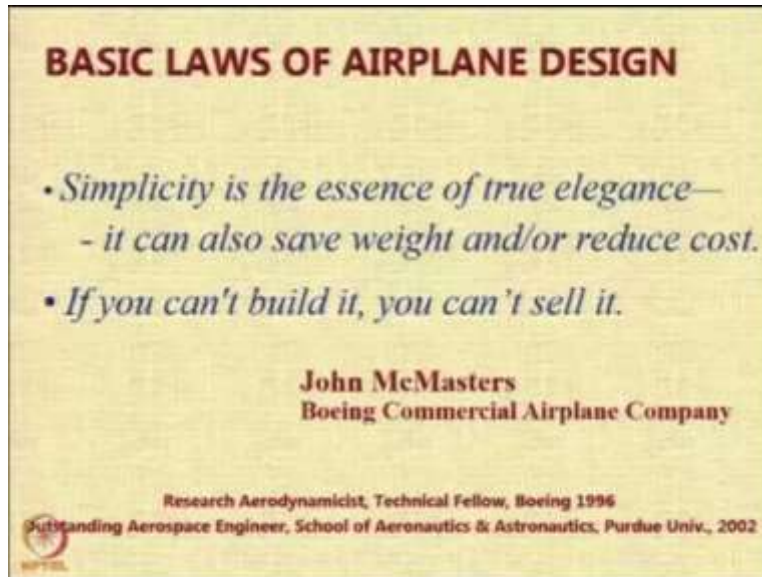


Introduction to Aircraft Design
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Lecture No – 07
Basic Laws of Aircraft Design

Let me now sum up with some closing remarks about the introduction to aircraft design.

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Let us look at some basic laws of Airplane design. One fundamental law is that, simplicity is the essence of true elegance; it can also save weight and or reduce the cost. When people do aircraft design they try to bring in very complicated or very new looking or innovative shapes. But complexity does not help, simplicity is the true elegance. The second important law of Airplane design is that if you can't build it then you can't sell it.

So ability to build it quickly, less expensive and in large numbers using resources available to you is the key in making a good aircraft design that can be sold and these laws have been propounded by John McMasters who spent his distinguished career in the Boeing commercial Airplanes Company and recently honored by his parent universities his Alma mater Purdue University.

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Some final comments from my side, the first thing that you should educate the student is, that there is no need to design the new aircraft if an existing aircraft is available and meets your requirements. Sometimes the aircraft that meets your requirements may be denied to you or your country because of political reasons. Then it is fine to make your own aircraft to meet your own requirement.

But, if it is possible to get something you know, that meets your requirements totally and it is cost-effective because your exercise is very expensive and it takes lot of time. So one have to be very careful in first deciding is there a need to design the new aircraft or can an existing aircraft be used to modify your own requirement to meet your own requirements. Secondly, there are no unique solutions in aircraft design.

As I mentioned this also in one of the past clips. You give the same design problem two or three different design companies equally good and equally capable. You will get a radically different solutions to meet the same requirement. This has been demonstrated in the several aircraft design competitions which have taken place in which the US DODS funded the design and to meet the same requirement, you know, two different companies came up with two different aircraft.

Next is about the process of aircraft design. It is not something that can be logically terminated at any given point. It has to be terminated artificially it runs out either when the money or the time

or the patience runs out. So this is something which has to be really understood, you cannot have convergence in Aircraft design naturally, it has to be done. secondly it is a team effort okay. You cannot say that I have designed this aircraft.

Because it is a team effort and when you have a team, in the end there are no heroes there are only villains. Because, Everyone has a complaint about the other team member who did not do what they thought was possible to do it. And finally the bottom line is cost; cost is everything in today's operating scenario for aircraft design. A design is good if it is cost effective otherwise it is not even worth the paper on which it is drawn.

So the students should be sensitized to these important points regarding aircraft design. Thank you for your attention, if you have any questions we will use the standard channels to sort out your query, thank you.