Lighter-Than-Air Systems
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Lecture - 67
***Aerium* Hangar for CL 160 Airship**

So let me show the world's biggest hangar which was built for what was going to be the world's biggest airship. This is called as the aerium hangar.

(Video Starts: 00:27) This is a small film shot from the air by a hangar. This hangar is in a disused Second World War airship at a place called Bran in Germany, which is around 70 miles away from Berlin. So in the year 2002, I had the chance to visit this place. Because we had gone to Cargolifter the company, which was based in this hangar to talk about cargolifter airship project and the possibility of associating with them in some R and D activities. So, first I want you to just have a really close look at this hangar and then I give you some idea about its dimensions, its cost, etc. So this hangar was built by the Cargolifter company. The work started in the year 2000.

I have a very interesting time lapse video that shows the construction of the hangar. So what they did is from the same place in the ground they took one picture everyday. And the series of these pictures becomes a time lapse video of the construction activity. So notice this hangar has on the sides these cutouts. These cutouts are basically meant to help in removal of the turbulence created by the side winds because on such a large size side winds sideways will create a lot of load.

The shape of the hangar also is very interesting. It has been optimized for reduction of the load acting because of the drag due to the ambient wind condition. And on both sides, we have these clamshell type opening doors, which were robotic doors and that could be open. In this particular film, we are seeing that the back door is slightly open to allow for the draft of the air as we saw in the previous film. So this is the basic hangar. **(Video Ends: 02:39)**

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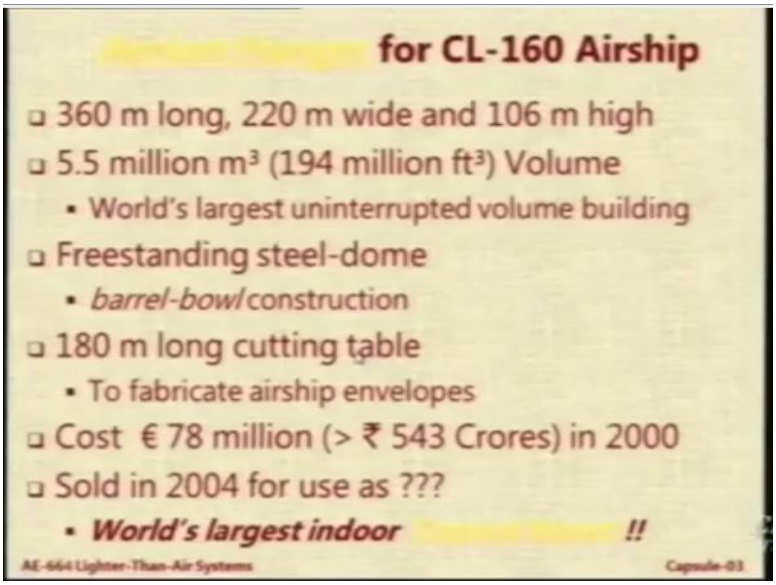

Now let us learn a little bit more about it. Look at the dimensions of this hangar. The length is 360 meters. The height is 106 meters, it is more than 100 meters high and the width is 220 meters. So at 5.5 million meter cube, this is the world's largest uninterrupted volume building. And the next largest building is the factory of building at Everett which makes the final assembly but that is occupied building.

This is the largest unoccupied or free building. It is a freestanding steel-dome structure and the shape is called as a barrel-bowl shape. And inside this hangar we have seen a cutting table which was 180 meters long. This particular table was required to cut the petals of the airship. The Cargolifter airship its petals were so large that you needed a table of 180 meters length on which you can cut the petals, give a proper contour and cut the petals.

And then if you join the petals you will get the envelope. The cost of this hangar was 78 million euros in 2000 which is approximately 543 crore rupees. So, before you start even thinking of making the airship, you have to invest 550 crores odd of money just to make the hangar in which you will start the activities. Now, this company Cargolifter it went bankrupt in 2002.

We will discuss towards the end of the course when we look at the commercial aspects of LTA systems why it went bankrupt? We will talk about cargolifter also. So, therefore if a company goes bankrupt, it cannot keep an asset of 540 crores just standing. So, now it has been sold for use for some other purpose. But can you think of what could be the purpose for which this hangar was sold? Go for a very wild imagination.

Imagine you are an entrepreneur and someone says hey I have this big hangar 360 meters, 220 meters, 106 meters high situated 70 miles southwest of Berlin in an abandoned or disused airfield, what would you use it for? So go ride. Let me give you one hint. The application is totally nontechnical. Nothing to do with aviation airships.

"Professor – student conversation starts." Yes. Olympic Stadium. Olympic stadium no because Olympic Stadium is already available in Germany in Berlin. Biological warfare. A biological garden or forest. Biological garden of forest, Varun is near the mark biological garden or forest. It was used as an amusement park. **"Professor – student conversation ends."** There is something called as a tropical resort.

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So I will show you some pictures of what is there inside the hangar now. So inside the hangar, they have created this tropical garden so that you can see the hangar valve are visible. You can see that they have created a small tropical island inside this particular hangar.

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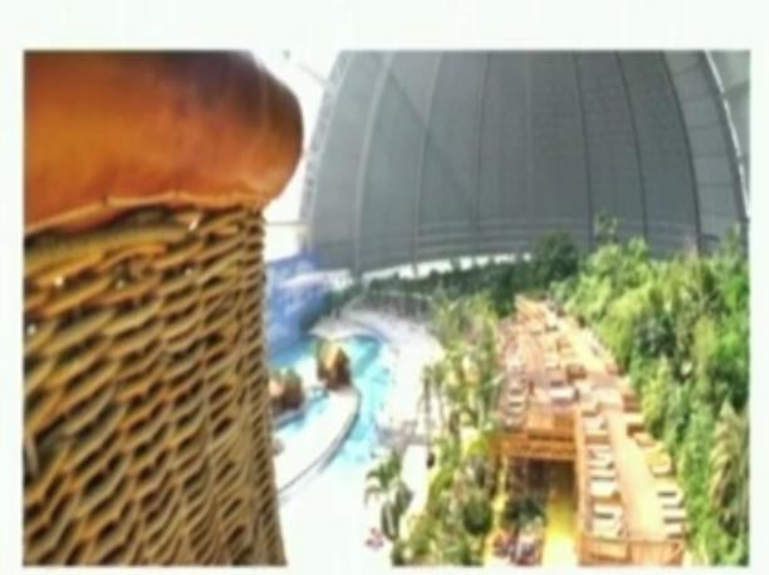

And this is a better picture. This shows you what they have done inside. So when it is very cold outside you use the side of the hangar to bring in the sunlight, you can do some breathing. It may be snowing outside, but inside you can create an artificial tropical island. This is Germany very cold. So they do not get an experience of hot climate and they they spend a lot of money in traveling to so many places.

So they said do not travel anywhere, just come here Berlin and we will give you the tropical experience right in near Berlin. So this is what they are doing in this particular place now.