

Lighter Than Air Systems
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Lecture - 51
Outdoor Hot Air Balloon

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Here let me show you a very, very short video. Have you heard of the name Arvind Gupta? He makes fantastic Toys from Trash. He allocated the video very recently of hot air balloon.

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This is the hot air balloon.

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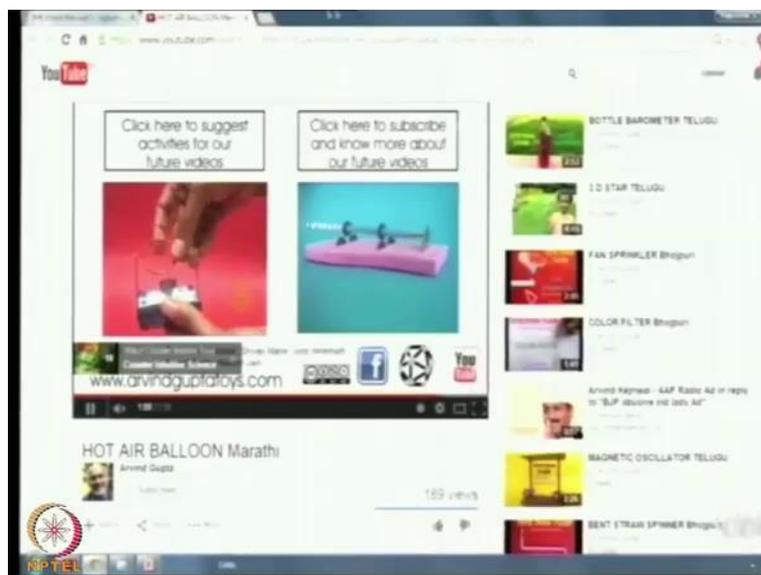
Basically, it is a thin wire ring and wax in the centre for burning.

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Light weight ring and then there is the simple Paper which is used for the kites. There you go; they claim that it can go up to 100 meters. So, the height given to you in the foyer is much, much lower 100 meters. They have not done any course on LTA systems or anything.

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Still, they are able to make it. So, I expect much higher. In this case, there is nothing Payload. They are just lifting themselves. The challenge is to use is in designing the system which can lift more Payload. The winning team will be the one which can carry the highest Payload fraction. If you make a bigger balloon, you will have more buoyancy and you have more self weight. So, the challenge with this assignment is how do you decide the dimension so that you can the highest Payload fraction?

And if you make the calculations properly you will come across one dimension beyond that the gain in the payload fraction is less than the weight So you have to stop at that point.