Innovation by Design
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Module – 08
Start of section 2
Lecture – 49
The seed for innovation
Creative ideation and models

(Refer Slide Time: 00:09)

So, what happens in the user study? So, I was taught in IDC that you go and fill petrol yourself, stay in the stations, learn from the operators, learn from the display people, learn from all the aspects working with the pump. So, after all that study very, very good insides came like you know Manoj was talking about now the so much a problem with the display, so much of problem with the length of the hole, so much of problem the user getting tired and have the shape because they have used the heavy hose, so all that we studied.

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And after doing all that study you also need to study what is happening with products around the world. So, we studied the international products.

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Then we studied a local market which put L and T out of business.

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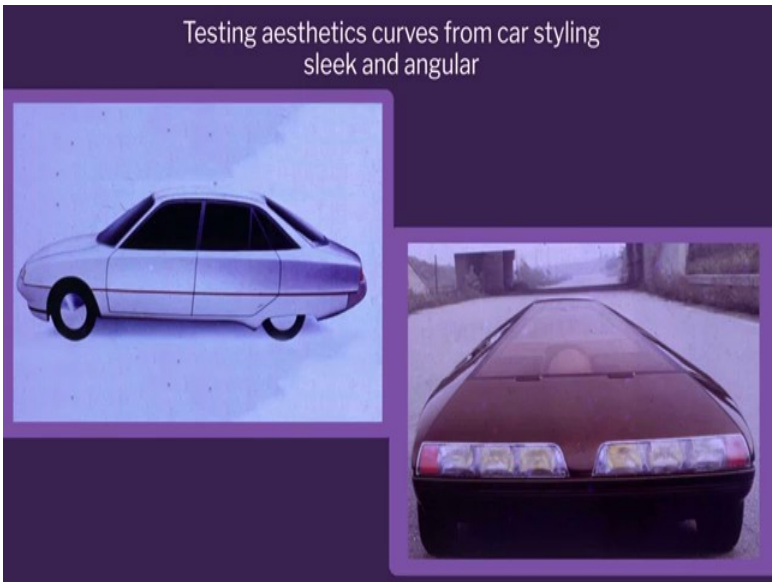

These are all you know essence of design.

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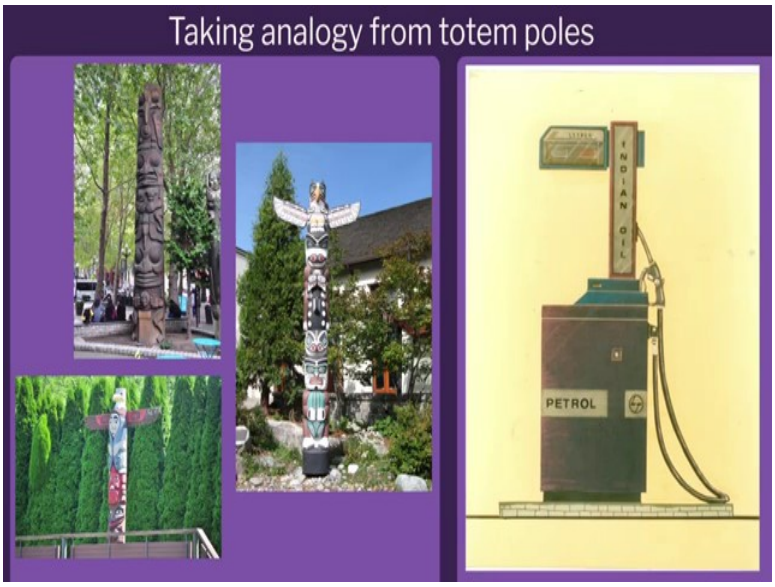

And then we started our ideas sketching. In fact, we read some 20-30 sketches, multiple scale models.

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So, we can see the scale model.

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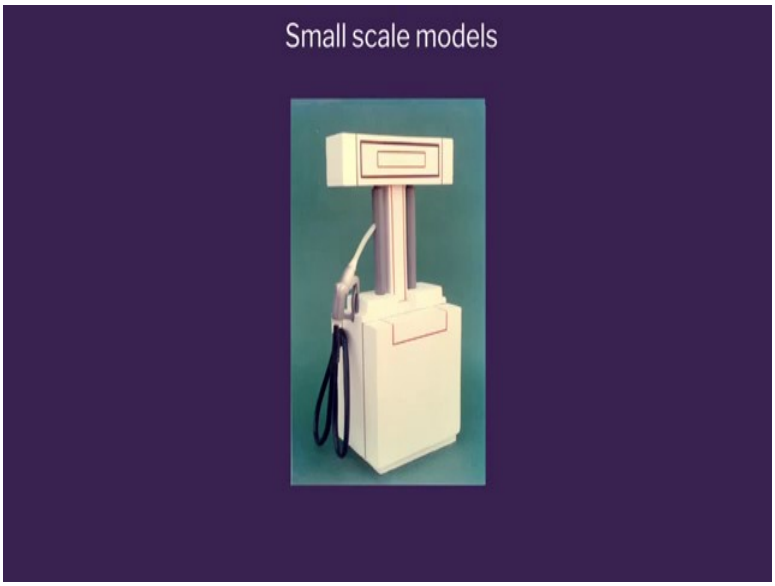

This is a small scale pump model of this size.

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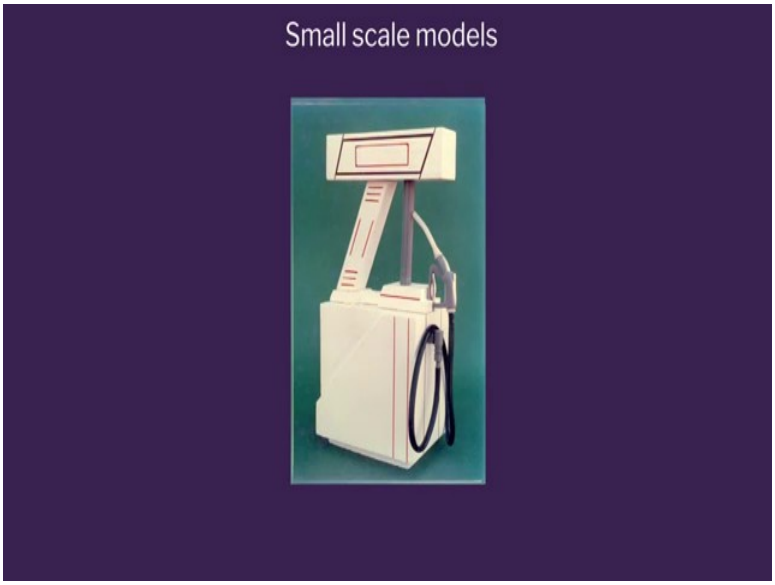

So, when we meet these models, we realized that this model was not very unique or very different from other existing products.

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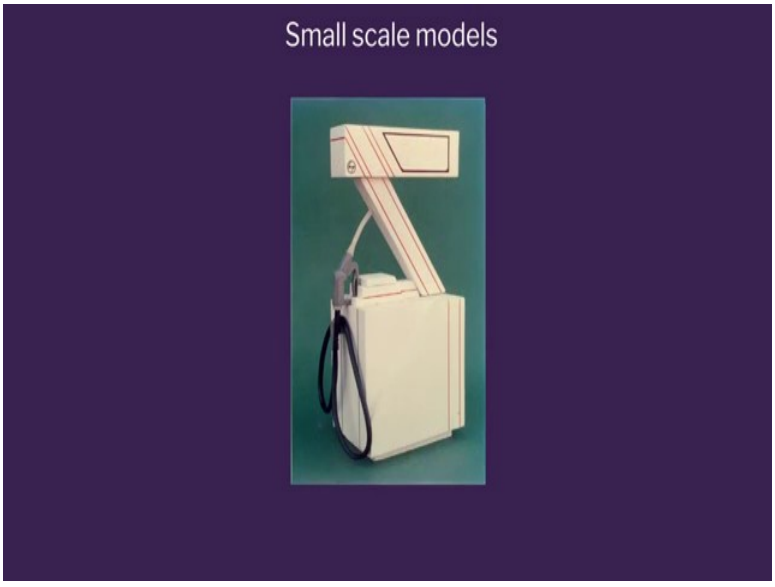

So, like you know we were analyzing this model was unique, because it was like having a sloping column and a much more variety.

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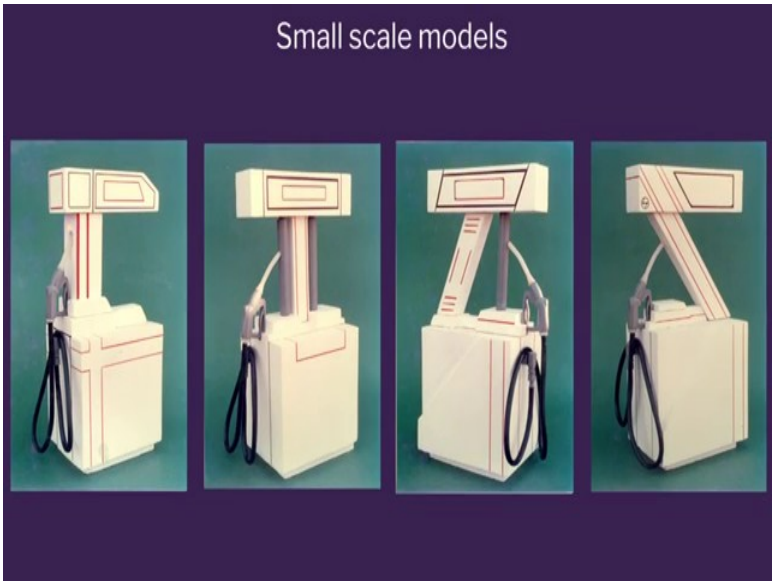

And the everlasting credit of using scale models and playing with models, this whole story of coming up with the Z-line came up because of play with this particular model. It was a small model in the hand. We are trying to see how the sloping column can work better, and we said why to have the pipe you see that vertical pipe. So, we removed the pipe which takes the you know signals from the bottom to the top, and the electronic signals as well as the electrical wires. And we removed that pipe and became phenomenally clean, sleek as well as you know like less clutter. So, this is the predecessor which was not there in the sketch form.

So, only when we started making model, so I always keep telling my students that when you start making physical models, scale models, your creativity grows at least 4 to 5 times. So, here we have this you know pump which is at the plaster scale small scale. And then we made a big presentation to the management. Management said we do not, we do not want to risk this completely novel out of the box idea, but we will make a prototype of this as well as a prototype of the pi, you saw the pi design. So, those two prototypes we will make.

But I said before prototype I would like to make a mock up model. What is a mock up model? Thermocoal which does not work, just made up of thermocoal. So, this is a mock up model made out of cardboard and thermocoal. And then we went for a meeting here what is the advantage of making these models, you get a lot of inputs from across your company from the manufacturing people who came and told us what is difficult in manufacturing, the marketing people came and told us what is good or bad about the new

features which they think was important, the people from the maintenance came and said oh wow this is very even a good to maintain, but you see to the box comes off very easily. So, everybody can relate to a mock up model, very early in the design phase. So, you can make quick changes and make it much better for implementation.

So, these are the first mock up model. And then we made out of the mock up models, we you know have made at least 3 mock up models. And we created two prototypes. You know with the pi shape, the pi which was the balanced form and we had the Z-line form.

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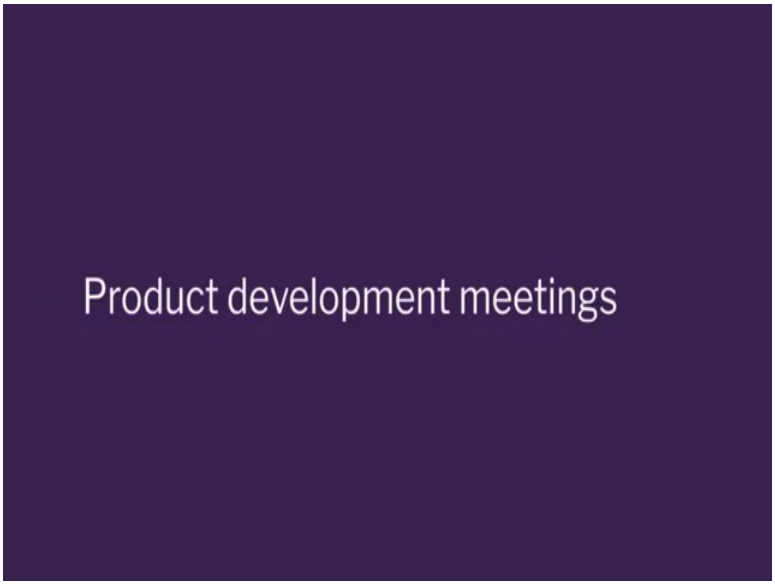

So, there was these two forms again in big companies like Larsen and Toubro there is something called the product development meetings. In the product development meetings, a very very tough meeting where, every department comes for the meeting. And at this stage it went to that particular meeting where we had head of manufacturing, head of product planning, head of finance, head of maintenance, head of marketing. So, all these people will come and they will look each one will look at his point.

What will the finance guy look at? He will see how much investment I need to make in making these two products come true, investment from point of your tooling, investment from point of your buying new machines, investment from point of view of development. What will manufacturing guys say? Oh, will my existing manufacturing machines take care of all the components. We gave him a brief that the manufacturing you should not

change some of the synergy. So, we kept 90 percent manufacturing same, but we had 10 percent improvements because without that you cannot have innovation coming in.

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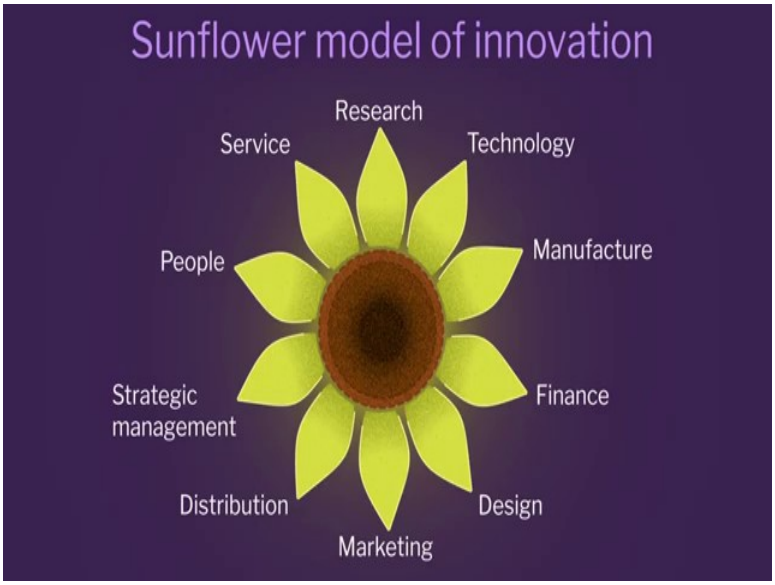

Remember the sun flower model at every level you need to innovate. So, the major things we kept constant, but we you know innovated on some very key components to come up with great level of innovation. So, how many of you will choose the first or the second. Within the company, it was very interesting that there were 70 to 80 percent people who chose the pi design. Why would they do that? Tell me.

Student: Stable design.

It is stable, very good. What else?

Student: Safe.

Safe, very good. What else?

Student: People are used to that kind of.

People are used to perception is very, very strong, remember letterbox example how I failed miserably when I you know negate in the perception. So, then what else?

Student: Easier to install and probably.

Very true, easy to install, easy to be you know there is no you know headache at all.

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But, but if L and T is talking itself as imaginary to the everlasting credit of you know Mr. Devindernath who used to teach at IDC, he is to come, he was the head of R and D there. And he was my boss. In that meeting he challenged the manufacturing and challenged the people in the maintenance, and said is it possible for you to take up this challenge of creating an out of the box idea, and taking it to the market.

When you give a challenge to people, what will they say very accomplished engineers and accomplished people in the company, they took up the challenge, they said yes we will do it. Because they are like had all the strengths, they had all the best machines in the world to produce a pump which was very different from any pump which can be manufactured very easily by local manufacturers.

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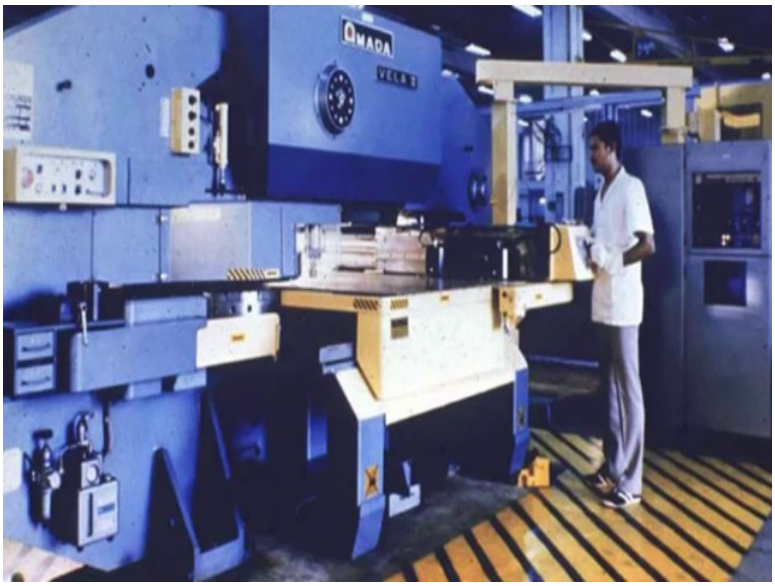

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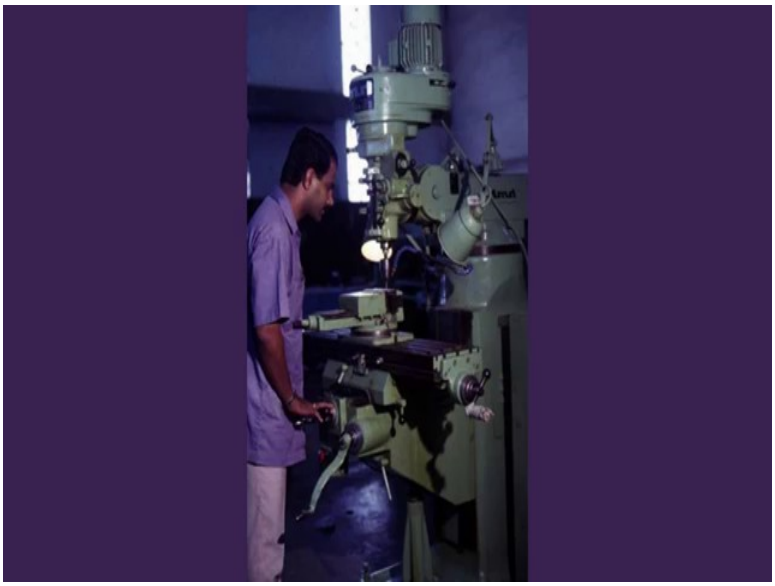

Whereas Z-line needed very, very high end CNC machines very high quality control of dimensional control of the assemblies, because just imagine if the sloping column becomes at an angle it looked very shabby, leave alone making it look out of the box and elite.

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In L and T we have large petrol station ourselves. So, we install both of them over there for study purposes, and we checked what is happening, they are all working prototypes. So, we reach the working prototype level.

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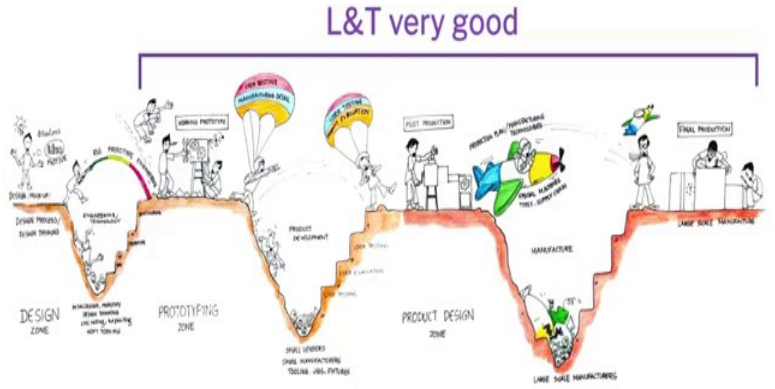

What is the advantage of Larsen and Toubro as I told you after your first mock up, you get the complete strength of the company to smoothly sale to the next stages, so that is the beauty of this design and this is the final you know selected concept, that is me if you can see me in 1988, I think it was around 26 years old, at that time.