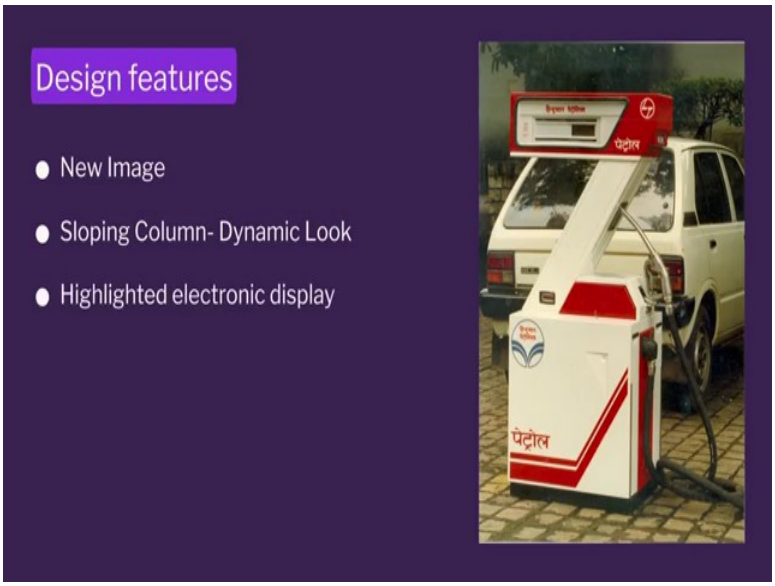
Innovation by Design
Dr. B. K. Chakravarthy
Department of Engineering Design
Indian Institute of Technology, Bombay

Module – 8
Start of selection 3
Lecture – 50
Pinnacle for Innovation
The user delight

(Refer Slide Time: 00:05)



And then these were the features of the Z-line pump at the concept level, it created a completely new image everybody was very happy within the company. The sloping column remember in form and aesthetics. What was my brief? My brief was to design a new look petrol pump. And all the pumps were boxy to create a new look, we had to come up with a dynamic shape.

And electronic product remember electronic product had to have a it is a new animal right, and mechanical products is a mechanical electrical, electronic product is a electronic product. So, your whole you know design has to be very different. So, how can we show high tech look in a product.

(Refer Slide Time: 00:39)

(Refer Slide Time: 00:42)

So, we took cues from TVs and radios and all and we said we need to have a display which is very, very prominent and which is good.

(Refer Slide Time: 00:46)

So, we have the display which came up that is called the high tech look of the pump.

(Refer Slide Time: 00:50)

Because of the display, and when the display glows in the night it makes it look very high tech.

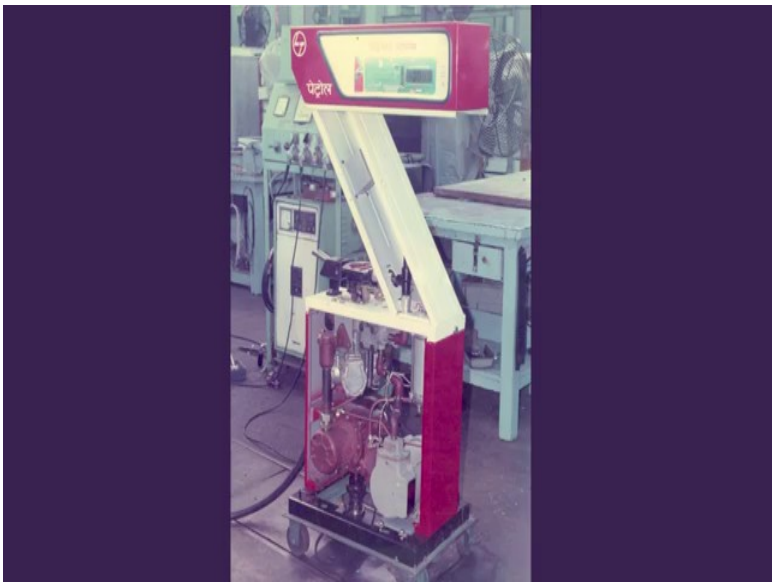
(Refer Slide Time: 00:54)

Then we also came up with this modular assembly the hydraulics was assembled separately in the hydraulics division of Larsen and Toubro and the electronics was assembled, in earlier pump it was together.

(Refer Slide Time: 01:00)

It was so difficult, because electronics needs different type of equipment, different type of clean rooms, different type of systems.

(Refer Slide Time: 01:09)



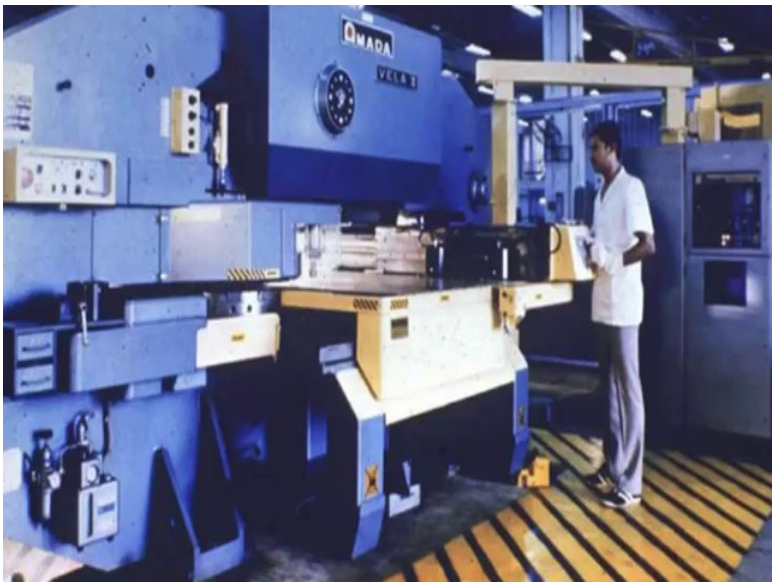
Whereas, hydraulics needs the different tanks, a lot of testing happening with the fuel before you put on. So, it is quite messy over there. So, we did modular design very early, so you could you know get very good sort of details over there.

(Refer Slide Time: 01:23)

And then we got a pilot production order from one, one product from each company, the Bharat petroleum the IBP, the Indian oil, and then the Hindustan petroleum, all of them gave one, one orders saying that for pilot production we will give only one order. One piece is very difficult to manufacture, but L and T being L and T, they said we will you

know spend all the money. If you make, for example, if the product cost is say 1 lakh rupees, if you have to produce one piece, how much will it cost? 10 lakh rupees that is the issue of mass production. So, we spent 10 times of cost because we had to make inroads into the market.

(Refer Slide Time: 01:58)



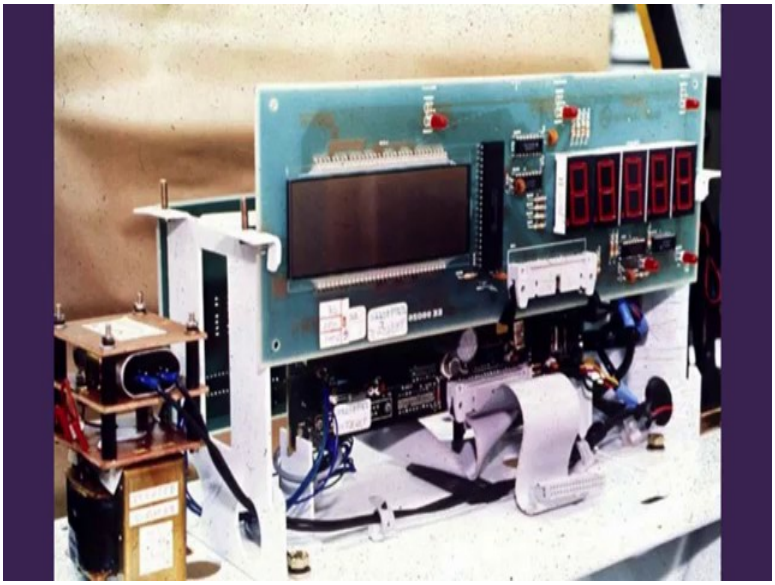
So, L and T had this large CNC started punching machines, their accuracy was 0.01 millimetre. And then we had convenience for the station the secondary users, in fact, earlier you know what used to happen, the station the petrol pump owners had to come to the pump, open the panel, put a torch and read this display which is to be read in the morning and in the evening, how much petrol was sold during the day in his shift, but we said our secondary users is also important.

(Refer Slide Time: 00:20)

So, what we did we moved it up and we had a nice display for him. So, he can just come to the pump and read in the morning and go. So, user convenience for every user is very critical. Here we just used you know creative ideation from car industry lift the bonnet.

(Refer Slide Time: 02:41)

(Refer Slide Time: 02:46)



So, we lifted the bonnet, and we fitted the cards like a computer industry. If the card gets out of order, you can replace it in 15 minutes flat, early it is used to take 3 hours. So, just imagine the amount of loss to the company station owner if he cannot operate a pump for 3 hours. So, this became a very, very you know important feature in the pump easy maintenance.

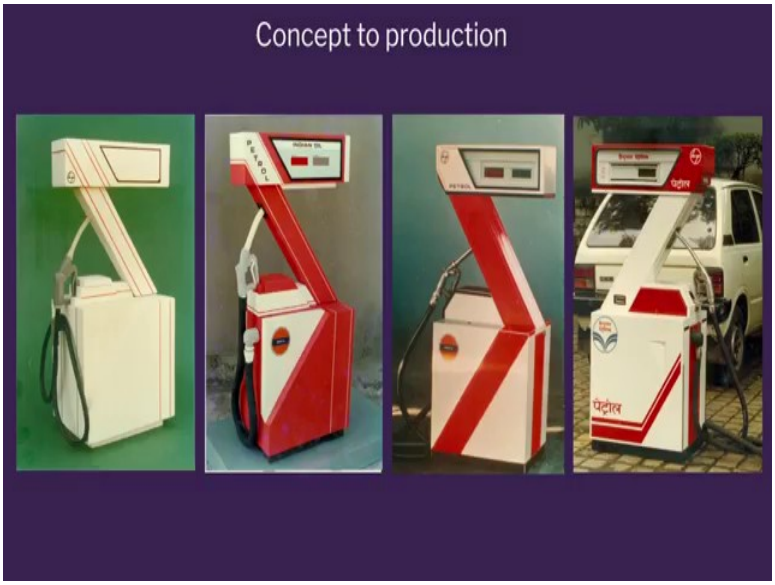
(Refer Slide Time: 03:05)

Then we had some excellent painting systems in Larsen and Toubro which were in line painting, we used to have in line automatic painting lines, so very good you know painting lines were there. We had great manpower as I told you very, very skilled manpower for machine parts and pumps and motor's and all were phenomenally done.

(Refer Slide Time: 03:23)

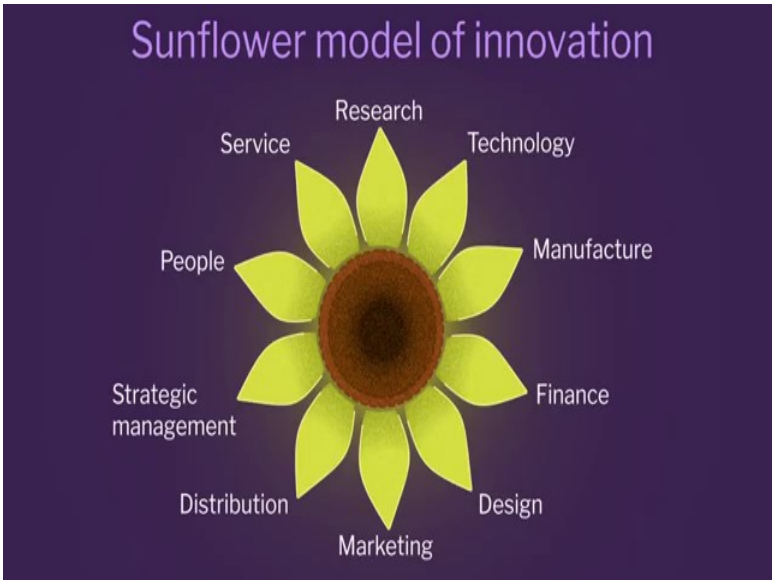
And, then we were very very happy that we could come up with our first pilot production. You can even see the pellet here this is coming out of the pilot production from the factory floor. So, now after the pilot production, we installed all of them, all the five in five different locations in Bombay, and all the company owner executives went and saw them, and they were all very, very happy.

(Refer Slide Time: 03:43)



Especially, because it had a new look, it had a lot of these interesting features. So, out of the five companies Bharat petroleum immediately placed an order, again a pilot order, but large order of around 200 petrol pumps.

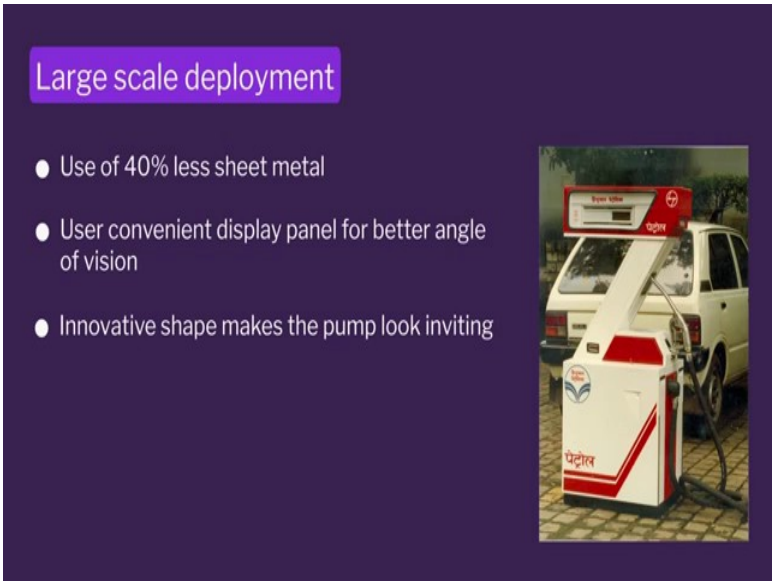
(Refer Slide Time: 04:04)



So, when I talked about the innovation flower, it is not just because of my shape and my you know like user interface that might our product was innovative, no, that petal manufacturing, technology, that every petal had phenomenal amount of in depth understanding, because I am doing design, innovation by design, I am showing only the design story. But I need to tell you about the other aspects which were very critical.

And this electronic development was phenomenal, the type of development are the engineers did in our division electronics division was very good and this particular you know like electronic cards were very robust and you know very little failure in the field. And, then we had large scale deployment like as soon as Bharath petroleum sort of give an order we put up these pumps all over you know all over the country. So, what are the key you know points? You can clearly see that we use very little sheet metal right.

(Refer Slide Time: 04:59)



The shape itself demanded we use 40 percent less sheet metal than the earlier box, then we had you know very convenient user display panel which was wide angled.

(Refer Slide Time: 05:05)

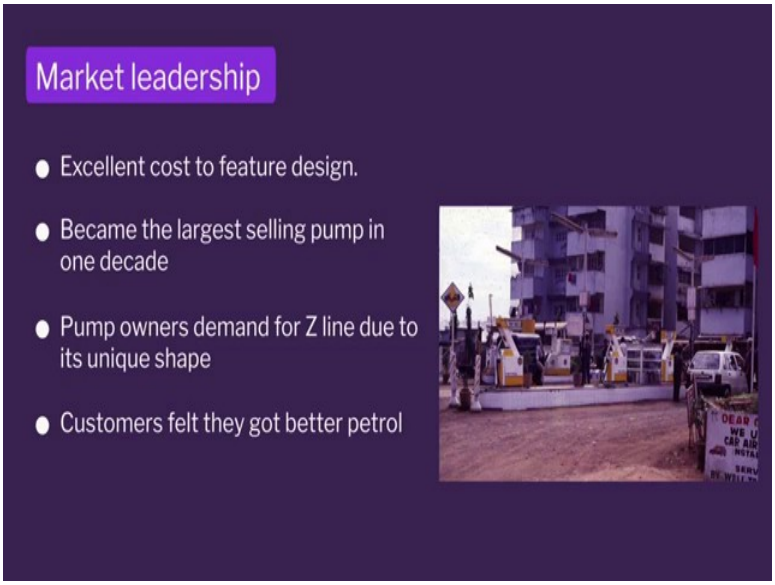
So, what happens when the display is wide angle, you can see from large angles, the angle of vision is larger. And the innovative shape made the pump look inviting.

(Refer Slide Time: 05:17)

We also had multiple displays that is one display running in rupees and another display for running in liters. So, we had very good chips which could actually run your pump on both. So, we used to have a button there say that if you want to buy for rupees 100 you could actually you know rather than buying the litres you could buy for 100 that was the first time L and T introduced; it now it is very common practice, but at that time it was very new.

And then we also had a three displays where you have the rupees, the litres and the rate of petrol coming in you know whenever you design a product you need to have multiple variants. So, the costs were higher of course, but there was a chance of the oil companies to have differentiation in the cities and in the rural areas or whatever they want to do, so that they can have much better systems in place.

(Refer Slide Time: 06:03)



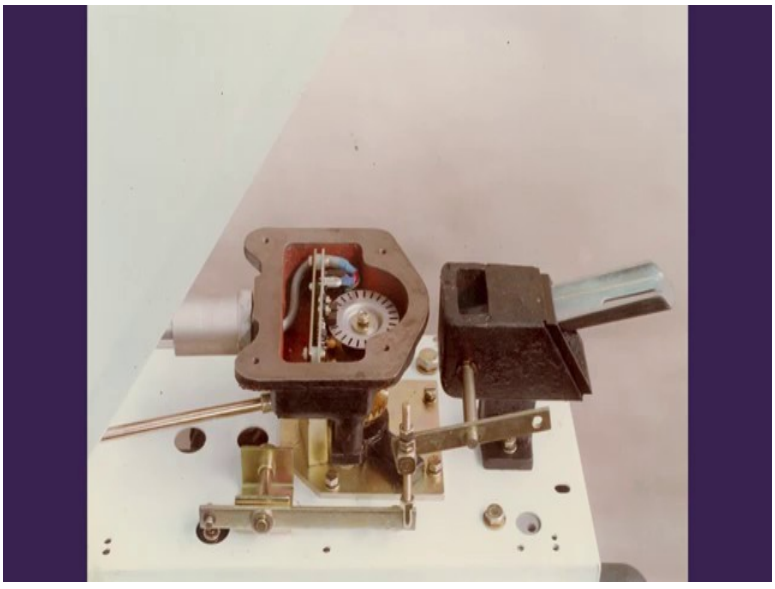
And then what we were very very happy that within 2 years L and T made even into a leadership position, the competition was wiped out. There was phenomenal cost to feature design, became the largest selling pump. And what was surprising was that the customers demanded for Z-line pump from the oil companies; they said we want only Z-line. And then the biggest satisfaction came when I was in the company and I read this you know Bharat petroleum internal magazine, and the customers thought they got better petrol and better quantity, correct quality of petrol from the Z-line, so that is a perception they got.

So, now, just imagine a shape can be related to perception right. So, whenever they went to Z-line petroleum pump, they got better petrol and better measure, and they did not get better measure of course, because we did a lot of technology inside we had you know special technologies to prevent cheating. So, we did a lot of those you know small improvements as I told you like from the innovation model, and then because the shape was new, the product was new, people also thought they got better quality petroleum that was you know great satisfaction for us in the company.

(Refer Slide Time: 07:01)

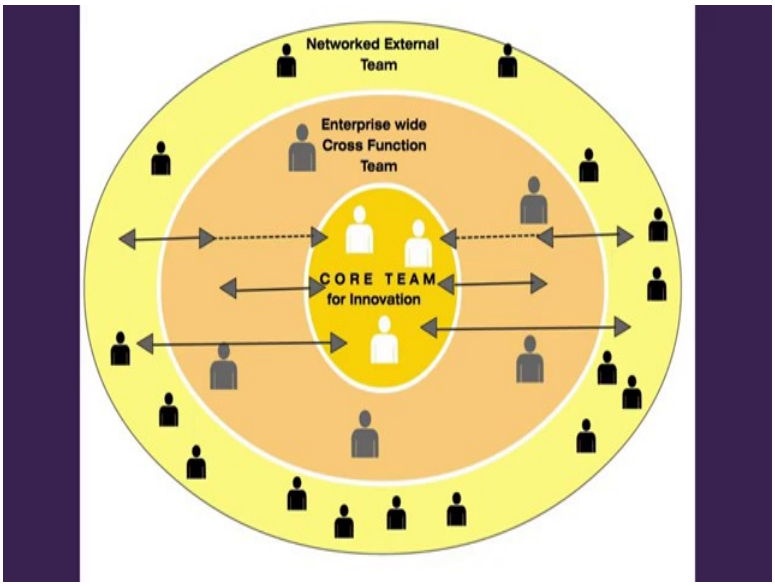
And then you know as you know rightly been discussed the unique shape you know gave it leadership position, and you know much better maintenance access from the top and from the side.

(Refer Slide Time: 07:11)



In fact, the sensors are located over here the sensors. So, when you open this box out, even you have very good access to sensors and maintenance. And within 3 years when we went to school for a survey, and we asked children to draw petrol pumps, the children were drawing the Z-line, so that becomes a very important aspect of semantic change. So, people registered that you know as the you know major shape, because it is a unique shape.

(Refer Slide Time: 07:35)

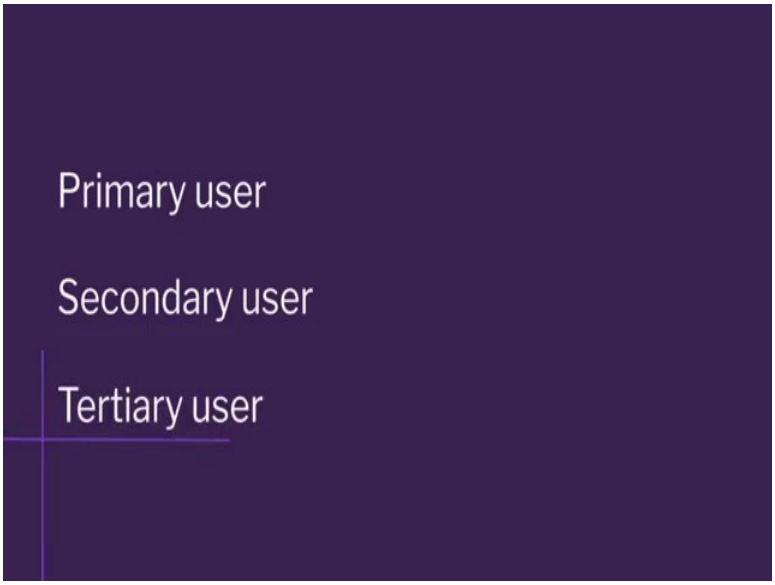


So, when you do the collaborative teaming, you are you know surely bound to be successful and come up with innovative products in the market. And, then by using with all these things the pumps everywhere we could see scales and scales of pump coming up, the displays were easy, they were you know demand for more and more all new stations would you know put out our pump. And, you know like it is now installed all over the country it is like nearly 1700 pumps displayed.

But now it is out of market. And we will you know understand how you know we close this I think the product it went out of production in 2001, we gave 5 years life. So, L and T car kept selling till 10 years, 10 to 11 years they kept on you know selling because the product is popular, they do not actually take it out of the market. So, that became very, very sort of successful and the company also turn over grew nearly 4 to 5 times in the petrol pumps sector itself.

And it was a real you know case study on innovation, where the customer accepted it finally, and that is why we call it innovation. And, the large scale deployment across the across the country and on top of it very critical aspect was that we had the users basically you know at multiple levels were satisfied.

(Refer Slide Time: 08:52)



The primary user that secondary users and the tertiary user, all of them were having something in the pump which was valuable for them.