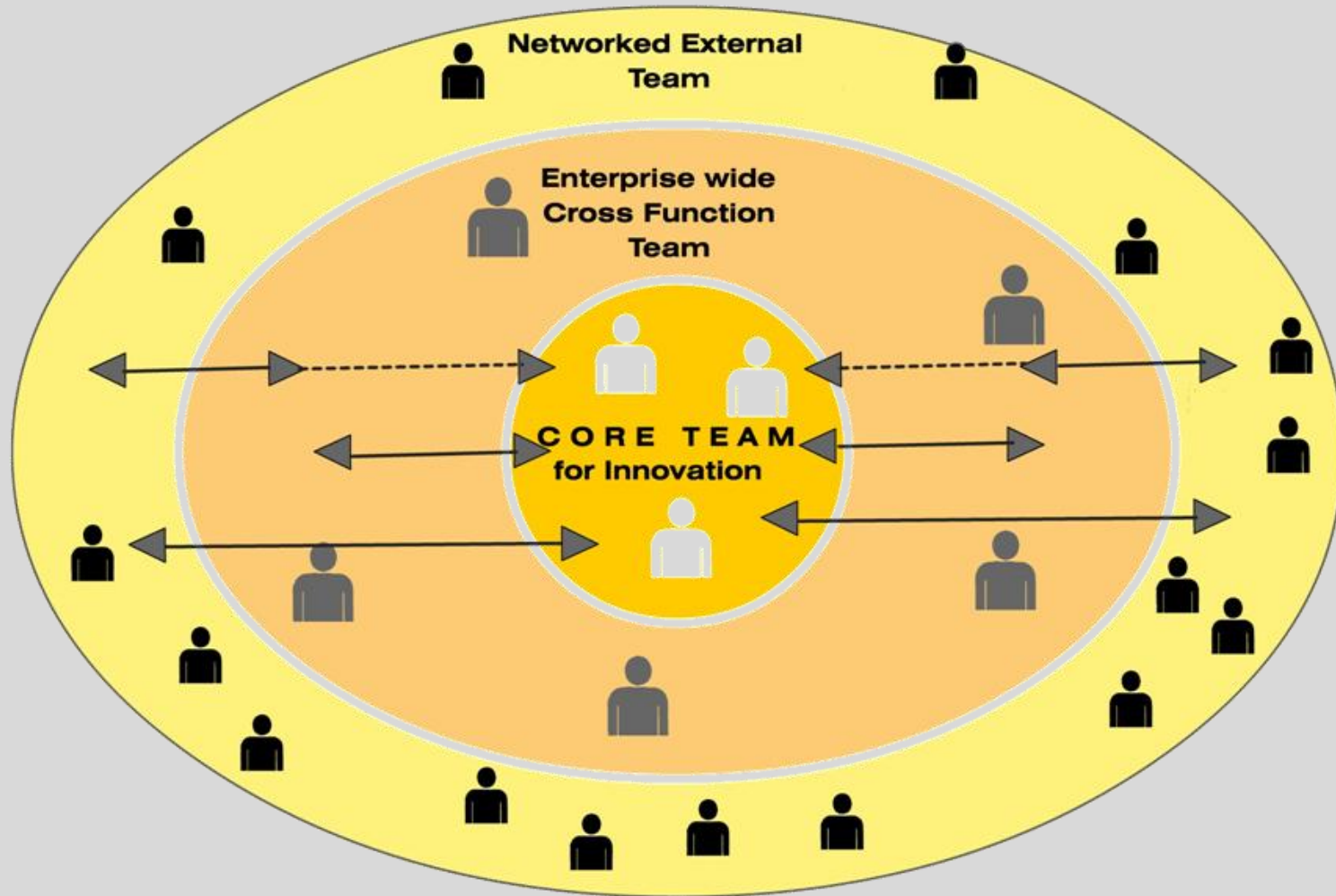


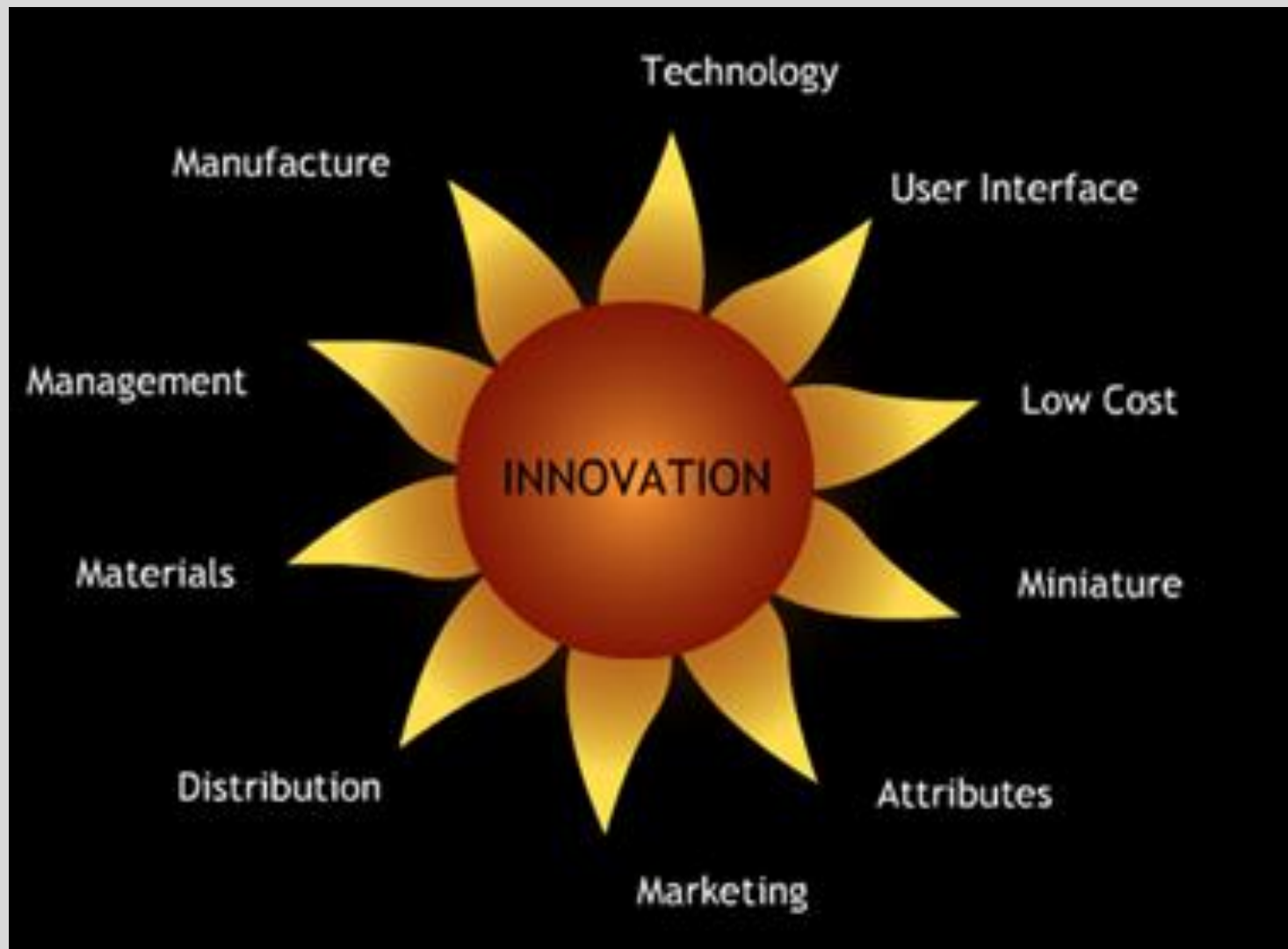


# Serial Innovation in Fuel Dispensers

1. **Z-Line (1989)**
2. Bullet (1998)
3. MPD (2002)
4. Oval (2005)
5. SureFill (2008)

# Collaborative Innovation Model







# Z - Line Petrol Pump Design (1989)

by Prof. B. K. Chakravarthy during his tenure at  
Larsen & Turbo Ltd. as Executive Designer

Special Credits to - Mr. DevendraNath & Mr. Russy  
Master

# Introduction

- The project to design a new look petrol pump was taken up 1989.
- L&T was manufacturing an electronic pump which was made by attaching an electronic box on top of the mechanical pump chassis.

# Bird's Eye View Of L&T's Manufacturing Facility



# MOTIVATION FOR NEW DESIGN



- Till 1986 L&T had the maximum market share in petrol pump business. Slowly the competition caught up and L&T was loosing ground rapidly.
- The competition brought in new models using the western models as reference.



# Product Brief

- The cost of the new modern pump had to be 25% less than the old one
- The product should have a life of at least five years.
- The form of the petrol pump had to be strikingly different so that it could create an impact in the market.
- The hydraulics organization should not be changed.
- Existing manufacturing facilities had to be used.
- Construction had to be in Sheet Metal

# Innovative Round Petrol Pump



# Data Collection

- Study of History of pumps.
- Study of Indian Pumps.
- Study of International Pumps.
- Study of manufacturing process.
- Study of contemporary style trends.



# History of Petrol Pumps



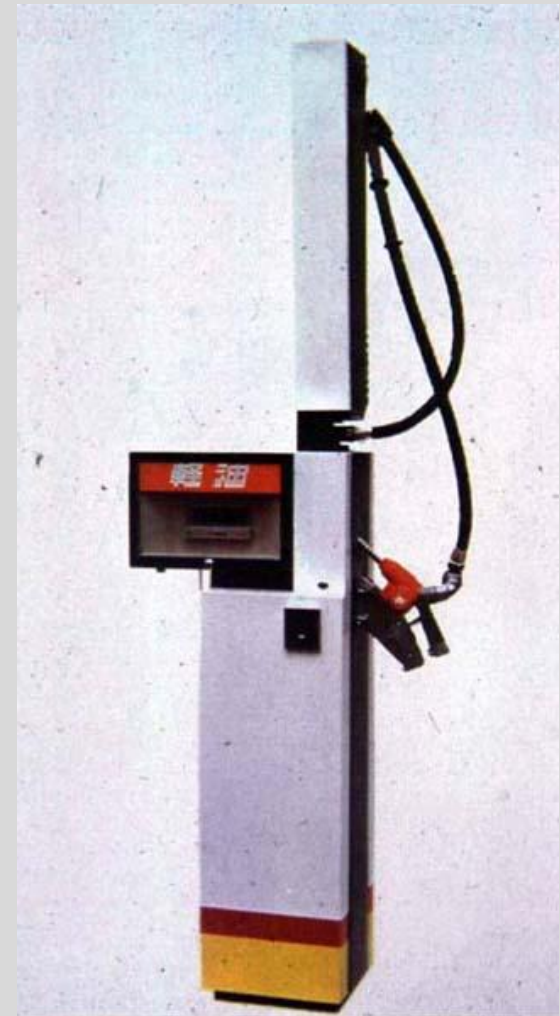
# History of Petrol Pumps

- Unique user-experience
- Innovation at the time of launch
- Human powered

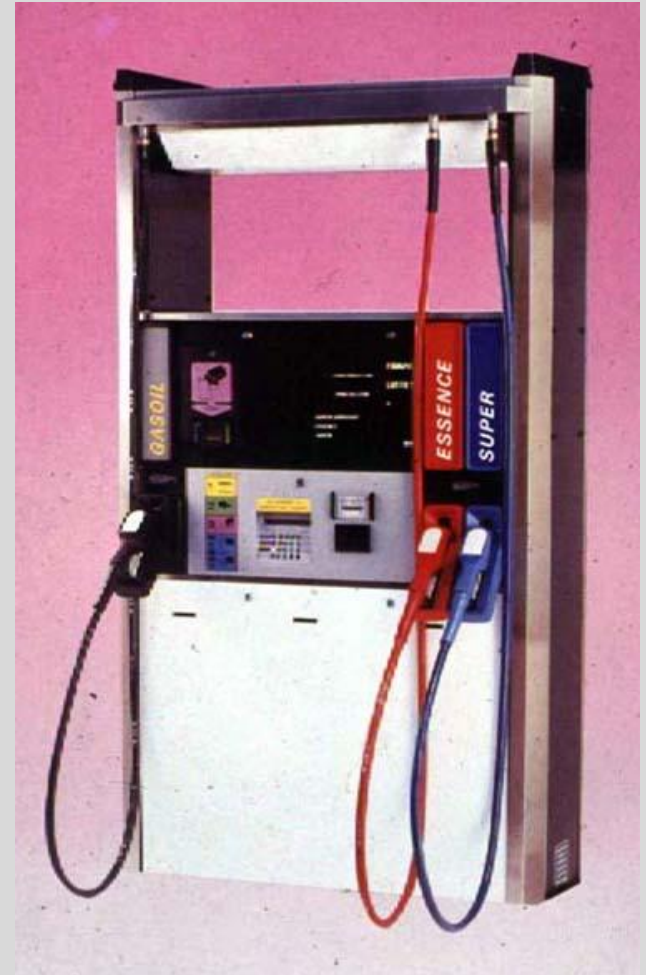
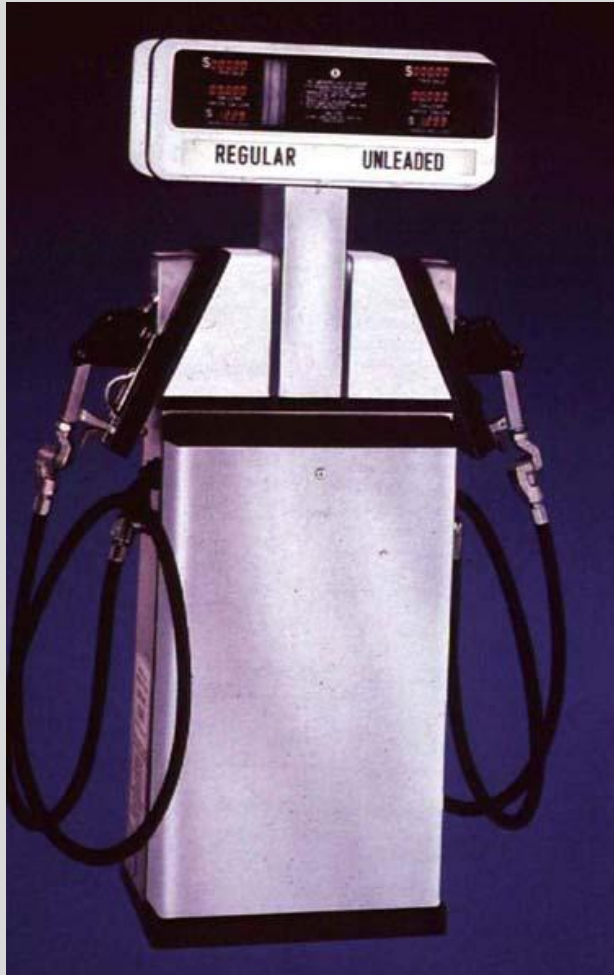




# Pumps in International Market



# Pumps in International Market



# Pumps In Local Market

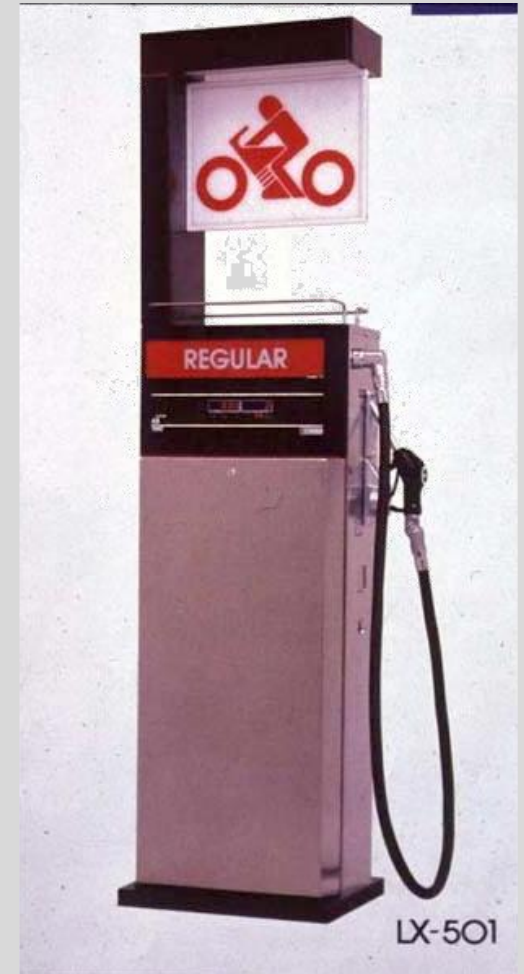
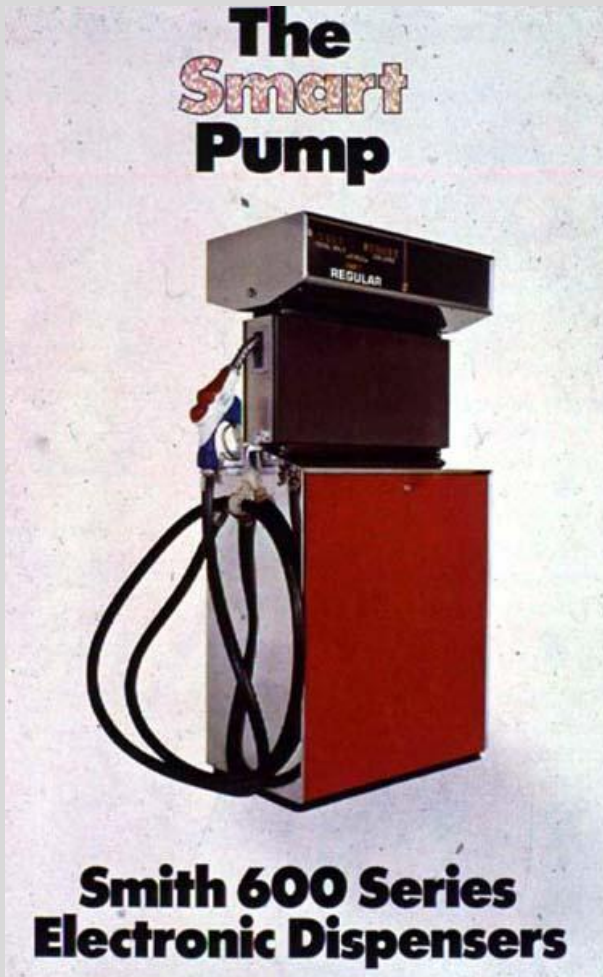




# Mechanical Pump of L&T



# International Market



# Style Trends



the world economy is struck by crisis, the car will continue to be used for decades to come. Frenchmen, among others, will keep using it in a resigned and yet immoderate manner.



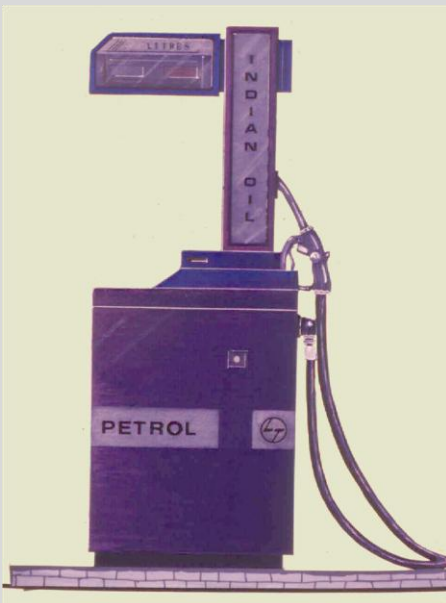
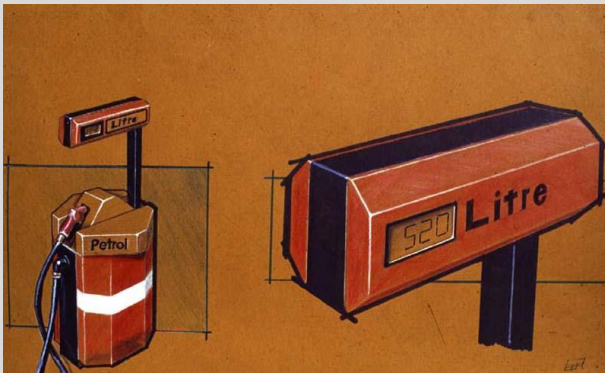
nothing is impossible - of being both as huge as a Boeing and so small "in a country where gluttony is the rule" to get by with a drop of gas.

"Le Monde", April, 1980

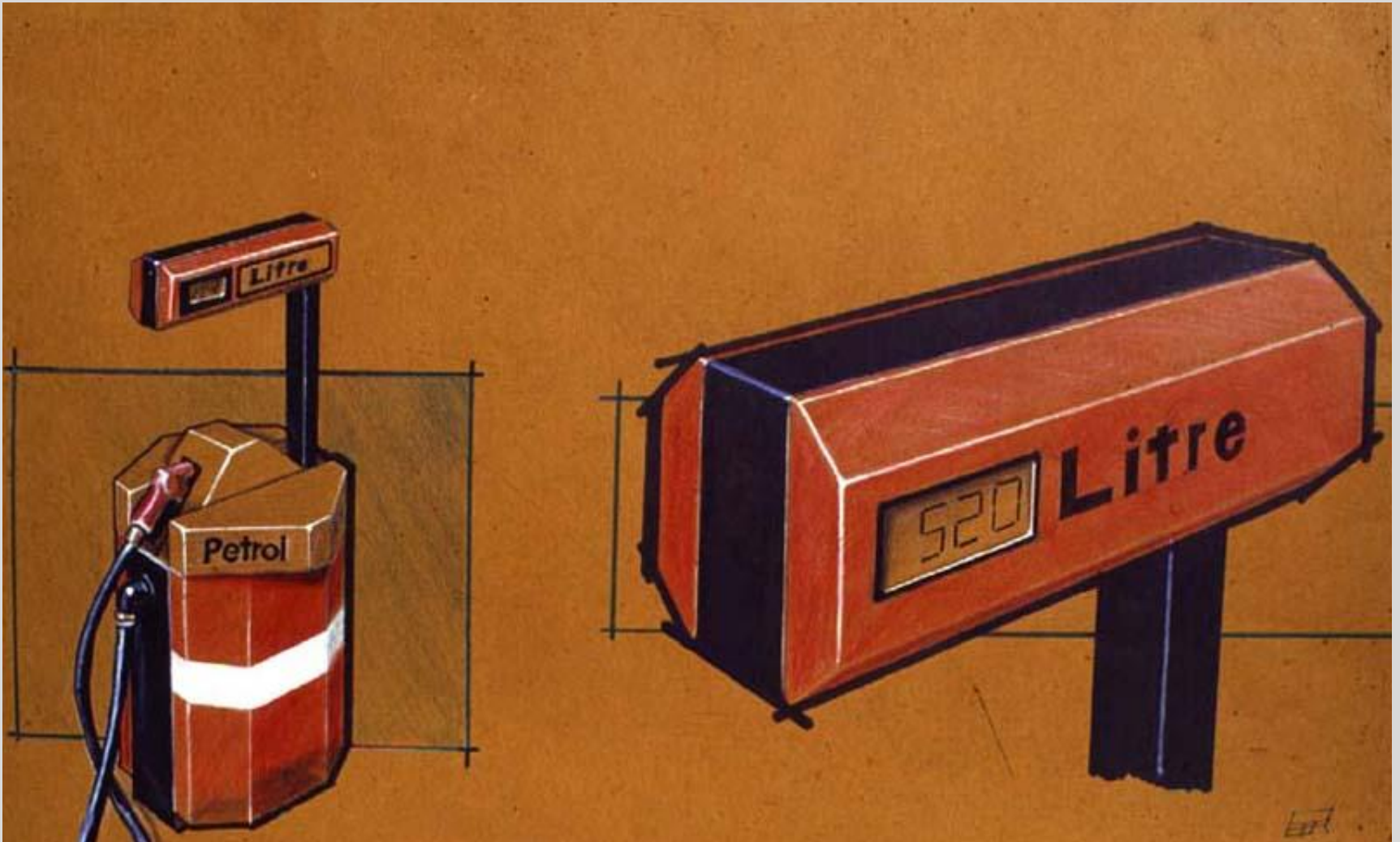




# Conceptualization



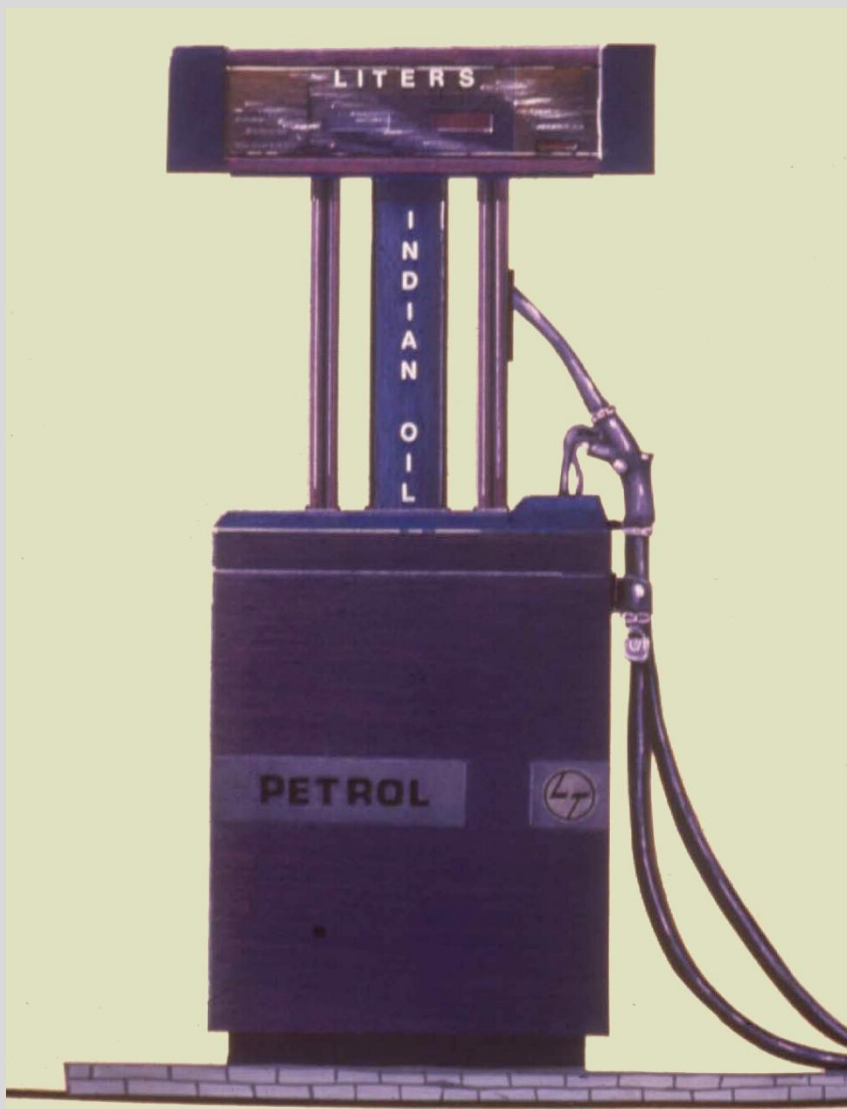
# Concept Generation



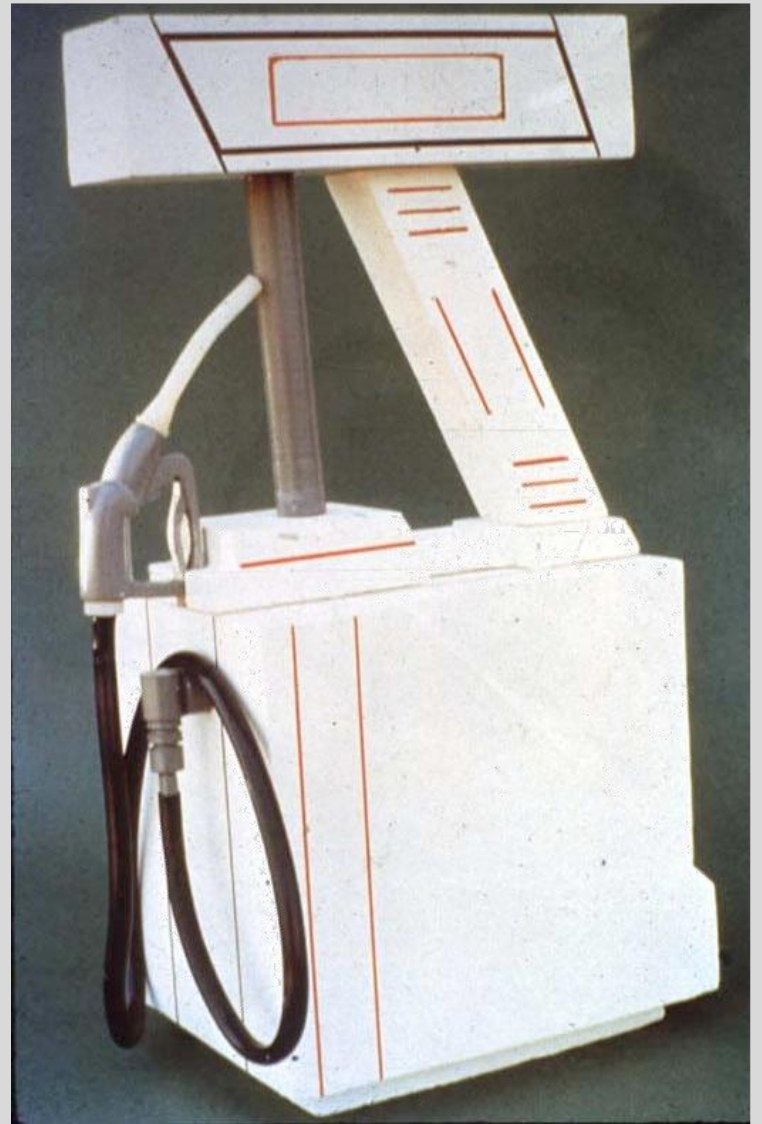
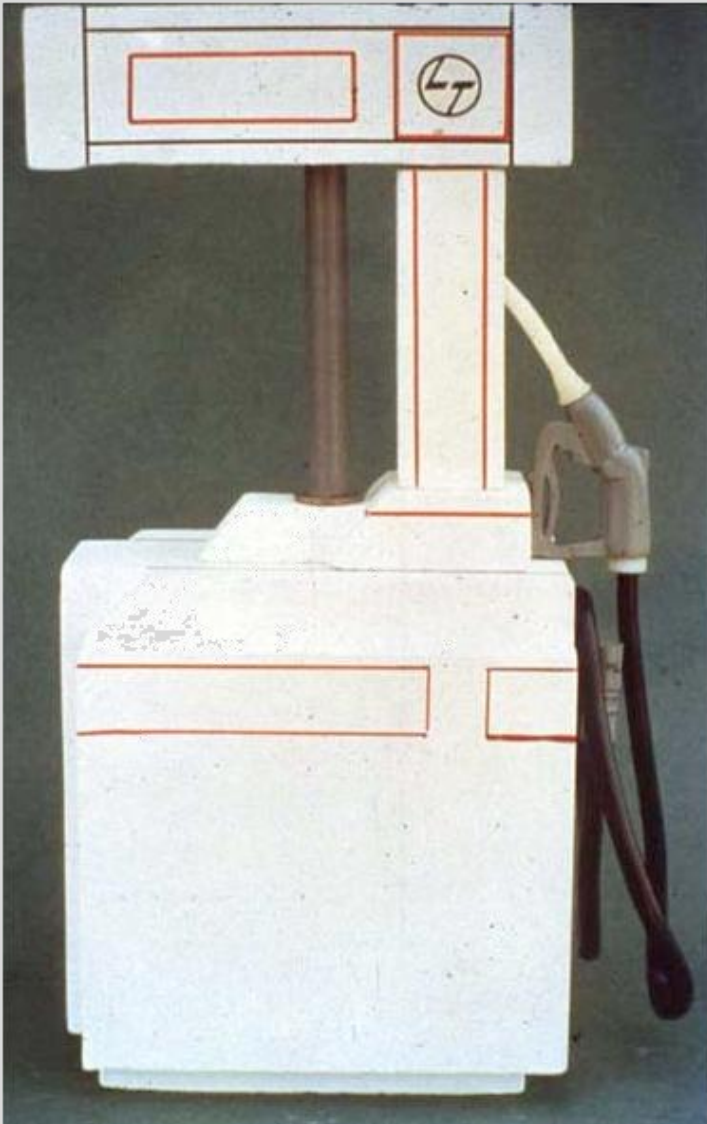


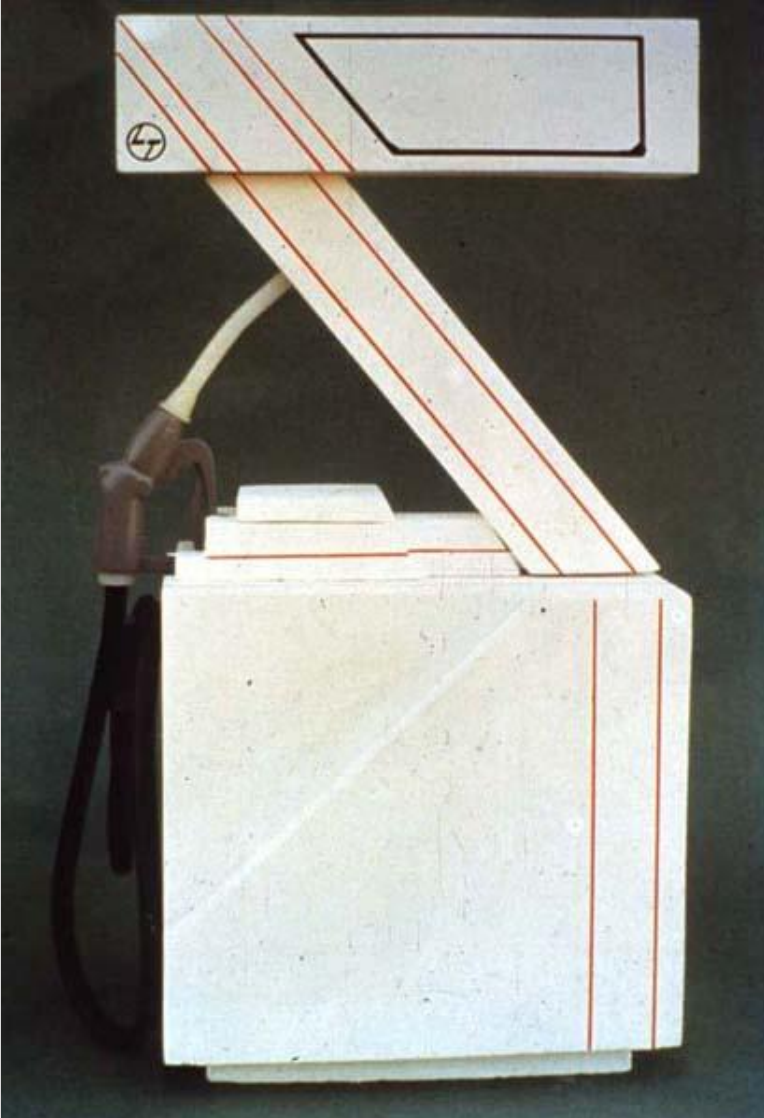












# Full Scale Mock-Up



# Working Prototypes





# Final Selected Prototype



# Final Selected Prototype



# Design Features

- The Z-line pump evolved created a completely new image.
- The sloping column of the pump gave the product a very dynamic look.
- The hi-tech look of the pump was achieved by highlighting the electronic display of the pump.
- An array of pumps in a station projected a friendly and inviting look.

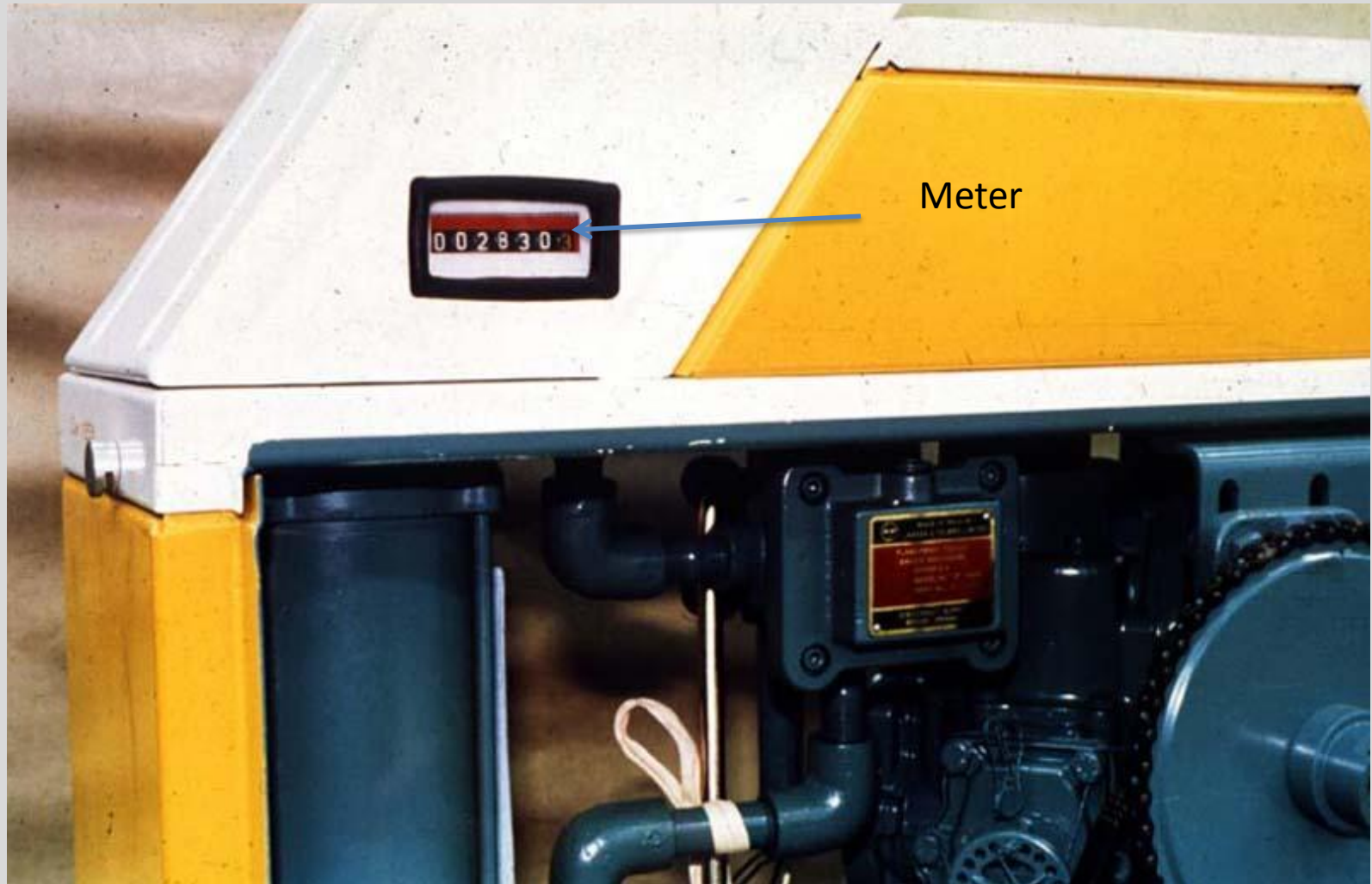


# Design for Ease of Manufacturing





# Design for Station Owners

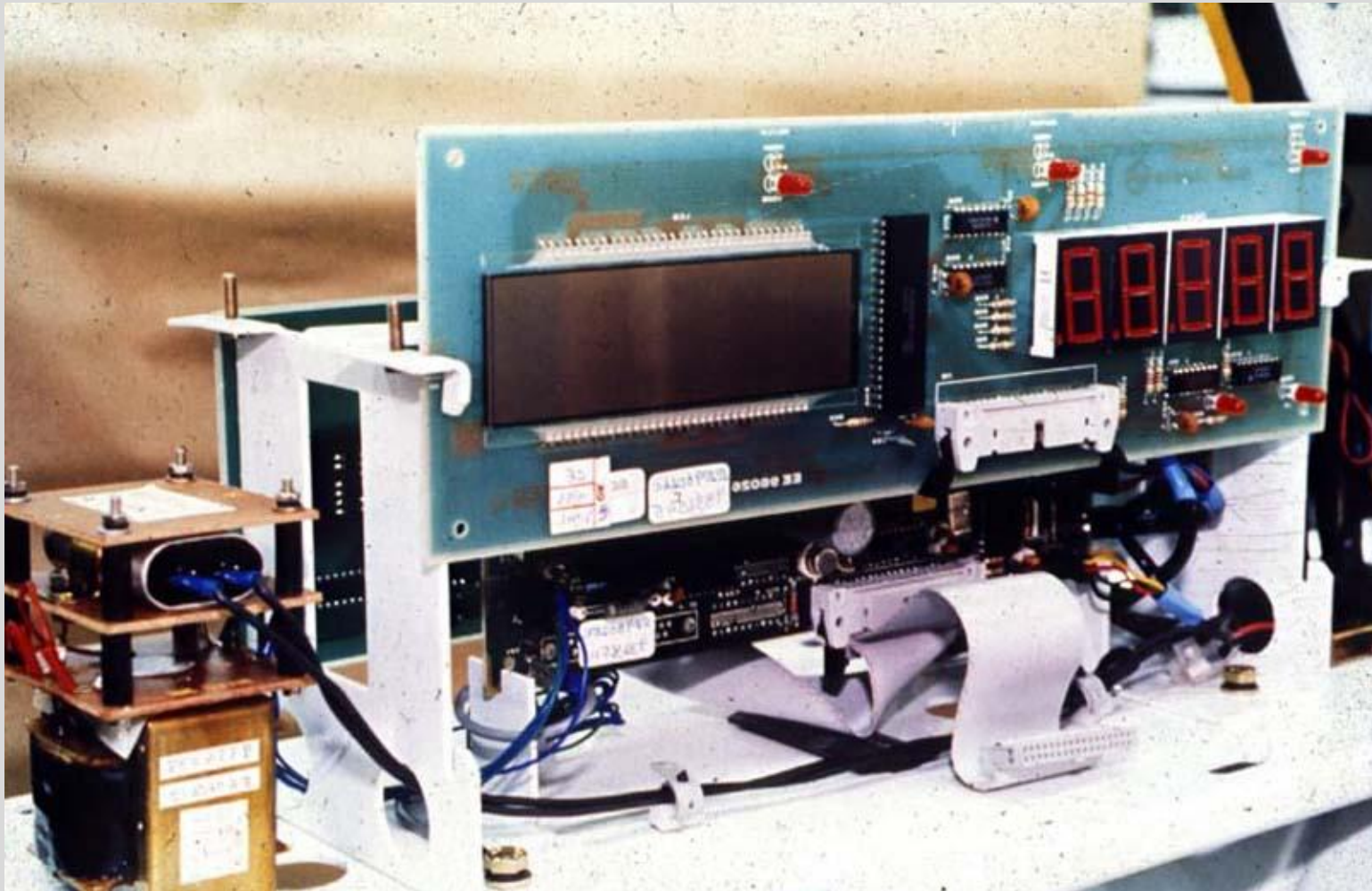


# Design for Service





# Design for Ease of Assembly



# Design for High-end Manufacturing





# Design for New Materials



# Design for New Painting Systems



# Design for New Details





# Design for Skilled Manpower





# Challenging Manufacturing



# Modular Assembly



# Design for Identity



# Design for User Convenience





# Display Features

- The pump has a microcomputer based system which gives the flexibility of having multi display models.
- In the single display the pump displays in the normal mode and on the actuation of the membrane switch the rate and sale values are flashed.
- In a two display pump one display shows litres and the other the sale price. The rate is flashed when the sale price is zero.
- In a three display pump the litres, sale and rate are simultaneously displayed.

# Innovative Design

- Use of 40% less sheet metal.
- User convenient Display Panel for better angle of vision.
- Innovative shape makes the pump look inviting.



# Market Leadership

- Excellent cost to feature design.
- Became the largest selling pump in one decade.
- Pump owners demand for Z Line due to its unique shape.
- Customers felt they got better petrol.



# User-Friendly Features

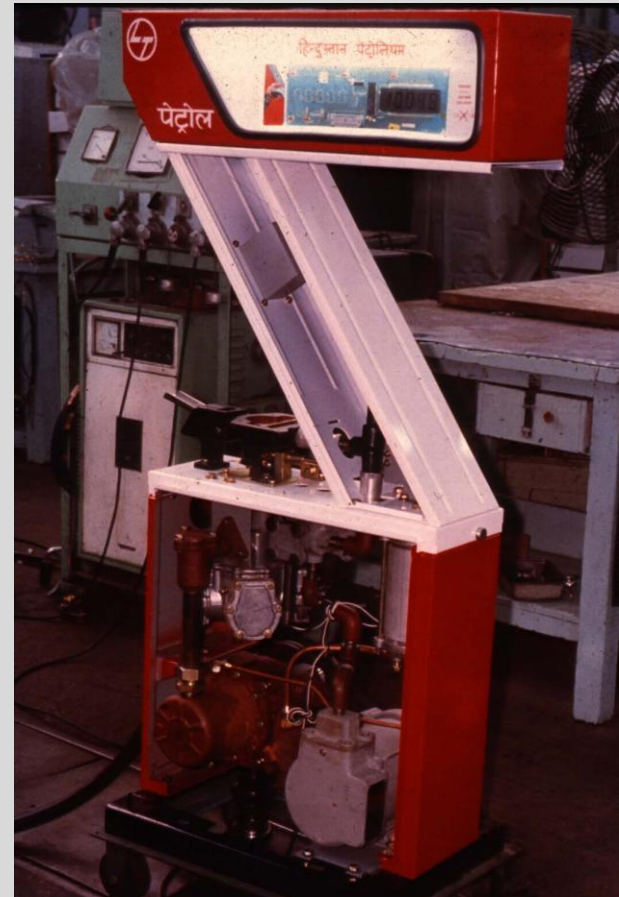
- The pump has an easy to open top; making maintenance quick.
- Three side access provides much better visibility.





# High-End Manufacturing

- Construction using high-end CNC manufacturing processes.
- Compact design and small footprint.
- Innovative glow panel and end indicator.



# Innovative Shape

- Unique shape led to the demand of the product.
- Shape helped in generating better maintenance access.
- Shape gave a new image to the Boxy old pump (children sketch the petrol pump as a Z line now).



# Product Installation



# Working Prototype Installation





# Customer Installation



# Customer Installation





# Demand for More



- The Z-line petrol pump has been in production since 1991 and is installed all over India.
- The pump has been well accepted by both the oil companies and the customers.
- The pumps have played a major role in the modernization of the outlets.
- The oil companies are vehemently recommending the Z-line pump internally as a result of which the order booking for 1993 is envisaged to go above 1700 pumps which exceeds our product target of 1400 pumps.



# Innovation by Design



# Read Further



Z-line (1989)



Bullet (1998)



MPD (2002)



Oval (2005)



SureFill (2008)