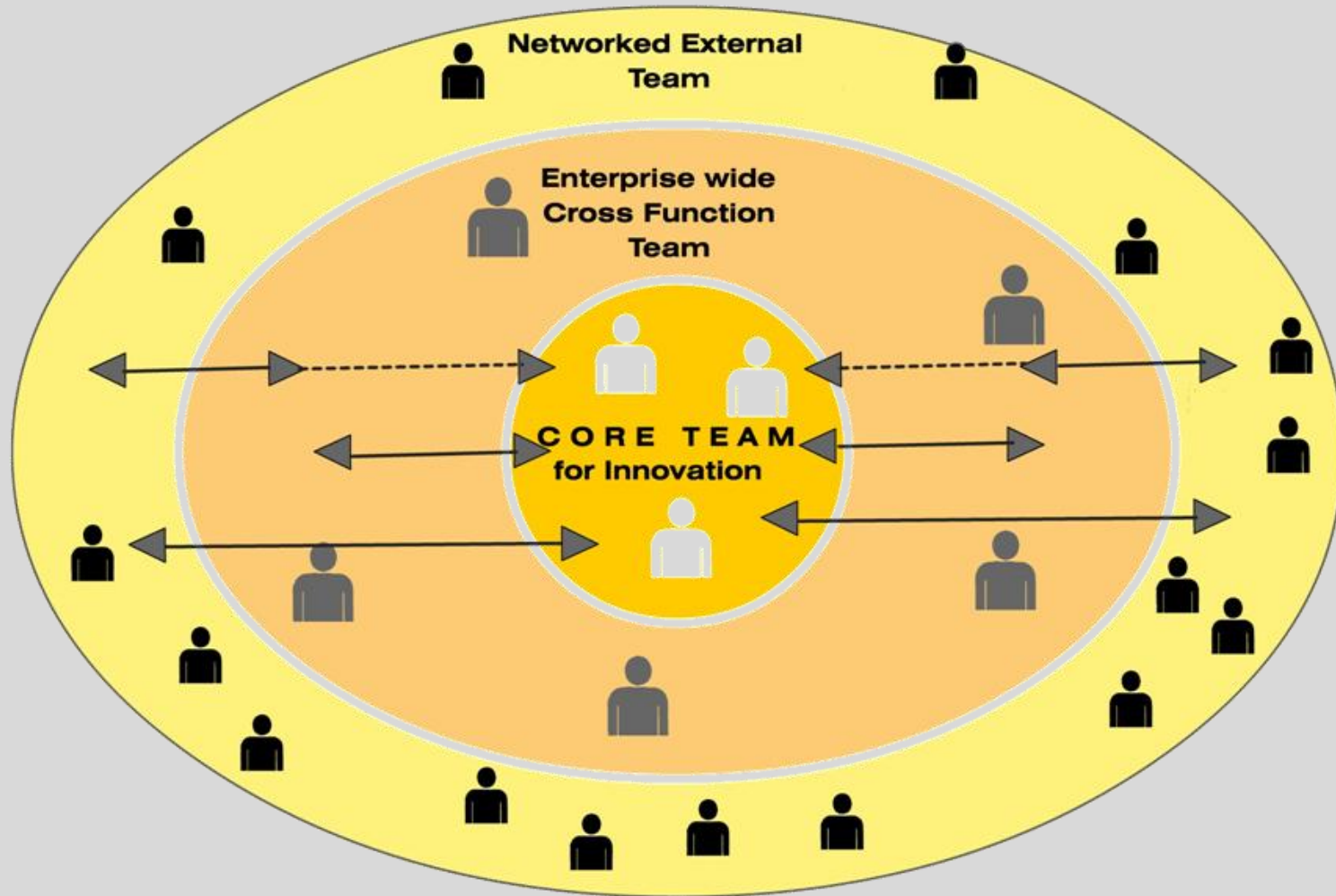


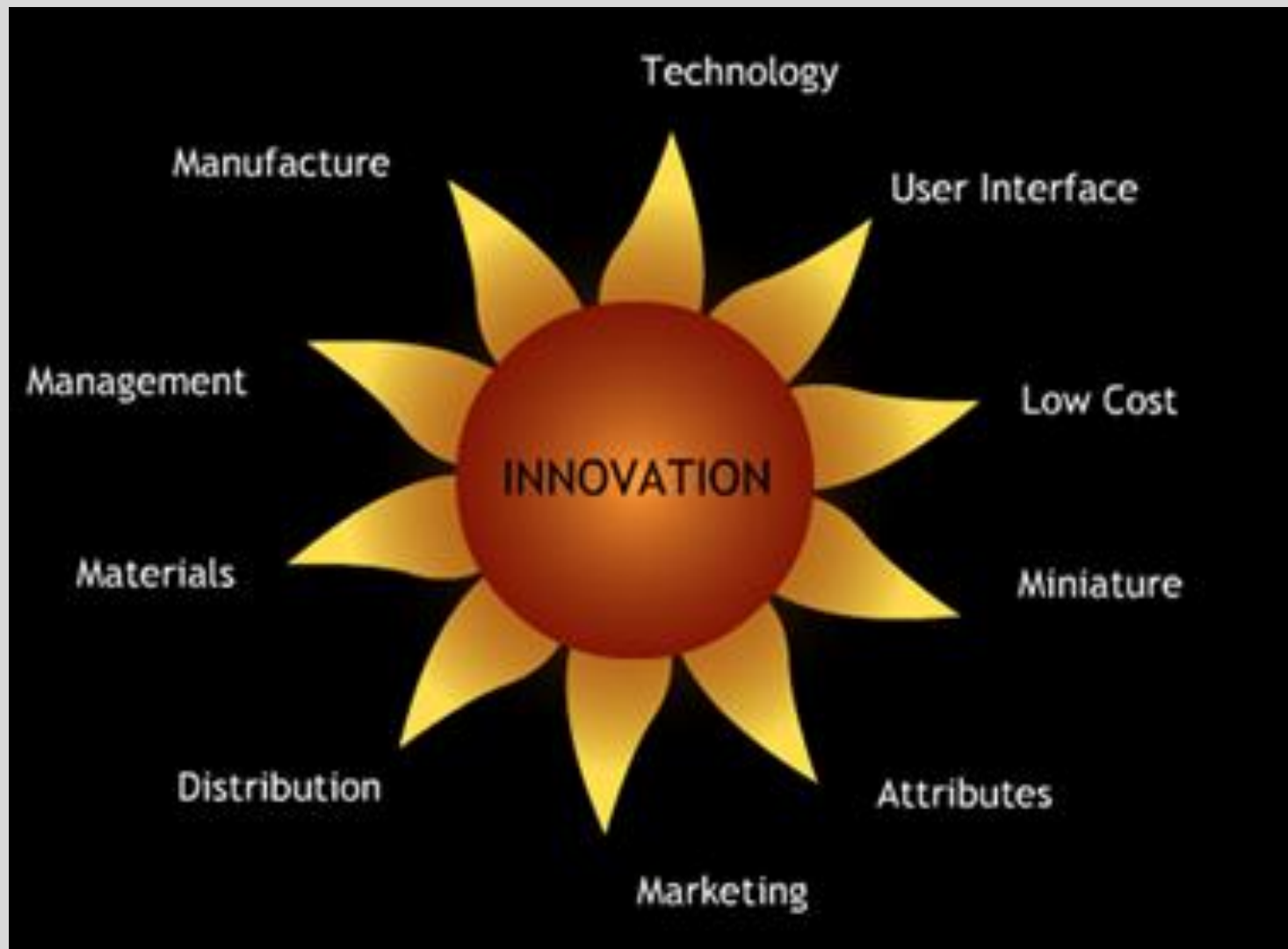


# Serial Innovation in Fuel Dispensers

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

# Collaborative Innovation Model







**Innovation**  
by **Design**

# MIDCO PUMP DESIGN - 1998

by Prof B. K. Chakravarthy as Design  
Consultant with MIDCO

Design Credits - ManojDubey

# Midco Petrol Pumps

- Very difficult to compete with Z-line
- Approached for consultancy
- Took it up as a student project



# Mechanical Pumps

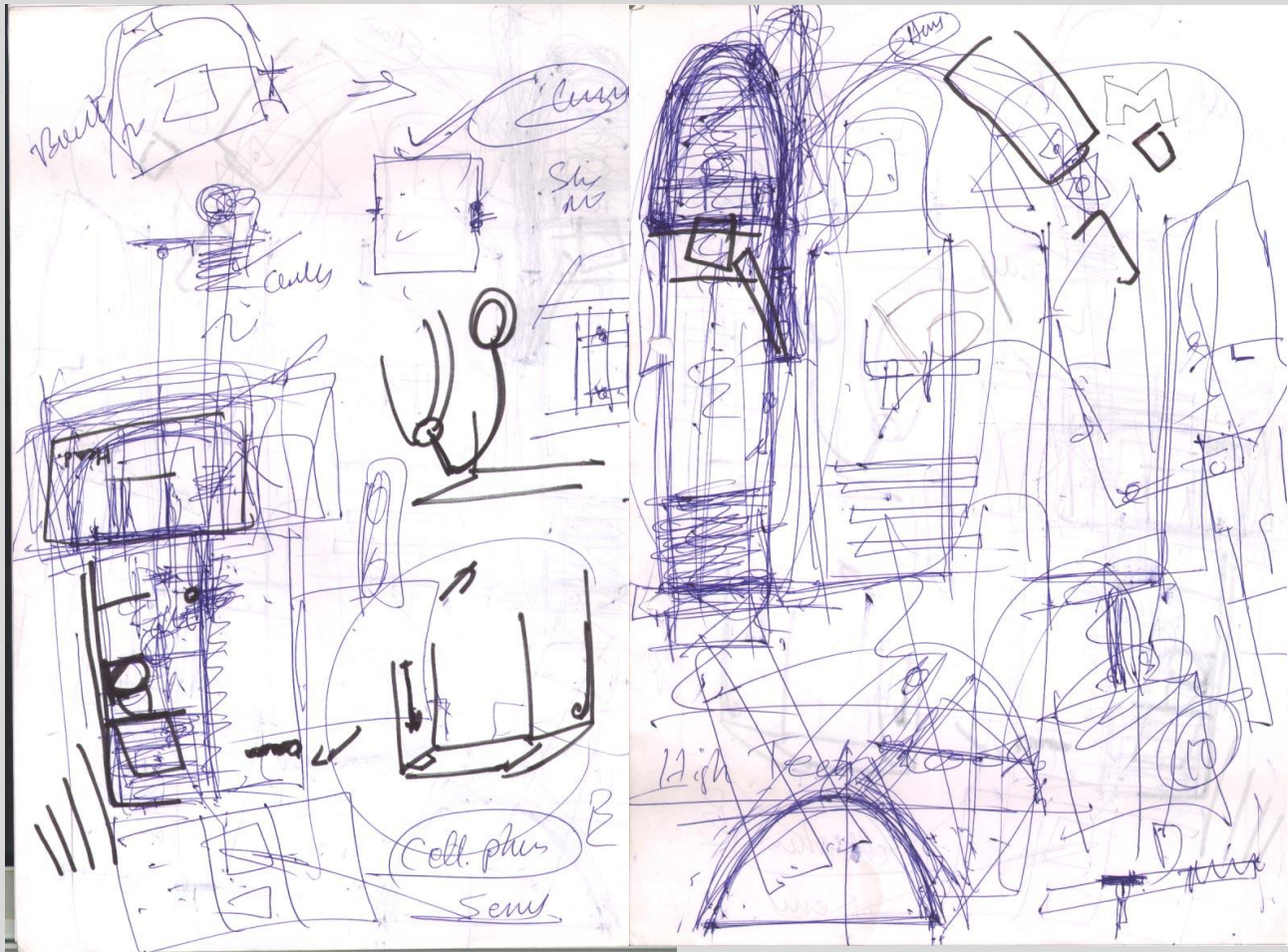


# Electronic Pumps





# Sketch To Prototype



# Student Project Prototype

- High Hose Design
- Faster Fuel Dispensing
- Unique and elegant form
- High quality electronics and software
- Modular design

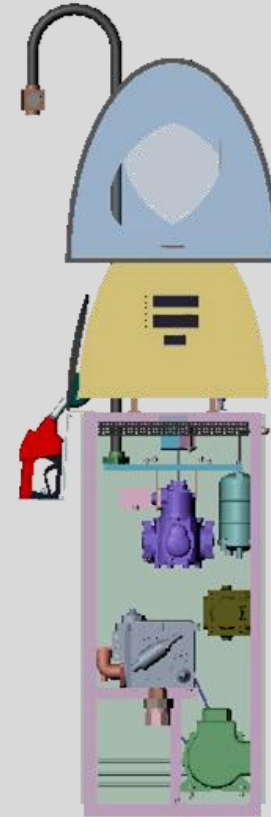


# Pilot Production



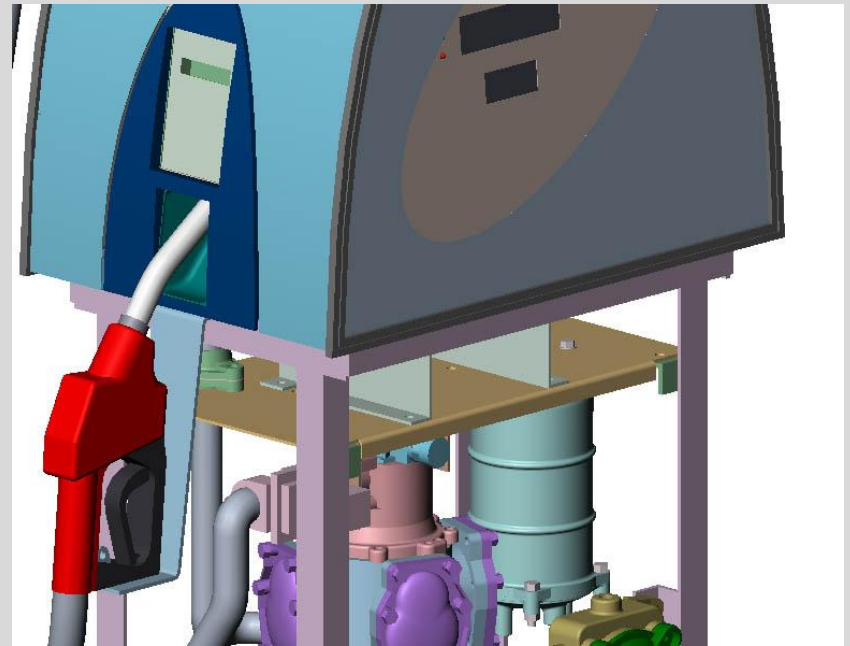
# Champion the Cause

- ManojDubey Joins MIDCO
- Starts a new design department in MIDCO
- Management keeps it isolated from the existing department



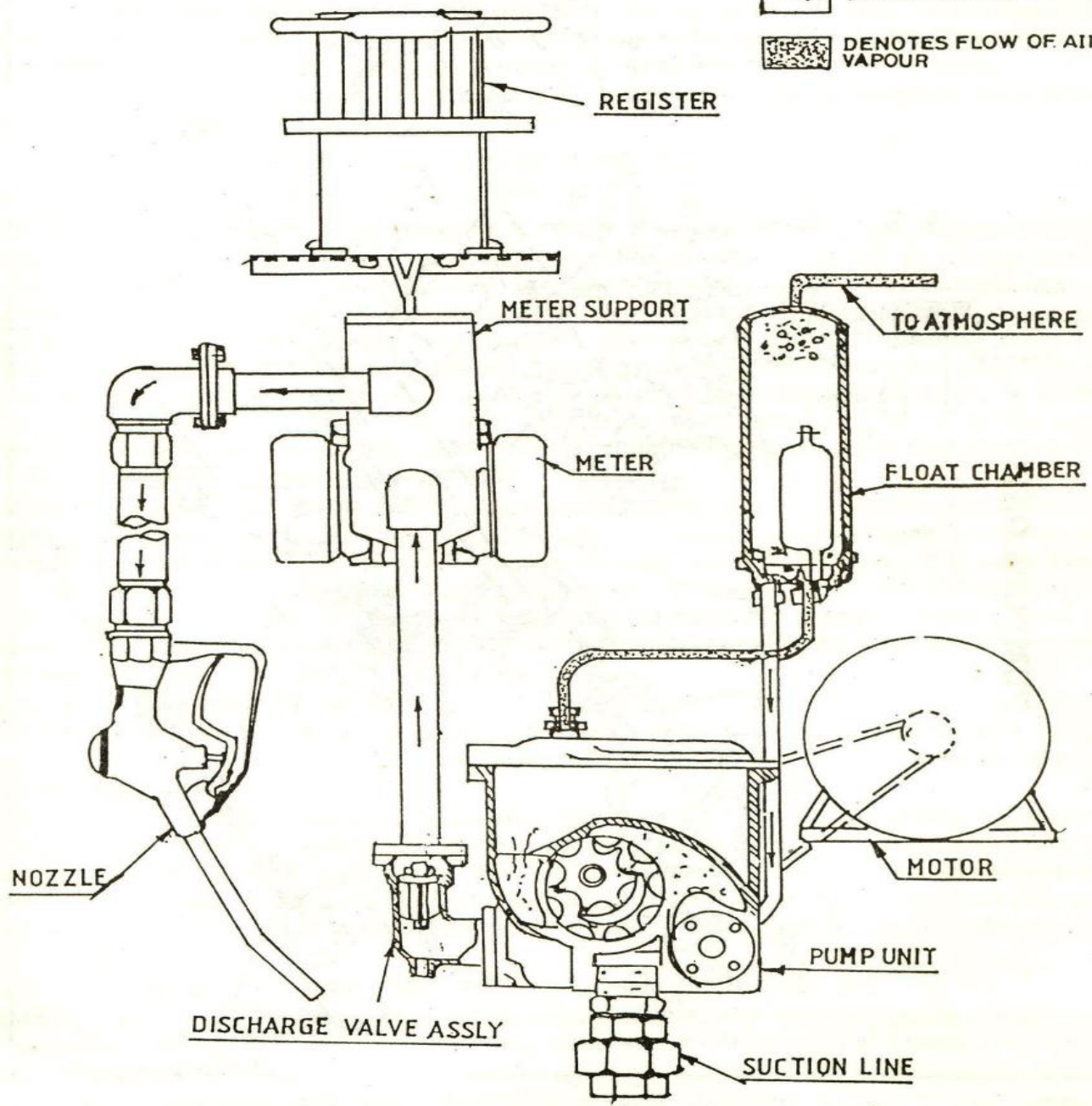
# Digital Design

- Chassis based design
- Innovative shape
- Convenient for Mass production
- Large display fascia
- Satisfies international norms for safety

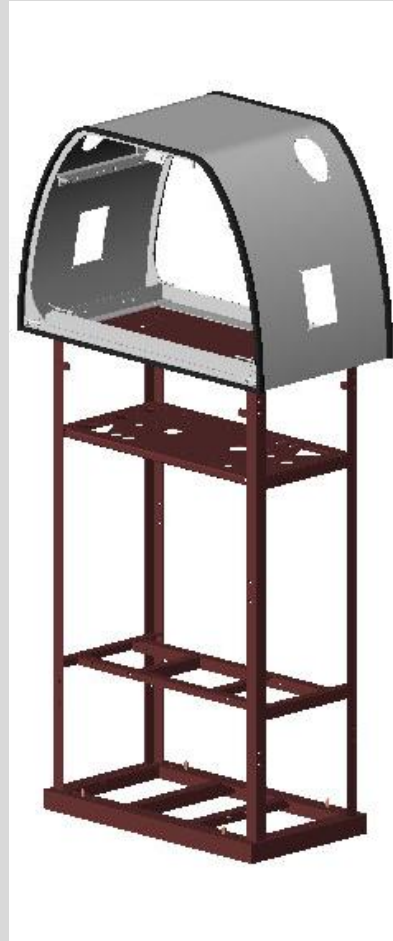


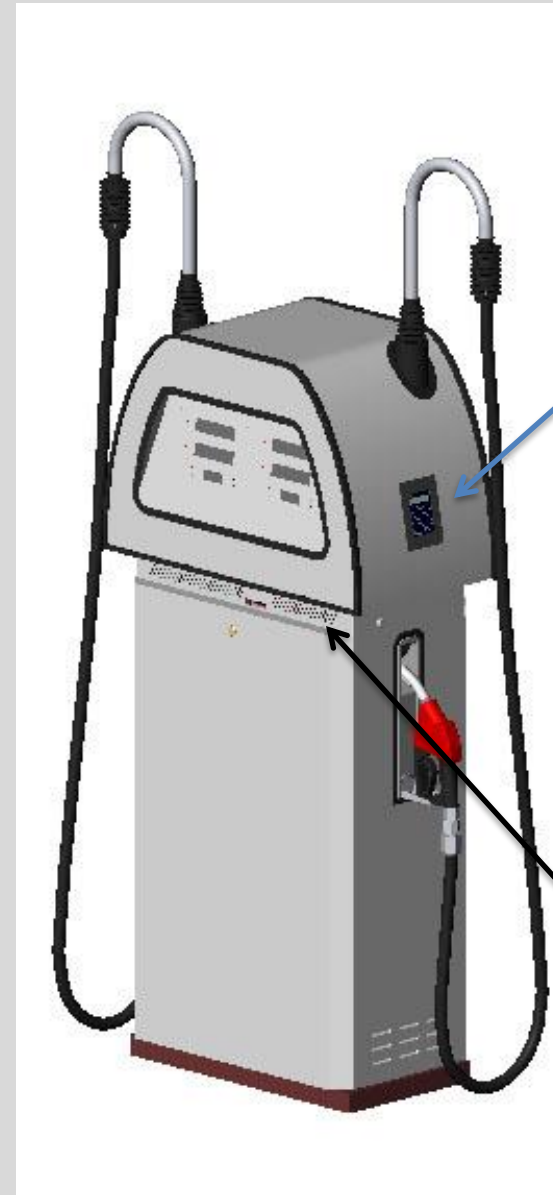
# Pump Schematic

→ DENOTES FLOW OF LIQUID  
▒ DENOTES FLOW OF AIR AND VAPOUR



# Computer Aided Design



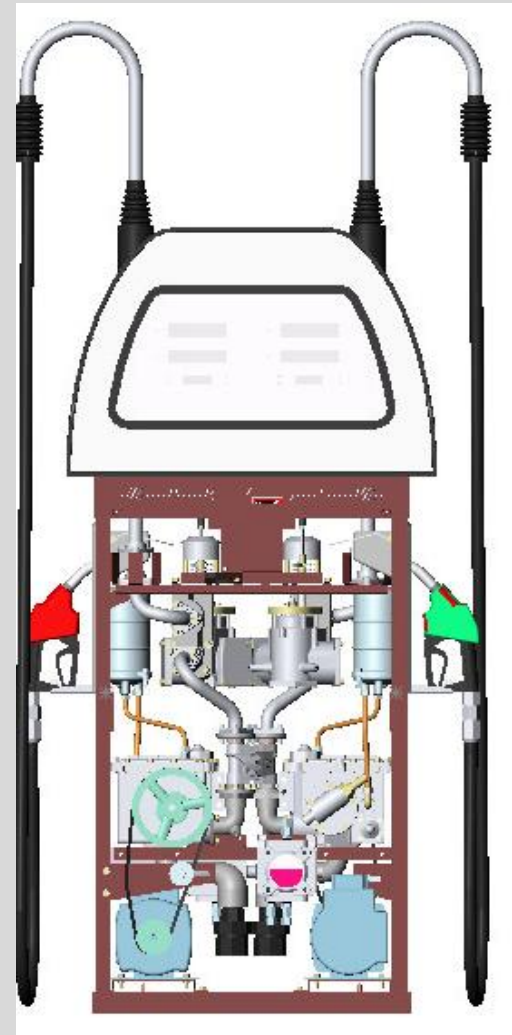


Preset  
keypad

Vapor  
Barrier to  
vent out  
the fuel  
fumes.



# Modular Design





# Prototype



# MEB Premix

2T oil mix



# Large Market Penetration



# Field Trials



# Prototype Installation

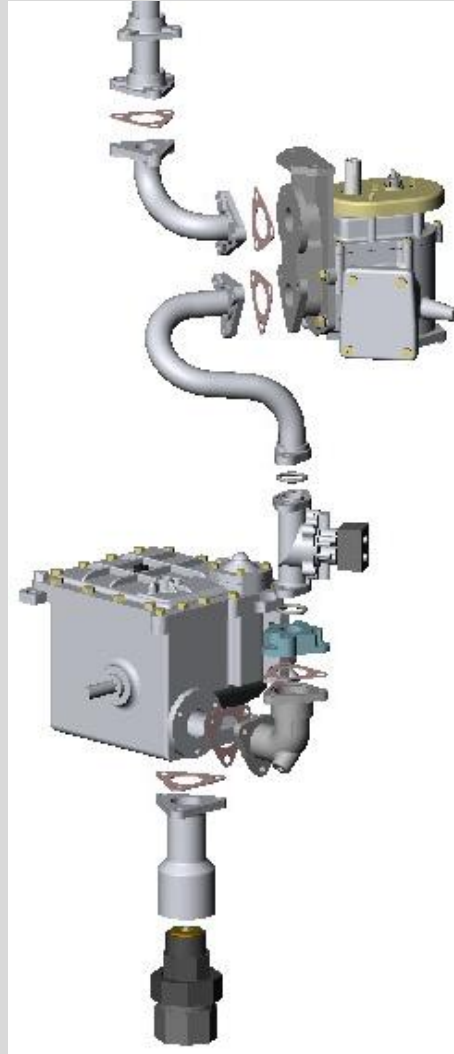


# Innovative Details





# Innovative Details



# Production Test Rig



# Innovation by Design



# Read Further



Z-line (1989)



Bullet (1998)



MPD (2002)



Oval (2005)



SureFill (2008)