

# REFUELING OPERATOR (RO) SKID SYSTEMS

for Small Bowser Filling  
at Retail Outlets



## Industry overview:

India has one of the world's largest fuel distribution networks. Industry reports indicate the Indian retail fuel market continues to expand at approximately 2.5-2.6% CAGR, supported by increasing vehicle population and fuel distribution infrastructure growth.

More than 77,000 fuel retail outlets are operated by major OMCs and private players.

IOCL, BPCL, HPCL and private players continue expanding retail stations' infrastructure.

## Executive Summary

Mobile refuelling skids, often configured for mining, fleet, and commercial fuel management, require durable, highly accurate, and legally defensible custody transfer solutions. Operating in harsh, remote environments, **Refueling Operator (RO) Skids** demand minimal downtime and low maintenance.

This application bulletin outlines the integration of Liquid Controls (LC) positive displacement (PD) M-Series meters, the TEX Flow Computer, strainers/air eliminators, and companion sliding vane pumps to build a robust RO Skid metering package.

## Meeting Customer Expectations in Doorstep Fuel Delivery

Retail outlet bowser filling demands precise metering under variable flow conditions. Liquid Controls addresses key customer requirements:



### ENSURES HIGH ACCURACY:

High-precision positive displacement measurement guarantees zero financial loss during volume transfer, satisfying stringent legal metrology requirements for commercial fueling.



### ENHANCES SAFETY AND RELIABILITY:

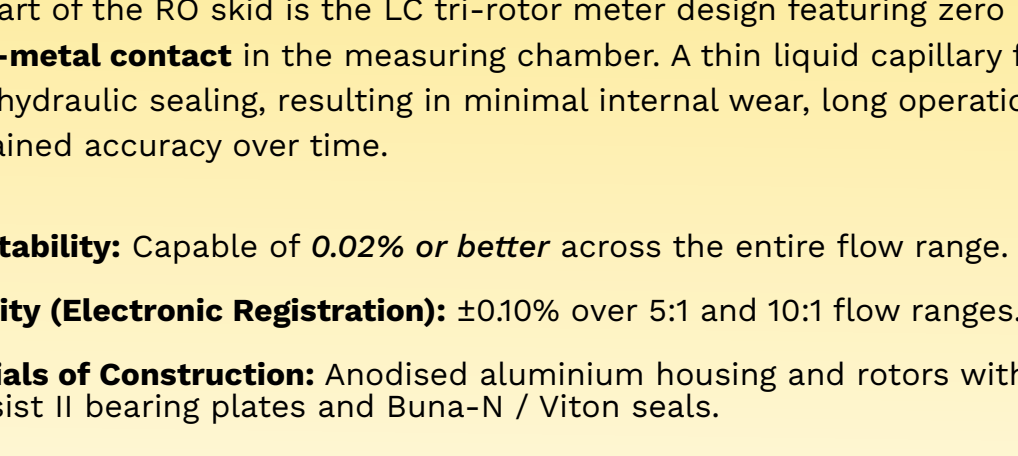
Integrated air elimination and digital control valves prevent overfills, eliminate dangerous pressure spikes, and maintain safe, controlled delivery operations for volatile fuels like MS and HSD.



### SIMPLIFIED STRUCTURE & EASY MAINTENANCE:

High-precision positive displacement measurement guarantees zero financial loss during volume transfer, satisfying stringent legal metrology requirements for commercial fueling.

# CORE SYSTEM COMPONENTS



## 01. Primary Metering:

### LC M-Series Positive Displacement Meters

At the heart of the RO skid is the LC tri-rotor meter design featuring zero **metal-to-metal contact** in the measuring chamber. A thin liquid capillary film provides hydraulic sealing, resulting in minimal internal wear, long operational life, and sustained accuracy over time.

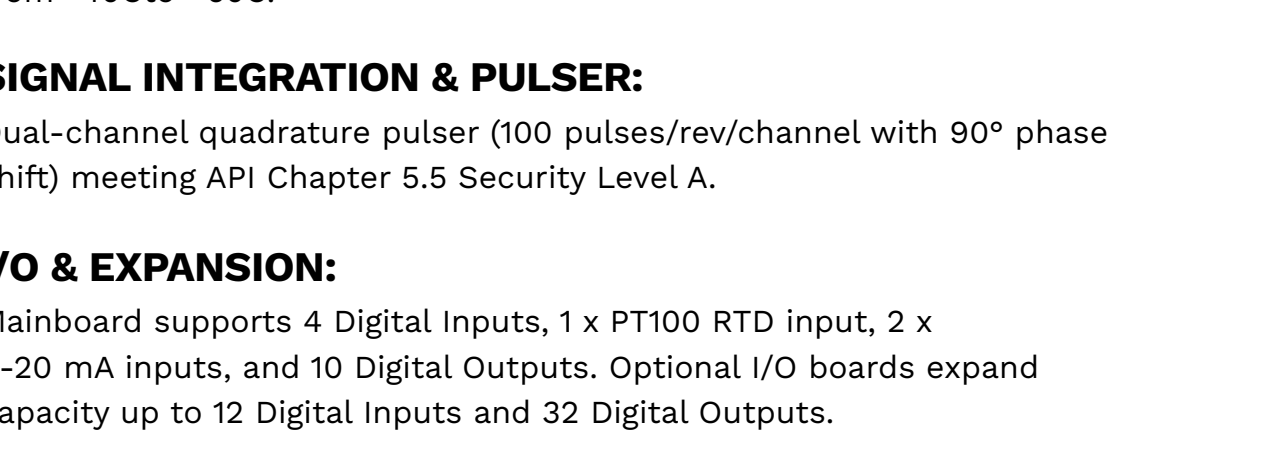
- **Repeatability:** Capable of 0.02% or better across the entire flow range.
- **Linearity (Electronic Registration):** ±0.10% over 5:1 and 10:1 flow ranges.
- **Materials of Construction:** Anodised aluminium housing and rotors with Ni-Resist II bearing plates and Buna-N / Viton seals.
- **Pressure / Temperature Rating:** 150 PSI (10.3 bar / 1034 kPa) max working pressure; temperature rating of -40°F to 160°F (-40C to 71C)

| MODEL       | FLANGE SIZE | FLOW RATE (GPM) | FLOW RATE (LPM) | TYPICAL APPLICATION                       |
|-------------|-------------|-----------------|-----------------|-------------------------------------------|
| M-5         | 1.5"        | 6 – 60          | 22 – 227        | LOW-FLOW SERVICE VANS & QUICK LUBE        |
| M-7         | 2"          | 10 – 100        | 20 – 378        | FLEET REFUELING & LIGHT COMMERCIAL        |
| M-10 / M-15 | 2" / 3"     | 15 – 200        | 56 – 756        | MEDIUM TANK TRUCKS & MOBILE RO SKIDS      |
| M-25 / M-30 | 3" / 4"     | 30 – 350        | 110 – 1323      | HIGH-FLOW FUEL TRANSFERS & BULK DELIVERY  |
| M-80        | 6"          | 80 – 1000       | 300 – 3024      | HEAVY MINING SKIDS & HIGH SPEED REFUELERS |

## 02. Flow Computation & Control:

### TEX Flow Computer

The TEX Flow Computer acts as the central control unit on the RO skid. Built to withstand outdoor, high-vibration mobile operations, it provides accurate real-time data capture and data transmission.



#### DISPLAY & INTERFACE:

7" high-contrast color display (800 × 480 pixels) with dedicated smart keys and a W&M optical switch for fast setup without opening the housing.

#### ENVIRONMENTAL & SAFETY RATING:

IP66 waterproof/dustproof enclosure, ATEX EEx-d certified, operation from -40Cto +60C.

#### SIGNAL INTEGRATION & PULSER:

Dual-channel quadrature pulser (100 pulses/rev/channel with 90° phase shift) meeting API Chapter 5.5 Security Level A.

#### I/O & EXPANSION:

Mainboard supports 4 Digital Inputs, 1 x PT100 RTD input, 2 x 4-20 mA inputs, and 10 Digital Outputs. Optional I/O boards expand capacity up to 12 Digital Inputs and 32 Digital Outputs.

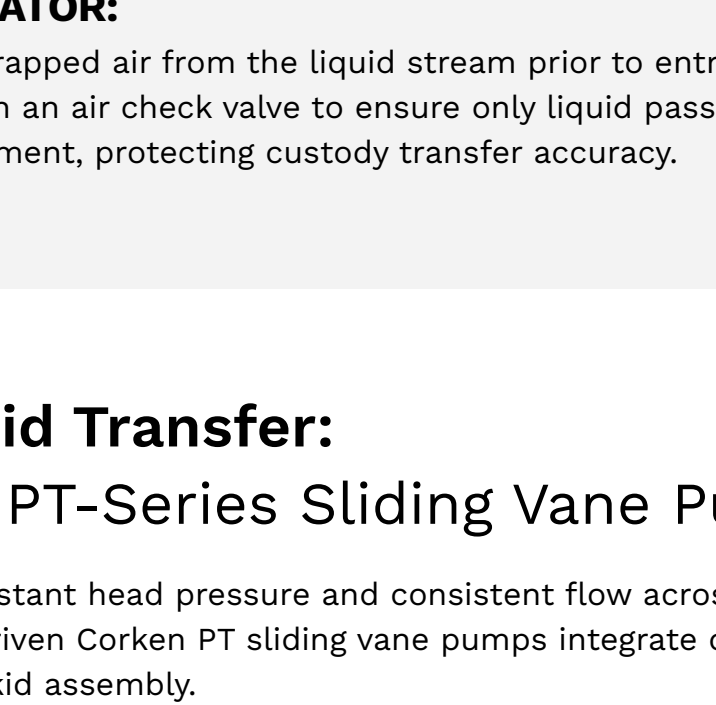
#### TELEMETRY & CONNECTIVITY:

Wi-Fi, Ethernet (TCP/IP Modbus), 2 x RS232, and 2 x RS485 ports for seamless telemetry or connection to fleet management software.

## 03. Protection & Air Removal:

### Strainer & Air Eliminator Assemblies

Air or gas pockets entrained in fluid streams cause over-registration and compromise measurement integrity.



#### STRAINER:

Traps foreign sediment and particulates to prevent mechanical damage to the tri-rotor measuring chamber.

#### AIR ELIMINATOR:

Separates entrapped air from the liquid stream prior to entry into the meter. Used in tandem with an air check valve to ensure only liquid passes through the measuring element, protecting custody transfer accuracy.

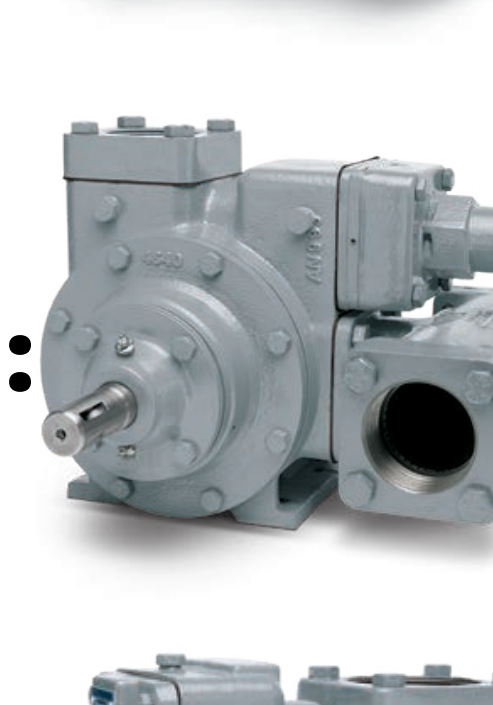
## 04. Fluid Transfer:

### Corken PT-Series Sliding Vane Pumps

To supply constant head pressure and consistent flow across the meter, PTO-driven Corken PT sliding vane pumps integrate directly into the RO skid assembly.

## MODEL PT20 (2" FLANGE):

Up to 88 GPM (333 L/min); ideal for lube oil and low-flow service.



## MODEL PT25 (2.5" FLANGE):

Up to 159 GPM (602 L/min); optimal for diesel, gasoline, and fleet fueling.



## MODEL PT30 (3" FLANGE):

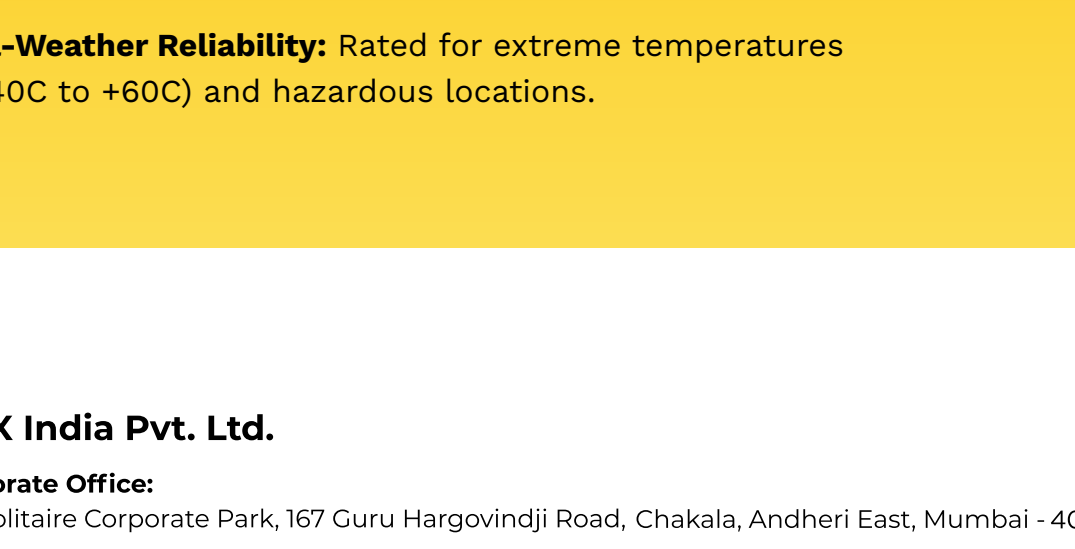
Up to 271 GPM (1,026 L/min); engineered for high-flow bulk delivery, ethanol, and biodiesel transfers.



## 05. Transaction Compliance:

### Epson Slip / Roll Printers

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## KEY OPERATIONAL BENEFITS OF THE INTEGRATED RO SKID PACKAGE

- **Sustained Accuracy:** Zero-wear design minimizes drift and extends re-calibration intervals.
- **Turnkey Integration:** Combining the pump, strainer/air eliminator, PD meter, register, and printer into one unit reduces footprint and simplifies electrical/hydraulic integration.
- **Data Integrity & Traceability:** Wireless (Wi-Fi/Modbus) transaction tracking prevents fuel loss and provides real-time audit trails.
- **All-Weather Reliability:** Rated for extreme temperatures (-40C to +60C) and hazardous locations.

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