



Sealmatic Delivers Automatic & Manual Top-Up Units For Refinery Application As Per API 682



Sealmatic recently delivered Automatic Top-Up Units (ATU) and Manual Top-Up Units (MTU) for a refinery project as per API 682. The said top-up units are designed to ensure continuous and reliable operation of API Seal Support Systems (Plans 52/53) employed with dual mechanical seals in pumps.

Automatic Top-Up Unit (ATU):

The Automatic Top-Up Unit (ATU) is engineered to maintain a consistent fluid level in seal support systems, ensuring uninterrupted pump operation and long-term seal reliability. By automating the refill process from a storage tank to the seal plan, the ATU eliminates manual intervention, reduces downtime and enhances overall system safety.

System Design & Key Components In ATU:

Storage Tank

- 300 L capacity, SS316 construction for corrosion resistance
- Equipped with level transmitter and magnetic level gauge

Pneumatic-Driven Liquid Pump

- Two pumps are employed in alternate operation for redundancy
- Air-driven, supply 3-10 bar (typically operated at 2-3 bar in this system)

Duplex Filter

- Ensures uninterrupted filtration
- Allows filter replacement without system shutdown

Differential Pressure Transmitter

- Monitors pressure differential between ATU discharge and seal system

Rotameter

- Provides flow measurement and visual flow confirmation

Magnetic Level Gauge

- This helps for direct visual indication of tank fluid level

Solenoid Valve

- The solenoid valve enables automated air supply control to pumps

Operating Principle

1. The level transmitter continuously monitors the seal pot fluid level.

2. When the level falls below the low set point, control logic activates one pump.

3. Fluid is drawn from the tank, filtered through the duplex unit, and delivered to the plan.

4. Flow is measured via the rotameter, while pressure balance is monitored by the differential pressure transmitter.

5. Once the high-level set point is reached, the solenoid valve shuts off the pump air supply.

Design Specifications:

Parameter	Value
Tank Volume	300 L
Design Pressure	30 bar
Design Temperature	100 °C
Displacement Rate	6 LPM
Media	ISO Vg 10
Refill Interval	350 days

Advantages Of ATU:

- Continuous Operation, automatic refill ensures uninterrupted performance
- High Reliability, dual-pump configuration for redundancy
- Low Maintenance, integrated filtration for clean fluid supply

Manual Top-Up Unit (MTU):

The Manual Top-Up Unit (MTU) provides an efficient and compact solution where automatic refilling is not required or space is limited. Unlike the ATU, it does not require pneumatic or electrical power and operates via a hand pump.

Key Features

- Storage Tank – 100 L capacity, SS316 construction
- Manual Refill Pump – piston-type hand pump with lever mechanism for easy operation
- Duplex Filter – ensures continuous filtration and allows filter changeover without system shutdown

The Automatic and Manual Top-Up Units play a vital role in ensuring safe, reliable and efficient operation of API seal support systems. While the ATU provides a fully automated, redundant, and maintenance-friendly refilling, the MTU offers a cost-effective, manual alternative for smaller or space-constrained installations.

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