

Skid Mounted Fuel Station Selection & Safety Engineering Guide

Tank Sizing | Dispenser Selection

Safety Protection | Project Inputs

For oilfield, pipeline, mining and remote industrial projects

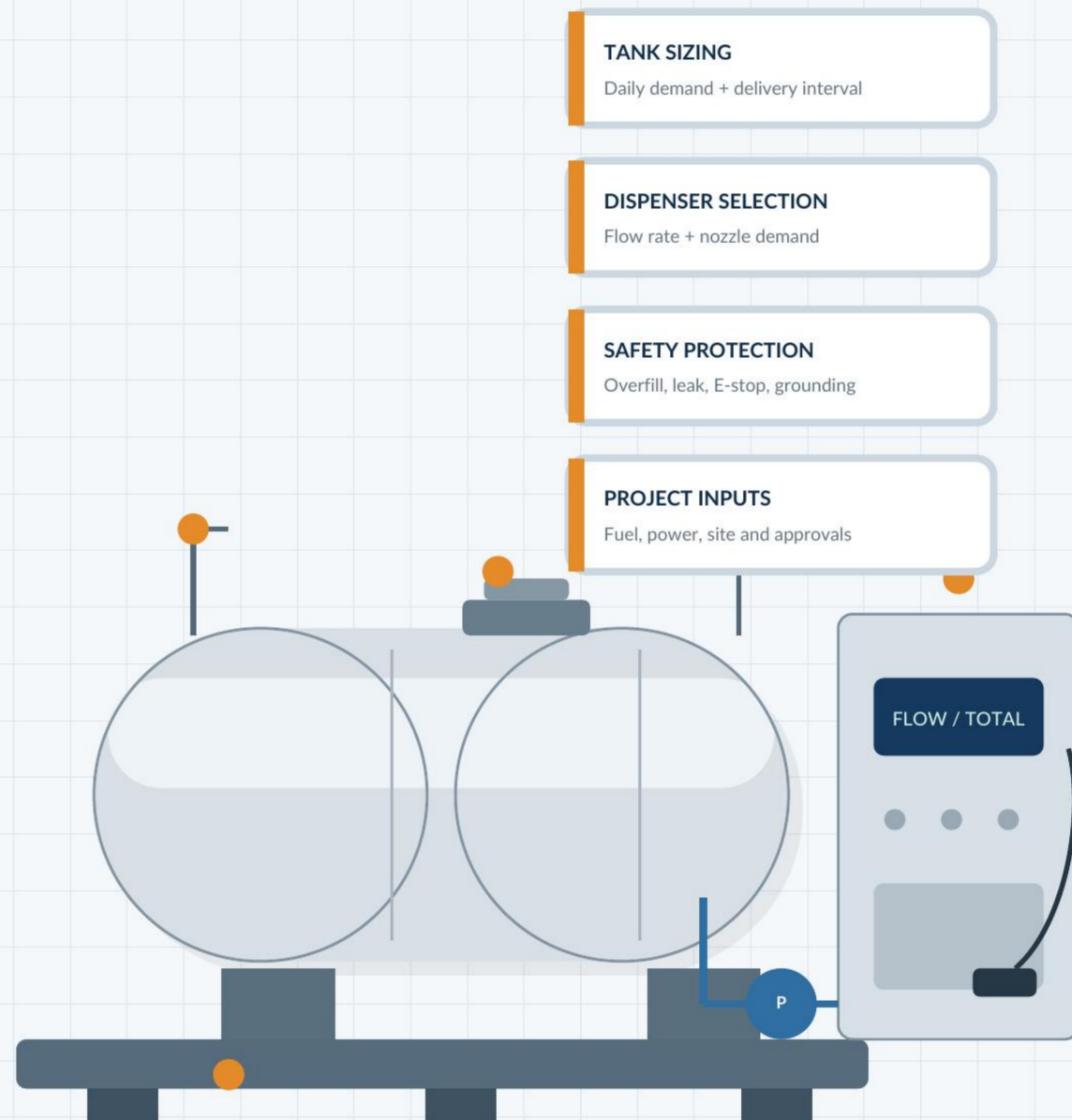
01 CAPACITY

02 FLOW

03 SAFETY

04 INPUTS

System concept: storage tank + unloading + pump/filter + metering + dispensing



How to Determine Fuel Storage Capacity

A practical starting point for sizing a skid mounted fuel station is the operating inventory required between normal fuel deliveries.

$$\text{Required Operating Inventory} = \text{Daily Fuel Consumption} \times \text{Fuel Delivery Interval}$$

WORKED EXAMPLE



$$8,000 \times 3 = 24,000 \text{ L}$$



Calculated operating inventory is a sizing baseline, not the final nominal tank capacity.

Final Tank Capacity Still Depends On

- Reserve inventory
- Delivery delay
- Usable tank volume
- Peak demand
- Filling limit



Dispenser Flow and Refueling Time

Storage capacity determines how much fuel is available, while dispenser flow determines how long each refueling stop takes.

$$\text{Refueling time} = \text{Fuel volume} \div \text{Dispenser flow rate}$$



Example fuel volume: **300 L**

Dispenser Flow Rate	Theoretical Refueling Time
40 L/min	7.5 min
80 L/min	3.75 min
120 L/min	2.5 min



ACTUAL REFUELING TIME ALSO DEPENDS ON

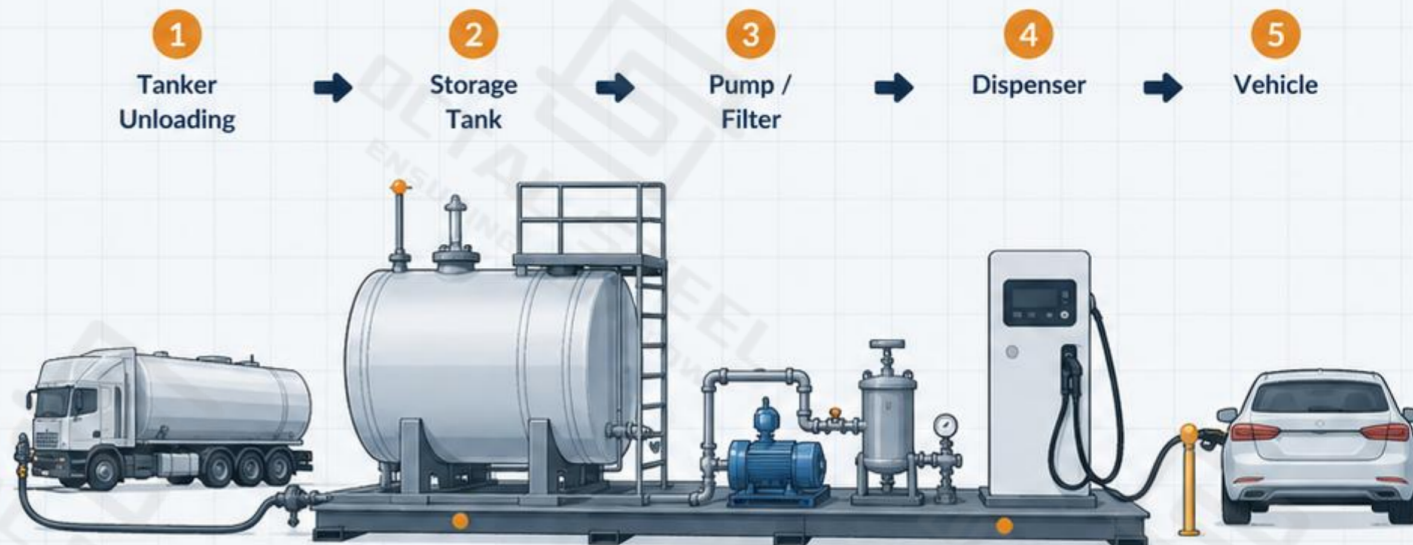
- Hose pressure loss
- Nozzle quantity
- Vehicle tank acceptance
- Dispenser control
- Simultaneous refueling demand



Higher flow rates significantly reduce refueling time, improving site turnaround and operational efficiency.

Safety Protection and Emergency Control

Safety protection should cover the full fuel path from tanker unloading and tank storage to pumping, dispensing, and vehicle refueling.



Safety Risk	Protection / Control	Engineering Verification
1. Tank Overfill	Level gauge, high-level alarm, automatic shutdown where specified	Setpoints checked against tank operating volume and unloading rate
2. Fuel Leakage	Secondary containment, interstitial monitoring, controlled drain arrangement	Leak test, containment inspection, monitoring function test
3. Spill During Transfer	Controlled unloading connection, isolation valves, drip/spill containment	Hose/connection inspection and spill-control arrangement
4. Tank Overpressure / Vacuum	Normal vent and emergency vent sized for actual duty	Vent type and installation checked against applicable code
5. Static Electricity	Bonding and grounding points for unloading and dispensing	Electrical continuity and grounding verified
6. Ignition Sources	Hazardous-area equipment and separation from uncontrolled ignition sources	Area classification and equipment certification checked
7. Emergency Condition	Accessible emergency stop to isolate pumps and dispensing equipment	Functional shutdown test completed
8. Vehicle / Mechanical Impact	Protected dispenser and exposed piping; barriers or bollards where required	Physical protection checked against traffic route
9. Fire Response	Fire extinguishers and other project-required provisions	Equipment type, rating and location checked
10. Unauthorized Operation	Lockable valves and access control where required	Access logic verified during FAT or commissioning

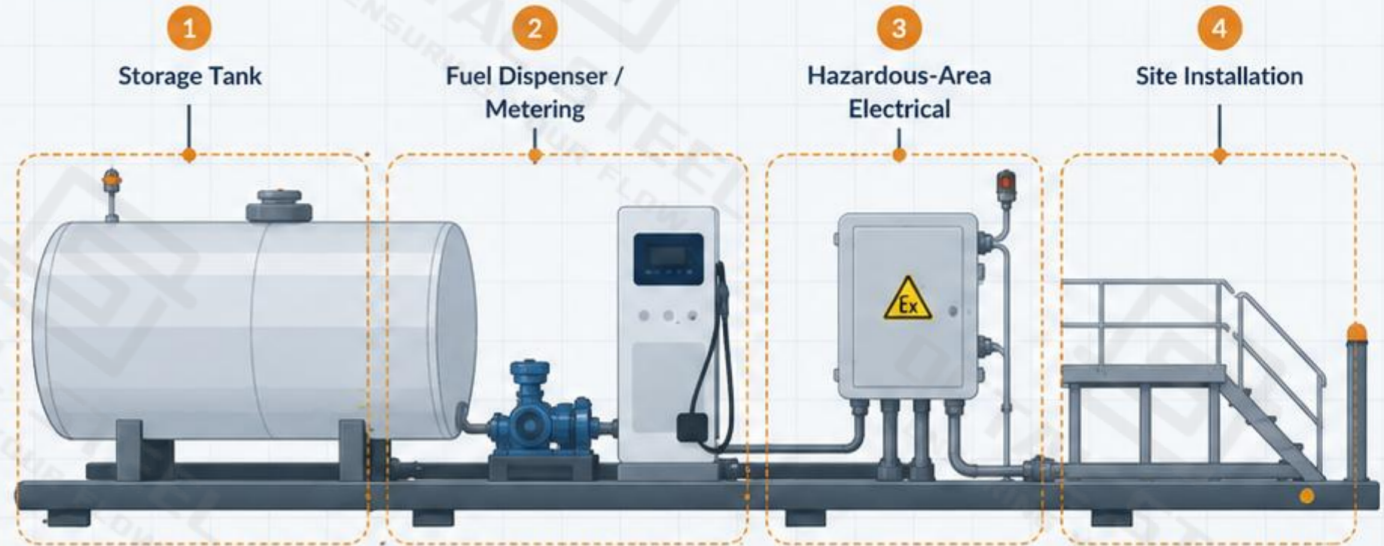
Standards and Approval Boundaries

A skid mounted fuel station is reviewed by system boundary rather than under one universal approval. Different parts of the package may follow different standards.



No single universal certificate covers the complete skid mounted fuel station.

SYSTEM BOUNDARY OVERVIEW



Equipment / Requirement	Typical Reference	Scope
Aboveground steel tank	UL 142, where specified	Shop-fabricated atmospheric steel tank
Protected aboveground tank	UL 2085, where specified	Fire/impact protected tank with integral secondary containment
Fuel dispenser metering	OIML R 117-1 or local metrology route	Measuring system / fuel dispenser
Hazardous-area electrical	ATEX / IECEx / NEC / local requirement	Electrical equipment and installation
Fuel station installation	NFPA 30A / local code, where applicable	Site installation and operation

PROCUREMENT REMINDER

- Confirm destination country
- Confirm fuel type and hazardous area
- Confirm approval route for each component

Project Data Required Before Selection

Tank capacity alone is not enough to specify a skid mounted fuel station. Equipment configuration should be based on how the station will operate.

Required Input	What It Determines
1 Fuel type	Tank, seal, pump and dispenser compatibility
2 Daily consumption and delivery interval	Required operating inventory and tank capacity
3 Peak refueling demand	Dispenser flow rate and nozzle quantity
4 Tanker unloading rate	Fill piping, venting and overfill protection
5 Fuel grades / compartments	Tank and dispenser arrangement
6 Power supply and hazardous-area requirement	Electrical equipment configuration
7 Destination country	Applicable code, metrology and certification route
8 Fuel management and documentation	RFID / FMS, reporting, inspection and handover scope

RFQ CHECKLIST

- Fuel and capacity
- Flow rate and nozzles
- Power and hazardous area
- Destination approval route
- Documentation scope



Two stations with the same nominal tank capacity may still require different pumps, dispensers, instruments, electrical systems, and safety arrangements.