PROJECT CASE STUDY

Renovation and Expansion of IPT Terminal

Location	Amchit, Lebanon
Client	IPT Terminal
Duration	5 years
Role	Detailed Design, Construction Supervision, Material Procurement, Project Management
Total Storage	13 tanks — 28,000 m^3 (9 existing rehabilitated + 4 newly constructed)

PROJECT OVERVIEW

IPT Terminal in Amchit is one of Lebanon's principal bulk petroleum storage facilities, serving as a strategic node for the import, storage, and distribution of refined products across the country. Over a continuous five-year engagement, our consultancy delivered the full revamp and expansion of the terminal — from initial detailed design through to construction supervision, material procurement, and overall project management.

The programme rehabilitated the entire existing storage base of nine tanks (16,000 m^3), added four new storage tanks (12,000 m^3), and introduced a fully redesigned operational core including the delivery pump station, road tanker loading station, control room, firefighting system, piping network, storm water and drainage system, and the supporting electrical and instrumentation systems.

SCOPE OF SERVICES

- Detailed engineering design across process, mechanical, piping, electrical, instrumentation, and firefighting disciplines.
- Material specification and procurement support for tanks, pumps, valves, piping, and control equipment.
- Full-time construction supervision through demolition, civil, mechanical, electrical, and commissioning phases.
- End-to-end project management: planning, scheduling, contractor coordination, quality assurance, and HSE oversight.
- Pre-commissioning, commissioning, and operational handover support.

FACILITIES DELIVERED

- Rehabilitation of 9 existing storage tanks with a combined capacity of 16,000 m^3.
- Construction of 4 new storage tanks with a combined capacity of 12,000 m^3.
- New delivery pump station designed for optimised flow and energy efficiency.
- New road tanker loading station incorporating gravity-assisted loading.
- New control room with upgraded electrical and instrumentation systems.
- Complete redesign of the terminal piping network.
- New firefighting system designed to exceed prevailing safety standards.

- Storm water and drainage system, including a custom-engineered API separator.

KEY INNOVATIONS AND OUTCOMES

1. Gravity-Assisted Road Tanker Loading System

A custom-designed loading system for road tankers was developed and implemented to reduce reliance on active pumping during dispatch operations. By engineering the system around gravity flow wherever operationally feasible, the solution simultaneously addressed three persistent pain points of conventional tanker loading: high power consumption, high maintenance overhead, and safety exposure during transfer.

- Reduction of overall operations power consumption by approximately 70%.
- Reduction of maintenance cost by approximately 70%.
- Material improvement in operations safety through reduced active mechanical handling.

2. Innovative Closed-Circuit API Separator

A purpose-engineered API separator was designed and installed as part of the drainage and hazardous-product handling system. Departing from conventional open-pit designs, the unit was delivered as a steel, closed-circuit system optimised for environmental compliance and minimal operator intervention.

- Steel construction, fully closed system.
- Gravity-based oil collection — no active pumping required.
- Gravity-based water removal — reduced operational complexity.
- Zero air emissions — fully sealed to atmosphere.
- Minimal operation and maintenance footprint.

OUTCOME SUMMARY

The renovated and expanded IPT Terminal entered service as a modernised, safer, and substantially more cost-efficient facility. The combined effect of the gravity loading system and the closed-circuit separator, alongside the broader piping, firefighting, and instrumentation upgrades, delivered structural reductions in both energy consumption and maintenance expenditure — measured at approximately 70% for the affected operations — while simultaneously raising the safety and environmental performance of the terminal to a level appropriate for long-term strategic operation.

DISCIPLINES COVERED

Process • Mechanical • Piping • Electrical • Instrumentation and Control • Firefighting • Storm Water and Drainage • Storage Tank Engineering

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