

The SMITH SYSTEMS Advantage



Customer: Aramco

Project: Jizan Bulk Plant

Location: Jizan, Saudi Arabia

Product: Diesel, Gasoline, Kerosene (DPK) and Fuel Oil

Modular control console design with Smith GeoFlo and GeoProv computers, mimic panels and RS-232 communication link to Aramco's Terminal Management System computer.

High accuracy measurement for multiple off-loading and loading scenarios

The Jizan Bulk Plant system was designed for off-loading and loading petroleum products to custody transfer standards at flow rates ranging from 100 m³/hour to 2,610 m³/hour. The system consists of five separate meter skids configured with one standby meter, either 3+1 or 1+1 as noted below.

Diesel Import	4 x 8" Smith Sentry Turbine Meters (3+1)
Diesel Export	2 x 4" Smith Sentry Turbine Meters (1+1)
Premium Gasoline	4 x 8" Smith Sentry Turbine Meters (3+1)
Fuel Oil	2 x 8" Smith H8-S3 Positive Displacement Meters (1+1)
DPK (Kerosene)	2 x 6" Smith Sentry Turbine Meters (1+1)

To maintain consistent high accuracy measurement, three Smith stationary bi-directional pipe provers provide for on-line meter calibration.

A common prover is shared between the diesel and gasoline meter skids. Fuel oil and DPK utilize dedicated provers to prevent product contamination.

Individual skid control consoles include a dedicated Smith GeoFlo flow computer per meter run and a Smith GeoProv proving computers per prover to perform custody transfer computations in accordance with Saudi Aramco specifications. Each control console communicates via RS-232 to the upper level Terminal Management System (TMS) computer.

In addition to performing flow balancing during product transfer and proving operations, the meter skid control valves are designed to perform pressure control under a range of off-loading and loading scenarios.

Jizan

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SYSTEM SPECIFICATIONS

	Diesel Import	Diesel Export	Gasoline	Fuel Oil	DPK (Kerosene)
Configuration	3+1	1+1	3+1	1+1	1+1
System Flow Rate	2,550 m ³ /hr	160 m ³ /hr	2610 m ³ /hr	240 m ³ /hr	369 m ³ /hr
Prover Flow Rate	875 m ³ /hr	875 m ³ /hr	875 m ³ /hr	300 m ³ /hr	370 m ³ /hr
Viscosity, cP@°C	3.8 @ 35°C	3.8 @ 35°C	.39 @ 35°C	175 @ 50°C	1.7 @ 35°C
Design Pressure	1,800 KPa	1,800 KPa	1,800 KPa	1,750KPa	1,750KPa
Design Temperature	70°C	70°C	70°C	70°C	70°C
ANSI Rating	150 lb	150 lb	150 lb	150 lb	150 lb
Design Code	ANSI B31.3 Chemical Plants and Petroleum Refinery Piping.				

INSTRUMENTATION

Flow Computers: Smith GeoFlo, Model MR-MPS
Proving Computer: Smith GeoProv, Model PR-BIP
Console: AMCO, Model FX-78
Pressure Transmitters: Rosemount, Model 1151GP
Pressure Indicators: Aschroft, Model 63
Temperature Transmitters: Rosemount, Model 3144

EQUIPMENT

Flow Control Valves: Fisher, Model A-41 Fisher, Model FSED
Double Block and Bleed Valves: General Twin Seal, Model CA811-G
Thermal Relief Valves: Crosby, Series 900
Inlet Gate Valves: DSI, Model 37-XU
Air Eliminator: Smith, Model VAR
Strainers: Smith, Model P/L
Flow Meters: Smith, Turbine Meters, Sentry Series, 4", 6" & 8"
 Smith, Positive Displacement, Model H8-S3
Actuators: Rotork, IQ Series
Meter Provers: 2 x Smith Bidirectional, 12" x 16" x 6", Volume 1.138 m³
 1 x Smith Bidirectional, 20" x 24" x 10", Volume 3.223 m³

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Smith Systems Operation

737 North Padre Island Drive ♦ P.O. Box 4658
 Corpus Christi, TX USA 78469
 Phone: 361/289-3400 ♦ Fax: 361/289-1115

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