



In the Field with Donaldson

Clean Fuel & Lubricant Solutions



BULK FUEL TERMINAL UPGRADE RESULTS IN IMPRESSIVE DOWNTIME REDUCTION

THE SITUATION

Puma Energy is a global energy company comprised of 104 terminals in 49 countries; loading 1,600 trucks every day. They are committed to providing quality fuels to customers in each country where they operate. With a supply network like theirs, and a total global storage capacity of 8.3 million m³ (2.19 billion gallons) of diesel fuel, it's no surprise that Puma Energy expects the very best from each and every storage and distribution facility in their network.

When Puma acquired its bulk seaboard fuel terminal in Eagle Farm, near Brisbane, Australia, the company quickly realized its aging pressure vessel fuel filtration system required considerable refurbishment to continue providing the diesel fuel cleanliness levels demanded by the Australian market.

THE CHALLENGE

The fuel filtration pressure vessel housings at the terminal were old technology and labor-intensive to maintain and service. Routine maintenance on the pressure vessels typically resulted in a day of downtime.

Eagle Farm terminals' high throughput, with flow rates up to 16,000 liters/min (4,227 gallons/min), meant that all dispensed fuel from the new installation needed to be cleaned on a single pass through the filtration system, and therefore pressure loss had to be managed and minimized. Any reduced flow rate due to pressure loss could result in higher demurrage costs being incurred if gantry loadout times became excessive.

“In the current Diesel Fuel market, the requirement for clean fuel is being driven by our customers who are demanding clean fuel for their common rail diesel engines.”

Fuels Operations
Manager National
Eagle Farm Terminal

In order to minimize filtration downtime, Donaldson needed to consider many factors to ensure that the upgrade at the Eagle Farm terminal would be executed successfully. The current pressure vessel filtration system would be offline for a day during routine maintenance and required a range of permits; all needing to be obtained and approved ahead of time.



Old Style Kettle Filters



Bank of five P568933 Manifolds with fifty DBB8777 filter elements installed

The good news was that diesel fuel shipped to the Eagle Farm terminal was already exceptionally clean, however, highly efficient bulk tank filtration would help ensure that any unwanted contamination is removed prior to reaching the dispensing gantries.

“Donaldson’s excellent customer service and after sales support has made the process very smooth and plans are in place to roll out similar systems to all Puma Energy terminals in the near future.”

Technical Manager – Fuels
Puma Energy

THE CLEAN SOLUTION

Donaldson personnel completed site audits to confirm that the proposed filtration would be manageable within the limited space constraints and reviewed the proposed installation. Considerations included: 1) the life expectancy of the filters/element replacement costs, 2) change-out frequency, 3) downtime to conduct routine element services and 4) subsequent cost per liter to guarantee clean fuel from Puma Energy’s Eagle Farm terminal.

Donaldson recommended spin-on element technology which has been field-proven to be easier to manage and

maintain than old style pressure vessel kettle and cartridge style assemblies. The system includes ten manifolds (P568933), each fitted with ten Donaldson Blue® (DBB8777) spin-on elements that utilize 7µm Beta 2000 (single pass) Donaldson Electrostatic Reduction Technology (D.E.R.T.™) media for a total of 100 filters.

In high-flow applications, an electrical charge can occur when non-conductive fluid flows over filter media at high velocity. Consequently, electrostatic discharge (ESD) or sparking may burn holes in the media, rapidly reducing the efficiency of a filter. Donaldson’s D.E.R.T. media minimizes the known effects of ESD at high flow rates providing unsurpassed single-pass cleanliness for the entire life of the filter. Donaldson Blue DBB8777 with D.E.R.T. media targets single-pass ISO4406 cleanliness levels of 16/14/11 (or better) for the usable life of the filter.

The Donaldson solution was integrated into the existing Eagle Farm terminal infrastructure. Manifolds were installed at ergonomic heights for ease of element servicing in accordance with safe working practices, eliminating the need for additional in-advance work permits. Puma Energy integrated an air-assisted diaphragm pump and valves to enable fuel to be pumped down from the filter assembly. This makes “dry” element change outs possible and reduces diesel spillage clean-up. Donaldson personnel conducted site training on system maintenance and best practice sampling procedures.

THE RESULTS

The Puma Energy Eagle Farm terminal is dispensing fuel at cleanliness codes as low as 13/11/9 or 32x cleaner than the World-Wide Fuel Charter (WWFC) cleanliness requirement. A single set of 100 filter elements plumbed in parallel at the terminal cleaned an impressive 185 million liters (49 million gallons) of diesel fuel prior to reaching capacity.

Even more impressive, scheduled servicing and downtime has been reduced by more than 85%,



with routine filter changeouts now taking a team of three people equipped with little more than filter straps, one hour from start to finish. This rapid changeout time can be scheduled into the terminal’s operations without the requirement of an additional bank of redundancy filters.

FUEL PATH FROM TANK TO TRUCK



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Brochure No. F111552 ENG (06/19)

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