innovate · create · execute

RAIL CONNECT SYSTEM (IN-LINE REFUELLING)

Pioneer of Refuelling Equipment & Support Services

REFUEL INTERNATIONAL



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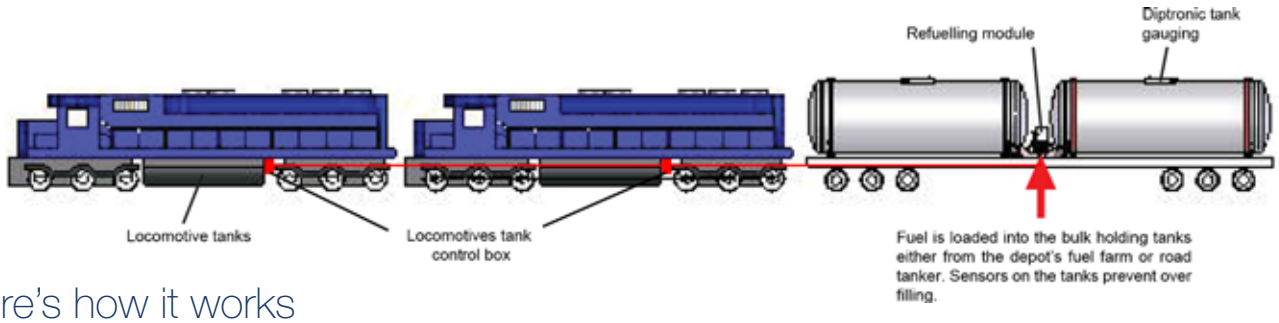
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long haul - non stop

Refuel International Rail Connect System (In-line Refuelling) is designed to allow diesel-powered trains to travel long distances without having to stop to refuel. A flatcar with two bulk diesel fuel tanks, one of which has a pumping module underneath, is connected to the diesel locomotive(s), providing constant in-transit refuelling of the locomotives. It is a revolutionary fuelling system that continuously refuels the locomotive day tanks during long haul operations.

The system is designed so that a locomotive can be coupled to either or both ends of the inline fuelling system flatcar. Dedicated connections for fuel, electrical / MU and air are provided at both ends of the inline system.



here's how it works

The Locomotive In-Line refuelling system is made up of two (2) quite distinct but fully integrated parts.

The Locomotive Fuel Tank Control Box

One is required per locomotive that indicates the fuel level in the loco's fuel tank via High and Low level probe indicator lights. The control box is also fitted with a Manual Override button should this be necessary.

The Bulk Fuel Tank set consisting of:

1. One (1) or two (2) Bulk Tanks (if fitted with 2 tanks, tanks are fitted with tank level gauging to continuously balance the tanks in transit). These are usually located directly behind the main locomotive set.
2. The central Refuelling Module containing the pumping system and system Control Box.

The fuelling system is designed to be semi-automatic, meaning that once it has been set, it requires no further human intervention. Activating the system for locomotive refuelling is as simple as pushing the Fuelling System button (START SYSTEM) on the central Pumping Module Control Panel prior to leaving the base / depot. The system is designed to eliminate the need for the driver of the locomotive to monitor the system, however a driver can monitor the fuel levels in the locomotives' fuel tanks via the fuel gauge on the locomotive.

When a locomotive requires ("request") fuel from the bulk tanks, a signal is sent from the loco fuel tanks to the refuelling module. Fuel is initially "delivered" by gravity feed to the locomotive's tank. However, if the locomotive requires a large quantity of fuel such that it takes longer than ten (10) minutes to deliver by gravity, a pump will automatically be activated to supply fuel under pressure. This will double the fuel delivery rate.

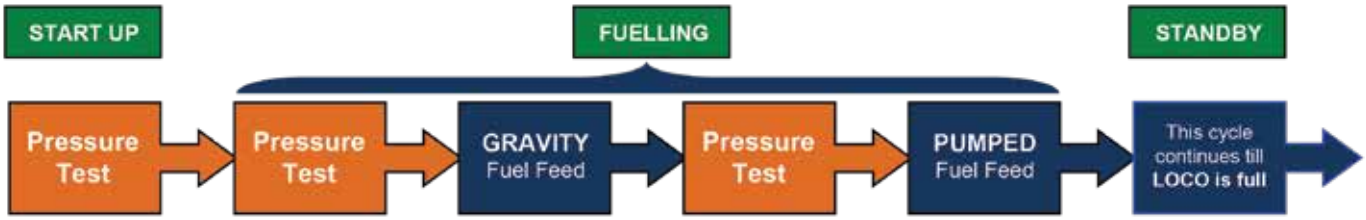
Note that a pressure test will be done every 10 minutes to ensure system integrity. Once the demand for fuel has been satisfied (loco tank probe detects a high level reading), the system will be reset (i.e. put in standby mode) waiting for the next fuel requirement.

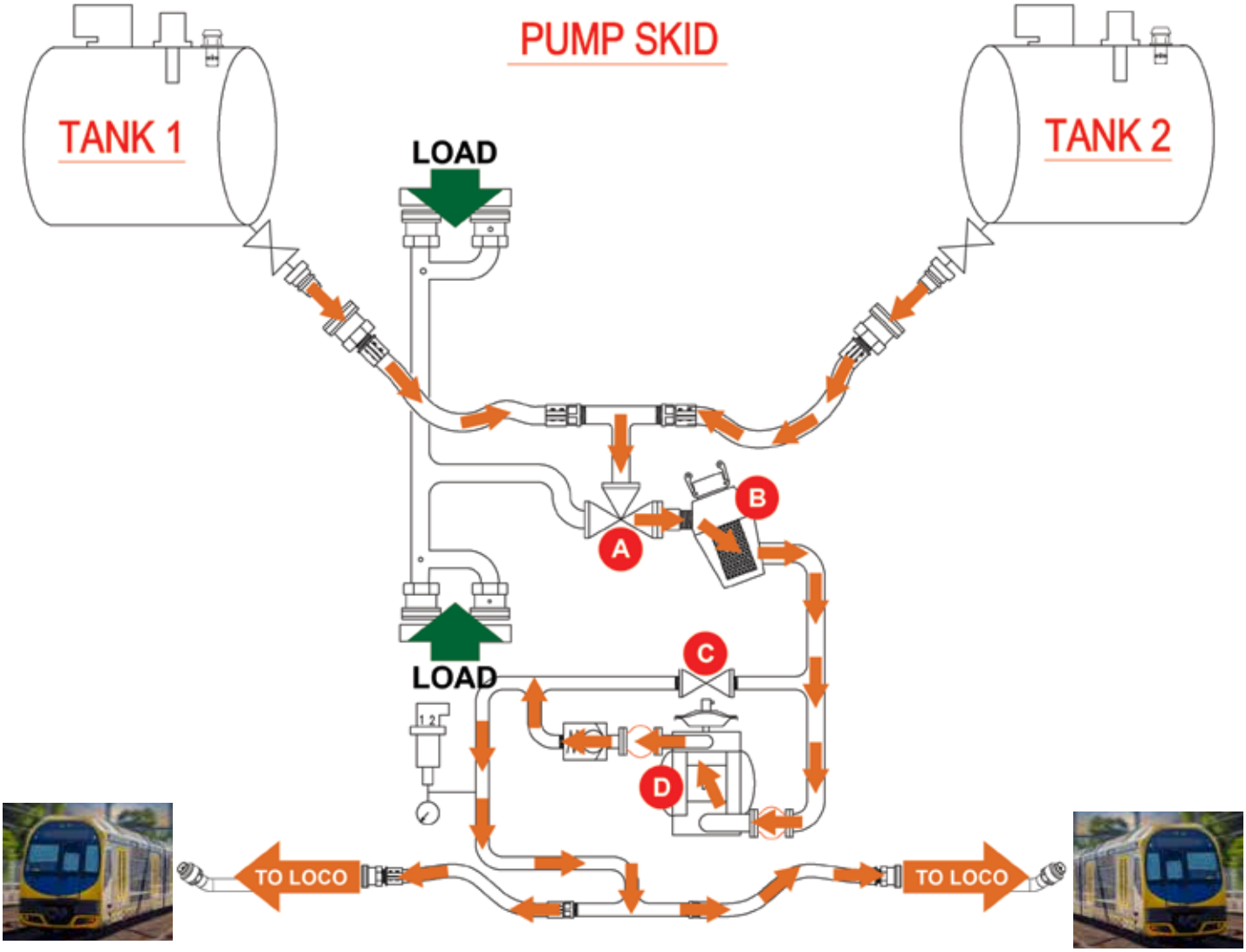


pump, gravity feed and pressure test mode fuelling flow logic

A pressure test of the fuel system is conducted every 10mins by the small pump while there is a locomotive requiring fuel. If no locomotives require fuel, the system remains in standby mode until locomotives again request fuel. This requirement cannot be bypassed and the system must pass the pressure test to deliver fuel to the locomotives.

The delivery of fuel from the bulk tanks to the locomotive is done in an alternating cycle of Gravity-feed >> Pumped supply >> Gravity-feed. This fuel supply method is more than sufficient to supply several locomotives in series and ensures that the locomotive tanks are always kept full of fuel.







features and benefits

- Continuously transfers a controlled amount of fuel from bulk storage tanks to the locomotive day tank, removing the need to take fuel onboard during long haul trips.
- Continuously balances the load if 2 bulk storage tanks are used (as pictured above) preventing the load becoming unbalanced.
- Provides operational efficiencies to reduce trip costs and prevent costly delays.
- Fail-safe technology ensures the integrity of the system during operation and addresses environmental concerns by disallowing refuelling if there is a potential leak in the system (for example if any connectors come loose in transit).
- All fuel connections are via “dry break” couplings
- On start-up and before each refuelling operation, an automatic system pressure test checks the integrity of the fuel lines before allowing refuelling to commence.
- Rapid return on investment has seen this system quickly becoming standard equipment on long haul locomotives.





