



[parker.com/hife](https://parker.com/hife)



## CHALLENGE:

Fuel Decon was challenged to reduce the number of failures and optimise fuel usage as their customer operates a remotely-located mine, consuming approximately 8 million litres of diesel each month.

## SOLUTION:

Fuel Decon chose to monitor fuel cleanliness 24/7 with Parker's iCount particle detector, integrating it into their remote monitoring solution. They then helped their customer to manage filtration so that their fuel meets the required specification.

## BENEFITS:

The copper mine saved more than \$5 million each year by predicting cleanliness, reducing fuel burn, and eliminating unplanned fuel pump and injector replacement.

# IOT AND CONDITION MONITORING: HOW TO ACHIEVE CLEANER FUEL AND SAVINGS

Fuel Decon chose Parker's iCount particle detector to prove fuel meets the required cleanliness standard and integrated it into their IoT solution for fuel delivery in remote locations, so that data could be viewed anywhere in the world.

**\$5 million saved annually**

*"Our end-to-end IoT services, used with Parker's iCount particle detector, streamlined the process - achieving great results for the customer"*

Chris Chow, Fuel Decon

## Why diesel needs to be clean

Fuel injection systems continue to be developed to reduce emissions, fuel consumption, and improve performance. Contemporary injection pressures exceed 2000 bars, demanding reduced orifice sizes and component clearances, typically 2 µm to 5 µm. Small, hard particles, which may be carried into these engine parts, are potential sources of engine failure.

Excessive diesel fuel contamination can cause premature clogging of on-machine filters causing bypass – something which may be ignored by an under-pressure workforce – or worse, a rupture goes unnoticed. Depending on the level of both hard and organic particles, the downstream modern fuel injection system parts are then unprotected against premature wear, loss of performance, and ultimately, engine failure.

Pumping already clean fuel into the machine's tank significantly reduces these risks.

***“Running engines on dirty fuel can lead to up to 11% excess fuel burn.”***

## How fuel gets dirty

Refinery-supplied fuel must meet cleanliness standards but is then transported through tankers and pipelines and is stored in large bunkers en-route to fuel bowzers. These types of environments can lead to accumulation of numerous contaminants, including:

- Water from condensation
- Rust and pipework debris
- Dust

## Cleanliness specification

The worldwide fuel charter, and manufactures, specify cleanliness requirements - for example, ISO 18/16/13 at the machine fuel tank. On-board filtering then improves this further: some manufacturers require 12/9/3 at the fuel injectors.

## Customer requirement

Fuel Decon was challenged to help reduce the number of failures and optimise fuel usage as their customer operates a remotely-located mine, consuming approximately eight million litres of diesel each month.

## Solutions

From experience, the first step was to understand cleanliness levels. Parker's iCount particle detector was linked with Fuel Decon's remote monitoring [IoT] solution to allow 24/7 feed of dispensed fuel quality. Analytics are used to recommend when the customer should change the filters on their fuel forwarding skids.



*Parker's iCount particle detector*

Improving from a cleanliness level of ISO 21/19/13 to ISO 16/14/11 at the filling nozzle through filtration monitoring and management has had a dramatic effect.



## Business benefits

The cleaner fuel has meant engines were able to operate without losing performance, resulting a \$5 million annual saving in fuel burn alone. A reduction in maintenance costs of \$200,000 has also seen no unplanned injector or pump replacements. Together, this proactive monitoring approach ensures that production operates at maximum performance.

Fuel consumption is a major operating cost for many businesses and the desire to minimise this is self-evident. Often it is tempting to push filter change-out and maintenance intervals further apart to reduce expenditure on filtration, however this has the effect of increasing cost, not decreasing it.

Filters are now changed at the right time to guarantee fuel cleanliness at the same time as maximising lifetime. The site is justifiably consuming more filters than before, but this expenditure is dwarfed by the savings achieved through clean fuel, outweighing the extra \$94,000 annual cost of filtration and Fuel Decon's service.