KLEENFUEL

ELAIS

KLEENOIL is proud to introduce the **KLEENFUEL ELAIS**, a simple, robust filtration system engineered to enhance diesel fuel quality across a wide range of industrial, transportation, and backup power applications. Designed with versatility, durability, and performance in mind, the ELAIS ensures optimal fuel cleanliness for critical operations.

www.kleenoilusa.com

Elais™

Intelligent Diesel Fuel Cleaning in a Compact Cube

Elais™ is a compact, intelligent, and fully self-contained diesel fuel cleaning system, meticulously engineered for **continuous protection** against **particulates, water, and ferrous contaminants.**

Housed in a durable 16-inch metal cube, the system leverages a powerful **Marco 12V pump** and **Kleenoil Kleenfuel™ cellulose depth filtration** to safeguard diesel fuel systems with unmatched efficiency.

Engineered for Real-World Demands

- **Easy to move/carry at 16 kilo and even has a carry strap for ease in service**
- **Perfect sizing for a multitude of locations**
- **Plug-and-Play Simplicity:** Quick-connect XT60 input for direct 12V battery connection, 240V adapter, or even Kleenoil's optional power pack.
- **Versatile Deployment:** Use during equipment idle, operation, or downtime—ideal for both permanent setups and mobile servicing.
- **Flexible Feed & Return:** Install directly into the fuel tank via filler, service, or breather ports. Minimal disruption, maximum effectiveness.
- **Simple filter changes with pressure release port/sample port and pressure gauge.**

Core Features & Benefits

Figure 1 - Kleenfuel unit

1. Advanced Kleenfuel™ Filtration

- Cellulose depth filter captures particulates down to **3 microns absolute.**
- Simultaneously **absorbs all free and emulsified water.**
- Maintains **ISO 18/16/13 or better** fuel cleanliness.


Figure 2 - Magnetic core

2. Built-In Magnetic Defense

- A full-length **4000-gauss magnet core** captures all ferrous particles.
- Prevents metal debris from damaging injectors and pumps.

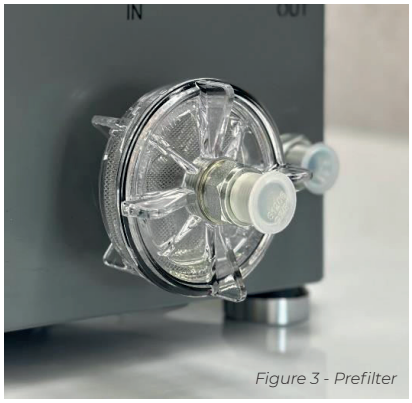

Figure 3 - Prefilter

3. Compact High-Performance Design

- Rugged metal housing.
- **Clear prefilter** for instant visual monitoring.
- Sleek **control panel with stop/start functionality.**
- Robust **Marco 12V pump** for flow reliability.

Figure 4 - Control Panel

4. Autonomous & Flexible Operation

- Run on a typical car battery, **240V via converter, or power pack.**
- Designed for **in-tank circulation, service cleans, or timed cycles.**
- **Auto shutoff** in the event of water overload or pressure increase.

Figure 5 - Kleenfuel Cartridge

5. Low Maintenance

- As a permanent siting - requires only a **quarterly cartridge change.**
- **Magnet wipe-down** included as part of routine service.
- Virtually maintenance-free otherwise.

Installation Made Simple

For most applications, the hardest part of installing Elais™ is choosing the optimal feed & return location. Here's how to do it right:

Feed & Return Pipe Installation Guide

Application	Installation Notes
Service Cleans	Temporary access via filler cap is suitable for quick cleaning jobs.
Buses & Coaches	Use breather or service ports; install ½" BSP bulkhead fittings for permanent connections.
HGVs & Trucks	Tap into service plates; avoid breather holes unless adapted. Secure hoses under chassis.
Prime Generators	Fit feed/return pipes at opposite ends of day tank; 2–3" off the base for full flow.
Standby Generators	Use dedicated stainless-steel dip tubes and isolation valves for ease of service.
Marine Vessels	Avoid filler caps. Use marine-rated deck or vent fittings with fuel-safe, corrosion-resistant hose.

Always follow OEM compliance standards and maintain accessibility for filter service.

Cleaner Fuel = Better Performance

validated by Millbrook testing

1. Lower Emissions

- Reduces soot, NOx, and PM output.
- Improves performance of EGR, SCR & DPF systems.
- Meets **Euro 6, Stage V, and Tier 4 Final** requirements

2. Higher Fuel Efficiency

- Clean fuel ensures **better combustion.**
- Improves atomization and spray accuracy.

3. Longer Engine Life

- Eliminates **abrasive particles and corrosive moisture.**
- Prevents microbial growth and “diesel bug”.
- Reduces wear on injectors, pumps, and cylinders.

4. Lower Maintenance Costs

- Prolongs filter life and injector service intervals.
- Reduces downtime from fuel-related failures.
- Boosts **uptime and profitability.**

5. Full Compliance & Warranty Protection

- Supports ISO 18/16/13 or better cleanliness standards.
- Maintains OEM fuel system warranties.
- Strengthens ESG and emissions reporting.

Who Needs Elais?

The Elais fuel cleaning system is designed for **people who depend on clean, reliable diesel fuel** to keep critical operations running smoothly. Whether managing fleets, protecting sensitive engines, or ensuring compliance, Elais provides peace of mind and performance.

Fleet Maintenance Managers

- Oversee servicing of trucks, buses, or off-road equipment.
- Responsible for preventing injector and pump failures.
- Benefit from fewer fuel-related breakdowns and easier emissions compliance.

Why they need Elais:
To protect high-pressure fuel systems from water and particulate damage, reduce downtime, and extend service intervals.

Site or Equipment Managers
(Construction, Mining, Agriculture)

- Coordinate fueling and maintenance for heavy machinery.
- Work in dusty, remote, or high-risk environments.
- Often rely on on-site storage or portable fuel tanks.

Why they need Elais:
To ensure clean fuel reaches critical equipment, reduce field breakdowns, and avoid costly repair delays on the job site.

Fuel Storage Operators / Depot Managers

- Manage diesel stock in tanks, bowsers, or IBCs.
- Deal with long-term storage, condensation, or microbial growth risks.
- May distribute fuel to vehicles or external clients.

Why they need Elais:
To “polish” fuel before transfer, remove water and sediment, and meet ISO cleanliness standards before delivery.

Facilities Engineers & Generator Operators

- Responsible for **standby and prime power generators** in hospitals, data centers, or utilities.
- Must ensure that fuel is always ready for immediate use.

Why they need Elais:
To maintain clean, stable diesel in backup systems—especially important in critical environments where failure is not an option.

Transport & Logistics Coordinators

- Oversee large fleets and fuel efficiency programs.
- Target reductions in fuel costs and emissions.

Why they need Elais:
To improve combustion, reduce filter replacement cycles, and demonstrate progress in sustainability or ESG initiatives.

Environmental Compliance & Quality Control Officers

- Monitor emissions, fuel specs, and regulatory alignment.
- Need data-driven tools to prove ISO fuel cleanliness and meet emissions regulations.

Why they need Elais:
To gain verified fuel quality through lab sampling or sensor feedback, ensuring warranty protection and legal compliance.

Marine Engineers & Boat Owners

- Operate vessels in humid, high-risk fuel environments.
- Need to protect engines from corrosion and microbial contamination (“diesel bug”).

Why they need Elais:
To clean fuel during transfer or dockside, prevent injector fouling, and ensure safe operation during long voyages.

In Summary: Elais is ideal for...

Role/Industry	Use Case
Maintenance Managers	Equipment protection, downtime reduction
Fleet Operators	Emissions compliance, fuel economy
Fuel Distributors	Polishing fuel to ISO standards
Generator Managers	Backup fuel reliability
Environmental Officers	Lab-tested fuel compliance
Marine Professionals	Water and bug protection
Site Engineers	Field-ready clean fueling

Whether you're powering a truck fleet, protecting a hospital generator, or fueling a bulldozer in the middle of a quarry — **if you rely on diesel, you need Elais.**

Using Elais for Clean Fuel Transfers: From Storage to Service

The Elais Fuel Cleaning System isn't just for in-tank circulation or periodic maintenance—it also excels as a mobile, inline filtration unit during fuel transfers between storage tanks and equipment or vehicle fuel tanks.

How It Works

During a transfer, diesel fuel is drawn from the **storage source (e.g., an IBC, barrel, or bulk tank)** using the built-in **Marco 12V triple-pump system.** As the fuel passes through the system:

- **Contaminants** such as dust, rust, water, and microbial sludge are captured by the **Kleenoil KleenfuelTM depth filter.**
- **Ferrous particles** are trapped by the integrated **4000-gauss magnetic core.**
- The now **clean, polished fuel** is returned directly into the destination tank—whether that's a machine, generator, truck, or vessel.

This ensures that **only filtered, ISO-clean fuel** enters the end-use system, helping to prevent costly damage to injectors, pumps, and DPF systems.

Why Use Elais During Transfers?

- **Eliminates contaminants** introduced during bulk delivery or long-term storage.
- **Protects high-performance engines** from wear, clogging, or poor combustion.
- **Avoids cross-contamination** from dirty containers or settling sediment.
- **Supports emissions compliance** by ensuring optimal combustion quality

Tips for Best Practice

- Position Elais between the storage tank outlet and the vehicle/machine tank inlet.
- Use proper **feed and return hoses** with fuel-safe fittings to avoid spills or air ingress.
- Monitor the **clear prefilter bowl** during operation to visually confirm fuel condition.
- Take **sample bottles** before and after the transfer for side-by-side comparison of fuel cleanliness.
- Consider adding a **timer module or flow meter** for precision during large-volume transfers.

Want Lab Verification?

Kleenoil offers **prepaid sample kits** for optional **independent lab analysis**, providing certified ISO cleanliness ratings before and after filtration—ideal for compliance documentation or customer assurance.

Using Elais during fuel transfers is not only smart — it's **essential** for modern diesel systems where **fuel quality = performance, reliability, and emissions control.**


KLEENOIL
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SPECIALISTS FILTRATION OF ALL
MINERAL FLUIDS | OILS & FUELS

Changing the Elais Filter Cartridge – Tips & Tricks for Peak Performance

Keeping your Kleenoil KleenfuelTM system running at its best requires minimal maintenance—just a simple cartridge change every three months in most applications. However, performance is often visible before that, thanks to two key visual indicators:

1. Surface Contamination on the Filter Top – Your Visual Gauge

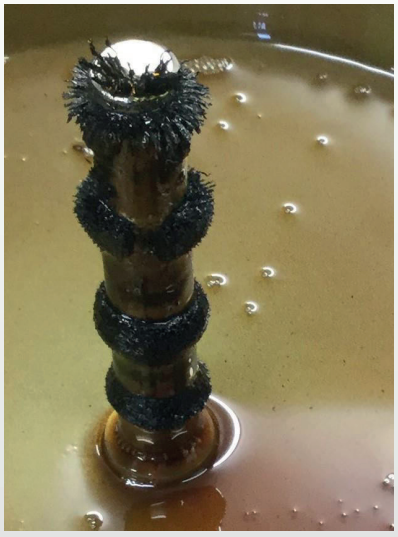
When removing the used filter cartridge, pay close attention to the top surface:

- This area acts as an early indicator of filter performance.
- You'll often see **trapped particulates**—fine dust, black carbon soot, rust particles, and sediment — clearly visible.
- A heavily loaded surface means the filter has done its job and is ready for replacement.

Tip: If the top of the filter appears dark, heavily stained, or feels gritty to the touch, it's time to change it—even if you're short of the 3-month interval.

2. Check the Magnetic Core for Ferrous Contaminants

Each Elais filter includes a powerful 4000-gauss magnet at its core:



- This magnet traps **metallic debris**, such as steel or iron filings, before they reach your fuel system.
- On removal, you can visually inspect the magnet — ferrous particles often form a grey/black sludge or fine metallic dust.

Tip: Wipe the magnet with a clean rag or paper towel. If it collects a notable amount of material, that's your sign the magnet is doing its job—and the cartridge is due for replacement.

Replacement Tips for Best Results

- Always use **genuine Kleenoil KleenfuelTM cartridges** for optimal particle and water removal.
- Ensure the **filter housing is clean** before inserting a new cartridge — wipe out any residual water or debris.
- After replacing the filter, monitor the **clear prefilter bowl** during first restart to check for any signs of entrained air or fuel quality issues.
- Dispose of used cartridges according to your **local waste handling regulations,** especially if fuel-saturated.

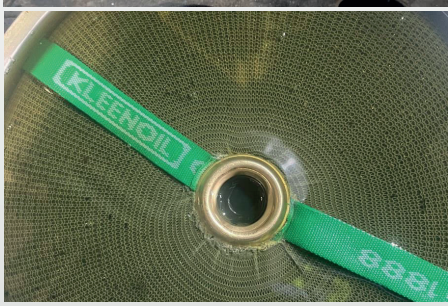
Proactive Maintenance Tip

Keep a **simple service log:**

- Note the **date of change, fuel condition**, and **magnet contamination** observed.
- Helps track fuel cleanliness trends and prevent problems before they occur.

By using the **filter top** and **magnet core** as visual tools, you can make informed decisions about filter changes and maintain the highest fuel system cleanliness with minimal effort.

Using **sample bottles** during a fuel clean is one of the simplest yet most effective ways to **visually demonstrate the impact** of the Elais system. By taking a **“before and after” sample** — one prior to filtration and one post-clean—you gain a clear, side- by-side view of the results. You'll often notice dramatic differences in **fuel clarity, colour, and particulate content.** The “before” sample may appear cloudy, darkened, or contain visible debris or water droplets, while the “after” sample typically shows a **bright, clear appearance** — free from suspended particles and water. It’s not only a practical validation of system performance but also a genuinely satisfying and even fun way to see the Elais in action. For those seeking professional verification, **Kleenoil also offers prepaid sample kits**, allowing you to send fuel to an **independent laboratory** for ISO cleanliness testing. This gives you a certified report on particulate and moisture levels—ideal for fleet compliance, OEM warranty records, or simply peace of mind.



Filter Change Best Practices for ELAIS Fuel Filtration Systems

Routine Use – Permanent Installations

For installations where ELAIS is used continuously (e.g., in recirculation systems or inline filtration for generators, machinery, or bulk storage), the recommended filter change interval is:

Every 3 months as a general rule of thumb.

However, this should always be supported by:

- **Differential pressure checks** across the filter (rising pressure = restriction).
- **Water detection** using visual indicators or sensor alarms (cellulose absorbs water but has a saturation limit).

Important: Pressure alone is not always a reliable indicator of particulate buildup in depth filters.

Why Pressure Isn't Everything

Cellulose depth filtration works very differently from standard pleated or surface filters:

- It contains **thousands of microscopic flow paths.**
- Dirt can occasionally **create channels or wormholes,** bypassing resistance.
- As a result, a filter may **still pass fuel easily** even when it's holding significant amounts of particulate matter.

This means:

- A filter may appear “normal” on pressure but be **internally clogged.**
- Regular experience with your system will help you recognize subtle performance shifts (flow rates, fuel clarity, or engine behavior).

Inspection-Based Maintenance

In addition to scheduled changes and pressure checks, you can also:

- Periodically **inspect the top section** of the filter (where contamination accumulates first).
- Look for signs of **dirt saturation, discoloration, or moisture pooling.**
- If in doubt, it's better to **replace the filter early** than risk degraded fuel quality.

Tank Cleaning & Mobile Service Jobs

For users deploying ELAIS for **tank cleaning or mobile fuel polishing**, filter change strategy should be **condition-based:**

Always assess based on the **initial fuel quality** and the **volume of contaminants expected.**

Best Practice:

- Start every **service clean with a new filter.**
- If cleaning multiple tanks in one job, **monitor fuel clarity and filter appearance** after each tank.
- Replace the filter **between heavily contaminated tanks**, especially when:
  - ✓ Fuel has visible sludge or dark coloration
  - ✓ Water content is high
  - ✓ Previous filtration has been poor or non-existent

Summary Recommendations

Use Case	Change Frequency	Change Frequency
Routine Install (Clean Fuel)	Every 3 months	Support with pressure & water checks
Routine Install (Dirty Fuel)	Every 1–2 months (or less)	Monitor experience and inspect filter top
Tank Cleaning Jobs	Per job or per tank	Always start with a new filter
Suspected Water Ingress	Immediately	Water reduces filter lifespan dramatically

Why ELAIS Is Superior to Conventional Fuel Filtration Systems

The **ELAIS fuel filtration system** combines advanced **cellulose depth filtration** with practical design innovations to offer unmatched performance, especially in applications where **fuel cleanliness and dryness are critical**. Here's how it outperforms typical filtration solutions:

Depth Filtration vs. Surface Filtration

Most standard fuel filters use **surface filtration** (e.g., pleated media or mesh screens), which only trap particles on the outer layer. In contrast, **ELAIS uses cellulose depth filtration**, which filters **through the full thickness** of the media.

Key benefits of depth filtration:

- **Higher dirt-holding capacity:** Contaminants are trapped throughout the media, not just on the surface.
- **Finer filtration:** Can remove particles **down to 1 micron or better.**
- **Water absorption:** Cellulose naturally captures and retains free water from fuel.

This means ELAIS doesn't just **filter** — it **cleans** and **conditions** the fuel.

Built-in Water Removal

Water in fuel leads to:

- Corrosion
- Microbial growth
- Poor combustion

Most filters **do not remove water** unless paired with expensive coalescers or separators. ELAIS' cellulose filter elements **absorb and trap water,** protecting your fuel system without needing extra components.

Multipass Capability for Superior Results

Unlike standard filters designed for **one-time, in-line passes**, ELAIS is engineered for **multipass filtration:**

- Ideal for **recirculating systems or fuel polishing** applications.
- Removes deeper contamination with each pass.
- Follows the **7x circulation rule:** 7 tank volumes = optimal cleanliness

This ensures fuel is not just marginally better — it's **ISO-grade clean.**

Simple, Rugged, and Service-Friendly Design

ELAIS systems are:

- Built for **long-term, industrial use.**
- Easy to install permanently or use as portable service units.
- Equipped for **easy filter changes and minimal downtime.**

Unlike some cartridge or spin-on systems, filters are robust, sustainable, and well-suited to **field maintenance.**

Performance Without Electronics

ELAIS delivers exceptional results:

- **Without electrical sensors.**
- **Without complex pumps or controllers.**
- **Without consumables that limit long-term value.**

This makes it highly reliable in **remote, off-grid, and demanding environments** — ideal for construction, agriculture, generators, and critical fuel storage.

Critical Applications

ELAIS is trusted in applications where **fuel failure is not an option**, including:

- Generator backup systems.
- Marine and off-highway machinery.
- Diesel storage tanks for hospitals, data centres, and military use.

It consistently delivers **cleaner fuel, longer injector life, and lower maintenance costs.**

Summary: What Sets ELAIS Apart

Feature	ELAIS	Standard Fuel Filters
Filtration Type	Depth (cellulose)	Surface (pleated/mesh)
Water Removal	✓ Built-in	✗ Rare or extra component
Micron Rating	Down to 1µ or better	Often 10–30µ
Dirt Holding Capacity	High (multi-layer media)	Low (surface saturation)
Reusability & Portability	✓ High	✗ Usually fixed or throwaway
Best Use Case	Recirculation, tank clean	Transfer-only

Understanding ISO 18/16/13

The ISO 4406 cleanliness code is a standard method of expressing contamination levels in fluids. Each number corresponds to a range of particle counts in 1 millilitre of fuel:

- **18 = 1,300–2,500 particles ≥ 4µm**
- **16 = 320–640 particles ≥ 6µm**
- **13 = 40–80 particles ≥ 14µm**

This level of cleanliness is **far beyond what standard filtration achieves**, and it matters more than ever because of modern engine technologies.

Protection for High-Precision Fuel Systems

Modern diesel engines (e.g., Common Rail, Tier IV, Euro 6) use:

- **Tight tolerances** (as low as 2–3 microns in injectors).
- **High-pressure injectors** (up to 2,500 bar).
- **Micron-level actuator nozzles.**

Clean fuel ensures:

- **Preventing premature injector wear.**
- **Maintaining fuel atomization quality.**
- **Avoiding misfiring or poor combustion.**

Even a few large particles can destroy injectors or pumps that cost thousands to replace.

Reduced Downtime and Maintenance Costs

Dirty fuel is the **#1 cause of unplanned diesel engine failures.**

Benefits of clean, dry diesel:

- **Longer filter life.**
- **Fewer fuel-related breakdowns.**
- **Lower repair frequency for pumps, injectors, and valves.**
- **Less contamination of fuel tanks and lines**

This is especially important in:

- Construction and mining.
- Agriculture during peak harvest.
- Remote or mission-critical installations (e.g., generators, telecom towers).

Water-Free Fuel Prevents Microbial Growth & Corrosion

Water contamination leads to:

- **Diesel bug** (bacteria, fungi).
- **Tank corrosion.**
- **Sludge and biofilm formation.**

Dry fuel:

- **Prevents microbial contamination.**
- **Extends storage life of diesel.**
- **Maintains system cleanliness.**

This is critical for backup generators or fuel stored for long periods.

Consistency for Fuel Polishing & Fuel Quality Assurance

Polishing diesel to ISO 18/16/13:

- Ensures **compliance with OEM standards.**
- Offers **traceability and peace of mind** for operators.
- **Allows fuel to** meet marine, aviation, or military-grade specs.

It's also valuable for fuel resellers or depots seeking to:

- Certify outbound fuel quality.
- Prevent customer complaints or warranty issues.

Better Combustion, Fewer Emission

Clean fuel promotes:

- More complete combustion.
- Lower soot formation.
- Fewer particulate emissions.

This leads to:

- Improved **fuel economy.**
- Reduced **exhaust system clogging** (e.g., DPFs).
- Environmental compliance in regulated industries.

Summary: Key Benefits of ISO 18/16/13 Fuel

Benefit	Impact
Injector & pump protection	Extended engine life, reduced repair costs
Downtime reduction	Fewer breakdowns, higher equipment uptime
Water removal	No microbial growth or tank corrosion
Long-term fuel stability	Ideal for standby generators or storage
Compliance & certification	Meets OEM, marine, and military standards
Emission control	Cleaner combustion, lower pollutants

For High-Volume or Industrial Applications – Let's Talk

While **Elais** is engineered as a **compact, portable, and medium-duty solution**, it's not intended to be the primary filtration system for **high-volume diesel flow environments** such as:

- **Bulk fuel depots.**
- **Pipeline-scale transfer lines.**
- **Large static storage facilities.**
- **Permanent high-throughput fueling infrastructure.**

In these cases, Elais is best suited for **fuel polishing, mobile field servicing**, or **spot-cleaning operations** — not as a full-time industrial-grade unit.

If you require filtration at industrial volumes, we encourage you to contact the Kleenoil team directly. We manufacture and supply **larger-scale, custom filtration systems** designed specifically for continuous, high-flow operations in demanding environments.

Get in touch at sales@kleenoil.co.uk or speak to a Kleenoil representative to discuss your requirements—we'll help match you with the right solution for your fuel quality and volume needs.

More Than Just a Filter

The Elais system is a complete fuel protection solution, delivering cleaner combustion, reduced emissions, extended engine life, and lower operating costs—while meeting the most stringent regulatory and OEM standards.

Elais aims to become not just a filtration system, but a **connected, compliance-ready fuel health management solution** — ensuring diesel fuel is always clean, reliable, and ready for action.

It's not just a filter. It's a **fuel performance enhancer.**

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