

# MAINTAINING THE RELIABILITY OF STORED FUEL

IPU's comprehensive fuel conditioning programme detects and eradicates contaminants from your stored diesel. We maintain its ability to power your critical activities.

Reliable engines need reliable fuel.



# WHY IPU?

## The importance of fuel maintenance

Almost all diesel stocks purchased today are biodiesel blends. They contain between 7 and 20% of FAME (Fatty Acid Methyl Ester), a biological component that reduces carbon monoxide and particulate emissions.

Unfortunately, biodiesel blends are more vulnerable to contamination than the petrochemical diesel that was common before 2011. They contain water when they are manufactured and they attract more water while stored.

Diesel fuel will only stay safe to use for 12 months under normal conditions. The build-up of contamination will cause problems for diesel-powered generators, vehicles and equipment if the fuel is left unprotected.

## Types and causes of contamination

As it gets older biodiesel suffers from 3 main types of contamination:

- Solid particulates including dust, grit, sand, rust, wax and sludge.
- Water contamination which takes three forms: free, emulsified and dissolved water.
- Microbial growth or 'diesel bug', covering up to 100 types of bacteria, moulds and yeasts.



WATCH OUR SHORT VIDEO TO HELP YOU UNDERSTAND FUEL CONTAMINATION

[www.ipu.co.uk/fuel-contamination](http://www.ipu.co.uk/fuel-contamination)

## IPU's comprehensive programme

Our programme consists of three essential stages:

1. DieselCheck fuel testing analyses your stored fuel to identify potential problems.
2. IPU's Fuel Cleaning service removes contaminants rapidly, discreetly and economically.
3. Diesel Defence fuel polishing units ensure cleaned fuel stays clean.

Many companies specialise in only one of the above areas but we know your goal is simple: reliable power. You want somebody else to handle fuel conditioning so your time is free for your real job.

With our complete, fully-managed fuel conditioning programme, that somebody is IPU.



WATCH OUR SHORT VIDEO SUMMARISING IPU'S FUEL CONDITIONING PROGRAMME

[www.ipu.co.uk/fuel-protection](http://www.ipu.co.uk/fuel-protection)

## We exceed ISO4406 & EN590

Our fuel conditioning programme ensures your diesel stays industry-compliant. We exceed international standards of cleanliness including:

- EN590 - which states that diesel should contain no more than 200ppm (parts per million) of water (0.02%).
- ISO4406 - an international standard for reporting on the level of particulate contamination in a liquid. Diesel fuel has to meet the 18/16/13 level of cleanliness.

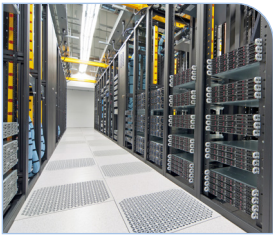


# IPU'S CORE MARKETS



## Healthcare

Hospitals must have reliable power. Patients are at risk without it. Grid blackouts are more common than ever, reinforcing the need for hospitals to have dependable back-up diesel generators. IPU's fuel conditioning programme ensures that stored diesel remains safe to use.



## Datacentres

Data centres around the world pride themselves on their reliability. This would not be possible without a clean fuel supply powering their back-up generators. IPU's fuel conditioning programme is the go-to solution for removing all forms of contamination from diesel storage tanks, protecting the reputation of data centres in the process.



## Marine

Ship, barge and survival craft engines power critical systems such as navigation, communications, alarms and fire pumps. IPU's fuel team is called upon to clean or polish stored diesel and prevent marine engine failure. We help businesses retain customers, avoid large repair bills and preserve their good reputation.



## Oil & Gas

Engines on oil and gas platforms power applications such as emergency generators, fire pumps and cranes. If they break down, an entire operation can be thrown into jeopardy. This is a very real risk without a fuel maintenance programme. Stored diesel is vulnerable to contamination from harsh offshore conditions but IPU keeps it safe to use.



## Mining

Underground mines are dusty environments. This can lead to particulates entering fuel systems and causing damage to engines. Engines in the mining industry power equipment such as generators, haulage trucks and excavators. IPU have a range of filtration solutions that will remove all contamination from your fuel and eliminate the risk of engine failure.



## Construction

Engine reliability is paramount on building sites. If cranes, bulldozers, trucks or other construction equipment breaks down it causes untold headaches for construction companies that are already under intense pressure to meet deadlines. These vehicles rely on clean fuel to run. IPU's fuel conditioning programme helps ensure projects finish on time.

# DIESELCHECK: FUEL TESTING



DIESELCHECK  
Fuel Testing



## The first step to protecting your power

IPU's DieselCheck is a market-leading portfolio of products and services that accurately detect fuel contamination. DieselCheck provides you with reliable and actionable fuel quality reports.

Diesel testing is the essential, economical first step to ensuring reliable power. Any project or activity that depends on diesel engines needs to test its stored fuel regularly.

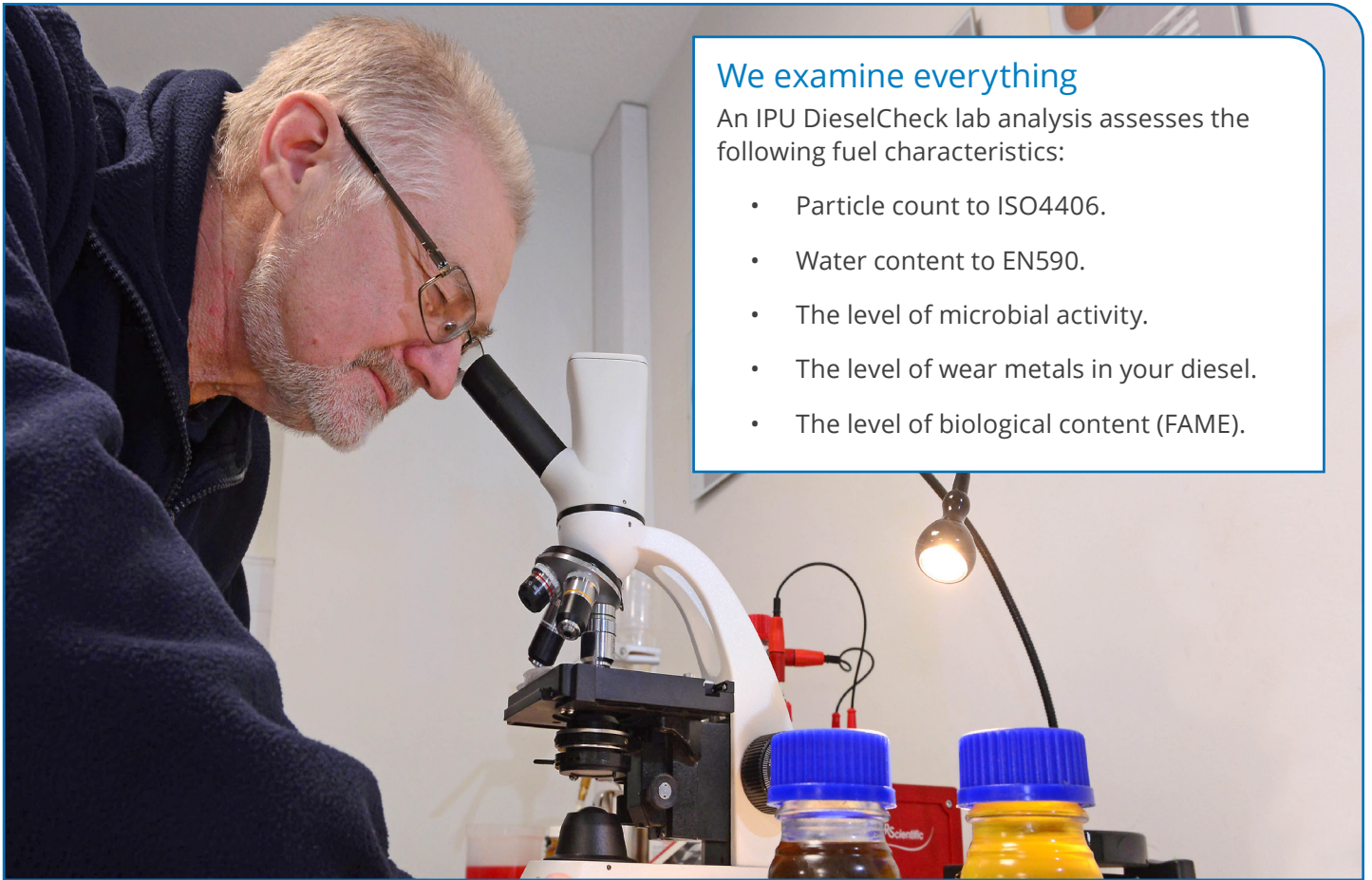
Our data shows that 95% of fuel storage tanks are contaminated. Without testing, you will be unaware of the critical threats that could bring your activities to a halt.

You cannot fix what you do not see. DieselCheck testing gives you the visibility you need.

## DieselCheck portable diesel analyser

The DieselCheck portable diesel analyser delivers the results you need time after time.

- Flexible - one device tests particulate and water contamination as well as fuel density.
- Standardised - results use accepted standards: ISO4406, EN590 and SAE AS4059.
- Fast - the portable diesel analyser delivers its results in less than five minutes.
- Simple - with four buttons and one screen, the unit is simple enough for anyone to use.
- Portable - the portable diesel analyser is small, light and robust.
- Economical - the Dieselcheck analyser is a fraction of the cost of lab equipment.



### We examine everything

An IPU DieselCheck lab analysis assesses the following fuel characteristics:

- Particle count to ISO4406.
- Water content to EN590.
- The level of microbial activity.
- The level of wear metals in your diesel.
- The level of biological content (FAME).

### DieselCheck on-site diesel testing service

IPU's on-site service uses globally-recognised methods and standards to test your fuel but we exceed the service available from regular labs. Our expertise in cleaning and polishing allows us to propose the most effective and economical ways to correct identified problems.

Our service is delivered in two ways:

- On-site service - we come to your site to take fuel samples. Analysis is either conducted immediately or back in the lab.
- Send us a sample - enjoy the flexibility of taking your own samples and sending them to IPU for analysis.

### DieselCheck fuel sampling kit

If you prefer to take your own fuel samples and send them in for analysis, IPU's fuel sampling kit has all the tools you need:

- Fuel sampler with measuring tape to take top, middle and bottom samples.
- Sample bottles.
- Protective gloves and safety goggles.
- An IPU fuel conditioning handbook.
- Site survey forms.

### For more information

Please visit [www.ipu.co.uk/dieselcheck](http://www.ipu.co.uk/dieselcheck) or call our friendly customer service team on 0121 511 0470.

# FUEL CLEANING SERVICE



## Fast, economical and efficient fuel cleaning

IPU's Fuel Cleaning is the premier service for removing all forms of contamination from diesel storage tanks.

Cost-effective, unobtrusive and extremely efficient, it ensures your fuel will exceed industry-standard levels of cleanliness so your diesel-powered equipment runs reliably.

If you have failed a fuel test, urgent action is needed to solve a problem that could cripple vital services. Failed fuel reports warn you that the equipment you use for day-to-day operations and emergency backup are not as reliable as they should be.

We are the solution.

Our highly-skilled technicians arrive on-site ready to start work immediately. Our high-powered systems complete the cleaning work fast. Fuel is tested at the end of the cleaning operation to ensure it is safe to use and exceeds industry cleanliness standards.

## All forms of contamination removed

IPU's Fuel Cleaning service addresses:

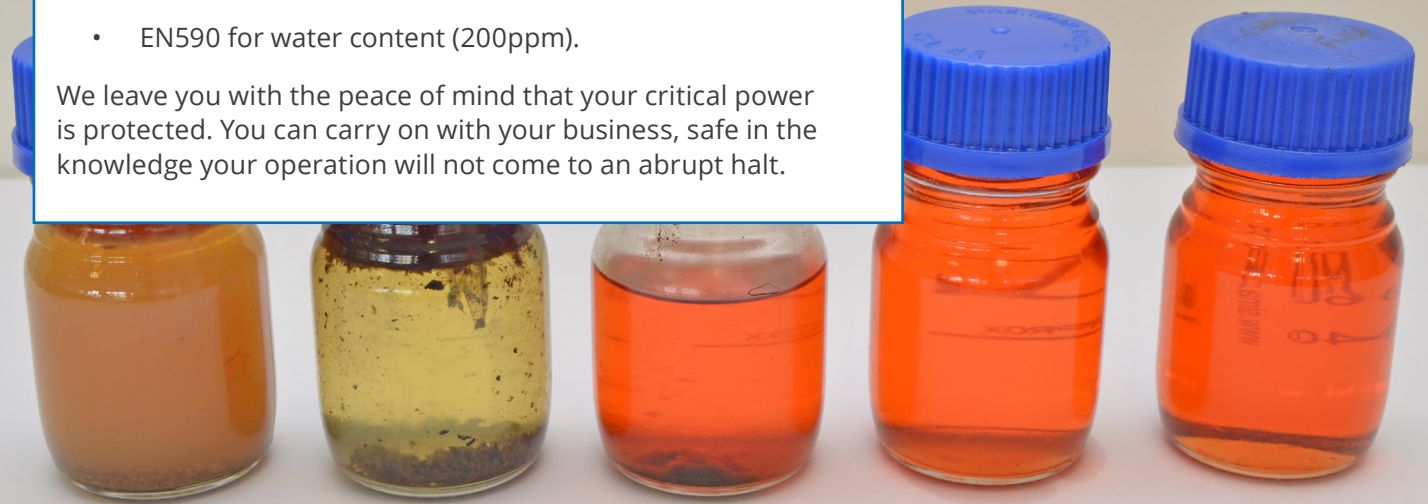
- Water contamination, removing water to below 200ppm as defined by BS EN590.
- Particulate contamination, removing particulates to the 18/16/13 standard set by ISO4406.
- Microbial growth, removing the films and bacteria collectively known as 'diesel bug'.

## Exceeding industry standards

Our fuel cleaning operation will not stop until your stored fuel is clean and safe to use. We clean your fuel until it exceeds industry standards for cleanliness including:

- ISO4406 for particulate cleanliness (18/16/13).
- EN590 for water content (200ppm).

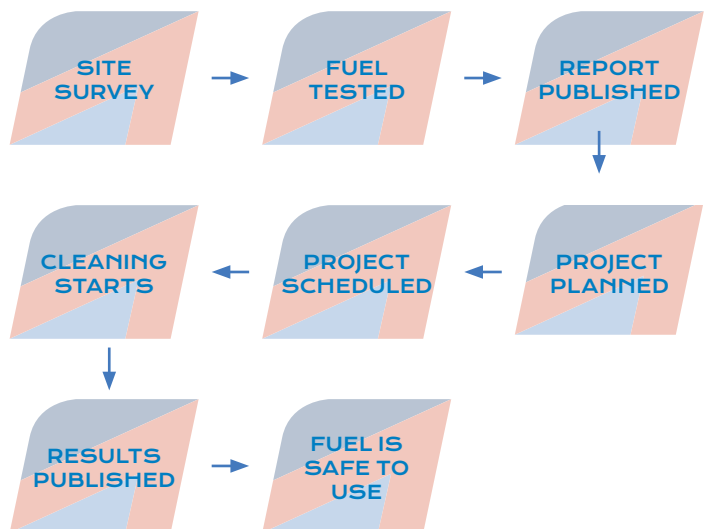
We leave you with the peace of mind that your critical power is protected. You can carry on with your business, safe in the knowledge your operation will not come to an abrupt halt.



## Features & benefits

- Exceptionally high flow rates generate turbulence in the tank, disrupting pockets of contamination and forcing them into our cleaning systems.
- Advanced technology and filtration media clean your fuel quickly and effectively.
- Your fuel is tested throughout the process. We only finish cleaning once it is 'on spec'.
- Our cleaning systems are de-mountable and modular so we can work on any tank, anywhere.
- We are discreet and unobtrusive. Our engineers arrive in as few vehicles as possible and operate from unmarked vans to avoid unsettling your customers.
- We provide a fully documented service.
- All waste fuel and contaminants are disposed of responsibly.
- Our team save you money. We only recommend cleaning if we detect dangerous levels of contamination.

## What does a Fuel Cleaning project look like?



## For more information

Please visit [www.ipu.co.uk/cleartank](http://www.ipu.co.uk/cleartank) or call our friendly customer service team on 0121 511 0470.

# DIESEL DEFENCE: FUEL POLISHING



DIESEL DEFENCE  
Fuel Polishing



## IPU's Diesel Defence fuel polishing range

Diesel Defence fuel polishing units ensure your fuel continues to exceed ISO4406 and EN590 standards months or years after our Fuel Cleaning team have left your site.

They keep your fuel clean by combining cutting-edge filtration and circulation techniques with unbeatable flow rates.

One, two or three-stage filtration removes water, particulate and microbial contamination down to 1 micron when necessary.

Fuel is circulated up to seven times a day, preventing pockets of dirty fuel or water collecting in stagnant parts of your tank.

## The importance of fuel polishing

Fuel is under constant attack. Water enters tanks through air vents and in new deliveries. The dusty atmospheres in mines, quarries and manufacturing plants deposit grit and dirt in tanks. Rust falls off the sides of tanks into the fuel. Bacteria grow as the water content rises. In short, biodiesel blends degrade over time.

It is not enough to clean your fuel. It has to be maintained.

Fuel polishing is a constant circulation process that stops water and contaminants from infecting fuel while it is held in storage.

IPU's Diesel Defence fuel polishing units improve the reliability and longevity of the fuel that feeds your standby generators and business-critical equipment.





## Diesel Defence fixed polishing units

Diesel Defence fixed units (DDF) are on-tank units that guarantee 24/7 fuel protection. They serve day tanks or up to three storage tanks, ranging from 10,000 to over 100,000 litres.

No expertise is required to operate a DDF unit. They are a 'fit and forget' solution. Set them up once and they run unassisted month after month, year after year.

Once your DDF unit has been installed, IPU's fuel division offers ongoing support, regularly attending site to ensure your system is running smoothly and replacing filters as necessary.



## Diesel Defence mobile polishing units

Diesel Defence mobile units (DDM) give you the flexibility to polish the fuel in numerous tanks with a single device. Rugged and portable, they can be wheeled from tank to tank and transported from site to site.

DDM mobile polishing units are suitable for a huge range of tanks from 1,000 litres or less up to 100,000 litres. They support the same high flow rate, three-stage filtration as the fixed DDF units.

You do not sacrifice performance for mobility with IPU's DDM mobile fuel polishers.

## Features & benefits

- Scalable, modular designs support tanks of all sizes.
- Exceptionally high flow rates remove particulates down to 1µm (micron) and 99.9% of water.
- A wide selection of filtration media effectively remove solid particulates and water content.
- Recirculation repeatedly cleans the fuel until it reaches the required level of cleanliness.
- Powerful pumps induce turbulence to drive contaminants from tank surfaces into the filters.
- Simple touch-screen or push-button controls and alarm indicators alert operators to the unit's status.
- Additional options cater for bespoke applications and requirements: flow meters, water sensors and DieselCheck testing ports.

## Product list

	Maximum Flow Rate (lpm)	Indicative Tank Size (litres)	No. Filtration Housings
<b>EKO with Kapture Technology</b>			
<b>DDF1</b>	50	10,000	1
<b>DDF2</b>	100	30,000	1
<b>DDF3</b>	150	80,000	2
<b>DDF6</b>	500	100,000+	6
<b>EKO Mobile</b>			
<b>DDM1</b>	10	<1,000	1
<b>DDM2</b>	100	5,000	1
<b>DDM3</b>	100	10,000	1
<b>DDM5</b>	150	30,000	2
<b>DDM5</b>	250	50,000	4
<b>DDM6</b>	500	100,000	6

## For more information

Please visit [www.ipu.co.uk/diesel-defence](http://www.ipu.co.uk/diesel-defence) or call our friendly customer service team on 0121 511 0470.

# IPU FILTRATION MEDIA

## Exceptional filtration for reliable diesel

The unbeatable performance of IPU's Diesel Defence fuel polishers is the result of unique hardware working in conjunction with our extraordinary filtration media.

IPU's filter elements are designed to fit our main range of polishers, giving each of them the versatility to tackle everything from initial cleans to final polishes.

## Three ranges, one commitment

IPU supply three types of filtration media to combat fuel contamination:

- FiltaSorb - offering unrivalled economy and high flow rates for effective water removal. It is the best in the market for water absorption.
- FiltaSolid - removing up to 99.9% particulate contamination. Disposable and re-cleanable versions are available.
- FiltaMesh - providing economical, basic cleaning. The hard-wearing, re-cleanable mesh elements are available in 10 and 20µm (micron) versions.

## Features & benefits

- Versatile - the same elements can be used in all our main fixed and mobile polishers.
- Effective - different media types can be combined in multi-stage polishers for superior contamination removal.
- Comprehensive - media elements range from 1 to 800µm (micron) with a variety of media materials.
- Economical - low-cost, coarse elements can be used with premium elements to reduce costs.
- High performance - our media support flow rates of up to 1,000 lpm.
- Low maintenance - our larger media have a voracious capacity to absorb water and retain contaminants. FiltaSorb retains three times more water than its closest competitor.
- Easy replacement - the integrated removal handle lets you lift the element easily out of the filter housing.



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## For more information

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# BESPOKE PROJECTS



### Exceptional engineering

Captured in the workshop before it was shipped to a Scottish power station in February 2019, this Diesel Defence polishing system was designed to achieve exceptionally high flow rates of up to 1,000 lpm. An extraordinary feat of engineering.

### Tailor-made designs to meet every need

Standard fuel polishing units are an ideal and economical solution for 'standard' situations. Your situation might be different:

- You may not have the space to accommodate a standard unit.
- You may have unusually large fuel stocks or face exceptionally heavy contamination.
- You may need special fittings to match existing pipework.
- You may need special options for control, monitoring and security.
- You may need a dosing system for additives or extra sensor options.

IPU's engineering team can design and build bespoke units for any application. Whatever the need, IPU will deliver.

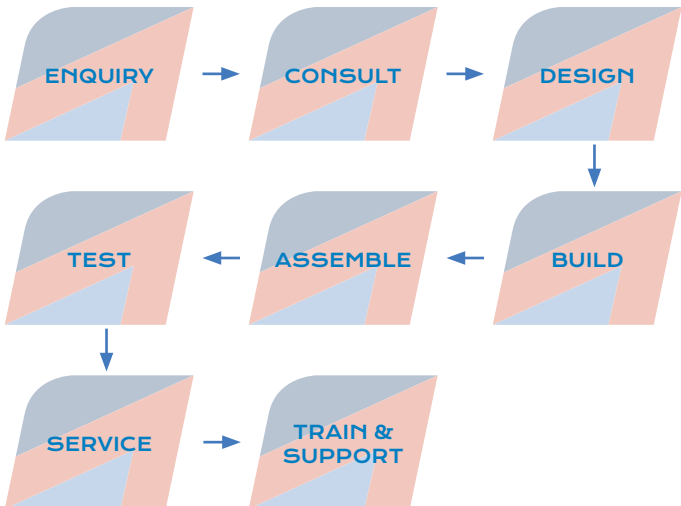
Our capabilities are built on a unique combination of powerful pumps, a comprehensive range of filter housings, filtration media that can handle exceptional flow rates and sophisticated control systems.

IPU have the versatility to service tanks from 500 to 5 million litres employing flow rates up to a staggering 4,000 lpm.

Our bespoke Diesel Defence polishing units offer great flexibility but one factor remains consistent - your fuel is kept clean.

### Your journey with IPU

Bespoke projects progress through many stages. Our professionalism and experience guarantees everything will be managed seamlessly, from your initial enquiry to ongoing after-care.



# SERVICE & TRAINING



## Quality service delivered worldwide

Our commitment to customer service does not end when a polishing unit leaves our factory. Our after-sales service guarantees that our systems exceed expectations from their first day of installation to the end of their working life.

Our network of distributors receive training from IPU so they are able to offer the same level of service around the world that IPU delivers in the UK.

Our pre- and post-sales service commitment ensures that the system you order matches your requirements, is installed professionally and is maintained throughout its lifetime.

Different levels of service plans are available to match your organisation's capabilities and resources. Options range from self-service to fully-serviced plans.

## A global centre of excellence

IPU's goal is to eradicate all fuel-related engine failures. Supplying equipment to tackle fuel contamination is only one step towards achieving this goal.

Improving global understanding of the issues around fuel storage is equally important. IPU run regular open days at our factory to explain the issues and demonstrate ways to tackle the problem.

We also run interactive CPD (Continual Professional Development) courses to introduce the issues to building services engineers and related professions. This course is approved by CIBSE<sup>1</sup>.

The course's key learning objectives include:

- Learning about fuel contamination and the problems with biodiesel.
- Why fuel contamination is important to building services engineers and facilities management professionals.
- Understanding fuel polishing and how to specify fuel polishing systems.
- Fuel polishing in the real world: share & solve.

<sup>1</sup> Chartered Institute of Building Services Engineers.

# INSPECTION & REMEDIATION SERVICES



## OFTEC inspections

IPU's engineers are certified to carry out OFTEC inspections of your of fuel pipework, storage and pumping systems.

OFTEC requires that any site that stores diesel should carry out an annual inspection to ensure the fuel is being handled safely. Failed audits can lead to prohibition notices being served to decommission or evacuate buildings.

IPU offer an exceptionally economical service by adding our OFTEC surveys into fuel testing, cleaning or other site visits.



## Spill response

Fuel spills represent a significant risk to the environment and human health especially if the spill reaches a water course. IPU offer rapid-action remediation services to mitigate the damage and any regulatory consequences that may follow.

Not all of our remediation services are emergency response. We can address almost all the work that may be identified in an OFTEC inspection: tank and pipework repairs, safety measures and processes, signage and a range of other civil engineering tasks.



## Environmental assessments

IPU's Environmental Impact Assessments (EIA) identify the scale and nature of the effect your site has on the surrounding area.

The assessments include:

- Environmental risk assessments.
- Identification of affected water-courses.
- Evaluation of local sites of special scientific interest (SSSI).
- Ground investigations.



## Fuel Uplift & Tank Decommissioning

In instances when fuel degrades to such an extent that it can't be bought back to refinery grade standard, IPU offer a comprehensive, competitive and compliant fuel removal service.

Tanks also go beyond repair, and are susceptible to erosion. With the average guarantee of 10 years for Mild Steel tanks, eventually they may need replacing.

IPU can provide tank removal service, as well as managing the installation and commissioning of a new bulk storage facility, in both Mild Steel and plastic Installations.

## CASE STUDY

# KENT & CANTERBURY HOSPITAL



## Problem

Concerns were raised about the quality of the fuel used to power the hospital's generators. IPU's DieselCheck service found that the fuel stored in all 6 tanks was heavily contaminated with high levels of water and solid particulates.

## Challenges faced

- IPU's DieselCheck identified extremely high levels of water and solid particulate contamination including wax, resins, organic and other debris.
- Each of the 6 fuel tanks were in different locations.

## Solutions delivered

- IPU's Fuel Cleaning service cleaned both the fuel and tanks simultaneously without taking the generators offline.
- IPU supplied Diesel Defence fuel polishing units to ensure the fuel stayed within EN590 and ISO4406 standards.

“ When we saw the results of our fuel tests we were concerned as reliable power is so critical to our hospital. IPU has been excellent in restoring our diesel and providing solutions that will protect our fuel in the future. ”

Estates Department | Kent & Canterbury Hospital

## CASE STUDY

# BANK, CANARY WHARF



## Problem

IPU's fuel team were called by the site's facilities management company to sample the diesel in their two 70,000 litre tanks. Analysis showed that the fuel was so heavily contaminated with water and solids it was impossible to assign an ISO cleanliness code.

## Challenges faced

- Our DieselCheck test identified that the existing fuel polishing unit was ineffective as both storage tanks were contaminated with water, colloid carbon, asphaltine deposits and other particulates.
- One of the tanks contained 2-3 times more water than is acceptable according to EN590 standards.

## Solutions delivered

- IPU removed the old fuel polishing system and replaced it with a Diesel Defence unit which provided a flow rate of up to 90 litres per minute.
- IPU installed vent TRAP filters to stop atmospheric moisture entering the tank.

“ We could see that the previous on-tank polisher wasn't up to the job. Diesel Defence is easier to use, reliable and ensures diesel stays within the EN590 standard. ”

IPU Group

## CASE STUDY

# GOOD HOPE HOSPITAL



## Problem

IPU identified that the hospital's diesel was heavily contaminated, putting critical power at risk. It contained solid particulates such as colloid carbon - a substance that can clog filters and cause poor combustion.

## Challenges faced

- IPU's DieselCheck test showed that the 7 storage tanks were all suffering from particulate contamination.
- Each of the tanks were in different locations.

## Solutions delivered

- IPU's Fuel Cleaning team restored the fuel to EN590 and ISO4406 standards without requiring man-entry and without taking the generators offline.
- IPU supplied 5 Diesel Defence polishing units to keep the fuel clean.

“Clean, dry fuel is so important for our backup power systems. When we saw the results of our fuel test we knew we had to act.”

Estates Department | Good Hope Hospital

## CASE STUDY

# FACILITIES MANAGEMENT



## Problem

IPU were called to a data centre in Chester after a critical power failure. During the outage its generators stopped running after 4 minutes. Upon investigation, the fuel tanks were found to have dangerous levels of water contamination.

## Challenges faced

- Heavy rainfall, an overwhelmed sump pump and a sheared dip cap (illustrated) meant the tank manhole was full of water.
- High levels of groundwater were detected, posing a serious environmental risk.

## Solutions delivered

- IPU removed 9,000 litres of water, recovered 13,000 litres of fuel and repaired the dip cap.
- IPU supplied Diesel Defence polishing units to ensure the fuel remains 'on spec'.

“Water can easily get into stored diesel without anyone noticing. When you come to use your generator it coughs, splutters and stops running as it did here. The data centre in this case also had environmental risks to consider. Thankfully we got there in time as the costs associated with a fuel spillage can be enormous.”

IPU Group



# THE COMPANY YOU WANT TO DO BUSINESS WITH

IPU helps businesses reach the profitability and efficiency they seek.

For sixty years, we have delivered the expert assistance and customer service that lets our domestic and international customers excel in their industries.

We support businesses in sectors including power-generation, oil & gas, marine, IT & telecoms, manufacturing and government.

Our industry experience, competitive pricing and superb support let us evolve from a regular supplier to become the company our customers *want* to do business with.



## IPU GROUP

IPU Group, Cygnus Way, West Bromwich, West Midlands B70 OXB  
T +44 (0) 121 511 0470 E [IPU@IPU.CO.UK](mailto:IPU@IPU.CO.UK) W [WWW.IPU.CO.UK/FUEL](http://WWW.IPU.CO.UK/FUEL)

