Fuel and Tank Care

for emergency energy systems and storage tanks (heating oil and diesel)
Your solution: CJC® Fuel Care Systems

- Maximize the long-term stability of your fuels
- Minimize tank cleanings
- Ensure trouble-free start and operation in emergency
- Improve engine performance
- Protect the environment and resources

www.cjc.de

Your goals

trouble-free operation of your emergency power system |minimization of the fuel disposal to protect resources | avoiding of system flushings and tank cleanings

The challenge: continuous contamination and ageing of your fuel

During the months or even years of storage in the storage tanks, the quality of the fuel continuously deteriorates. Contaminants such as particles and water enter the tank from the outside, e. g. via leaks, leaks, condensation and tank ventilation. Even the fuel itself often does not correspond to the desired cleanliness, e. g. because there is a high risk of dirt entry during transport and transfer to your tank or the specified fuel cleanliness is unavailable on short notice in an emergency. But also oxidation and additive depletion accelerated by the contaminants shorten the storage time prematurely and lead to severe consequences for the tank and emergency power system.

1 Diesel plague, microorganisms, bio sludge and biocorrosion

Water in the fuel is the perfect food source for microorganisms (bacteria, fungi and yeasts), which spread more frequently. Microorganisms produce sludge-like biomass in the tank and lead to microbial corrosion. If such contaminated fuel is used in the engine, fuel lines, valves, injection nozzles and in-line filters spontaneously clog. Intensive rinsing, cleaning and maintenance work under increased health risks (microorganisms, acids, foul odour) is the result.

2 Premature fuel oxidation

Water and metal particles (Cu, Fe, Al, Zn) accelerate oxidative processes and additive depletion, resulting in the formation of acids. Since water is highly polar, it attracts polar additives and contaminants. As a result, a sludge-like mass is generated, which sediments at the bottom of the tank.

3 Corrosion, rust and hydrogen embrittlement

Water, acids and microorganisms cause corrosion, rust and hydrogen embrittlement to the metal surfaces. Sharp-edged rust particles, which circulate in the fuel system, are highly abrasive for surfaces, and can damage moving parts and clog nozzles and pipes.

4 Cavitation and micro-pitting

Water droplets in the diesel evaporate and implode in fuel pumps under high pressure or in injection nozzles because of the high fluid velocity. Micro-pittings and erosion-like material removal are the consequencse.

5 Wear on fuel pumps, injection nozzles and needle valves

Abrasive metal and corrosion particles, as well as, sludge-like reaction products (microorganisms, oxidation) in the fuel, lead to wear and deposits on the metal surfaces, nozzles and moving parts in the engine.

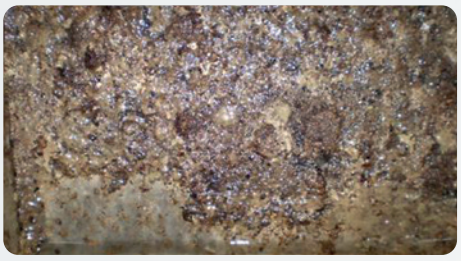
6 High consumption of the in-line filters

Clog quickly because of the low dirt holding capacity. Has to be changed frequently.

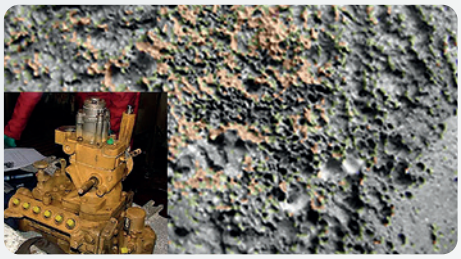
7 Ineffective combustion

Wear and damage in the injection system and combustion chamber impair the combustion and can cause that fuel enters into the engine lubricating oil (blow-by gases, spray pattern problem injectors, leakages). That impairs the engine performance, emissions and engine lubrication.

Tank cleaning because of diesel plague



Microorganisms and bio corrosion in the tank



Cavitation in the fuel pump

Cavitation and corrosion on injection nozzles

Changed spray pattern due to clogged and wearly nozzles

The conventional method

To ensure the reliable start and operation of the emergency power system, operators regularly check the fuel quality. When the critical state is reached, they replace the stocks and dispose of them. The high fuel consumption is accepted, as the trouble-free power supply must be guaranteed, and failures are more cost-intensive than the fuel. But with us, you can operate more ecologically and economically.

Fact is, with efficient flue care, you minimize the fuel consumption and the engine wear

Efficient fuel care means that water, particles, oxidation residues and acids are continuously removed from the fuel. Consistent high fuel cleanliness improves the long-term stability of your fuels and ensures trouble-free start and operation due to the maximum wear protection.

Your solution

ultra clean and dry fuel within shortest time | consistently high fuel cleanliness for efficient fuel, tank and engine care

CJC® Fuel Care Systems

Offer quick, persistent and cost-optimal highest protection for your fuel reservoirs, tanks and emergency power systems.

1 Installation at the Tank

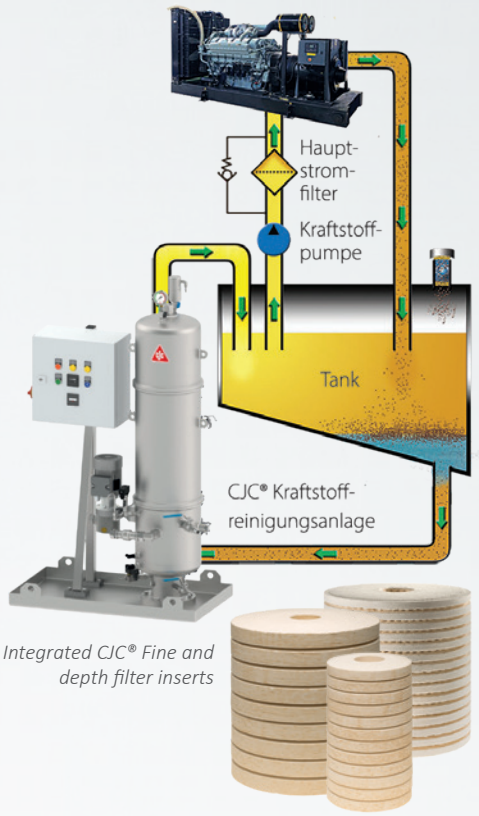
The filter pump allows the installation in a separate circuit at the tank and thus enables the continuous depth filtration and care of the fuel (24/7).

2 Sensational separation performance

The CJC® Fuel Care System removes all contaminants:

- **Particles**
  Achieve cleanliness classes up to ISO 12 (ISO 4406).
- **Water – free, emulsified and dissolved**
  100% drying of fuel
- **Microorganisms**
  Prevent the spread of microorganisms with dry fuel and efficiently remove existing microorganisms thanks to high filtration degree and depth filtration.
- **Oxidation residues and acids**
  prevent, remove and neutralize.

The modular design makes CJC® Fuel Care Systems optimally adaptable to the different tank sizes and engines.

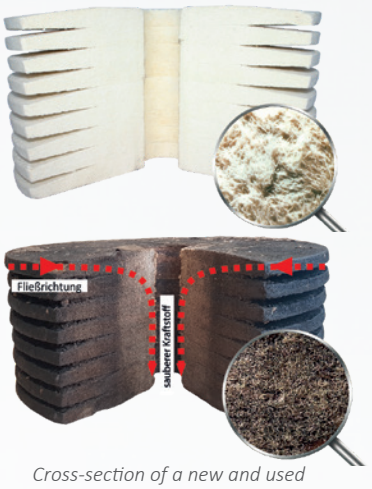


Integrated CJC® Fine and depth filter inserts

3 High dirt holding capacity and filtration degree

CJC® Fine Filter Inserts are depth filters that even remove microorganisms with a filtration degree of 3 µm absolute and a retention rate of up to < 1 µm. The volume corpus made of finely ramified fibres offers an outer surface, and in addition, an inner surface — from 120 to 150 m² per gram. That enables the extremely high dirt holding capacity – the higher, the longer the lifetime of the filter inserts.

Fact is, our dirt holding capacity is the market leader.



Cross-section of a new and used CJC® Fine and Depth Filter Insert

4 Filter material made of 100 % natural fibres

CJC® Fine Filter Inserts are easy to dispose of and comply with the circular economy law – 0 % plastic, 0 % metals.

5 Condition Monitoring

CJC® Fluid Care Systems are equipped with sensors for online monitoring of the filter status (filter pressure). Fuel sensors for relative humidity, temperature and oxidation rate are modular implementable. Alert limits and warnings can be configured so that you can detect deviations from normal conditions prematurely and counteract them. Ideal for particularly critical emergency power systems, e. g. of hospitals and data centers.

CJC® Condition Monitoring Systems

Your advantages

A CJC® Fuel Care System is a small investment with large effects – for your emergency power system and the environment!

Achieve the highest fuel cleanliness

- Maximize the storage time of your fuel stocks
- Maximize the wear protection – ideal for common rail injectors

Ensure the reliable start and operation of your emergency power system

- Minimize the risk of failures and unscheduled downtime and, therefore, the risk of power supply shortages, losses of sale, contractual penalties and/or claim of damages

Profit from less maintenance

- Avoid extensive tank cleanings, system flushings and damages in the tank
- Prevent proactive wear on engine components
- Replace the stored fuel in time using real-time monitoring

Prevent the in-line oil filter from clogging

- Prolong the lifetime of the fuel filter – the additional CJC® Fuel Care System at the tank removes all the contaminants quickly, efficiently and cost-effectively

Protect the environment and resources

- Dispose less waste fuel and improve the CO_2 footprint
  - 1,000 Litres less waste fuel for thermal disposal means 2.6 tons less CO_2 emissions
- Save fuel and spare parts and protect so resources
- Improve combustion and reduce fuel consumption and emissions

Experience the simplicity

- Install the CJC® Fuel Care Filter quickly and simply at the oil sump – without heating, sludge tank, control air or water connection
- The operation without human resources, nearly maintenance-free, with low energy consumption convince

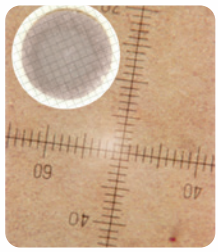
Best Practices

With more than 70 years of experiences in engine oil and liquid fuel care of gas and diesel engines, we are the experts

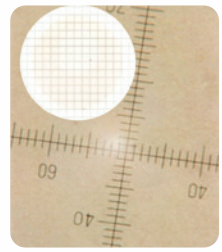
Storage tank with 10,000 m³ diesel

Saving only due to treatment and care instead of replacement:

- > 10,000 m³ diesel
  - > 26,000 tons of CO_2
  - > 8 Milion EUR of fuel costs (purchase, disposal)
- Water, particles, sodium and potassium as well as microorganisms and bio sludge are minimized
- Fuel cleanliness reconditioned so that the operator in ermergency – in case of gas supply shortages – can operate the gas turbine with fuel. Without the CJC® Fuel Care System the fuel had to be disposed of because the cleanliness was insufficient for a gas turbine

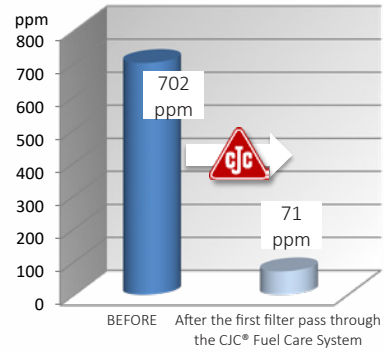


BEFORE
Cleanliness class: 15/14/11



After the first filter pass
Cleanliness class: 15/13/10
> 40 % less particles > 2 µm

Water content



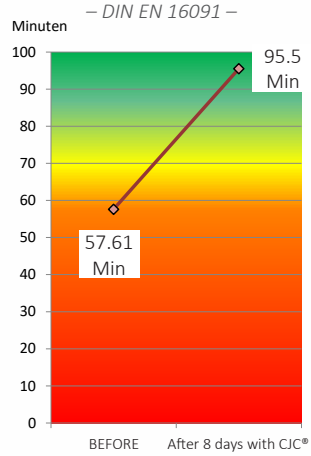
Storage tank with 40 m³ fuel

Saving only due to treatment and care instead of replacement:

- > 40 m³ fuel
  - > 104 tons CO_2
  - > 35,000 EUR of fuel costs (purchase, disposal)
- Oxidation stability drastically improved (limit: min. 60 minutes)
  - premature fuel oxidation prevented and, therefore, storage time prolonged
- Water content reduced from 80 ppm to < 30 ppm
  - Tank optimally prevented against microorganisms, sludge and deposits

Oxidation stability

– DIN EN 16091 –



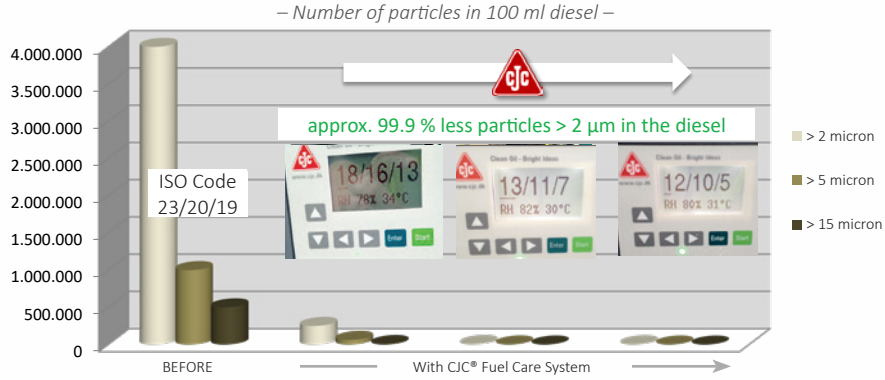
Storage tank with 60 m³ diesel

Saving only due to treatment and care instead of replacement:

- > 60 m³ diesel
  - > 156 tons CO_2
  - > 52,000 EUR for fuel costs (purchase, disposal)
- Wear on injection nozzles reduced.
- Lifetime of fuel filter tripled.
- Sludge and deposits removed from the tank.

Particle content according to ISO 4406

– Number of particles in 100 ml diesel –



The Synonym for Oil Care

Proactive Maintenance

Consulting

We offer you oil care systems that are optimally adapted to your machine.

Evaluation

Using your machine data, you will recognize that the investment is more than worthwhile.

Service

You can expect a personal, regional contact person who will also visit you on-site.

Challenges

We also check complex cases for filterability and offer cost-effective solutions.

Contact us! Mail or call us:

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