



# Engine Oil Care

for gas and diesel engines (natural gas, LNG, diesel & special fuels)  
Your solution: CJC® Lube Oil Filters for the off-line circuit



- Prolong oil change intervals
- Maximise wear protection and lifetime of the engine
- Optimise reliability, availability and performance
- Accelerate the return on investment
- Protect the environment and resources





# Your goals

economical and ecological operation | to minimize damages and downtime | to maximize the lifetime of the oil filling and the engine components

## The challenge: contaminated and quickly ageing engine oil

The engine oil in gas and diesel engines is permanently heavily loaded. Oxidative ageing processes, thermal load and direct contact with harmful polluted blow-by gases stress these lube oils rigorously. But also soot, metal particles, dust and humidity can ingress the oil system, partly depending on operating and engine conditions and the load. These processes accelerate each other and lead to premature base oil degradation and increased additive depletion, even when using oxidation-resistant synthetic oils. Contaminated and quickly ageing engine oil has severe consequences for the lifetime of components, engine and, therefore, the ecological and economical operation:

### 1 Frequent oil changes and poor long-term effects of additives

High operating temperatures, wear particles (iron, copper, aluminium, tin etc.), soot and water in the engine oil accelerate the oil oxidation and the additive depletion. In the course of the oil oxidation, the engine oil's viscosity and acid number increase. Sludge and residues deposit within the engine. Aggressive acids caused by the entering blow-by gases intensify acidification, primarily when the engine is operated with bio, sewage and landfill gas or sulphurous fuels.

### 2 Corrosion and rust

Acids and water in the engine oil lead to corrosion and rust on the metal surfaces. Especially the combination of acids and water is highly corrosive. Abrasive rust particles damage surfaces and moving components and block narrow passages. Corrosion can also result in leakages so that cooling water and anti-freeze fluids can contaminate the engine oil – immediate consequences for the engine: jelly-like thickening of the oil, poor lubrication, clogged in-line filter, increased risk of foam and glycol-acids.

### 3 Wear and deposits

Particles, water and oxidation residues in the engine oil lead to wear, corrosion, sludge, and varnish-like deposits on all oil lubricated engine components – shafts, bearings, cylinders, and pistons. Also, soot from the fuel combustion can enter the oil system. When the soot load reaches a limit, the dispersancy gets lost, and the soot particles agglomerate, precipitate and deposit in the engine. Furthermore, the viscosity increases and thickens the engine oil, which is problematic for cold-starts.

### 4 Higher consumption of the in-line oil filter

Existing oil filters clog rapidly because of the low dirt holding capacity and have to be changed frequently.

### 5 Air release property and foam risk

Contaminants, oxidation residues and an increased viscosity impair the air release property. Air bubbles in the engine oil ascend badly, and the risk of foam generation increases with poorly lubricated engine components as a consequence.



In-line oil filter  
Photos le: new filter, ri: quickly clogged filter

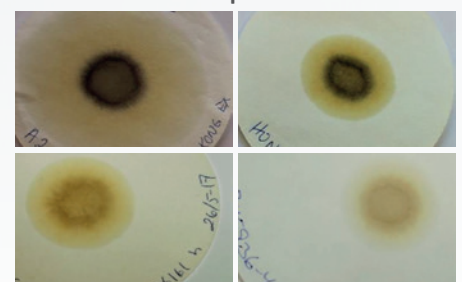
## The conventional method

Operators control the engine oil condition periodically to ensure the reliable operation of the gas and diesel engines. When the oil draws near a critical limit value, the oil sump is partly replaced (bleed-and-feed) or completely changed. But that doesn't reduce the impact on the engine oil. On the one hand, the newly filled-in oil contaminates within the shortest time due to deposits and dilution with dirty residual oil. On the other hand, contaminants, oxidative processes and acid stress unimpeded the engine oil's lubrication properties and the long-term effects of additives, which shorten the lifetime of the oil filling. That finally results only in high oil consumption. But with us, you can operate more ecologically and economically.

**Fact is,** with efficient engine oil care, you maximise the lifetime of the oil filling and the engine components

Efficient engine oil care means that particles, water, oxidation residues and acids are continuously removed from the engine oil (24/7). Consistent high lube oil cleanliness improves the oxidation stability and long-term effects of additives and maximises the protection against wear, corrosion, and deposits.

### Blotter spot test



Development of the engine oil condition with  
CJC® Lube Oil Filter





# Your solution

consistently clean and dry engine oil | improved oxidation stability | optimal for lube and wear protection properties and additives

## CJC® Lube Oil Filters for gas and diesel engines

Offer quick, persistent and cost-optimal highest protection for your oil filling and gas or diesel engine.

### 1 Oil care in the off-line circuit

The integrated pump enables the installation in a separate circuit and, therefore, continuous depth filtration and care of the engine oil (24/7). The filter inlet is connected diagonally to the oil sump, and the filter outlet is connected higher up – as far away as possible from the filter inlet. The operation, filter insert replacement and maintenance are independent of the engine operation.

### 2 Sensational separation performance

The CJC® Lube Oil Filter removes all contaminants:

- **Oxidation residues and acids**  
for persistent stable oxidation rate, TAN and TBN
- **Particles, soot and insoluble solids**  
for the highest oil cleanliness
- **Water – free, emulsified and dissolved water**  
for water content well below the saturation limit of the oil

The CJC® Lube Oil Filter and the integrated CJC® Fine Filter Inserts are due to the variety of combinations and the modular design optimal configurable to the specific conditions of the various gas and diesel engines, also when operated with special fuels such as bio, sewage and landfill gas.

### 3 High dirt holding capacity and filtration degree

CJC® Fine Filter Inserts are depth filters with a filtration degree of 3 µm absolute and a retention rate of < 1 µm. The whole volume of the insert is made of numerous finely ramified fibres and offers an outer surface and, in addition, an inner surface – from 120 up to 150 m<sup>2</sup> 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.

### 4 Condition Monitoring

CJC® Lube Oil Filters are equipped with sensors for the automatic online monitoring of the filter condition (filter pressure). Up to three additional sensors for oil humidity, temperature and oxidation are implementable. Alert limits and warnings are configurable to detect premature deviations from the normal condition. So you are able to counteract them timely. Optional further sensors can be supplemented to get more information about the oil condition. They deliver detailed data in real-time and allow conclusions about the engine condition because of the high data density.

Our intuitive operable cloud applications have a clearly-arranged dashboard to visualise the sensor data. The highly developed algorithms integrated into the premium monitoring package automatically evaluate and interpret the data. Ideal for critical gas and diesel engines, where a failure quickly has costly consequences.



CJC® Lube Oil Filter and integrated CJC® Fine and Depth Filter Inserts



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



CJC® Condition Monitoring Systems



# Your advantages

A CJC® Lube Oil Filter is a small investment with large effects – for your engine and the environment!



## Decrease oil consumption with a longer lifetime of the oil filling

- Achieve the highest engine oil cleanliness and oxidation stability consistently
- Improve the long-term effects of additives



## Ensure the reliable operation of your engine – also with start-stop-operation

- Minimise 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 during service and revision

- Prolong the lifetime of all oil lubricated engine components and the engine
- Avoid time- and cost-intensive engine cleanings and flushings
- Expand the time between services and revisions



## Prevent the in-line oil filter from clogging

- Prolong the lifetime of the oil filter – the additional CJC® Lube Oil Filter at the oil sump removes all the contaminants quickly, efficiently and cost-effectively



## Protect the environment and resources

- Dispose less waste oil and improve the CO<sub>2</sub> footprint
  - 1,000 Litres less waste oil for thermal disposal means 2.6 tons less CO<sub>2</sub> emissions
- Save engine oil and spare parts and protect so resources
- Improve combustion and reduce fuel consumption and emissions



## Experience the simplicity

- Install the CJC® Lube Oil 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

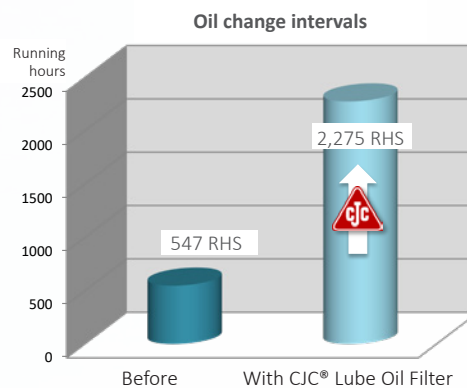
## Biogas engine MAN 2842, BHKW Engine oil: 60 Litres Mobil Pegasus 710

### Savings per year – only due to the prolonged oil change intervals:

- > 660 Litres of engine oil per year at 8,000 running hours (RHS):
  - > 1.7 tons CO<sub>2</sub>
  - > 1,900 EUR oil costs
- Instead of 14–17, only 4 oil changes per year, improved engine availability
- Oil condition values are after 2,275 RHS better than previously without CJC® Lube Oil Filter after only 450–550 RHS



	Before	With CJC® Lube Oil Filter
Oil life time, operating hours	547	2,275
Viscosity 40°C, cSt	167	161
TAN, mg KOH/g	5.08	4.20
Oxidation, abs/cm	27	29
Nitration, abs/cm	27	10
IpH	4.40	5.37



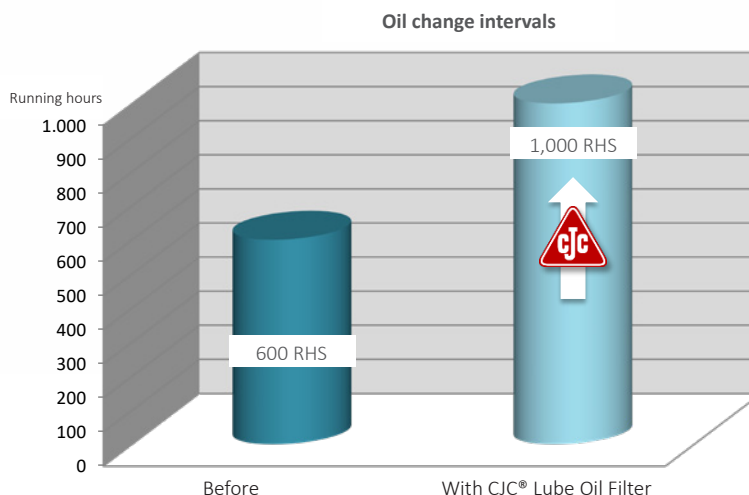
approx. 76 %  
longer oil lifetime

approx. 667 Litres  
less oil consumption  
per year

## Biogas engine JENBACHER J420GS, biogas plant Ecomax Linea Bio Engine oil: 650 Litres Mobil Pegasus 605

### Savings per year – only due to the prolonged oil change intervals:

- > 9,000 Litres of engine oil per year at 8,000 running hours (RHS):
  - > 9 tons CO<sub>2</sub>
  - > 10,000 EUR oil costs
- Instead of 13–16, only 8 oil changes per year, improved engine availability
- But only after 1,000 RHS do the oil condition values draw near the critical limit – previously, after only 600 RHS (TAN/TBN, viscosity, contamination level, nitration, oxidation)



approx. 40–50 %  
longer oil lifetime

approx. 3,500 Litres  
less oil consumption  
per year



# 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 recognise 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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**[filtration@cj.de](mailto:filtration@cj.de)**

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