



**TTECTROL**

# Quality lubricants for CHP engines

Small effort. Great effect.

GAS-ENGINE OILS,  
ENGINE COOLANTS,  
OIL ANALYSES AND  
COMPETENT SERVICE.



# TECTROL MethaFlexx –

## High-tech engine oils for your engine



Maximum efficiency  
for your plant.



Technical support  
and expertise.

> 4.000  
ENGINES

are operated with our  
products.



Gas-engine oils  
recommended and  
approved for use  
from renowned engine  
manufacturers

**The service lifetime of your plant is influenced by a lot of factors.**

TECTROL MethaFlexx gas-engine oils offer the best protection and have proven their quality in practical use. Dangerous deposits are reduced. High protection against wear of engine components as well as high temperature and ageing stability allow long intervals between oil changes.

**Become part of the large community and start to profit!**

Over 4,000 CHP engines, running up over 30 million operating hours annually are already operated with our products.



# TECTROL product service package – and it's smooth running!



## TECTROL PSP – your strong partner for your plant

You profit from the following advantages:



Competent  
consultancy from  
qualified experts



Optimum  
application  
recommendations



Individual  
analysis service



Fast test results



Precise  
identification of the  
plant's condition



Free data backup



Maximized  
efficiency for  
your plant



Monitoring and  
supervision of  
your system



Support and advice  
with respect to  
insurance cover

# TECTROL analysis system

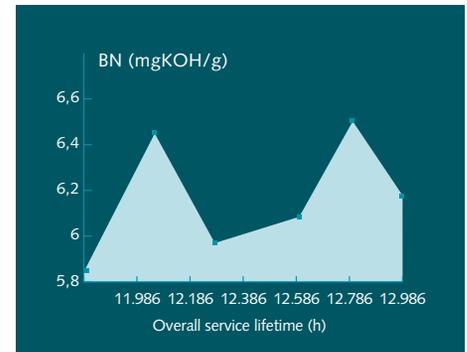
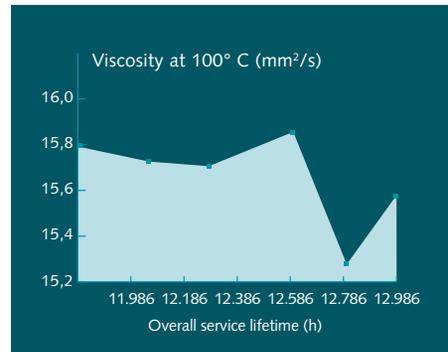
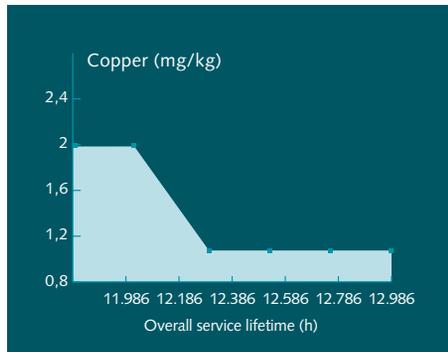
Regular analyses of the used oil provides you with important information on the condition of your engine and the performance quality of the oil used.



The TECTROL analysis system is your ideal partner for an efficient service lifetime of your plant.

On the basis of our long and extensive experience, we can compile easily understandable diagnoses. These are individually adapted to the specific technical needs.

Thanks to our close cooperation with independent laboratories, we can provide you with fast analysis results and summarised trend reports.





## Get going with us!



**FREE**  
oil analysis

### **Together we are strong**

Use our TECTROL MethaFlexx products and receive a free analysis set during the initial stages. We will then contribute towards the costs for all subsequent analyses.

### **Application recommendations and competent consultation**

Your qualified expert will provide you with recommendations for oil-change intervals in order to optimise our TECTROL MethaFlexx engine oils.

### **Simplified data processing and back-up**

The test results are communicated in a way that is easy to understand and are backed up on a data base. All data are available to you at all times and can be accessed on an individual basis.

### **Summarised representation**

The results can be represented as a trend sequence as well as an individual report.

# The perfect solution for natural-gas engines

Engines which are powered using natural gas pose significant challenges to the engine oils being used. Our high-performance gas-engine oils meet these particular challenges excellently:

- » TECTROL MethaFlexx HC PREMIUM
- » TECTROL MethaFlexx HC-M PLUS
- » TECTROL MethaFlexx NG PLUS
- » TECTROL MethaFlexx NG



## Higher temperature level

Natural gas combusts with a higher temperature than bio-methane, and the temperature level increases as a result. The premium-quality TECTROL MethaFlexx products offer the best basis for higher operating temperatures.



## Increased water enrichment

The increased percentage of hydrogen in natural gas (up to 25%) with respect to petrol (roughly 13%) results in increased moisture build-up during combustion. This can in turn lead to increased corrosion. MethaFlexx natural gas engine oils contain a package of additives with high neutralisation properties as well as a high ageing stability.



## Loss of liquids

The changing percentages contained in the fluid gases already boil at low temperatures. The lubricating effect is significantly reduced and practically no liquid film can diffuse. The unique synergies of additives and base oils mean that TECTROL MethaFlexx oils display the optimum viscosity-temperature behaviour.

# Maximum efficiency for your plant:

Our multi-talent TECTROL MethaFlexx HC PREMIUM

The advantages for you:

- + Increased intervals between oil-changes thanks to the very high ageing stability
- + Reduced service costs thanks to reduced combustion residues
- + Cost savings thanks to reduced oil consumption
- + Increase in efficiency of your plant thanks to specially selected HC synthetic base oils
- + Improved engine cleanliness thanks to softer ash deposits



TECTROL MethaFlexx HC PREMIUM is our premium engine oil for lubricating stationary gas engines in accordance with the Otto principle and the diesel principle with pilot injection technology.

With its high alkaline reserve and low sulphate content, it is excellently suited for use with special gases (biogas, sewage gas or landfill gas), among other applications.

The fact that the additives used do not contain zinc is optimal for oxidising catalytic converters. In combination with specially selected hydrocrack base oils, the intervals between oil changes can be increased.

## APPROVED FOR:

- » GE Jenbacher
- » MWM
- » MAN
- » MTU Onsite Energy
- » CATERPILLAR
- » DEUTZ
- » TEDOM
- » 2G
- » SEVA Energie AG
- » AGROGEN
- » AVS BHKW GmbH

# Full performance with special gases

Sewage gas, landfill gas, firedamp and wood gas

**TECTROL MethaFlexx fulfils the stringent requirements and offers the perfect product for every type of application.**

- » TECTROL MethaFlexx HC PREMIUM
- » TECTROL MethaFlexx D PLUS
- » TECTROL MethaFlexx NG PLUS
- » TECTROL MethaFlexx ZS PLUS



## **Sewage gas, landfill gas**

Sulphur and organic silicon compounds as well as the partial-load operation of many plants pose significant challenges to lubricants. During the decomposition of chemical substances in landfills, gases are created which can have significant influences on the service lifetime of engine components. TECTROL MethaFlexx engine oils remain age-stable thanks to their high properties when it comes to neutralising acids. Their excellent oxidising stability protects against excessive loads and stresses.

## **Firedamp**

The highly explosive mixture of gases, consisting of CO<sub>2</sub>, methane and nitrogen, is never stable regarding its composition. Influences from the surrounding environment such as dust and high humidity further contaminate the firedamp. Specially combined additive packages constitute a very good wear protection of engine components and guarantee optimum engine cleanliness.

## **Wood gas**

The use of fuels such as, for example, wood chippings, saw chippings and fermentation residues containing lignin from biogas decomposition contain contaminants which pose significant challenges for the engine. Depending on the temperature in the reactor, dangerous tar layers can accumulate in the engine block, which can result in consequential damage. Through the correct combination of selected base oils and zinc-free additives, our MethaFlexx gas-engine oils protect the engine components when under heavy loads and stresses and reduce the combustion residues.

**We recommend to principally determine the oil change intervals of the engine oils on the basis of laboratory analyses.**

# Optimum use with catalytic converters

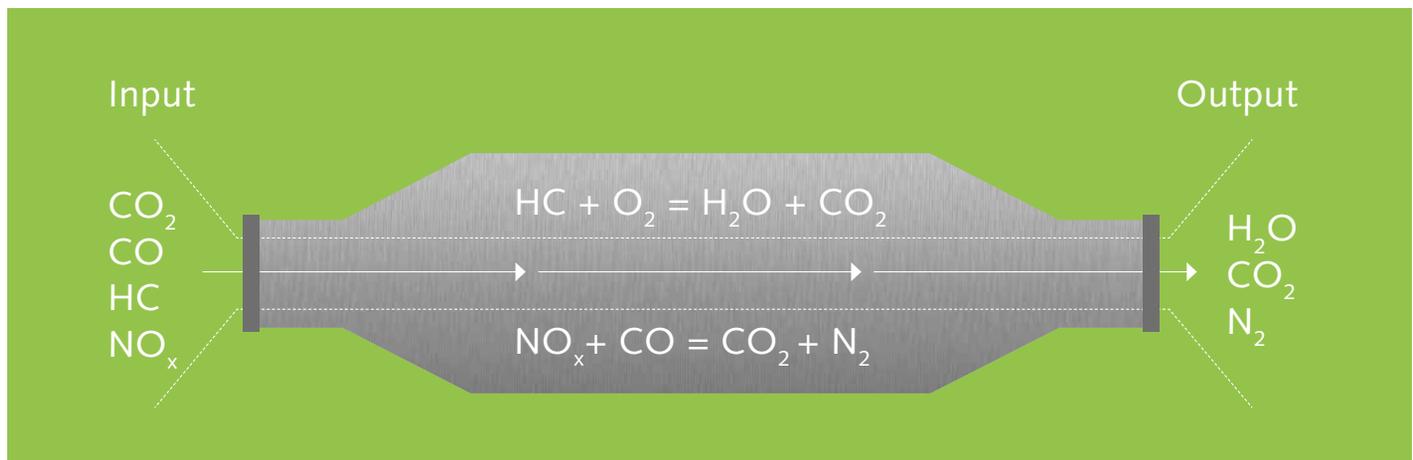
For a clean environment



Exhaust gas catalytic converters reduce the polluting emissions which are produced when the engine is in operation. They reduce poisonous carbon monoxide (co), hydrocarbons (hc), aldehyde (odour), nitrogen oxide (nox) as well as particles which are hazardous to health and already reach high conversion rates at low temperatures.

TECTROL MethaFlexx engine oils create the ideal basis for the optimum use of a three-way or oxidising catalytic converter. The quality of our gas-engine oils is characterised by their low-ash build-up. They are so-called low-ash oils.

Thanks to their special additive technology and the 'softer' ash, they reduce the wear of engine components and help to counteract the poisoning of the reaction surfaces as a result of the minimal loss of phosphorus.



## At a glance: The TECTROL MethaFlexx gas engine oils

Viscosity class	Product	Fuel	Characteristic properties	Approvals
SAE 40	TECTROL MethaFlexx HC PREMIUM 	Natural gas, biogas & special gases	<ul style="list-style-type: none"> <li>» TBN: 8.9 mg KOH/g</li> <li>» SA: &lt;0.68 M-%</li> <li>» Zinc-free additive technology</li> </ul>	2G filius series (biogas) / CHP series (biogas), AGROGEN component series BGA for biogas, AVS BHKW GmbH, CAT CG132 / CG170 / CG260, Deutz TR 0199-99-01213 (natural gas), Jenbacher TA 1000-1109 BR 2/3 Propellant Kl. A/B(CAT); BR 4 (Version B/C) Propellant Kl. A(CAT); BR 6 (Version C/E) Propellant Kl. A(CAT), MAN M 3271-4 (special gas), MTU Onsite Energy DK-BS-0001 (BR 400 biogas, natural gas, sewage gas, landfill gas, propane) / DK-BS-0002 (BR 4000 biogas), MWM TR 0199-99-2105, SEVA Energie AG, TEDOM TA 61-0-0281.1 (biogas, sewage gas and landfill gas)
SAE 40	TECTROL MethaFlexx HC PLUS	Biogas & special gases	<ul style="list-style-type: none"> <li>» TBN: 9.2 mg KOH/g</li> <li>» SA: 0.8 M-%</li> <li>» Zinc-free additive technology</li> </ul>	CAT CG132 / CG170 / CG260, Dreyer & Bosse (jet-ignition engines), Jenbacher TA 1000-1109 component series 2 and 3 Propellant class B, MDE (Component series 28xx and 30xx), MTU Onsite Energy DK-BS-0001 (BR 400 Biogas, sewage gas, landfill gas), MWM TR 0199-99-2105, Schnell pilot injection technology up to series constructed in 2005, SEnergie (MWM Brasil/Liebherr), SEVA Energie AG
SAE 40	TECTROL MethaFlexx HC-M PLUS 	Natural gas, biogas & special gases	<ul style="list-style-type: none"> <li>» TBN: 9.1 mg KOH/g</li> <li>» SA: 0.65 M-%</li> <li>» Zinc-free additive technology</li> </ul>	2G filius series (biogas) / CHP series (biogas), AVS BHKW GmbH, MAN M 3271-4 (special gas), SEVA Energie AG
SAE 40	TECTROL MethaFlexx ZS PLUS 	Biogas & special gases	<ul style="list-style-type: none"> <li>» TBN: 8.5 mg KOH/g</li> <li>» SA: &lt;0.7 M-%</li> <li>» Zinc-free additive technology</li> </ul>	2G filius series (biogas) / CHP series (biogas), AGROGEN Component series BGA for biogas, AVS BHKW GmbH, MAN M 3271-4 (special gas), Schnell pilot injection technology, SEnergie (MWM Brasil/Liebherr), SEVA Energie AG
SAE 40	TECTROL MethaFlexx ZS	Biogas & special gases	<ul style="list-style-type: none"> <li>» TBN: 8.9 mg KOH/g</li> <li>» SA: &lt;0.68 M-%</li> <li>» Zinc-free additive technology</li> </ul>	Dreyer & Bosse (pilot injection technology), Schnell pilot injection technology



Viscosity class	Product	Fuel	Characteristic properties	Approvals
SAE 40	TECTROL MethaFlexx D PLUS	Biogas & special gases	<ul style="list-style-type: none"> <li>» TBN: 10.0 mg KOH/g</li> <li>» SA: &lt;1.0 M-%</li> <li>» Zinc-free additive technology</li> </ul>	2G filius series (biogas) / CHP series (biogas), AVS BHKW GmbH, CAT CG132 / CG170 / CG260, MAN M 3271-4 (special gas), MWM TR 0199-99-2105, SEVA Energie AG
SAE 40	TECTROL MethaFlexx D	Biogas & special gases	<ul style="list-style-type: none"> <li>» TBN: 8.5 mg KOH/g</li> <li>» SA: 0.99 M-%</li> </ul>	2G filius series (biogas) / CHP series (biogas), AVS BHKW GmbH, Jenbacher TA 1000-1109 Component series 2 and 3 Propellant class C, MAN M 3271-4 (special gas), MDE BS 3212f, MTU Onsite Energy DK-BS-0001 (BR 400 biogas, sewage gas, landfill gas), SEVA Energie AG
SAE 40	TECTROL MethaFlexx NG PLUS	Natural gas, biogas & special gases	<ul style="list-style-type: none"> <li>» TBN: 6.5 mg KOH/g</li> <li>» SA: 0.49 M-%</li> <li>» Zinc-free additive technology</li> </ul>	CAT CG132 / CG170 / CG260, Deutz TR 0199-99-01213 (natural gas), MWM TR 0199-99-2105, SEVA Energie AG, TEDOM TA 61-0-0281.1 (natural gas, propane-butane)
SAE 40	TECTROL MethaFlexx NG	Natural gas, biogas & special gases	<ul style="list-style-type: none"> <li>» TBN: 5.5 mg KOH/g</li> <li>» SA: 0.45 M-%</li> </ul>	2G CHP series (natural gas), AVS BHKW GmbH, CAT CG132 / CG170 / CG260, Deutz TR 0199-99-01213 (natural gas), Jenbacher TA 1000-1109 Component series 2 and 3 Propellant class A (CAT), MAN M 3271-2 (natural gas), MDE (component series 28xx and 30xx), MTU Onsite Energy DK-BS-0001 (BR 400 natural gas, propane), MWM TR 0199-99-2105, SEVA Energie (MWM Brasil/Liebherr), SEVA Energie AG
SAE 40	TECTROL MethaFlexx GE-M	Biogas & special gases	<ul style="list-style-type: none"> <li>» TBN: 8.8 mg KOH/g</li> <li>» SA: 0.85 M-%</li> </ul>	2G filius series (biogas) / CHP series (biogas), Jenbacher TA 1000-1109 Component series 2 and 3 Propellant B/C, MAN 3271-4 (special gas), MTU Onsite Energy Component series 400 for biogas, sewage gas and landfill gas, MWM TR 0199-99-2105





# This means that your engine won't blow a gasket: TECTROL COOLPROTECT-MIX

Our TECTROL COOLPROTECT-MIX engine coolants can meet even the highest technical challenges and are already pre-mixed for you. In combination with analyses, you receive the optimal application recommendation for your plant.



Engine coolants can be used immediately – 'ready-for-use'



Reliable protection against deposits, cavitation and corrosion



Constant and homogeneous operating conditions for your CHP engine

TECTROL COOLPROTECT-MIX 3000 as well as TECTROL COOLPROTECT-MIX 480 are high-performance engine coolants for your CHP engine. The specially adapted mixed water in combination with OEM approved original engine coolant prevents deposits and minimises risks.

Our engine coolants have been developed in cooperation with leading engine manufacturers and are excellently suited for use in stationary engines thanks to their special properties.



### Component parts that come into contact with engine coolants:

- » engine-coolant pump
- » cylinder (head gasket, cylinder head)
- » radiator
- » turbo charger
- » and much more besides

### The tasks that an engine coolant fulfils:

- » corrosion protection
- » temperature stability
- » secure heat transfer
- » protection against deposits
- » long intervals between changes

### Demands made on the top-up water:

- » special electric conductivity
- » individual hardness grade
- » adapted mixture ratio
- » maximum percentage chloride and sulphur
- » defined pH-value

The cooling performance of the cooling unit depends on numerous factors such as, for example, heat transferring ability, volume flow, specific heat capacity, density and so on. The supplementary water which it contains must meet the quality standards defined by the engine manufacturer.

The goal is to prevent damage to the plant as a result of deposits, cavitation (gas or vapour bubble formation) as well as corrosion in the water circuit. With TECTROL COOLPROTECT-MIX, the risks can be minimised and the consequential costs reduced.

# Qualified expert consultation

You can avail of our product service package across Germany and many other countries. A total of 100 qualified experts are ready to assist you and provide you with any advice you need.

## Your contact partner – Germany

BayWa AG Energy Segment,  
Product Management Lubricants

Phone: +49 (0) 931 99 172 440

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