ALTERNATIVE ENERGY
SOLUTIONS

ENGINE PRESERVATION · PRODUCT PRESENTATION

FUELPROCESSOR AcidX

Total Acid Number (TAN) reduction in fuels. Manufactured by CEPS LLC.

VERSION 2025-02-14 · PUBLIC

01

THE PROBLEM

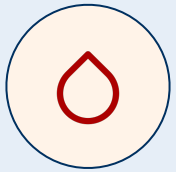
Acid fuels damage engines

MORE FUELS WITH HIGH TAN

- Biofuels and changing refining practices lead to more and more fuels with a high Total Acid Number (TAN).
- High TAN is directly linked to corrosion, component wear, operational inefficiency and high OPEX – a significant risk for engine systems.
- When TAN exceeds ISO or OEM limits, operators face higher maintenance costs and possible regulatory and warranty issues.



WHERE HIGH TAN COMES FROM



ORGANIC ACIDS

By-products of refining, oxidation or contamination, e.g. naphthenic acids.



SULPHUR COMPOUNDS

Sulphur oxidation forms strong acids such as sulphuric or sulphonic acids.



OXIDATION PRODUCTS

Acids formed during storage or at high temperatures.



CONTAMINANTS

Acidic cleaning agents or chemical residues in the fuel.

EXAMPLE FROM A POWER PLANT

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DAMAGED FUEL PUMPS AND INJECTION

Sample taken	Density	Viscosity	Water content	Acid number	Sulphur	Complies with ISO 8217 / DIN / OEM
	limit 1,010 kg/m³ @ 15 °C	mm²/s @ 50 °C	limit 0.3 %	**limit 2.5 mg KOH/g**	%	
after separator / before engine	945	405	0.07	**3.1**	0.47	**no**
after separator / before engine	948	518	0.06	**3.5**	0.51	**no**
after separator / before engine	**1,102**	517	0.04	**3.7**	0.50	**no**
after separator / before engine	946	363	0.07	**3.4**	0.50	**no**



TARGET

< 2.5 mg KOH/g

Reduction of the acid number as required by ISO 8217 or DIN / OEM requirements. All four samples were at 3.1 to 3.7.

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THE SOLUTION

How FUELPROCESSOR AcidX works

COMPLIANT FUEL FROM ACID FUEL

- Converts non-compliant acid fuel into compliant fuel with a guaranteed TAN
- Neutralising agent KOH and water reduce the acidity
- Only the fuel the engine needs at its current load is processed, in real time
- Needs little space near the engine and fits almost any power house or engine room

Positive side effects

- Better atomisation and more complete combustion, leading to fuel savings
- Lower emissions (NOx, CO, HC) and particulate matter (PM)
- Lower Filter Smoke Number (FSN) for visible smoke

1.2

MG KOH/G REACHABLE

OEM limit is 2.5 mg KOH/g

3 + 2

DAYS PER ENGINE

≈ 3 days installation plus 2 days commissioning

≈ 2

YEARS PAYBACK

Through fuel savings and lower O&M

ROBUST AND LOW MAINTENANCE

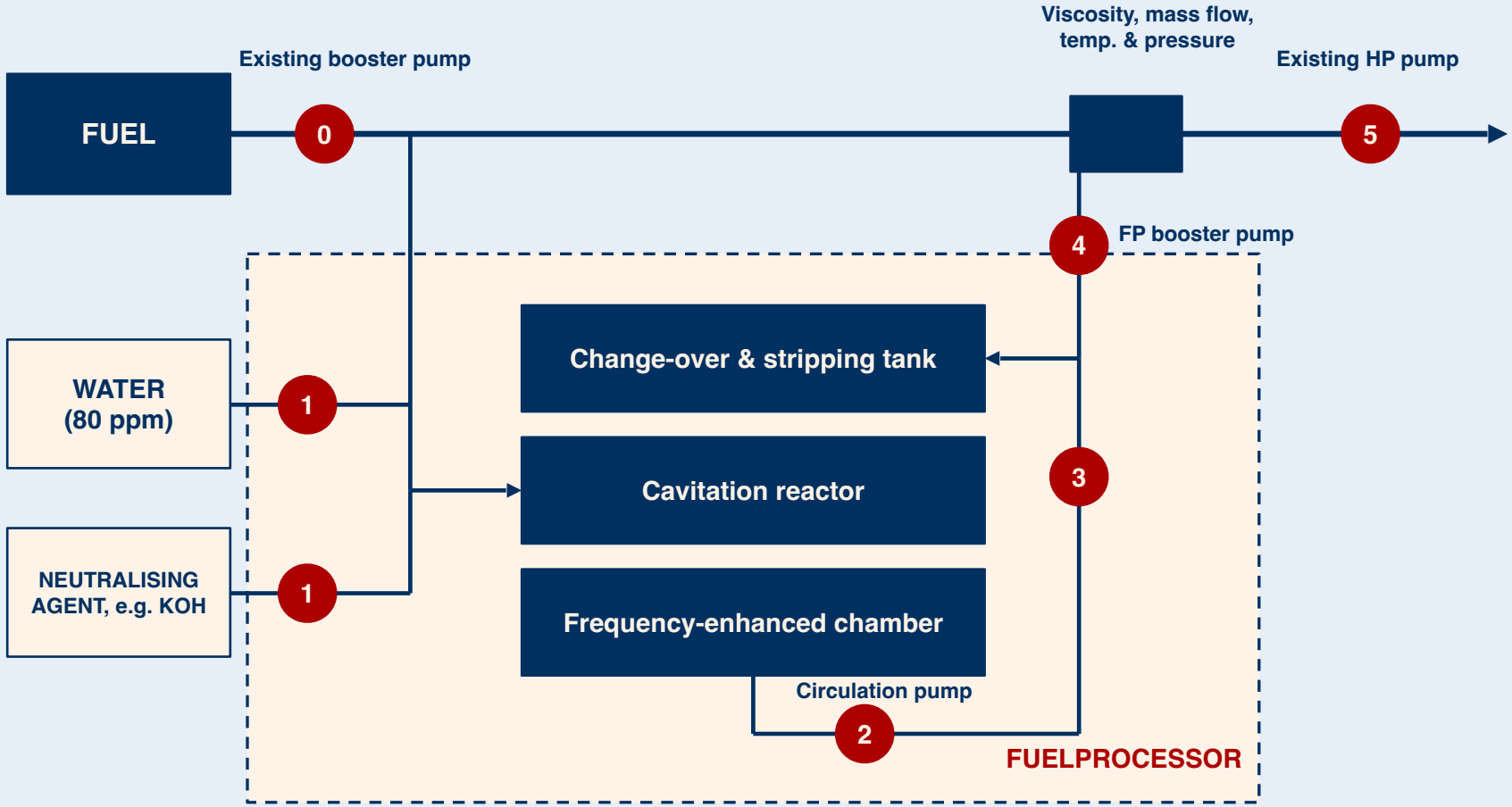
- Payback of about two years for CAPEX, KOH and water through fuel savings and lower O&M
- Robust and reliable reduction solution
- Verified functionality, performance and durability
- Low maintenance in time and costs
- Full fallback to the normal fuel supply line at any time, without impact on operation

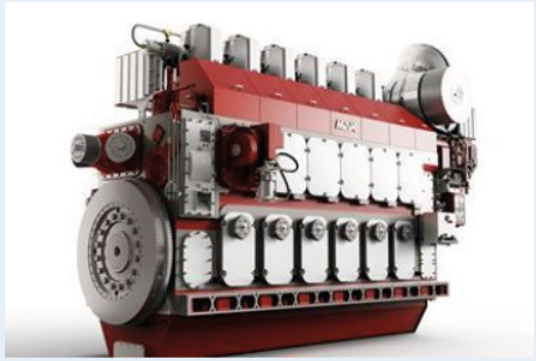


FP unit and control cabinet, opened

SYSTEM INTEGRATION

For 2- and 4-stroke engines with HFO, diesel and bio-fuels.





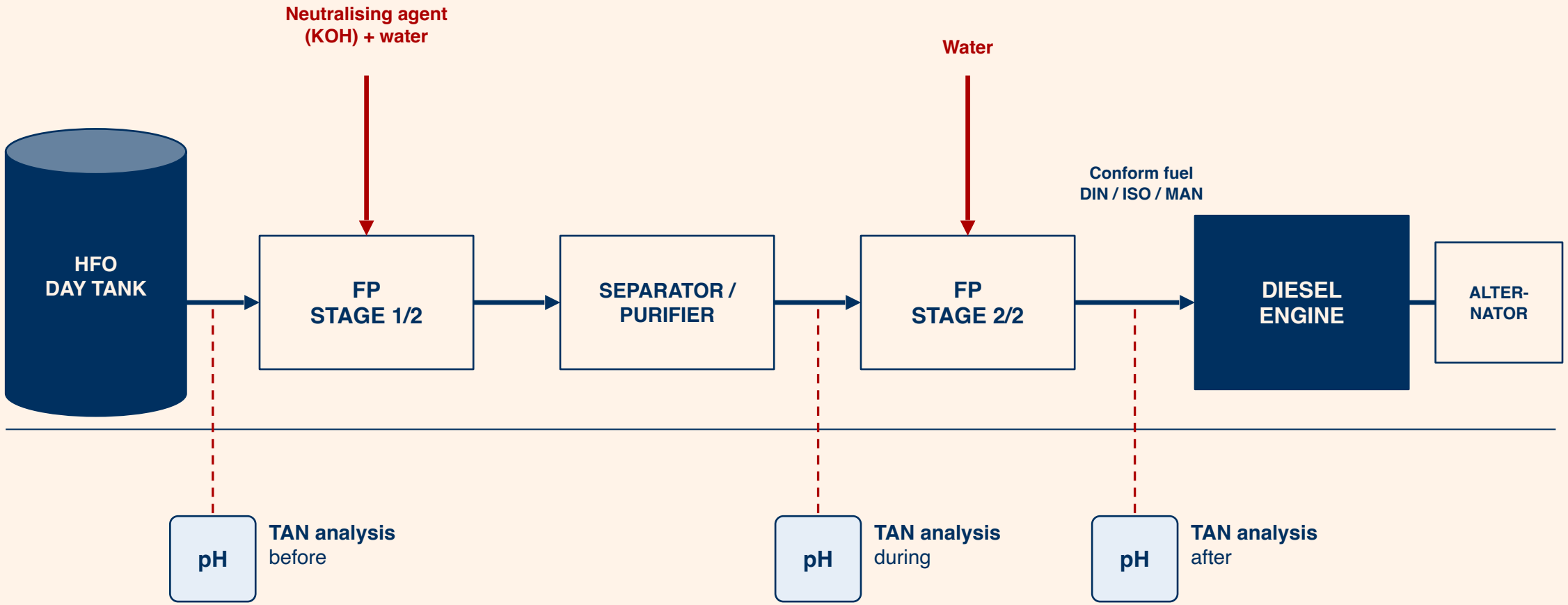
INTEGRATION WITH

- Engine automation
- Engine management
- Alarm system
- Control room
- Exhaust gas monitoring (CEMS, at least for commissioning)

Pumps: 0 and 5 existing · 1 dosing · 2 circulation · 3, 4 FP pumps

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TWO STAGES TO COMPLIANT FUEL



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REFERENCES & SUMMARY

Tested on the test bed and at sea

TESTED ON TEST BED AND AT SEA



TEST BED

MaK 6L M20 diesel engine, 1,000 kW, at the test bed of the University of Rostock (FVTR)

AT SEA

On a fishing vessel, in cooperation with the Icelandic Marine College

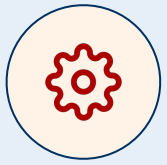
Single cases – every installation is individual.

SECURE FUEL SUPPLY AND ENGINE



PROBLEM

High TAN causes corrosion, lowers fuel quality and raises maintenance costs.



SOLUTION

Two-stage fuel processing neutralises and traps acidic compounds – in line and in real time, for more reliable fuel.



BENEFIT

Lower TAN, less corrosion, more stable fuel and lower operating costs.

FUELPROCESSOR AcidX combines fuel processing with chemical neutralisation. It delivers DIN / ISO-compliant fuel to OEM requirements, reduces OPEX and protects the engine and its components from excessive damage.

MANUFACTURER AND SALES

MANUFACTURER

Clean Energy Power Systems LLC (CEPS)

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Production: Zagreb, Croatia

PROMOTION, SALES AND TENDERING



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FUELPROCESSOR AcidX

THANK YOU

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