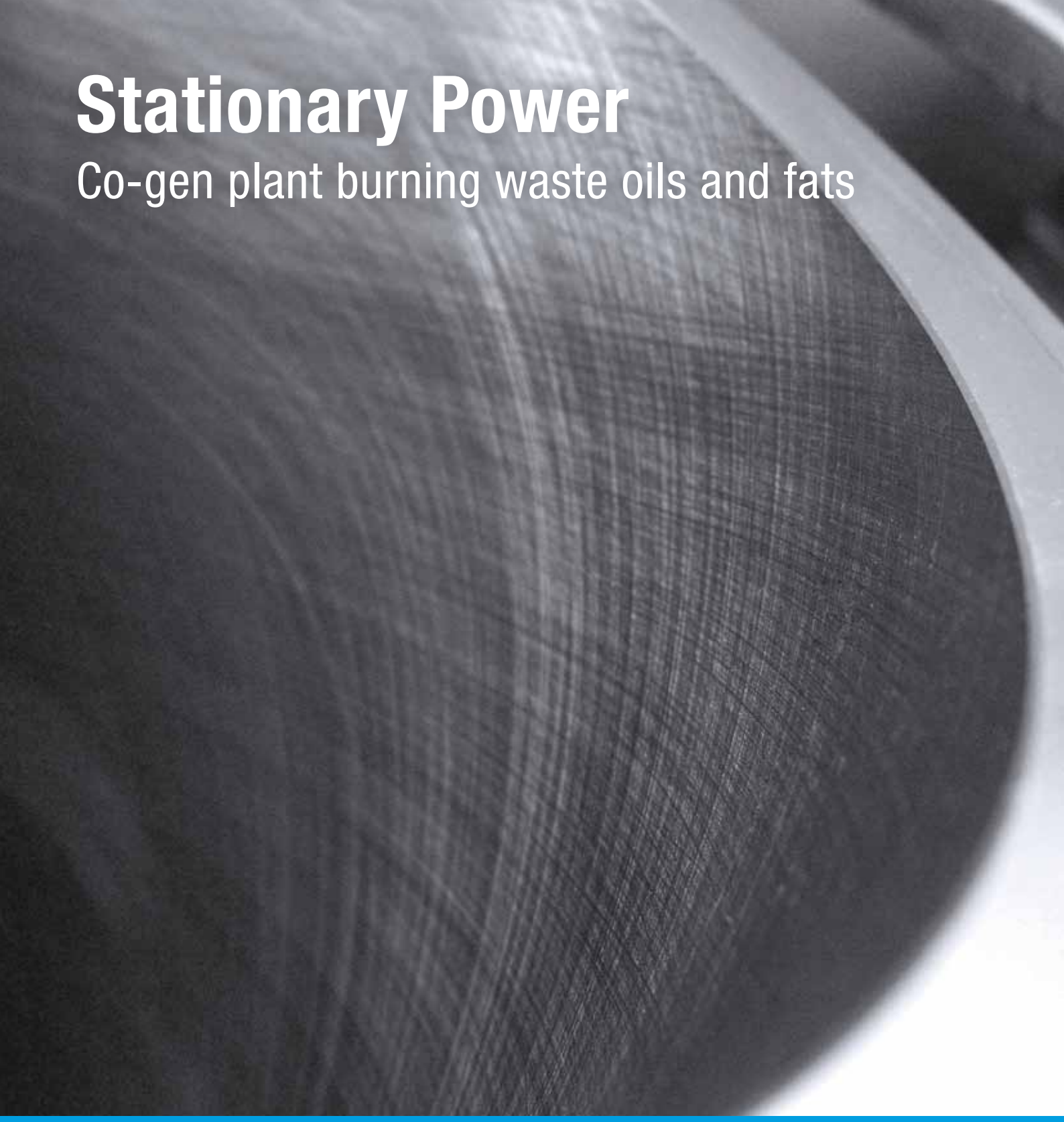
Stationary Power

Co-gen plant burning waste oils and fats



Engineering the Future – since 1758.

MAN Diesel & Turbo

Belgian Bio-Fuel Co-Gen Plant uses

MAN´s most powerful four-stroke engine

Fuel flexibility – part of the solution

With their broad insensitivity to fuel quality, large medium speed diesel engines designed for heavy fuel oils cope readily with carbon dioxide (CO_2) neutral fuels like treated and untreated plant oils, animal fats, waste oils and various blends thereof – fuels which cause considerable problems in high speed engines with their more sensitive injection systems. Thus, large medium speed diesel engines are part of the global warming solution.

Background

MAN Diesel & Turbo's bio-fuel references reached a significant milestone in 2007 with the commissioning of a waste oil version of the highest powered four-stroke medium speed engine type in its engine range. In a further distinction, the co-generation (co-gen) plant operated on renewable fuels by Electrawinds Biomassa Mouscron SA at Mouscron, Belgium runs on a blend of pre-refined vegetable oils and organic fats. The fuel is produced at a dedicated processing works also owned by Electrawinds. As the company name suggests, Electrawinds is a specialist in renewable energy, and operates another co-gen plant in Ostend as well as a number of wind turbines.

Electrawinds co-gen plant, Mouscron, Belgium

The Mouscron co-gen plant operated by Electrawinds is based on a 17.7 MW rated bio-fuel version of MAN Diesel & Turbo 18 cylinder, vee configuration type 18V48/60 engine (108,5 L/cyl. bore 480 x stroke 640 mm). It powers a generator set feeding electrical power to the local grid and supplies a further 14 MW of thermal energy from its exhaust gases and coolant. Part of the thermal energy is used in the plant for fuel heating etc. and part is fed to a nearby public swimming pool and leisure centre. Waste oils and fats are delivered to the plant several times per week and stored in a purpose built tank farm.

Fuel conditioning

Fuel is processed by heating using engine heat and in a 3-stage fine filtration system.

Bio-Fuel incentive

The viability of the Mouscron co-gen plant is underpinned by the carbon dioxide trading scheme operated by the Belgian Government. Green certificates are earned for the use of a CO_2-neutral fuel and encashed at the regulatory body. The supply of thermal energy from the plant to the nearby leisure centre ensures that the Mouscron plant qualifies as a high efficiency co-generation plant, which brings further financial incentives.

Urea-based SCR and Oxicat

All the bio-fuel power and co-gen facilities supplied by MAN Diesel & Turbo include selective catalytic reduction to control emissions of oxides of nitrogen (NO_x). The SCR systems use urea as the reducing agent and incorporate a downstream oxidation catalyst to eliminate ammonia slip.

Partner

MAN Diesel & Turbo and Electrawinds cooperated closely with German co-generation speclialist MAN Engineering in the construction of the Mouscron plant.

The 17.7 MW rated type 18V48/60 engine at the Electrawinds co-gen plant in Mouscron, Belgium

Outputs	17.7 MW electrical 14.0 MW thermal
Overall efficiency	85%
GenSet	18V48/60B
Fuel	Organic waste oils and fats
Fuel conditioning	Heating, 3-stage fine filtration
Recovered heat utilization	Fuel conditioning- Space heating Heat for local swimming pool

Fuel is processed by heating and 3-stages of progessively fine filtration

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