



The Power Density and Efficiency of a Diesel Engine

32/40PGI – A New Gas Engine Without Spark Plugs

Augsburg, 30th May 2006. MAN B&W Diesel AG has developed a new gas engine with the type designation 32/40PGI and operating on the Otto principle. The abbreviation PGI stands for Performance Gas Injection and denotes the engine's novel start-up and ignition system, which does not need spark plugs. Thanks to this start-up and ignition system, for the first time the 32/40PGI combines the advantages of a diesel engine such as high power density and high efficiency with the benefits of a gas engine. As a result, the new engine makes possible the highly efficient conversion of the globally available fuel natural gas into thermal and electrical energy with the lowest possible emissions.

In the PGI-ignition process a small quantity of ignition gas is injected into a pre-chamber separate from the main combustion chamber. There, it is ignited on a hot surface and initiates the ignition of a lean air-gas mixture in the combustion chamber. This lean mixture contains a high excess of air so that, in combination with an effective method of ignition, efficiencies are achievable approaching those possible with a state-of-the-art diesel engine. And this at low emissions and without the need for elaborate after-treatment to reduce oxides of nitrogen (NO_x). With its novel start-up and ignition system, the 32/40PGI is capable of high efficiencies in excess of 46 %, in combination with NO_x emissions of less than 250 mg/Nm³ at 5 % O₂.

Further major technical details of the new gas engine are individual gas supply lines to each cylinder, which together

MAN Diesel Group

Department of Communications

Stadtbachstrasse 1

86224 Augsburg - Germany

Phone: +49 (0) 821 – 322 42 42

Fax: +49 (0) 821 – 322 42 40

E-mail: press@de.manbw.com

Internet: www.manbw.com

For further information,
please contact:

Michael Melzer

Phone: +49 (0) 821 – 322 38 50



with the “SaCoS PGI” engine management system – likewise an MAN B&W Diesel in-house development – ensures optimum fuelling of each individual cylinder. SaCoS PGI enables trouble-free engine operation in the operating range between the ignition knock and misfire limits. In addition, the special PGI ignition system is characterised by its very long maintenance intervals compared to conventional gas engine ignition systems.

The development of high performance gas engines like the 32/40PGI is driven by the World’s growing energy needs. Increasingly, these will be met by natural gas. The growing global distribution infrastructure for natural gas is leading to worldwide growth in its availability, even in regions whose energy needs could, hitherto, only be supplied economically by diesel engines. This opens up new market opportunities for the gas engine. In addition to growing energy needs, the introduction of emissions limitations like the Kyoto Protocol and increasingly strict standards for local emissions play a growing role in the operation of stationary power generation plants.

With its long experience in the gas engine field, the MAN B&W Diesel Group is well equipped to meet these developments. Only recently, the Group launched its 51/60DF dual-fuel engine for stationary and marine applications onto the market. Now the company has emphatically underlined its gas engine competence with the introduction of the 32/40PGI pure gas prime mover.

MAN Diesel Group

Department of Communications

Stadtbachstrasse 1

86224 Augsburg - Germany

Phone: +49 (0) 821 – 322 42 42

Fax: +49 (0) 821 – 322 42 40

E-mail: press@de.manbw.com

Internet: www.manbw.com

For further information,
please contact:

Michael Melzer

Phone: +49 (0) 821 – 322 38 50



Technical Data of the 32/40PGI Gas Engine:

Combustion process:	Lean-burn	
Number of cylinders:	12V	18V
Power output	5400kW	8100 kW (750rpm)
	5160kW	7740 kW (720rpm)
Cylinder bore:	320 mm	
Piston:	400 mm	
Engine speed:	720/750 rpm	
Mean piston speed:	9.6/10.0 m/s	
Mean effective pressure:	22.4 bar	
Frequency:	60/50 Hz	
Specific energy consumption:	7740 kJ/kWh	

MAN Diesel Group

Department of Communications

Stadtbachstrasse 1

86224 Augsburg - Germany

Phone: +49 (0) 821 – 322 42 42

Fax: +49 (0) 821 – 322 42 40

E-mail: press@de.manbw.com

Internet: www.manbw.com

For further information,
please contact:

Michael Melzer

Phone: +49 (0) 821 – 322 38 50

About MAN Diesel

MAN Diesel is the World's leading designer of large-bore diesel engines. The company designs two and four-stroke diesel engines, generating sets and turbochargers, which are manufactured by MAN Diesel and its licensees. The engines have outputs ranging from 450 to 97,300 kW. MAN Diesel has approximately 6,400 employees, located in Germany, Denmark, UK, France, the Czech Republic and China. The company's worldwide service network consists of Authorised Repair Shops and service centres. MAN Diesel is a subsidiary of the German industrial group MAN AG.