

## Algorithm for methane number calculation

- Methane number
- Gas quality parameter

- Gas engine operation
- Program available

DGC has developed a program for determination of the methane number for natural gases and mixtures of natural gas with hydrogen and CO. The program operates on a standard PC with Windows.

### Gas quality parameter

The methane number is a critical natural gas quality parameter if the gas is to be used in gas engines for power or combined heat and power production. The methane number is a relative scale for the gas tendency to cause engine knocking as is the octane number for petrol. The definitions are that pure methane has a methane number of 100 and pure hydrogen has a methane number of 0.

The DGC program includes components  $CH_4$ ,  $C_2H_6$ ,  $C_3H_8$ ,  $C_4H_{10}$ ,  $N_2$ ,  $CO_2$ , CO and  $H_2$ . The latter two components have been included in order to provide guidelines if gasification gases or hydrogen are to be added to the natural gas grid. The program area of operation includes all gas mixtures of the above components where the methane number is above 45.

### The method

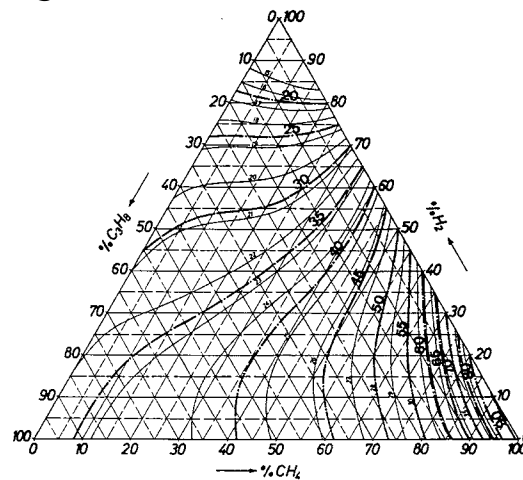
The DGC program is based on the

original AVL work on a test engine. The data is available as ternary diagrams as shown in the figure. For further information on the AVL studies see:

*Forschungsberichte Verbrennungskraftmaschinen, Heft 120, 1971.*

### The program

The developed program together with a user manual can be requested from Danish Gas Technology Centre. For technical questions about the program or the algorithm please send email to [pgk@dgc.dk](mailto:pgk@dgc.dk). To place an order please send email to [pel@dgc.dk](mailto:pel@dgc.dk). The price for the program including an English user manual is 400€ plus handling.



CFR/RDH-MOTOR  
 $n=900 \text{ U/min}$ ,  $\alpha_p=15^\circ \text{ KW v.OT}$   
 $\lambda=1$ ,  $t_s=20^\circ \text{C}$ ,  $t_z=25-30^\circ \text{C}$ ,  $t_w=80^\circ \text{C}$   
 Klopfstärke  $KI=50$ -konstant

— Methanzahl-Linien (%  $CH_4$ )  
 —  $p_{VE}$ -Linien ( $kp/cm^2$ )

**PRODUCT SHEET**  
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**Contact us**

If you have any questions to the subjects described on the product sheet or other DGC services, you are welcome to contact us:

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**Profile**

DGC is a specialized consultancy and development company within energy and environment. DGC's main focus area is gas utilization.

DGC offers consultancy, measurements, laboratory testing, training and certification.

DGC has its head office and laboratory in Hørsholm, north of Copenhagen and a local office in Aalborg.