

Coal Mine Methane

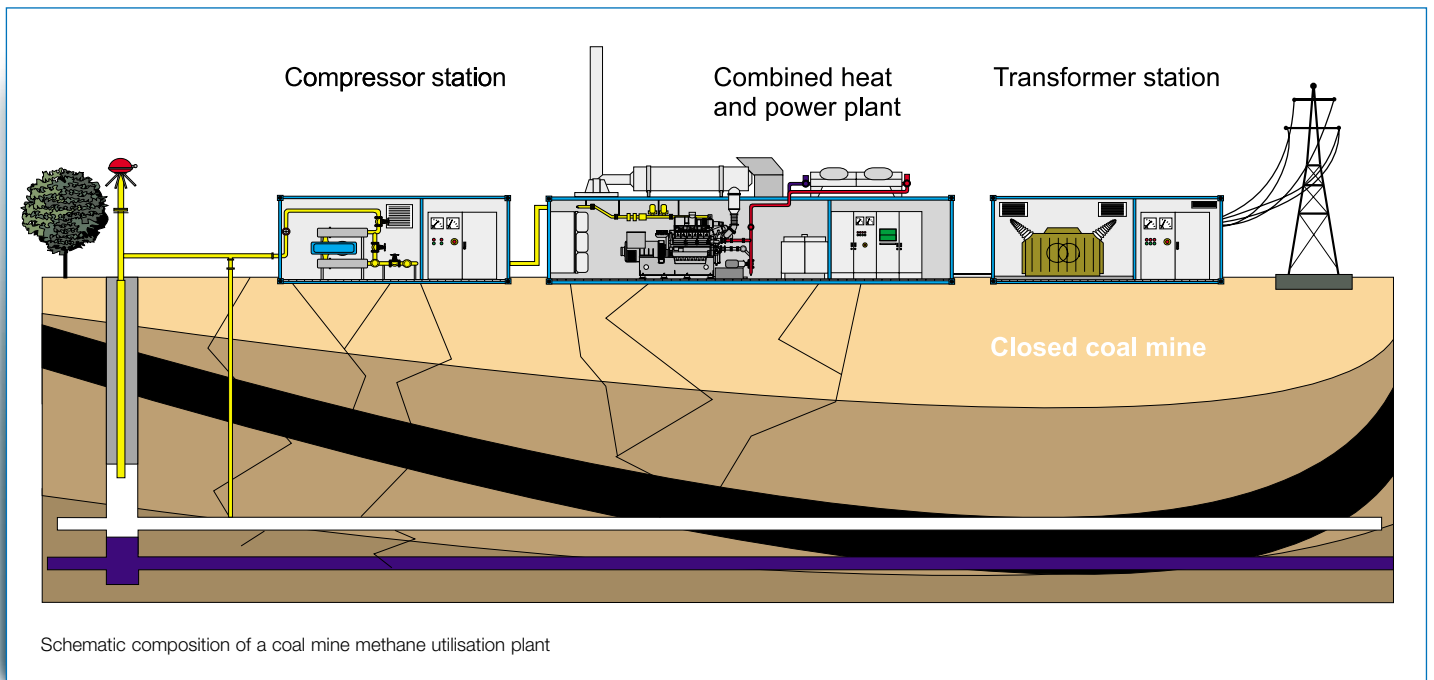


concrete - compact - competent!



IVG e.V.
Interessenverband
Grubengas e.V.

CMM CONCRETE



Coal mine methane (CMM) concrete

About 300 million years ago, CMM, a gaseous mixture consisting basically of methane, developed during the geochemical transformation of organic substances into hard coal.

CMM is set free in active mining. In combination with air/oxygen it generates explosive mixtures, which may lead to the dreaded firedamp.



Even from shut-down mines CMM leaks for decades. When it gathers in basements or canals, it may also lead to explosions and dangers for life and property. Besides, methane, which is extremely noxious to the climate (21 times more noxious compared to CO₂), is set free when the gas comes to the surface.

In order to avert dangers, CMM is carefully sucked off under as well as above ground. Sucking off CMM ensures on the one hand the **safety of miners and the adjacent residents** and on the other hand **reduces the environmental impact** by the reduction of methane emissions into the atmosphere.

An important additional benefit is that CMM is excellently suited for the production of **power** and **heat** in combined heat and power stations.

The energy- and eco-political effects of the utilisation of CMM are stressed

by the **“Grubengasinitiative NRW”**, established October 31st, 2001 by the provincial government of **North Rhine Westphalia (NRW)**.

Consequently the advantages of a sensible utilisation of CMM are selfevident.

At this point the Association of Interests in CMM (Interessenverband Grubengas, abbreviated: IVG e.V.) makes a start. The associations' philosophy is:

“Set, promote and use basic conditions for the optimal utilisation of CMM – as compactly and competently as possible.”

The scheme of a CMM utilisation plant is supposed to show in which way CMM can be utilised in a sensible manner and which competences are covered under the roof of the IVG e.V.

UNION COMPETENT



A-TEC Anlagentechnik GmbH

Technology for utilization and danger prevention of CMM.

Our competences: Development and testing of CMM sucking, conception and design of CMM utilization plants, project development for utilization of CMM.



ATEMIS GmbH

Planning and consulting. Analyses of location-related requirements, concept development, profitability calculations, permissions according to the Federal Immission Control Act (BImSchG), UVP-testing, tenderings, construction management, plant support and optimisation of combined heat and power plants.



pro₂ Anlagentechnik GmbH

Pro2 – Your partner for exploration and extraction as well as for coal mine methane utilisation. Beginning with the detection of potentials over permission and plant planning by use of block heat and power plants, maintenance, contracting and operating of turnkey plants up to averting of dangers, Pro2 provides everything from one source.



your partner in JI and CDM

Developer and consultant for JI and CDM projects. At present we are involved in more than 60 projects. JI projects in: Germany, Poland, Ukraine, Russia and Romania CDM projects in: Kazakhstan, Thailand and Indonesia.



Fraunhofer Institut Umwelt-, Sicherheits-, Energietechnik UMSICHT

Non-profit application-oriented research institute: integrated environmental technology, optimal security and process technology, sustainable and economical power engineering (coal mine methane, biogas, biomass, energy networks), testing and demonstration plants, transfer of knowledge and technology.



Institut für **Markscheidewesen**

The Institute for Markscheidewesen, mining damage and geophysics in the mining industry (IFM) of the RWTH Aachen is concerned with questions of storage management. It attaches importance to practice-oriented research and teaching and has close national and international contacts in industry and science. A main point of research are renewable energies such as methane and geothermal energy.



DMT GmbH

Research in the field of gas emission in active as well as in abandoned mining areas; evaluation of methane sources; determination of sucking locations on the basis of pictures of pits and geology; planning and monitoring of drillings; security above ground.



SILOXA ENGINEERING AKTIENGESELLSCHAFT

The erection of gas purification plants, especially for the separation of siloxane from biogases, appears as the core competence of SILOXA ENGINEERING Joint Stock Company. Our business activities optionally include supply, erection, maintenance and operating surveillance from one source.

EnergieAgentur.NRW

The Grubengasinitiative NRW (methane initiative North Rhine Westphalia) respectively the EnergieAgentur.NRW forms an information and co-operation platform for the methane industry. Companies and federations cooperate actively with the aim of promoting the sucking and utilization of CMM as well as creating positive conditions for the establishment and use of the plants and initiation of technological transfer and improving the export chances particularly in mining countries, e.g. the Ukraine or China.



LAMBDA Gesellschaft für Gastechnik mbH

Innovative proposals for individual solutions in plant construction; conception and erection of gas collecting-, gas conditioning- and gas utilisation plants; operation management of technical plants; safety engineering trainings for customers and employees at different locations.



Green Gas **Germany GmbH**

We develop and realize projects for methane avoidance and production of green energy from mine and dump gas. We offer all elements, such as project development, financing and realization as well as management and optimization of the plants. With an installed output of 110 MW_{el} we are leading in the field of offering and operating CMM-plants.



Daldrup & Söhne AG

The Daldrup & Söhne AG is one of the leading internationally acting drilling companies. The main focus are drillings for the production and use of geothermal energy, methane production drillings, exploration drillings for storage investigation (coal, gas, brine...), well drillings as well as mine damage reorganization and environmental technology.

Drilling Engineering GmbH



Engineer's office for planning, consultancy and site supervision of drilling projects.

Main emphasis of know-how are drilling technologies for rivercrossing, mining and tunneling, geothermal wells and methane production from coal deposits – directional drilling technology included.



H. Anger's Söhne GmbH

belongs to the leading mediumsized drilling companies in Germany. The company's focal points are drillings for the exploration of deposits, utilisation and extraction (ultimate disposal, mine-gas, ventilation and recovery drillings), geothermal energy as well as water and CO₂-drillings.



STEAG Saar Energie AG

STEAG Saar Energie AG as part of the energy division in the RAG group engineers, builds, finances and operates plants for CMM extraction and utilization, in particular in combined heat & power & cooling plants. The company is engaged in CMM projects in China, Russia, Ukraine and Poland and utilizes more than 196 million Scbm CH₄ per year.



GmbH & Co. KG

With Deutz Power Systems GmbH & Co. KG a professional partner for the realisation of your projects is at your disposal. Throughout the world the company belongs to the leading suppliers of economic and environmentally friendly energy plants. Depending on the customer's demand DEUTZ engines transform both natural gas and bio gas or coal mine methane into power, heat and/or cold.



Umwelttechnik Bojahr

Umwelttechnik Bojahr

Consulting engineers in the fields of gas, energy and safety engineering, waste and water, from conception to construction. Professional competence in the area of fire and explosion protection as well as in threat analyses. Approved and nominated surveyor of coal mine methane extraction plants.

www.DEMETA.net **DEMETA GmbH**

Initiation and execution of JI and CDM projects in Ukraine, Russia and Kazakhstan. Documentation, financing, equipment, service, and sale of ERUs. Export of sucking- and utilization equipment for methane.



Alfred Kuhse GmbH

Development and production of process controls for cogenerative, coal mine methane and substitutional power plants, plant planning and development, development of visual display systems for process automation, production of electronic devices and electro-magnets.



Public Services Herne have provided energy for a hundred years already. Regenerative energy projects: gas expansion plant, energy park with one of the world's largest roof integrated photo-voltaic plants, a battery bank plant and CMM-driven BHPPs.



EnD-I Grubengas GmbH

The EnD-I Grubengas GmbH develops, builds and operates energy production plants on the basis of methane. The society is part of the EnD-I group, a competent partner for all phases of creating and realizing projects for the energetic utilization of green gases such as dump-, purification- and bio-gas, nationally and internationally.



Deutsche Steinkohle AG

Under the roof of the RAG Aktiengesellschaft the Deutsche Steinkohle AG (DSK) bundles all activities within German pit coal mining.



Stadtwerke Dinslaken GmbH

Power, natural gas, drinking water for the city of Dinslaken. Regenerative usage of energy. Largest CMM-driven combined heat and power station in Germany. Through the affiliated company "Fernwärmeversorgung Niederrhein" (District Heating Supply for the Lower Rhine area): utilisation of industrial and waste heat from power stations for 11 cities in NRW.

Minegas GmbH

Minegas GmbH uses mine gas (CMM) from abandoned mines in North Rhine Westphalia. It realizes the project development of methane drillings, project sites and the use of combined heat and power stations. Minegas GmbH has an electrical output of 82 MW and is leading in North Rhine Westphalia and Germany. It annually avoids 2,5 million tons of CO₂-equivalent.

Mingas-Power GmbH

Mingas-Power GmbH uses methane (CSM/CMM) from active and abandoned mines in North Rhine Westphalia. It realizes project development and the use of combined heat and power stations. Mingas-power GmbH has an electrical output of 50 MW in North Rhine Westphalia. It annually avoids 1.5 million tons of CO₂-equivalent.

IVG E.V. COMPACT

IVG e.V. compact

At the outset there is the **localization of CMM**. IVG e.V. supports research and **development of conceptions** and technologies for the prompt and unerring detection of CMM.

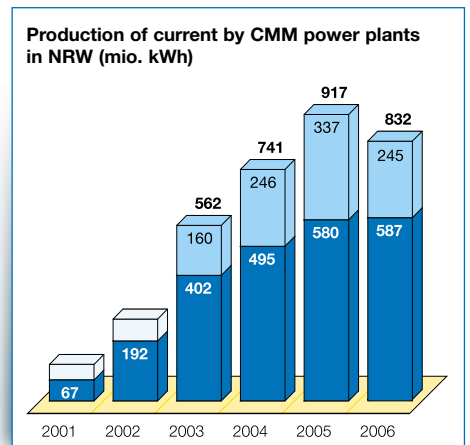
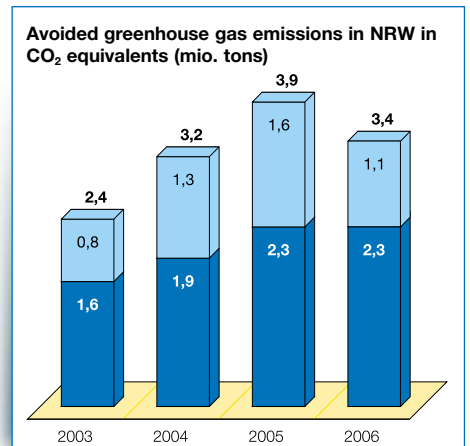
Once the gas emissions are localized, the **sucking of CMM** starts. If it doesn't exit to the surface through an existing pit, the "resource", i.e. the CMM, is brought to light by drillings in the old mine. Then it is sucked from the shut-down mines with the help of **compressors**.

When analyses have determined the chemical composition, the **electrical and thermal exploitation** is about to follow. Power is generated from CMM in combined **heat and power plants (BHKW)** and supplied into the public electrical network by means of a

transformer station. At the same time, heat is set free, which can be inducted into local or district heating networks, if the required infrastructure is provided.

IVG e.V. provides the full range of competences connected to CMM. As an allrounder we offer the know-how needed to make use of the energetic potentials of CMM in an optimal way as well as to protect the environment by averting dangers and reducing noxious emissions.

We support you in technical and economic questions as well as in the process of public permission and in the field of public relations. Feel free to contact us, we are going to help you with pleasure – **concretely – compactly – competently!**



- Before 2003: no figures for active mining
- active mining
- abandoned mines

IMPRESSIONS OF REALISED PROJECTS



ADDRESSES

A-TEC Anlagentechnik GmbH

Dipl.-Ing., Dipl.-Wirtschaftsing.
Achim Wörsdörfer
Eurotec-Ring 15
47445 Moers
Phone +49 (0) 28 41/8 84 38 50

Alfred Kuhse GmbH

Stefan Griskiewitz
An der Kleinbahn 39
21423 Winsen/Luhe
Phone +49 (0) 41 71/7 98 -1 77

ATEMIS GmbH

Dipl.-Ing. Rainer Biegler
Dennewartstraße 25-27
52068 Aachen
Phone +49 (0) 2 41/9 63 18 98

Daldrup & Söhne AG

Bohrtechnik
Andreas Tönies
Lüdinghauser Straße 42-46
59387 Ascheberg
Phone +49 (0) 25 93/95 93 - 0

DEMETA GmbH

Dr. Viktor Böspflug
Hansastraße 9
45276 Essen
Phone +49 (0) 2 01/51 30 67

Deutsche Steinkohle AG

Dr.-Ing. Rainer Lange
Shamrockring 1
44623 Herne
Phone +49 (0) 23 23/15 - 32 12

DEUTZ Power Systems GmbH & Co.KG

Dipl.-Ing. Pedro A. Gil Vodermayr
Carl-Benz-Straße 1
68167 Mannheim
Phone +49 (0) 6 21/3 84 86 77

DMT GmbH Bau Consulting – Oberflächenausgasung

Dr.-Ing. Heribert Meiners
Am Technologiepark 1
45307 Essen
Phone +49 (0) 2 01/1 72 - 14 78

Drilling Engineering GmbH

Dr.-Ing. Michael Schloenbach
Mittelstraße 22
66571 Eppelborn-Habach
Phone +49 (0) 68 81/89 77 17

Emissions-Trader ET GmbH

Dipl.-Ing. Clemens Backhaus
Schulstraße 11
46519 Alpen
Phone +49 (0) 28 02/8 00 86 97

EnD-I Grubengas GmbH

Hans-Joachim Nebel
Mühlweg 43
06114 Halle (Saale)
Phone +49 (0) 3 45/2 91 60 - 0

Fraunhofer Institut für Umwelt-, Sicherheits- und Energietechnik UMSICHT

Prof. Dr.-Ing. Eckhard Weidner
Osterfelder Straße 3
46047 Oberhausen
Phone +49 (0) 2 08/85 98 - 0

Green Gas Germany GmbH

Dipl.-Ing. Petro Sporer
Hessenstraße 57
47809 Krefeld
Phone +49 (0) 21 51/52 55 - 1 10

Grubengasinitiative NRW

c/o **EnergieAgentur.NRW**
Dr. Frank-Michael Baumann
Haroldstraße 4
40213 Düsseldorf
Phone +49 (0) 2 11/86 64 20

H. Anger's Söhne Bohr- und Brunnenbau- gesellschaft mbH

Dipl.-Ing. Waldemar Müller-Ruhe
Gutenbergstraße 33
37235 Hessisch-Lichtenau
Phone +49 (0) 56 02/93 30 11

Institut für Markscheidewesen RWTH Aachen

Prof. Dr.-Ing. Axel Preuße
Wüllnerstraße 2
52062 Aachen
Phone +49 (0) 2 41/8 09 56 87

LAMBDA Gesellschaft für Gastechnik mbH

Dipl.-Ing. Benedikt Preker
Ludwig-Richter-Straße 6
42329 Wuppertal
Phone +49 (0) 2 02/97 39 - 0

Minegas GmbH

Dipl.-Ing. Andreas Minke
Rüttenscheider Straße 1-3
45128 Essen
Phone +49 (0) 2 01/8 01 - 26 70

Mingas-Power GmbH

Dipl.-Ing. Andreas Minke
Rüttenscheider Straße 1-3
45128 Essen
Phone +49 (0) 2 01/8 01 - 26 70

Pro2 Anlagentechnik GmbH

Dipl.-Ing. Stephan Waerdt
Schmelzer Straße 25
47877 Willich
Phone +49 (0) 21 54/48 81 10

SILOXA Gas GmbH

Dr. M. J. Prabucki
Wittenbergstraße 12
45131 Essen
Phone +49 (0) 2 01/2 89 51 - 0

Stadtwerke Dinslaken

Dipl.-Ing. Klaus Wichert
Gerhard-Malina-Straße 1
46537 Dinslaken
Phone +49 (0) 20 64/60 52 88

Stadtwerke Herne AG

Dr.-Ing. Jürgen Bock
Grenzweg 18
44623 Herne
Phone +49 (0) 23 23/5 92 - 3 11

STEAG Saar Energie AG

Dipl.-Ing. Thomas Mauersberger
Malstatter Markt 13
66115 Saarbrücken
Phone +49 (0) 6 81/4 05 - 94 34

Umwelt Technik Bojahr

Dipl.-Ing. Armin Bojahr
Staudenstraße 6
88276 Ravensburg-Berg
Phone +49 (0) 7 51/56 19 00

Responsible

Interessenverband Grubengas e.V. (IVG e.V.)
Feldgarten 11
46414 Rhede
Phone +49 (0) 28 72/80 79 61
Fax +49 (0) 28 41/8 84 38 52

Copyright: IVG e.V.
Layout: GCM Gesellschaft für Creatives
Marketing mbH, Duisburg
Photographies: IVG e.V.

Use of photographs, graphics and texts
in any form – even in extracts – only by
previous written permission by IVG e.V.