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Gasflares
Combustion chambers
Water treatment

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Markets of C-deg environmental engineering GmbH

Combustion of environmentally relevant gases and contaminated airs, heat utilization and heat recovery

- Biogas technology
- Landfill gas applications
- Waste water treatment technology
- Industrial gases

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Small biogas flares
0,01 up to 5 Megawatt

These gases are produced by the bacterial decomposition of organic substances and have mainly methane as oxidizable component.

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Big biogas flares
5 up to 60 Megawatt

Each flare is equipped with one or more burners circles, depending on the desired output control range.
Our gas flares can be produced as open, enclosed, or high temperature version.
Opposite is a 40MW high-temperature flare with two burner circles and a half covered, safety-oriented (SIL) 55MW hot blow off stack realized.

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High temperature combustors for industrial applications

The spectrum of industry-related emissions ranges from low calorific lean gases to high-caloric fuel gases that can, depending on the oxygen content, bear a significant risk of explosion. The treatment of this type of gases must take place always on the basis of a very elaborate safety concept.

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Combustion of low calorific gases (lean gases)

Lean gases are generally referred to those gases which have such a small proportion of oxidizable components, that their use for energy utilization is not possible. Nevertheless, also lean gases contribute to climate change and must be neutralized. For example, during the shut-down at the dry fermentation process arises a low calorific lean gas.
With the innovative C-deg method of lean gas combustion these gases are burned safely and economically.

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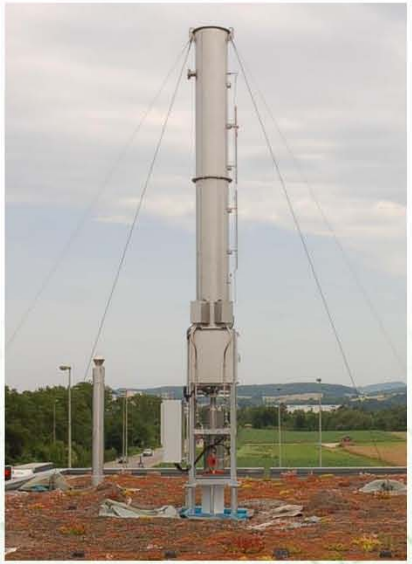
Combustion chambers for disposal of wood and pyrolysis gases

The thermal decomposition of organic substances under exclusion of air is the alternative procedure to the traditional biogas plant for recovering usable energy from gas of biomass. These plants require special burner technology C-deg can provide.



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Combustion chamber for generating a exhaust gas pressure of 40bar$_g$

For a new engine that is currently being developed, C-deg provides a high-pressure combustion chamber to produce a exhaust gas pressure of 40bar$_g$ by burning biogas.

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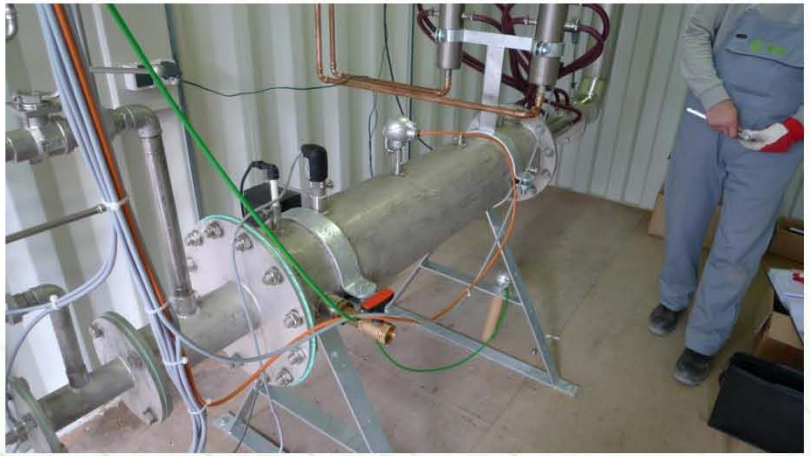
1000°C combustion chamber with heat utilization

For a research project at the Fraunhofer IGB a high temperature combustion chamber has been realized with a combustion capacity of 10 kW and an integrated heat exchanger. The plant burns biogas, natural gas and low calorific polluted air.



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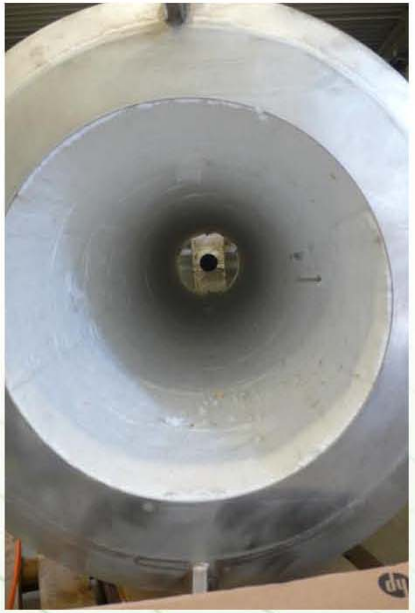
Combustion chamber for the disposal of a hot high pressure gas

For a synthesis process of the mining academy Freiberg, a high temperature combustion chamber was created with an innovative high pressure burner. This flare burns synthesis gases obtained with a pressure of 5bar$_g$ and a temperature of 625 °C (1157°F).



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Combined biogas / biomethane flare for disposal of biogas and biomethane in bivalent operation

At biogas plants for upgrading the biogas to natural gas quality, biogas and “bad” biomethane arise during the start of the treatment plant.
The C-deg combi flare can burn biogas and biomethane as well as both gases simultaneously. C-deg has delivered several flares of this type in high temperature and low temperature version.

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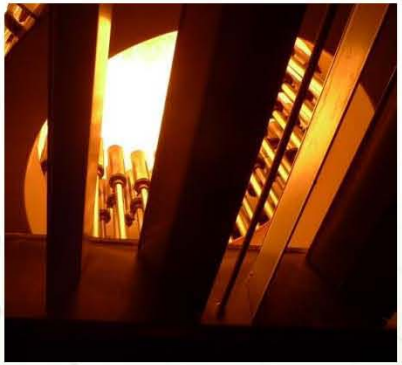
Gas flares and combustion chambers with particularly quiet burners

For some special applications, the gas has to be disposed particularly quietly. For that case, C-deg has developed new and innovative low noise burners for low and high temperature applications.



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High temperature flares for CDM Projects (CO2-certificates)

In June 2011, C-deg has commissioned the first CDM flares for the generation of CO2 certificates in Colombia successfully. Especially the raw gas, exhaust gas and flow measurement, as well as the data recording, compliant according to UNFCCC was an extra-ordinary challenge during the realization of the systems.

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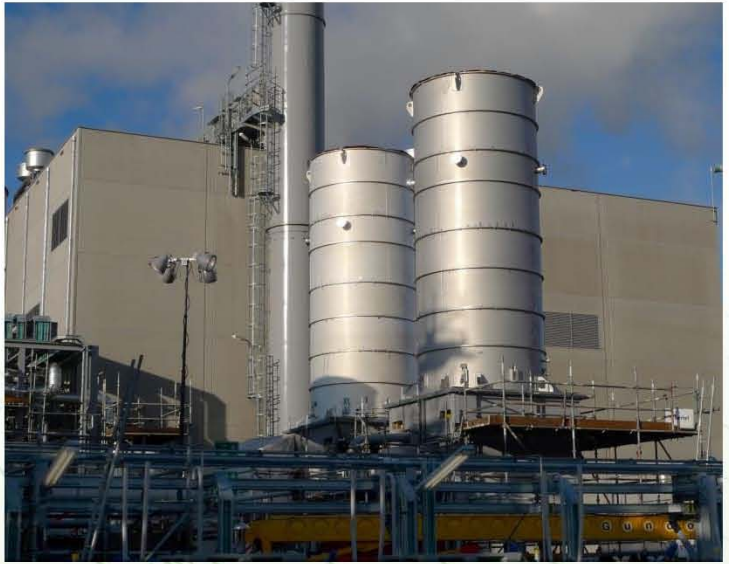
2 x 32 MW high temperature flare system for high calorific associated gas



In the beginning of 2012 C-deg commissioned successfully for the netherlands petrol company (NAM) a special gas project with extraordinary dimensions. The biggest oil field of Western Europe in Schoonebeek is reactivated by using sophisticated technologies like steam injection in several new drillings. Thereby associated gas with extremely fluctuating heating values, flow rates and pressure variations is released. With C-deg's know-how it was possible for the client to replace another new, but not functioning flare system. Now all of NAM's requirements are met. Special design: (PED 10bar Header, SIL, Failsafe-control system, enclosed soot free high temperature combustion, low noise level. Technical data:
2 x 32MW, 160 – 4300m³/h, 12 – 25kWh/m³, 16mbarg, natural draft burner

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Research and development

C-deg surface burner with new designed material

Mobile testing plant for waste water treatment

Mobile big-size flare (50-100MW) with closed combustion

Stationary hightemperature flare with high firing capacity (70MW)

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Landfill lean gas flare with heat recovery

This flare yields 200 kW heat from 255 kW lean gas from a landfill (15-30% methane). The heat is used for feed water heating of a district heating station.
The combustion is operated according to TA-Luft (1000°C flue gas temperature and 0.3 s residence time)

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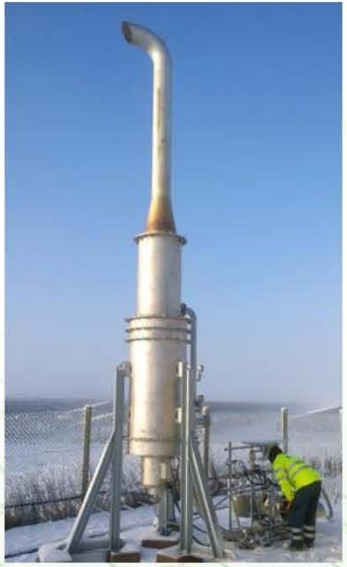
Lean gas flare for landfill gas

Lean gas emissions are increasingly seen as a major factor for the greenhouse effect.

The lean gas combustion as a treatment is becoming therefore more and more important.

By recovering the exhaust gas energy, it is possible to combust lean gas with an energy content of 6% Methanequivalent (rest inert gas) without the addition of support gas.

The combustion takes place according to TA Luft (1000 ° C exhaust temperature and retention time 0.3 s)



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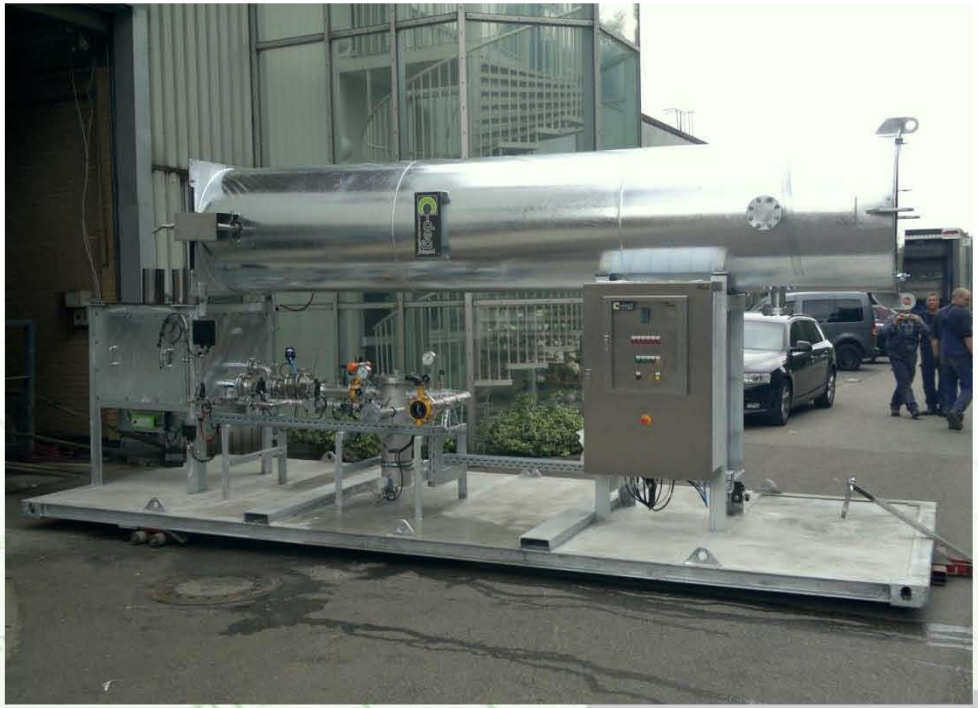
Mobile high temperature flare on a 20‘-container skid

This plant is used for the combustion of up to 200 Nm³/h oil associated gas at oil field test drillings.
Combustion conditions according to TA-Luft (flue gas temperature 1000°C, 0.3 s residence time).
The combustion chamber can be lowered for transporting the flare unit. The skid has twistlock-corners for swap trailer transport and is weighted with reinforced concrete.
No additional foundation is required.



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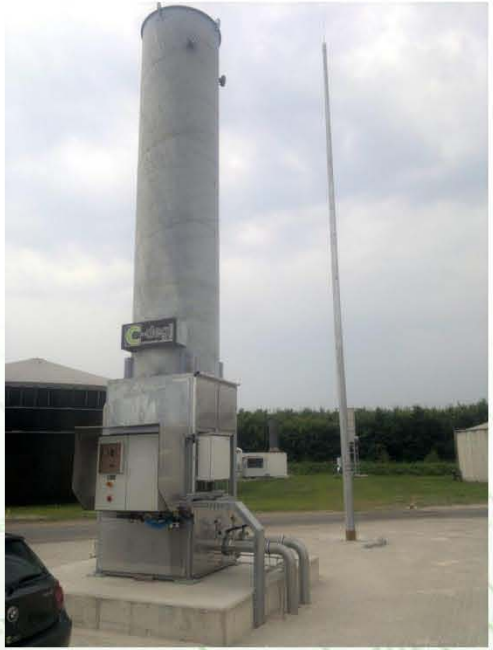
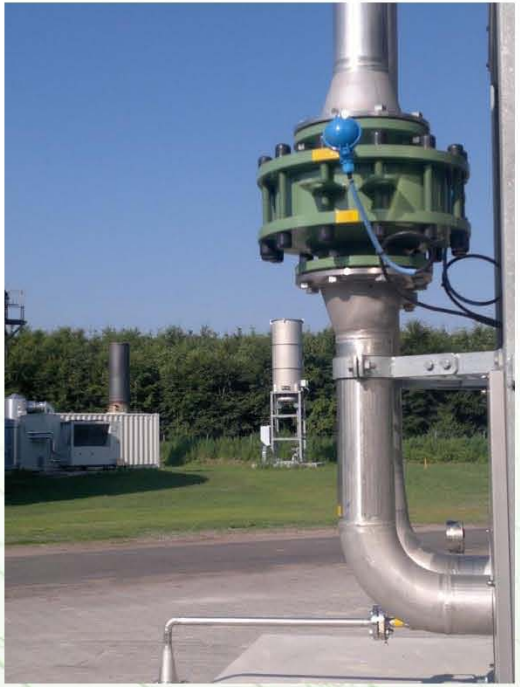
Combined high temperature flare for hydrogen and „E-gas“

This high temperature flare is employed at the first industrial scale „E-gas“ plant and has a combustion capacity of 5.5 MW. With surplus wind energy, hydrogen is generated. This, together with CO2 from biogas upgrading, is used for methanization. Our flare can burn hydrogen as well as methane and any occuring mixture.
This makes this flare unique.





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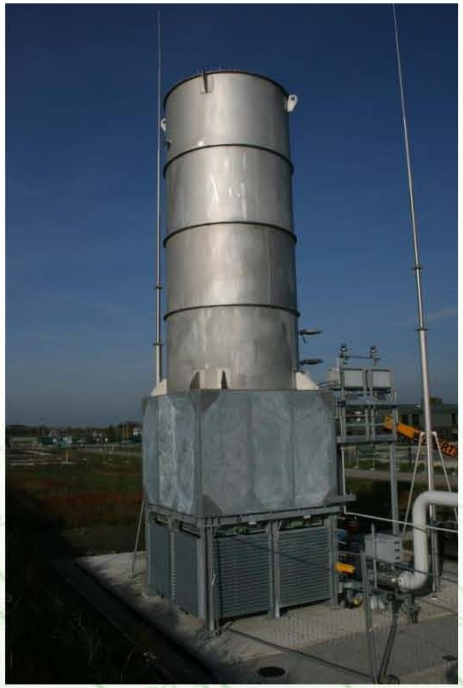
30 MW natural gas flare for storage cavern

In Jemgum, close to the Dutch border, a huge natural gas reservoir is developed in underground salt caverns. This high temperature flare is used for disposing of unusable gas in a climate friendly way. The combustion efficiency is far above 99.9% and hence the effect on climate change of the waste gas is reduced by factor 20.
With its two burner circles, the flare can burn 375 to 2500 m³ natural gas per hour at a temperature of 1000°C.



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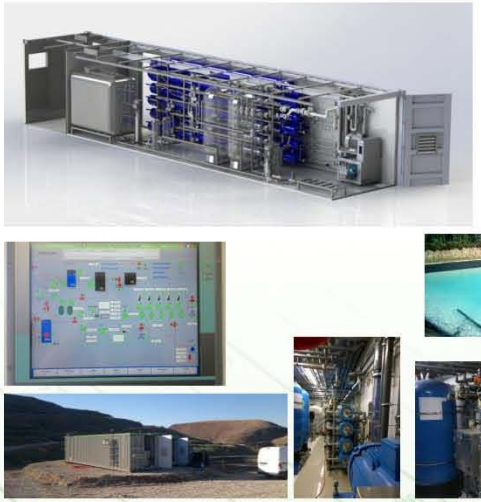
Reverse osmosis plants for leachate

On landfill sites accumulated leachate has to be treated, because of its environmental polluting ingredients. In our reverse osmosis plants, the contaminated water is concentrated and thus the disposeable volume is reduced. The clean water (Permeate) meets the customer or legal discharge requirements, which can significantly be lower depending on the degree of purification. In any case, neither harmful viruses or bacteria are detecteable. C-deg reverse osmosis plants are available for semi-automatic and fully automatic operation. Individual customers requirements are regarded any time. The high availability of the system can be enhanced by remote and telephone support further.



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Micro-, Ultra-, Nanofiltration and Reverse osmosis for industrial arised waste water

In a high number of industrial processes polluted water will accumulate. Usually this polluted water needs to be disposed cost intensive external or recirculated in upstream processes. C-deg offers with the technical processes of micro-,ultra-, nanofiltration and reverse osmosis optimal solutions for the respective process. Especially for extrem difficult tasks the comprehensive experiance of the C-deg employees could be helpfull. Mobile test units are also available.

Skidframe RO unit 275m³/d, permeat staged