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MUCH LOWER CO_2 EMISSIONS WITH EXHAUST GAS HEAT RECOVERY

MODULAR EXHAUST GAS HEAT EXCHANGERS

- YOUR CONTRIBUTION TO FUTURE GENERATIONS

MADE IN GERMANY

bomat®
MAKING MORE OF ENERGY

MORE SAVINGS. GREATER EFFICIENCY.

MAKES MORE OF ENERGY.

ENERGY CONSUMPTION WITH

GAS –15 %*

For gas fired heat generators, the use of BOMAT exhaust gas heat exchangers can lower energy consumption by up to 15 %.

ENERGY CONSUMPTION WITH

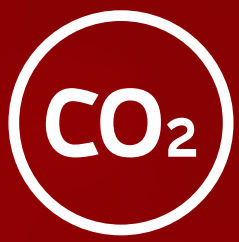
OIL –10 %*

The use of BOMAT exhaust gas heat exchangers can lower energy consumption by up to 10 %. The heat is recovered from the hot exhaust gas, and condensing technology is used to harness the condensation energy of the water vapour contained in this gas.

EMISSION OF

ACIDS –60 %*

During combustion, sulphur and sulphur compounds contained in the respective fuel react with atmospheric oxygen and the water vapour in the exhaust gas to form sulphuric acid (acid rain). This acidic exhaust gas condenses in BOMAT heat exchangers.



EMISSION OF

CO_2 –15 %*

Less CO_2 is emitted due to energy conservation. The greater the energy saving, the higher the CO_2 reduction.

*Compared to conventional heat generators.

BOMAT HEAT EXCHANGERS.

REAP THE BENEFITS OF EFFICIENT SOLUTIONS FROM THE MARKET LEADER.

Aim: minimise environmental impact

Many fuels contain acidifying agents (such as sulphur) that form an aggressive, vaporous acid/water mixture during combustion. In the case of conventional heat generators, these combustion acids contained in the exhaust gas pass through a chimney and are blown into the environment. They then condense and enter the soil through precipitation (acid rain), where they can harm flora and fauna. Even buildings can suffer damaging effects.

Solution: BOMAT for the perfect harmony of ecology…

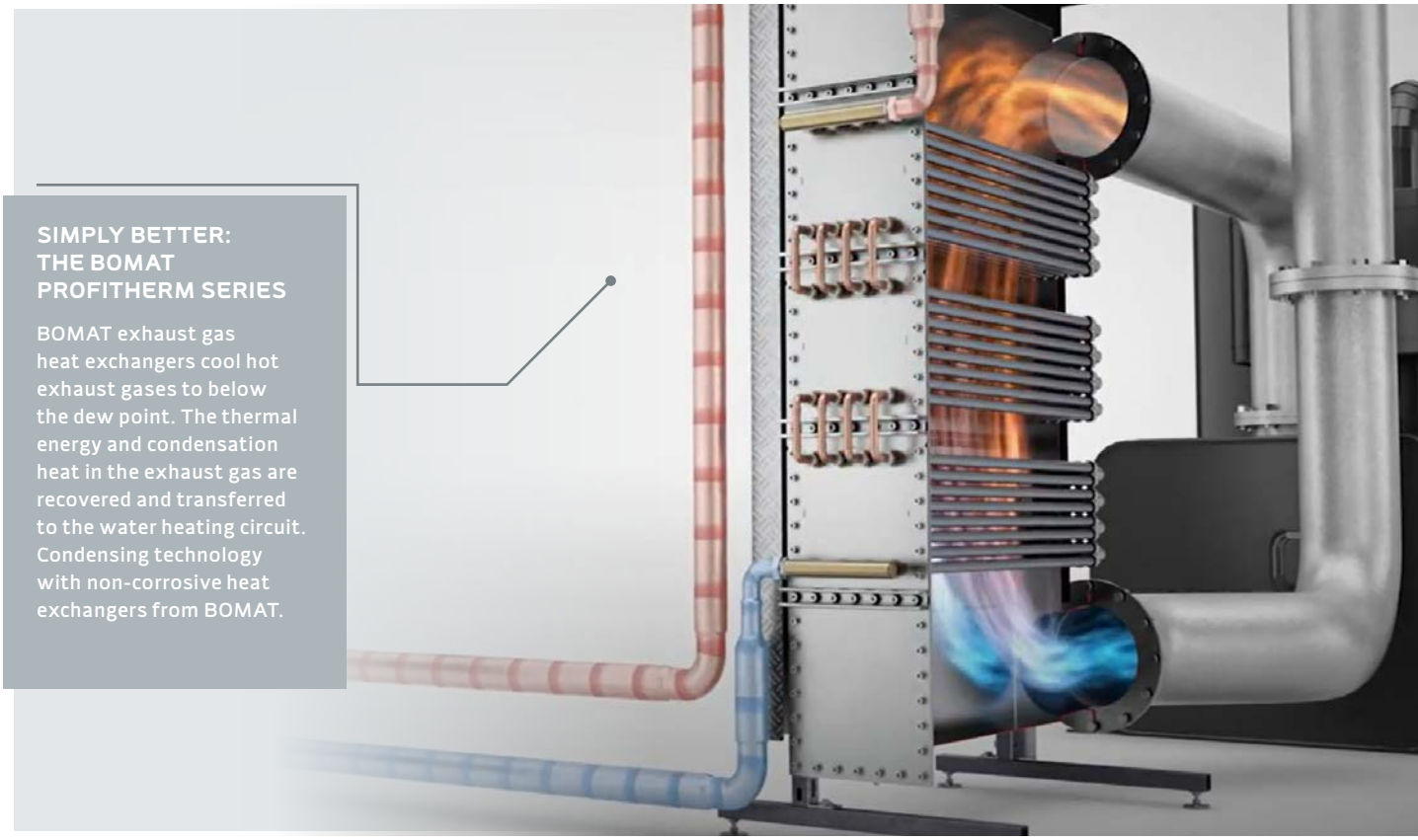
The high performance plastic pipes used in BOMAT heat exchangers are characterised by excellent thermal conductivity and an extremely long service life. They are also resistant to acids and alkalis.

…and economy

Condensing technology cools the exhaust gas in the heat exchangers until it condenses. Heat is released and transferred to the heating water. Fuel consumption and running costs are significantly reduced.

Less in, more out

Now with even better energy utilisation, BOMAT is at the cutting edge of advanced heating technology. Ensuring investments pay off in just a few years.



SIMPLY BETTER: THE BOMAT PROFITHERM SERIES

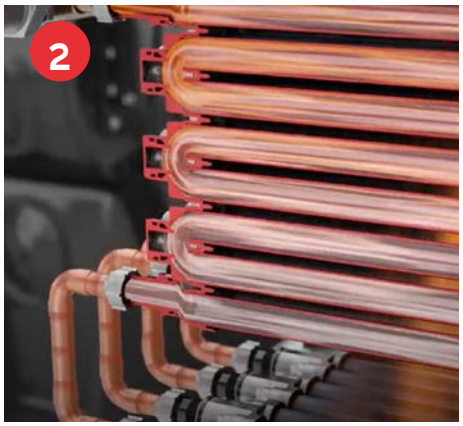
BOMAT exhaust gas heat exchangers cool hot exhaust gases to below the dew point. The thermal energy and condensation heat in the exhaust gas are recovered and transferred to the water heating circuit. Condensing technology with non-corrosive heat exchangers from BOMAT.

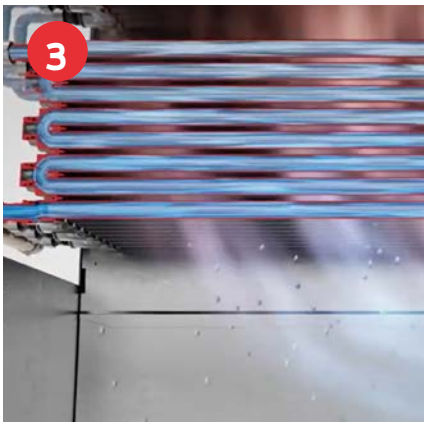
TECHNOLOGY 4.0

HERE'S HOW OUR HEAT EXCHANGERS WORK.

Heat is transferred indirectly from the hot exhaust gases

The hot exhaust gases flow through the heat exchanger and heat liquids in pipes with high thermal conductivity.



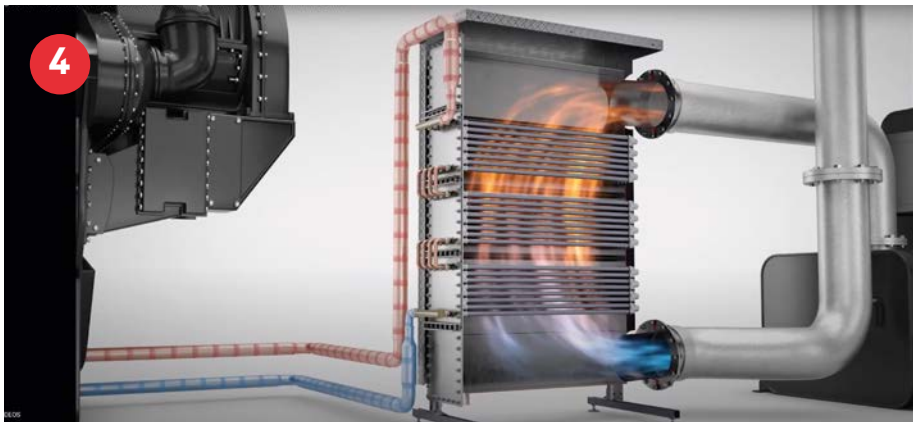


Heat is extracted from the exhaust gases

In the first stage of the process, most of the heat is extracted from the exhaust gas.

Residual heat is removed

Then the residual heat is removed from the exhaust gas through a process of condensation.

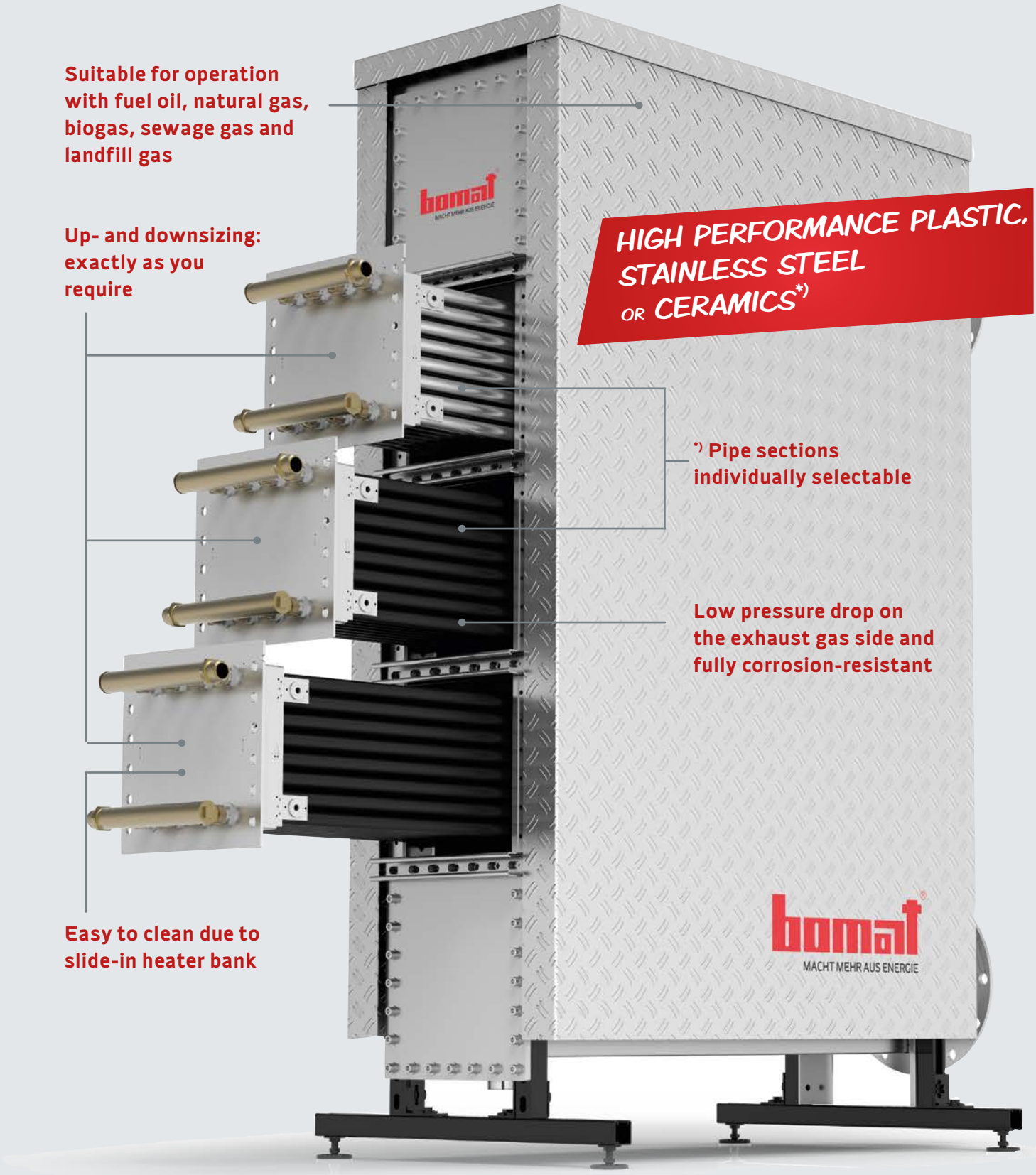


Calorific value effect: maximum energy yield

The thermal energy obtained can be utilised in many ways and leads to significantly reduced CO_2 emissions. For example, it can be used to heat process air or rooms, or be fed into a district heating grid.

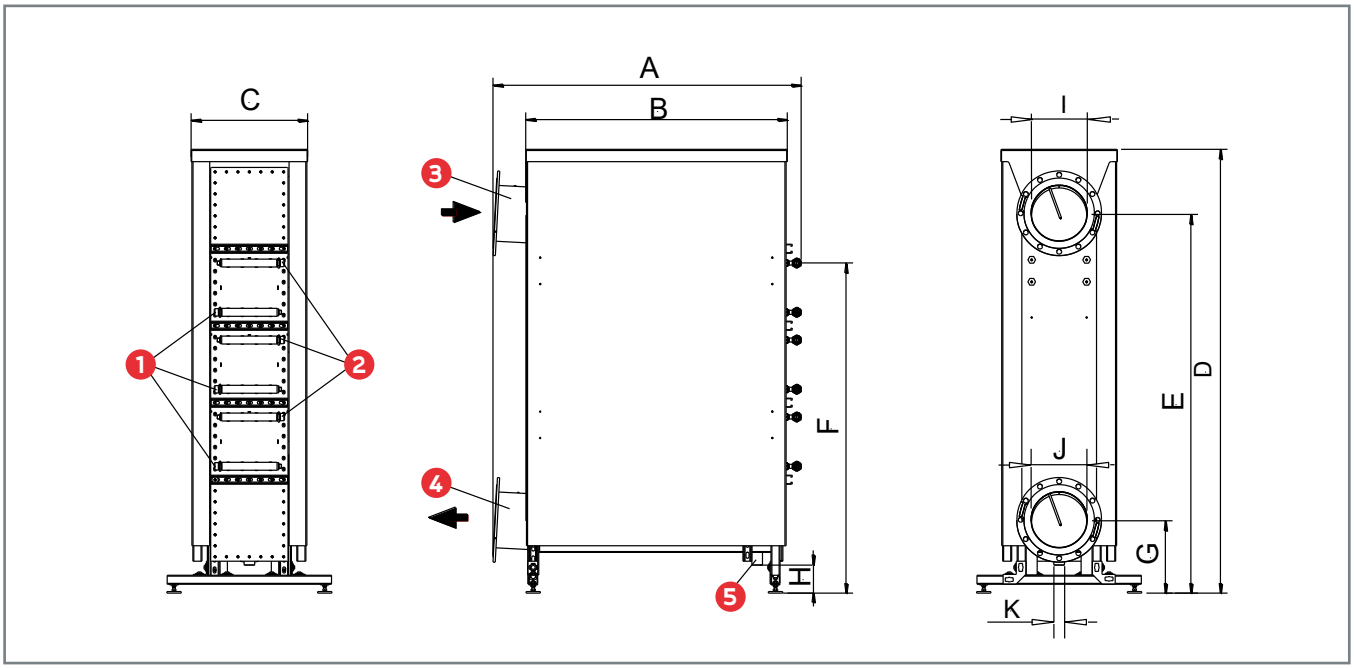
HIGHLIGHTS

EASILY ADJUSTABLE OUTPUT THANKS TO CASCADABLE INSTALLATION.



TECHNICAL DATA

FOOTPRINT AND CONNECTION DIMENSIONS.



Key

1 Water inlet, internal thread, R1 (DN 25)
2 Water outlet, internal thread, R1 (DN 25)
3 Exhaust gas inlet (DN 250) ***)
4 Exhaust gas outlet (DN 250) ***)
5 Condensate outlet

Temperatures and pressures

Max. permissible exhaust gas outlet temperature	120 °C
Max. permissible operating pressure	3/6 bar
Max. permissible exhaust gas inlet temperature	400 °C
Max. permissible water outlet temperature	95 °C
Max. permissible heating gas overpressure	5000 Pa

Profitherm Modular EGHE →		03-KK-1064-MT-4-9-6 (03M1064)
Water capacity	litres	53.6
Weight	kg	approx. 300 **)
Water connections		
Dimensions (mm)	**A**	1375
	B	1190
	C	542
	D *)	2018
	E *)	1715
	F *)	1490
	G *)	325
	H *)	115
	I+J	250
	K	DN 50

*) Infinitely adjustable by +/-10 mm via machine levelling foot
**) Depending on the design
***) In accordance with DIN 2642 type B
Maximum permissible exhaust gas sound pressure 70 dB(A). On-site measures required for higher sound pressure.
Subject to technical changes.

SHORT PAYBACK PERIODS

YOUR COST SAVINGS.

3 EXAMPLES OF CALCULATIONS:

PAYBACK PERIODS
AND CO_2 REDUCTIONS
FOR BIOGAS CHP UNITS

	Hagl CHP unit 250 kWel	MWM CHP unit 2019 V12, 536 kWel	Jenbacher CHP unit JMS 412, 901 kWel
Fuel	Biogas	Biogas	Biogas
No. of BOMAT exhaust gas heat exchangers (EGHE) (03M1064)	1	2	3
Exhaust gas inlet temperature into the BOMAT EGHE	170 °C	200 °C	180 °C
Exhaust gas outlet temperature from the BOMAT EGHE	68 °C	65 °C	74 °C
Water inlet temperature into the BOMAT EGHE	60 °C	55 °C	65 °C
Water outlet temperature from the BOMAT EGHE	64 °C	60 °C	70 °C
Heat recovery capacity	**40 kW**	**110 kW**	**170 kW**
Cost of BOMAT EGHE(s) and accessories	€20,420	€39,540	€60,180
Cost of installation, pipework and accessories (estimated)	€19,500	€37,000	€50,000
Total investment (estimated)	€39,920	€76,540	€110,180
Unit runtime	**4500 h**	**5000 h**	**2000 h**
Heat recovery per year	180,000 kWh	550,000 kWh	300,000 kWh
Heat price (estimated)	€0.08	€0.06	€0.10
Payback period, approx.	**2.8 years**	**2.3 years**	**3.7 years**
CO2 reduction per year, approx.	**36,180 kg**	**110,550 kg**	**60,300 kg**

STATE FUNDING

THERE ARE GENERALLY STATE SUBSIDIES AVAILABLE FOR YOUR INVESTMENT.

Information on funding

Generally speaking, **BOMAT exhaust gas heat exchangers are eligible for subsidies** and practically all of our customers take advantage of these. There are various funding programmes depending on the application and federal state, offering a one-off subsidy or inexpensive loan according to the programme and institution. A number of CO_2 reduction and energy saving programmes are currently available.

The **Federal Funding Programme for Energy and Resource Efficiency in the Economy** (*Bundesförderung für Energie- und Ressourceneffizienz in der Wirtschaft*) is particularly noteworthy. There is always something suitable, whether you are a small enterprise or company group.

Aim of funding

Funding is available for the use of climate protection technology in commercial applications, to name one example. The aim is to reduce greenhouse gas emissions.

Talk to our **energy consultants**, we'd be happy to help you with this.

ENERGY CONSULTING

HELP REDUCE CO_2 EMISSIONS AND ASK OUR ENERGY CONSULTANTS ABOUT THE RIGHT SOLUTION FOR YOU.

Professional advice and support

Our skilled and experienced energy consultants are there for you. Whether you need help applying for subsidies or professional support on construction matters, it is important to have somebody who knows what they are doing by your side. Involving a professional energy consultant can greatly simplify many projects, given the often complex guidelines that must be met in order to obtain subsidies. BOMAT energy consultants actively and expertly support you and your project.

REFERENCES. BIOGAS/SEWER GAS

BEHLING BIOENERGIE GMBH & CO. KG

Bomes Weg 3, 49637 Menslage

Heat generator:	MTU BIOGAS CHP unit, 190 kW
Exhaust gas heat exchanger:	03-KK-1064-MT-4-9-6
Exhaust gas temperature:	approx. 220 °C (into heat exchanger) approx. 60 °C (from heat exchanger)
Heat recovery per year:	approx. 320,000 kWh
CO_2 reduction per year:	approx. 64,000 kg

Payback period of **less than 3 years.**

BUHL BIOGAS PLANT

Kaltenhof 50, 72275 Dornhan

Heat generator:	CHP unit, 550 kWel
Exhaust gas heat exchanger:	03-KK-1064-MT-4-9-6
Exhaust gas temperature:	approx. 250 °C (into heat exchanger) approx. 66 °C (from heat exchanger)
Heat recovery per year:	approx. 800,000 kWh
CO_2 reduction per year:	approx. 160,000 kg

Payback period of **less than 3 years.**

MARKUS WEHRLE BIOGAS PLANT

Bercherhof 3, 79801 Hohentengen-Bergöschingen

Heat generator:	Jenbacher JMS 312 GS-BL, 549 kW
Exhaust gas heat exchanger:	2 x 03-KK-1064-MT-4-9-6
Exhaust gas temperature:	approx. 200 °C (into heat exchanger) approx. 60 °C (from heat exchanger)
Heat recovery per year:	approx. 840,000 kWh
CO_2 reduction per year:	approx. 168,000 kg

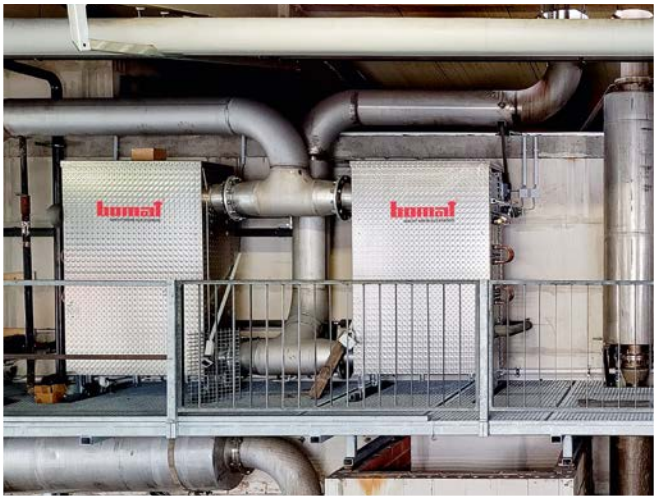
Payback period of **less than 3 years.**

GÖTZ BIOENERGIE GMBH & CO. KG

Ried 3, 85229 Markt Indersdorf

Heat generator:	Hagl biogas CHP unit, 400 kW
Exhaust gas heat exchanger:	2 x 03-KK-1064-MT-4-9-6
Exhaust gas temperature:	approx. 180 °C (into heat exchanger) approx. 75 °C (from heat exchanger)
Heat recovery per year:	approx. 300,000 kWh
CO_2 reduction per year:	approx. 60,000 kg

Payback period of **approx. 3 to 4 years.**



B. SCHÜLTKEN-WILSMANN BIOGAS PLANT

Westerwieher Str. 36, 33129 Delbrück

Heat generator:	MWM biogas CHP unit 2016 V12 – 536 kW
Exhaust gas heat exchanger:	2 x 03-KK-1064-MT-4-9-6
Exhaust gas temperature:	approx. 200 °C (into heat exchanger) approx. 70 °C (from heat exchanger)
Heat recovery per year:	approx. 500,000 kWh
CO_2 reduction per year:	approx. 100,000 kg

Payback period of **approx. 3 to 4 years.**

AGRO ENERGIE HOHENLOHE GMBH & CO. KG

Bachstrasse 48, 74635 Kupferzell

Heat generator:	Jenbacher JMS 312 GS-BL, 549 kW
Exhaust gas heat exchanger:	2 x 03-KK-1064-MT-4-9-6
Exhaust gas temperature:	approx. 200 °C (into heat exchanger) approx. 60 °C (from heat exchanger)
Heat recovery per year:	approx. 840,000 kWh
CO_2 reduction per year:	approx. 168,000 kg

Payback period of **less than 3 years.**

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MAKING MORE OF ENERGY

REAP THE DUAL BENEFITS OF THIS SETUP.

ARRANGE A NO-OBLIGATION CONSULTATION WITH US NOW.

MADE IN GERMANY

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