WE USE OUR ENERGY IN AN EFFICIENT WAY, AND WORK TOGETHER WITH YOU, SO YOU REDUCE YOUR ENERGY

CONSUMPTION.





# HOW DO WE SOLVE THE ENERGY-CHALLENGES OF OUR TIME?

**""**ONLY TOGETHER!



## THERMICON :

GREEN START UP

"TAILOR MADE" SOLUTIONS

**CONSULTING SERVICES AND HIGHLY EFFICIENT TECHNOLOGIES** 

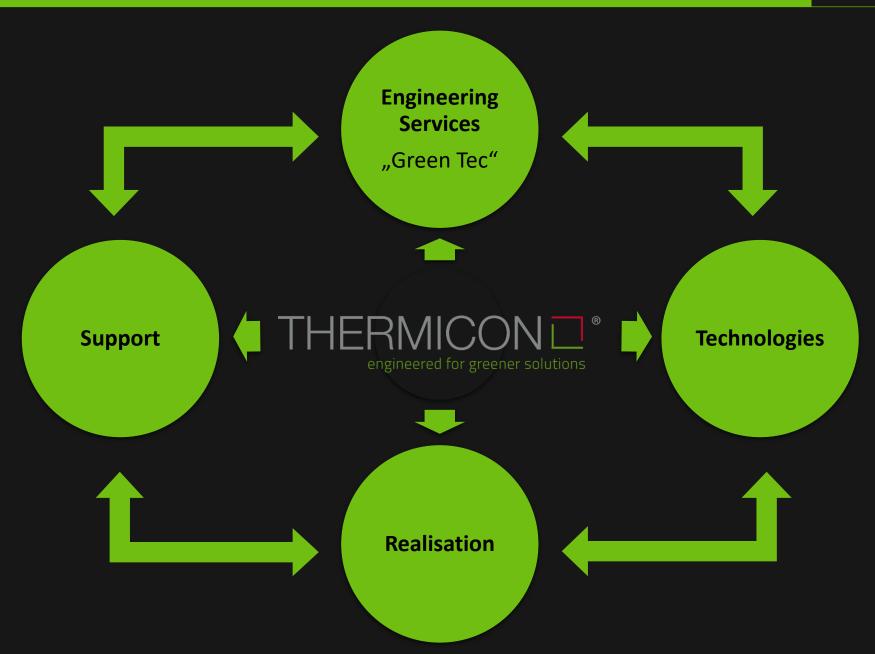
PATENTED AND AWARDED

CONCEPTION "MADE IN GERMANY" – FROM COLOGNE TO THE WORLD

MANAGEMENT OF PROJECT-RELATED INNOVATION NETWORKS

AMBASSADOR FOR SUSTAINABILITY

FOR YOUR GREENER SOLUTIONS...





**RESOURCES CONSERVATION** 

**COST SAVING** 

THINK TANK

Exhaust heat revovery

Air purification systems

Water treatment systems

Electricity from heat (i.d)

Ultra-light PV & MF Battery





















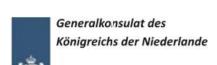




Der Bundespräsident









Easter's Easter's long Pours



















Bergische Gesellschaft für Ressourceneffizienz mbH

 Joint project modules supported by independent experts from science, research and politics.



HOW HIGH
YOUR EXHAUST TEMPERATURES ARE?

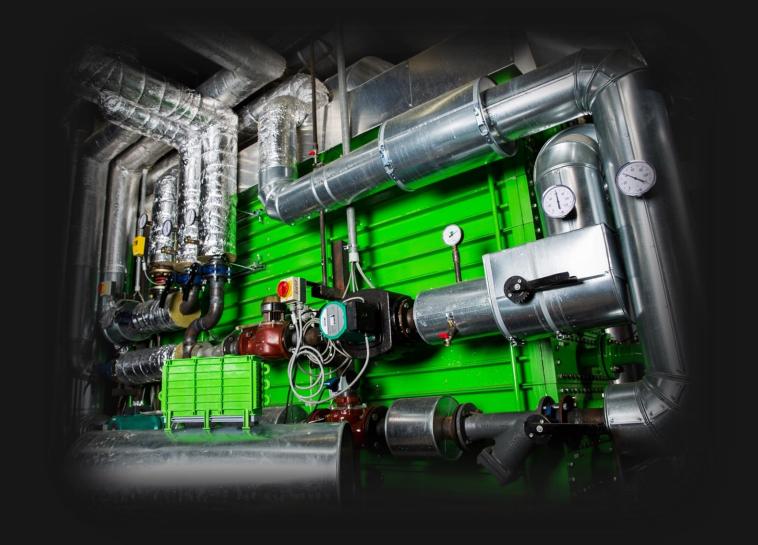
BUT WE KNOW

HOW CAN WE IDENTIFY AND EVALUATE THESE FOR YOU!



## POLY CALOGRAPH® DP PLUS

THE MOST EFFICIENT EXHAUST HEAT RECOVERY TECHNOLOGY.

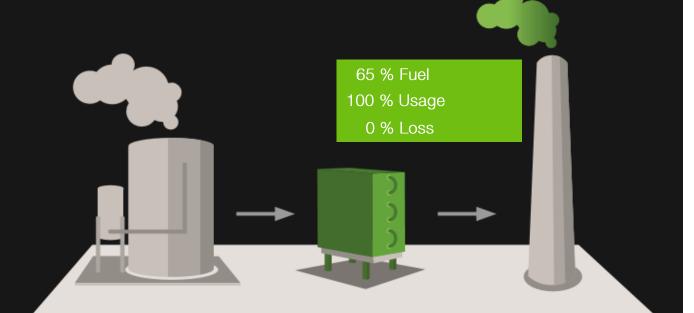


#### POLY CALOGRAPH DP PLUS®

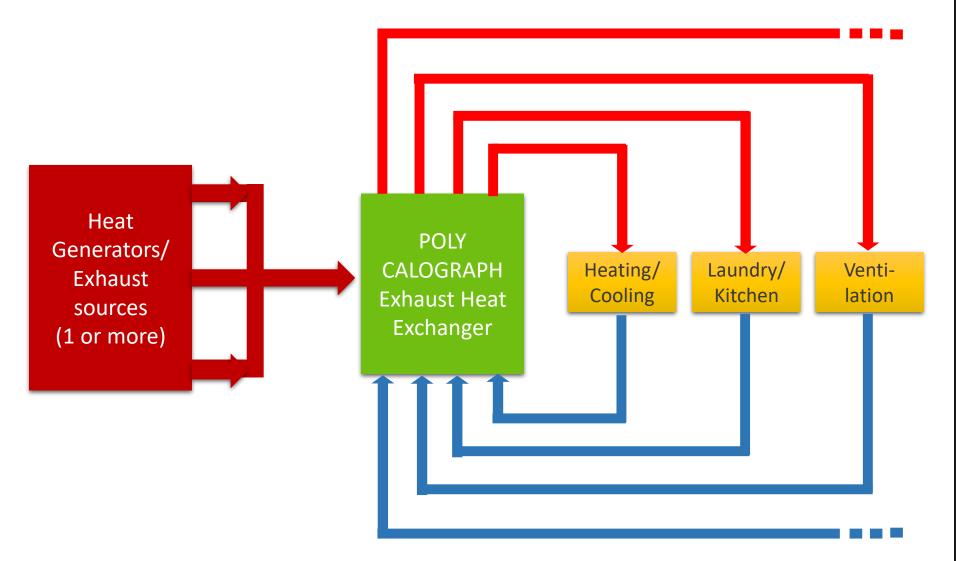


Without
POLY CALOGRAPH
DP PLUS®

Boiler Natural gas
KoGen Fuel oil
Oven Coal
Etc. Biomass
Solid fuel



With
POLY CALOGRAPH
DP PLUS®



WIDE FIELD OF APPLICATION – DUE TO MODULAR CONSTRUCTION

CONNECTION TO MULTIPLE BOILER AND SEVERAL CUSTOMERS



Exhaust 250°C Supply flow Heating 69°C ■ Return flow Heating 55°C 60°C Supply flow Water 45°C Return flow Water 30°C 35°C Supply flow Ventilation 25°C Return flow Ventilation 15°C Exhaust 20°C

WIDE FIELD OF APPLICATION – DUE TO MODULAR CONSTRUCTION

CONNECTION TO MULTIPLE BOILER AND SEVERAL CUSTOMERS

#### POLY CALOGRAPH DP PLUS®



#### Eingaben

Projekt	Greven Dampf 1	
Brennstoff	Erdgas L	
Kesselleistung	5000,000	
CO2 im Abgas	10,000	
Abgastemperatur	160,000	
Außentemperatur	20,000	
Feuchte	1,500	
Brennertart	Erdgas mit Gebläßebrenner	
Einheiten	Volumen	

#### Abgas bei realer Verbrennung

Abgas	feucht		trocken		
	[m <sup>3</sup> /m <sup>3</sup> ]	Vol%	[m <sup>3</sup> /m <sup>3</sup> ]	Vol%	
H <sub>2</sub> O	1,949	17,249	0,000	0,000	
CO <sub>2</sub>	0,935	8,275	0,935	10,000	
$N_2$	8,114	71,804	8,114	86,771	
O <sub>2</sub>	0,302	2,672	0,302	3,229	
Summe	11,301		9,351		
	Taupunkt [°C]				
	0	1,166			
_	11,301	•	<u> </u>	57,198	

#### Patented Software – Thermodynamic Exhaust analysis

#### Tauscherleistung

Tauscher	Temp	pro 6850,275 m³ Warmgas		Kondensat	Betrieb
	[°C]	Einzel	Summe	[kg]	[m³/h]
WT1	80,000	211,412	211,412	0,000	8857,682
WT2	50,000	306,185	517,597	318,649	<del>810</del> 4,904
WT3	20,000	441,355	958,952	842,097	7352,127
WT4	10,000	59,520	1018,472	894,024	7101,201

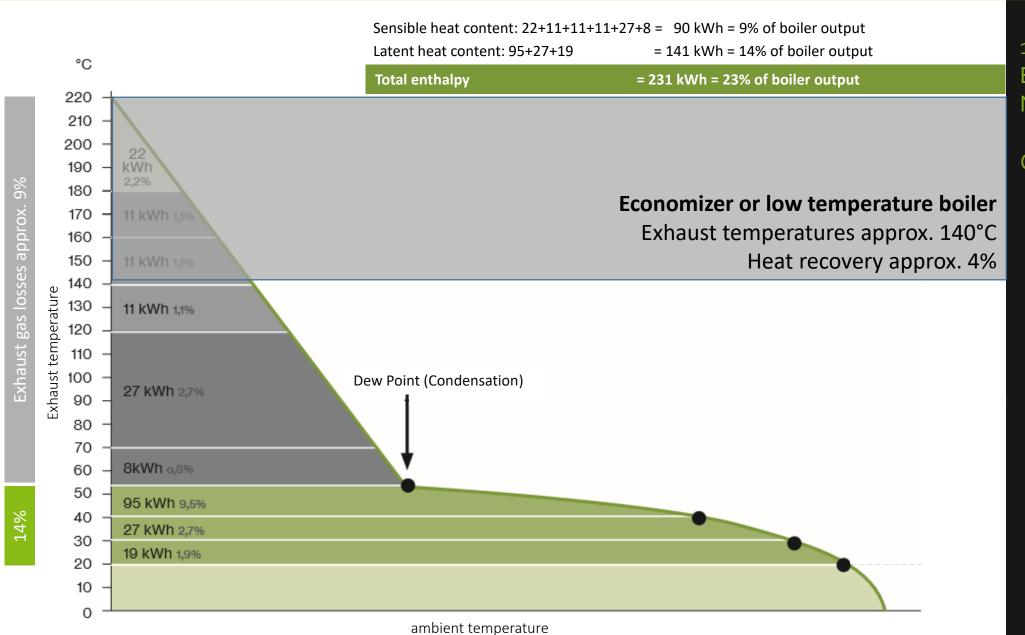
Resulting exhaust
 gas energy during
 cooling
 from approx. 160° C
 to approx. 20° C

#### **HEAT RECOVERY DIAGRAMM**



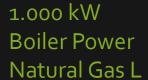


 $CO_2 = 10\% \cdot \eta f = 90\%$ 

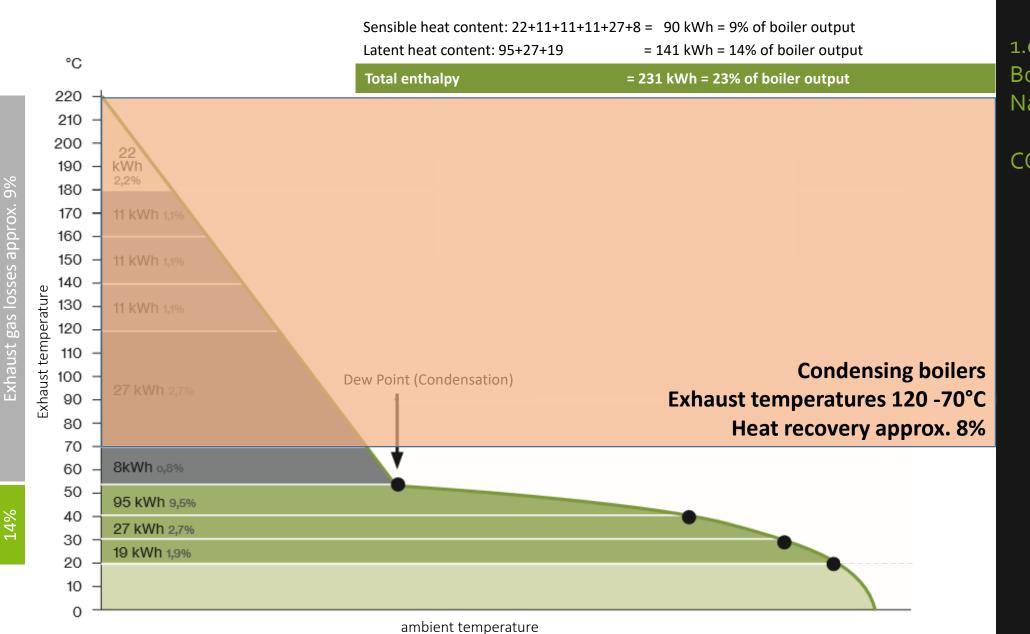


#### **HEAT RECOVERY DIAGRAMM**



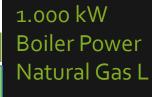


 $CO_2 = 10\% \cdot \eta f = 90\%$ 

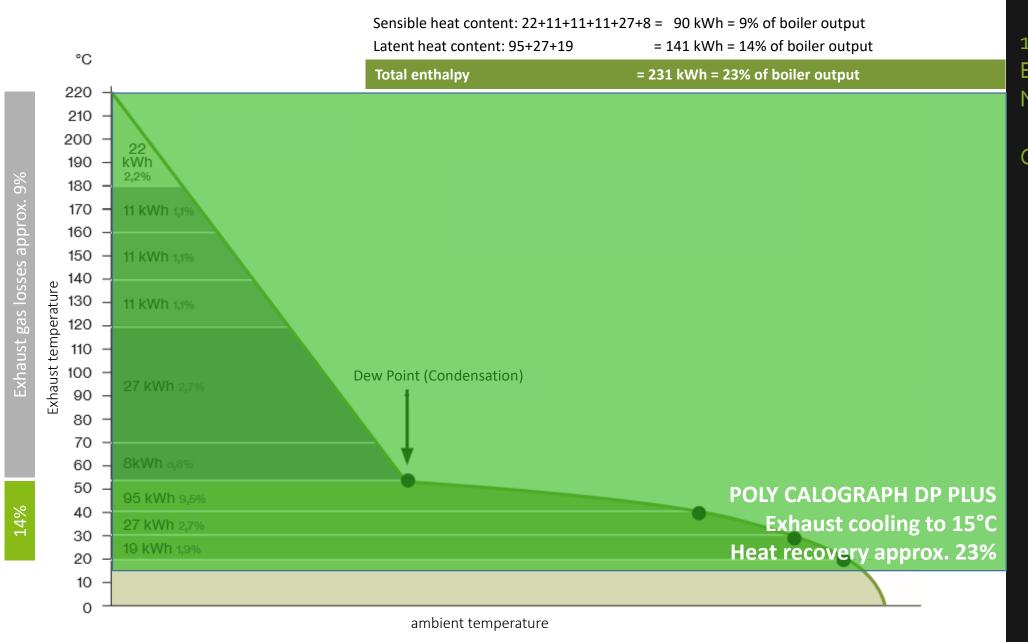


#### **HEAT RECOVERY DIAGRAMM**





 $CO_2 = 10\% \cdot \eta f = 90\%$ 





## MARIEN-HOSPITAL EUSKIRCHEN

430 Beds



#### Inventory data

#### Boiler

2 High pressure each 1.100 kW + 2 LPHW each 1.860 kW

#### **Burner**

Modulating burners

#### **Installed heat recovery**

Connection of all boilers to Heat Recovery System with 8 modules

#### **Exhaust gas cooling**

Down to 15°C

#### Economic success in 2015

Measured heat

1.133.000 kWh

Fuel saving

1.819.000 kWh

Fuel reduction

30%

Earnings

140.000,00€

CO<sub>2</sub>-Reduction

480 Tons



### MEDIZINISCHES ZENTRUM WÜRSELEN

400 Beds



#### Inventory data

#### **Boiler**

3 HDD-Boilers each 700 kW

#### **Burner**

Modulating burners

#### **Installed heat recovery**

Connection of all boilers to Heat Recovery System with 6 modules

#### **Exhaust gas cooling**

Down to 25°C

#### Economic success in 2015

Measured heat

1.321.000 kWh

Fuel saving

1.952.000 kWh

Fuel reduction

33%

Earnings

150.000,00€

CO<sub>2</sub>-Reduction

500 Tonnen

#### **GRANTS POSSIBILITIES: EXAMPLE GERMANY**



Internal avoidance and use of waste heat, i.e.:

- process optimization
- Conversion of production processes to energy-efficient technologies to prevent or use waste heat
- Insulation / insulation of systems, pipelines and fittings
- Return of waste heat to the production process
- Preheating of other media
- Electricity efficiency measures directly related to waste heat

Internal avoidance and use of waste heat, i.e.:

 Connection pipes for transferring heat, i.e. feed into existing heating networks KFW
Bank aus Verantwortung

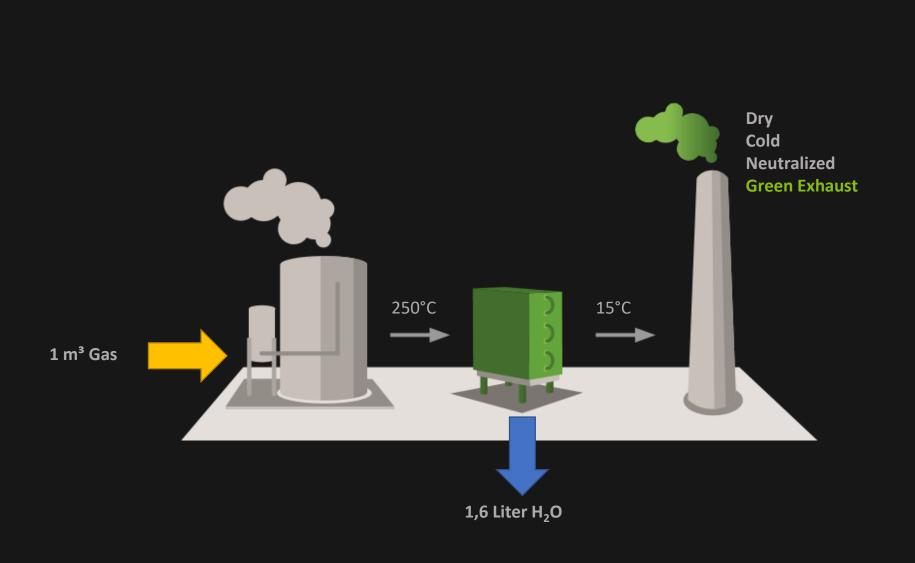
This program is funded by the Federal Ministry of Economics and Energy (BMWi), within the framework of the "Offensive Waste Heat" of the National Action Plan for Energy Efficiency (NAPE) – regardless the company size.

30-40 % Grant

40-50 % Grant

#### **CONCEPT: WATER FROM WASTE EXHAUST HEAT**





- Water yield of up to 1.6 liters per m<sup>3</sup> of natural gas consumption
- Neutralization of the condensate (soft water) by a neutralization unit
- Preparation of water to desired water quality
- Permanent water yield cost-effectively and without waste of water resources
- Decentralized water supply from any heat generator



"In addition to the economic success of the technique it is a significant contribution to reducing harmful emissions."

Technical Manager Hospital Mittelbaden

"Our decision has resulted in a very pleasing result: We have reduced our costs for heat supply significantly."

> Technical Manager Marien-Hospital Euskirchen

"Also at the basis of an unfavorable development of energy prices payback periods can be effected by substantially less than 5 years."

DEKRA Umwelttechnik GmbH, Environment Cerificate





## GreenTec Awards

nominee 2013

lominated for the GreenTec Award 2013 in the category **Galileo Wissenspreis** Iominiert für den GreenTec Award 2013 in der Kategorie **Galileo Wissenspreis** 

#### **THERMICON GmbH**

for the project für das Projek

Abgaswärme-Rückgewinnungsanlage

Berlin, 30. August 201

Chi stoph Körfer Sendersprecher, Stellvertreiender Ges

Galileo

hr stoph Körfer endersprecher, tellvertretender Geschäftsführer roSieben l. Q

Dipl.-Ing. Sven Krüger Geschäftsführer GreenTec Awards





AWARDED



#### **BEST OF 2016**

**ENERGIE & UMWELT** 

Die Huber Verlag für Neue Medien GmbH prämiert mit dem INDUSTRIEPREIS besonders fortschrittliche Industrieprodukte mit einem hohen wirtschaftlichen, gesellschaftlichen, technologischen und ökologischen Nutzen. Die Experten-Jury zeichnet mit dem Prädikat BEST OF 2016 aus:

Thermicon GmbH

PRODUKT

POLY CALOGRAPH DP PLUS

Das ausgezeichnete Unternehmen hat die Jury überzeugt und gehört damit zur Spitzengruppe der eingereichten Bewerbungen. Eine unabhängige Fachjury bestehend aus Industrie-Branchenexperten, Professoren und Fachjournalisten bilden den erlesenen Kreis der Preisrichter. Sie sorgen für maximale Objektivität und machen den Preis in der Industriebranche so einzigartig.

Karlsruhe, im April 2016

Geschäftsleitung

Geschäftsleitung

www.industriepreis.de



# WE ARE NOT ONLY EXPERTS. WE ARE YOUR PARTNER AS WELL.



PARTNERS IN THE DEVELOPMENT
PARTNER FOR IMPLEMENTATION AND SUPPORT
PARTNERS IN FINANCING AND GRANTS
PARTNER WITH SERVICE
PARTNER WITH COMPETENCE
PARTNER ON REQUEST



## ENGINEERING FOR YOUR GREENER SOLUTIONS...



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www.thermicon.de info@thermicon.de 02 21 / 27 64 64 64 Alpenrosenweg 12-14 | 50769 Köln