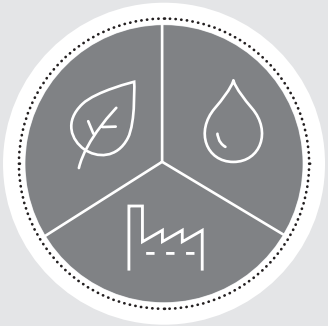
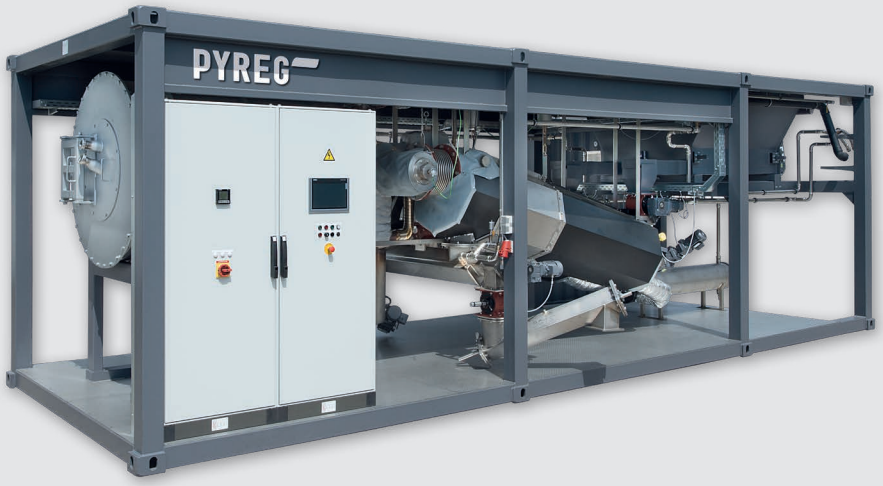
PYREG

CARBON TECHNOLOGY
SOLUTIONS

PYREG SOLUTIONS
CARBONIZATION

RESIDUALS

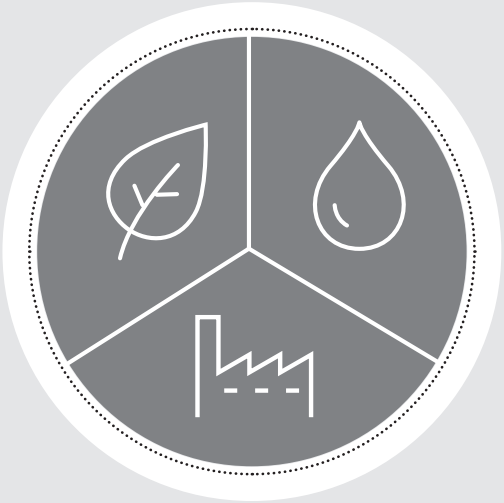




BIOCHAR

PYREG SOLUTIONS
MULTI-MATERIAL CAPABILITY

CARBONACEOUS RESIDUES



BIOMASS

WASTE WOOD
GREEN CUT
SHEET WASTES
WOOD CHIPS
FOODREST
FRUIT SHELLS

MIXED

RUBBER
VARIOUS PLASTICS
COMPOSITE
PACKAGING

AGRICULTURAL FERTILIZER

SEWAGE SLUDGE
FERMENTATION
SLURRY
MANURE

INDUSTRY

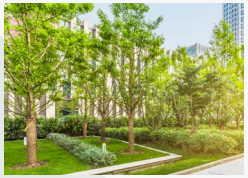
INDUSTRIAL SLUDGES
ORGANICALLY POLLUTED RESIDUES
PRODUCTION WASTE

PYREG SOLUTIONS
WORLDWIDE

MARKET LEADER

SUSTAINABLE PLANTING OF URBAN TREES

SWEDEN



RECYCLE RESIDUAL MATERIALS AND IMPROVE CO_2 BALANCE

GERMANY

PRODUCTION OF SOIL

AUSTRIA

SEWAGE SLUDGE RECYCLING

SILICON VALLEY

GREEN ENERGY PRODUCTION, LOCAL HEATING NETWORK

SWITZERLAND

CLEANING OF MARINE LITTER

INDIA

DISPOSAL OF INDUSTRIAL SLUDGE

CHINA

PYREG SOLUTIONS
WORLDWIDE

IN DETAIL

SEWAGE SLUDGE RECYCLING

SILICON VALLEY

During the carbonization process, the contained nutrients of the dried sewage sludge are conserved. The sewage sludge is sanitized on site and is completely recycled into a marketable (approved Europe-wide) phosphate fertilizer.

SUSTAINABLE PLANTING OF URBAN TREES

SWEDEN

Biochar obtained by carbonization, becomes an important component of planting substrate, in which water and nutrients are stored, specially adapted to the needs of urban trees. As a consequence, the life expectancy of the trees is extended and the risk to lose new plantings is reduced.

GREEN ENERGY PRODUCTION, LOCAL HEATING NETWORK

SWITZERLAND

The PYREG system works autothermally. Beyond that the system generates an energy surplus of up to 750 kW_{th}, which is used either directly for neighboring processes (drying, local heating network), or can be converted into electricity.

RECYCLE RESIDUAL MATERIALS AND IMPROVE CO_2 BALANCE

GERMANY

The PYREG system enables upcycling of different residuals into clean biochar. Through closed-loop material cycles, the sustainable and climate-friendly carbonization-technology contributes to the reduction of CO_2 emissions:

→ Improved CO_2 footprint

→ Carbon Sink Technology

CLEANING OF MARINE LITTER

INDIA

Mixed green and municipal waste from rivers and canals can be carbonized on site and thus be sustainably disposed of before they reach the oceans.

PRODUCTION OF SOIL

AUSTRIA

The biomass-obtained biochar, together with compost, is processed to a high-quality plant soil, which improves the growth of plants in a sustainable and 100 % natural way.

DISPOSAL OF INDUSTRIAL SLUDGE

CHINA

Industrial waste materials can be carbonized without prior sorting. The resulting homogeneous biochar can, e.g. be used as a filler in further integrated processes.

PYREG

CUSTOMERS & PARTNERS

REFERENCES
SOIL PRODUCTION

In 2011, we opted for PYREG technology because only it could meet the strict limits of the Waste Incineration Ordinance. As we now know, this was absolutely the right decision. This summer we will expand our plant park with a PYREG plant (P1500).

GERALD DUNST
MANAGING DIRECTOR

SONNENERDE

Sonnererde has built the first biochar production plant in Europe in 2012! The plant operates 24 hours a day and produces about 1,000 kg of high-quality biochar per day. This biochar pioneer feeds the energy, released during the carbonization process, into its heat network - for heating and drying the feed material.

www.sonnenerde.at

Gentle carbonization of the residual materials is the basis of our valuable potting soil. We have chosen PYREG because their many years of scientific support and practical experience give us great security regarding our sustainable product quality.

AARON SASSMANNSHAUSEN
MANAGING DIRECTOR

bionero®

In close cooperation with the University of Halle-Wittenberg, Bionero GmbH has developed a Terra Preta made of unused biological materials. This plant soil, produced from vegetable charcoal and compost, improves the growth of plants in a sustainable and 100 % natural way.

www.bionero.de

REFERENCES
BIOCHAR PRODUCTION & CO_2 SEQUESTRATION

As the leading marketer of EBC certified biochar, we invest heavily in applied research and in the certifiability of carbon sinks. In order to be able to guarantee our quality promise on a long-term basis, we have been successfully cooperating with PYREG from the very beginning. We currently have three PYREG plants in operation and will soon expand our capacities.

NOVO CARBO
passionate about biochar

CASPAR VON ZIEGNER
MANAGING DIRECTOR

NovoCarbo is a leading international producer and marketer of biochar, with focus on industrial and agricultural sectors. Biochar is an important element for its customers to achieve their CO_2 targets. Taking this into account, NovoCarbo is pursuing a CO_2 certificate for its biochar, in 2020.

www.novocarbo.com

Our customers actively contribute to climate protection, as carbon remains contained in the soil for hundreds of years (carbon sink). Over the course of time we have put three PYREG plants into operation – what better proof can there be that we stand by our ecologically and economically sensible decision?

moola
EIN DU: GUT

CHRISTOPH ZIMMERMANN
MANAGING DIRECTOR

Moola is the name of the biochar, produced by Fetzer Rohstoffe & Recycling GmbH, which is made from regional biomass (wood chips, grain husks). During production, up to 150 KW of heat are generated per plant. Fetzer uses this heat to heat the water system of a PET recycling plant. The remaining energy is used to heat the administration rooms.

www.du-gut-pflanzenkohle.de

REFERENCE
SEWAGE SLUDGE RECYCLING

The treatment of biosolids from sewage sludge to biochar with high nutritional value is not only cost efficient, but also a sustainable solution to locally transform organic streams into renewable energy and biochar. Once used as a phosphate fertilizer in the ground, it helps to improve the environmental footpoint by sequestering CO_2 for centuries. By reducing the waste volume by 90 %, the PYREG technology offers a great cost saving.

BIOFORCETECH
Corporation

DARIO PRESEZZI
MANAGING DIRECTOR

The vision of Bioforcetech is simple: instead of trucking "waste" away, we offer the technology that can autonomously transform organics into value. In the US alone, over 100 M tons of organic waste per year are sent to landfill, incinerated or land applied, creating environmental and health problems.

www.bioforcetech.com

REFERENCES
DISPOSAL OF INDUSTRIAL SLUDGE, RESIDUALS

Our goal is to provide our customers with a complete, efficient and cost-effective solution which continually creates an add value. By integrating PYREG technology at the respective sites and making additional use of the bioenergy generated, we have achieved this in a sustainable manner.

henotec

PENG JIANG
MANAGING DIRECTOR

Henotec GmbH, founded in 2012 in Munich, helps European environmental technology companies enter the Chinese market. Henotec Qingdao specializes in solutions for the recycling of bio-waste, henotec Shanghai in solutions for the recycling of hazardous waste.

www.henotech.com

Critical, difficult to dispose of and cost-intensive industrial waste is not only a problem in the Asian region. PYREG plants enable our customers to recycle them in a sustainable way - directly at their site. In addition to enormous cost savings, the use of this technology also improves the waste balance, which makes it possible to expand the site.

MEIHO

WEIRONG CHEN
MANAGING DIRECTOR

Meiho is an environmental service provider for automation and environmental technology in the field of industrial production- and painting-lines. The primary task is to offer solutions for a sustainable emission control and waste treatment.

www.shmeiho.com

REFERENCE
ACADEMICS

"This exciting and highly topical subject focuses, among other things, on the fact that the biochar introduced into the soil not only serves as a long-term CO_2 sink, but also makes the soil more fertile and less susceptible to the negative consequences of intensive use and climate change," says Bruno Glaser. "I have been working successfully with PYREG for more than 10 years, as their technology enables the use of this natural problem solver."

PROF. DR. HABIL. RER. NAT. BRUNO GLASER
SOIL BIOGEOCHEMISTS AND UNIVERSITY LECTURER AT THE UNIVERSITY OF HALLE (SAALE)

MARTIN-LUTHER UNIVERSITÄT HALLE-WITTENBERG

Our cooperation partner Professor Dr. Bruno Glaser, a German soil biogeochemist and lecturer at the University of Halle (Saale), with a research focus on Terra Preta and biochar, is considered a luminary in the field of biochar.

www.landw.uni-halle.de/prof/bodenbiogeochemie

PYREG

SELECTED REFERENCES

REFERENCES BIOMASS
P1500, P500

		SITE	SYSTEM	COMMISSIONING	IN
1	Sonnenerde Gerald Dunst Kulturerden GmbH	Riedlingsdorf **AUT**	**P500**	2011	Green waste Grain husks
2	Verora GmbH	Edlibach **SUI**	**P500**	2012	Woodchips Green waste
3	Fetzer Rohstoffe und Recycling GmbH	Eislingen **GER**	**P500** **P500** **P500**	2013 2018 2018	Woodchips Forestry and agricultural residues
4	NovoCarbo GmbH	Dörth **GER**	**P500** **P500**	2014/18 2018	Woodchips Screenings
5	Finzelberg GmbH & Co.KG	Andernach **GER**	**P500**	2015	Production residues
6	Abfallwirtschaft und Stadtreinigung Freiburg (ASF) GmbH	Freiburg **GER**	**P500**	2016	Woodchips Various biomass
7	Abfallwirtschaftsgesellschaft des Neckar-Odenwald-Kreises (AWN) mbH	Buchen **GER**	**P500**	2016	Woodchips Various biomass
8	AH Meyer (Roess Nature Group)	Tianjin **CHN**	**P500**	2016	Straw Coconut fiber
9	Greenpoch s.a.	Wagnelée **BEL**	**P500**	2016	Woodchips Green waste
10	Stockholm Vatten	Stockholm **SWE**	**P500**	2016	Woodchips Green waste
11	Skanefro AB	Hammenhög **SWE**	**P1500**	2018	Agricultural residues (Pallets) Various biomass

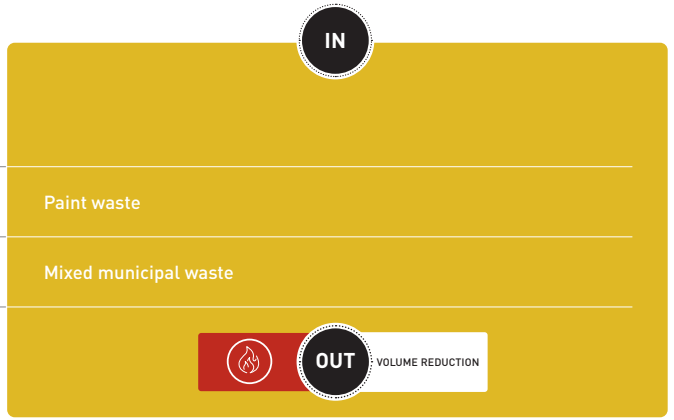
12	Bionereo GmbH	Thurnau **GER**	**P500**	2018	Woodchips Green waste Various biomass
13	AS Rohstoffe GmbH	Lohsa **GER**	**P500**	2020	Woodchips Forestry and agricultural residues
14	Jordpro AS	Trondheim **NOR**	**P500**	2020	Woodchips Green waste
15	Industrielle Werke Basel (iwb)	Basel **SUI**	**P1500**	2021	Woodchips Green waste

REFERENCES SEWAGE SLUDGE
P500

		SITE	SYSTEM	COMMISSIONING	
16	Zweckverband Abwasserbeseitigung Linz-Unkel	Unkel **GER**	**P500**	2015	Dried sewage sludge
17	Entsorgungsverband Saar (EVS)	Homburg **GER**	**P500**	2016	Dried sewage sludge
18	Bioforcetech Corporation	Redwood, Cal. **USA**	**P500**	2017	Dried sewage sludge
19	Skanefro AB	Hammenhög **SWE**	**P500**	2019	Dried sewage sludge
20	Trutnov	Trutnov **CZE**	**P500**	2020	Dried sewage sludge
21	Lorsbach	Lorsbach **GER**	**P750**	2020	Dried sewage sludge

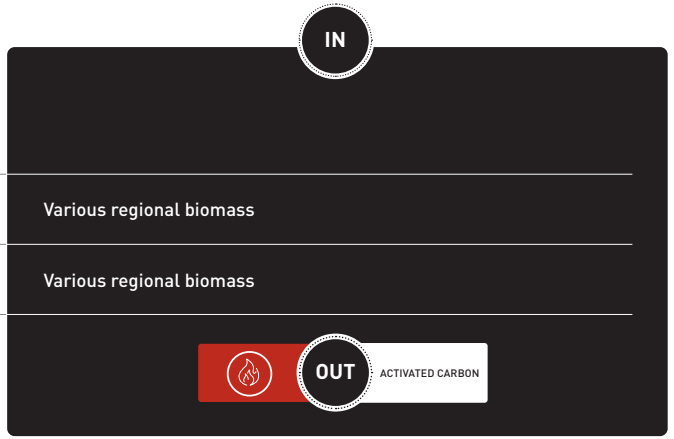
REFERENCES INDUSTRIAL RESIDUALS / DISPOSAL
P1500, P500

		SITE	SYSTEM	COMMISSIONING
22	Shanghai Meiho International Logistics Co., Ltd.	Shanghai **CHN**	**P500**	2020
23	DESMI	Hyderabad **IND**	**P500**	2020



REFERENCES RESEARCH SYSTEMS BIOMASS
A500

		SITE	SYSTEM	COMMISSIONING
24	Eigenbetrieb Umwelttechnik Baden-Baden	Baden-Baden **GER**	**A500**	2019
25	NovoCarbo GmbH	Dörth **GER**	**A500**	2019



REFERENCES PYREKA
LABORATORY SCALE UNIT OF PYREG SYSTEM

		SITE	SYSTEM	COMISSIONING
26	Agroscope, Bundesamt für Landwirtschaft (BLW)	Zürich **SUI**	**PYREKA**	2014
27	Austrian Institute of Technology (AIT)	Tulln **AUT**	**PYREKA**	2016
28	Zürcher Hochschule für Angewandte Wissenschaften (ZHAW)	Zürich **SUI**	**PYREKA**	2017
29	FH Burgenland	Pinkafeld **AUT**	**PYREKA**	2020
30	Universität Kassel	Kassel **GER**	**PYREKA**	2020

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