



EXPERIENCE IS IN THE AIR

CTP: SPECIALISTS IN
AIR POLLUTION CONTROL

IT'S ALL ABOUT THE AIR



IT'S ALL ABOUT THE AIR.

OUR TECHNOLOGIES STAND FOR CLEAN AND EFFICIENT PROCESSES WORLDWIDE. FOR THE CLEAN AIR THAT WE BREATHE, NOW AND FOR FUTURE GENERATIONS.

CLEAN AIR

When it comes to pollution, what is perfect for employees, neighbours and for you as well? It's clear: nothing. That is because production waste gas is only perfect when it contains no impurities at all. CTP systems achieve close to zero emissions, and do so with matchless efficiency. The reason is the catalytic and regenerative thermal processes of air purification that are mainly used by CTP.

INDIVIDUALITY PAYS

Your production is like no other. For that reason, each CTP system is different. Production and location conditions, waste gas volumes or contaminant concentrations form the starting basis for your customized system solution.

40 YEARS OF EXPERIENCE

CTP has set a standard from which you profit: technology leadership. We create solutions that are too daunting for others. Proof of this is provided by more than 800 systems installed worldwide.

With CTP you have a general contractor as a partner – one contact for all steps from the emission source to the stack. We make your production waste gas clean again, because nothing is more useful.



**Together with our
customers, we help
ensure a clean future**

-ctp-airpollutioncontrol



EXPERIENCE & EXPERTISE

THROUGHOUT THE PROCESS

CTP SYSTEMS CAN BE FOUND IN 40 COUNTRIES AROUND THE WORLD, ON ALL CONTINENTS. TOGETHER WITH OUR CUSTOMERS, WE HELP ENSURE A CLEAN FUTURE.

SHAPE THE FUTURE

Heimo Thalhammer and Johannes Schedler are pioneers of air purification in Austria. They founded CTP in 1985 with a vision of helping to shape a liveable future.

In the early 80s, they developed a catalytic oxidation process in formaldehyde synthesis together, which laid the foundation for further research work in air purification technology. The company has developed in four decades into one of the leading partners of industrial air purification worldwide.

POWERFUL MISSION

To us, a partnership with CTP means understanding you. We want to get to know your entire process in detail because that is the only way we can develop the efficient and economical solution that we want for you. As a partner with you at every step, we provide the innovative concept right up to turnkey system solutions in any order of magnitude.

NEW MANAGEMENT & OWNERSHIP

In 2018 our longterm partner NCA Container- und Anlagenbau GmbH with Mr. Christian Schrammel as new CEO took over CTP. This integration provides further synergies and opportunities in steel and plant construction. At his side are Economist Robert Kobierski as CFO and Gerd Rabenstein as COO. The company has around 65 employees at its head office in Graz, and there are around 400 worldwide. The global operations of CTP will continue to be developed in the coming years.



Christian Schrammel



Robert Kobierski



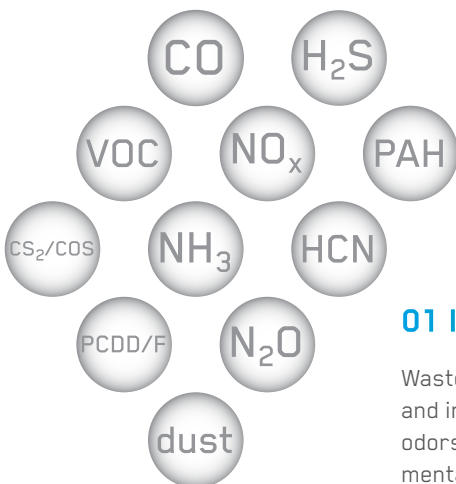
Gerd Rabenstein

AHEAD OF ITS TIME: INNOVATIVE CONCEPTS

IN ORDER THAT YOU CAN CONCENTRATE ON YOUR CORE COMPETENCE, WE MAKE SURE THAT YOUR PRODUCTION ONLY LEAVES CLEAN AIR BEHIND – AND NOTHING ELSE.

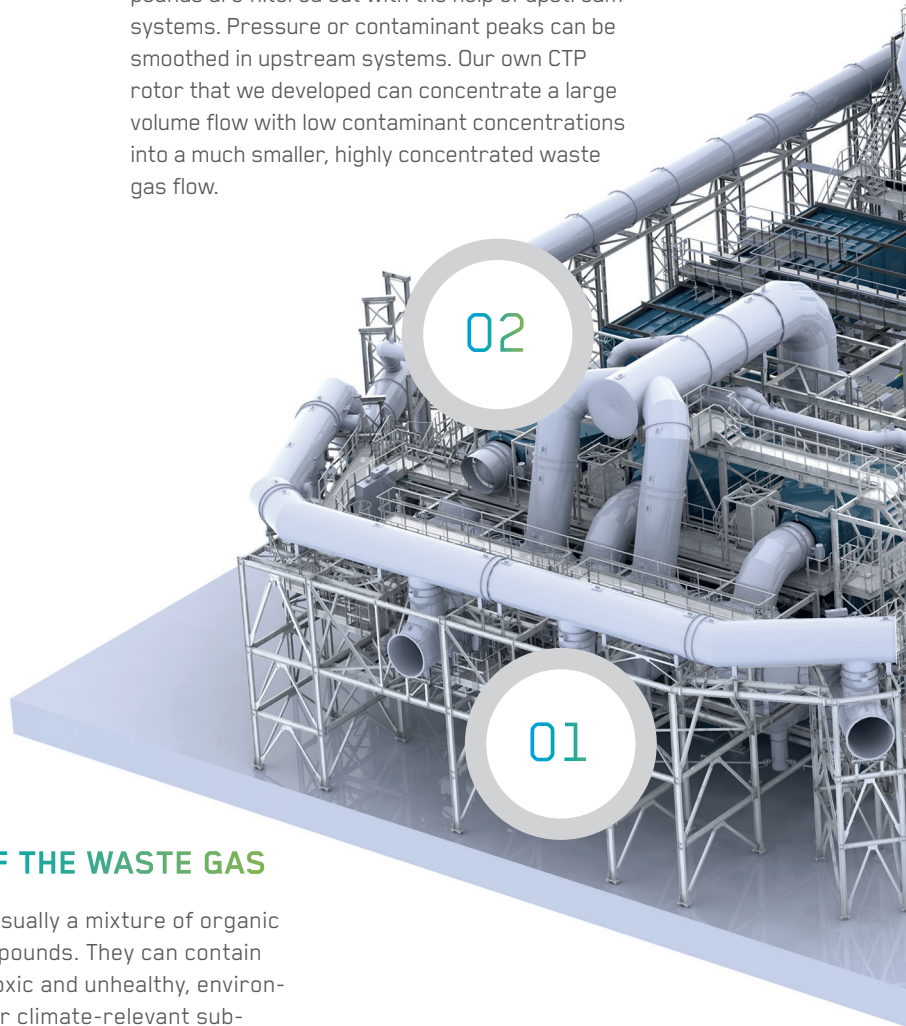
PILOT SYSTEMS

Nothing speaks more clearly than experience. We have several pilot systems that can be made available worldwide and can be adapted for your specific objective. These systems can be set up at the customer's site in just a small amount of space. The air purification solution can be tested in the customer's process for several weeks. That, along with visits to comparable reference systems, increases the certainty of the correct decision.



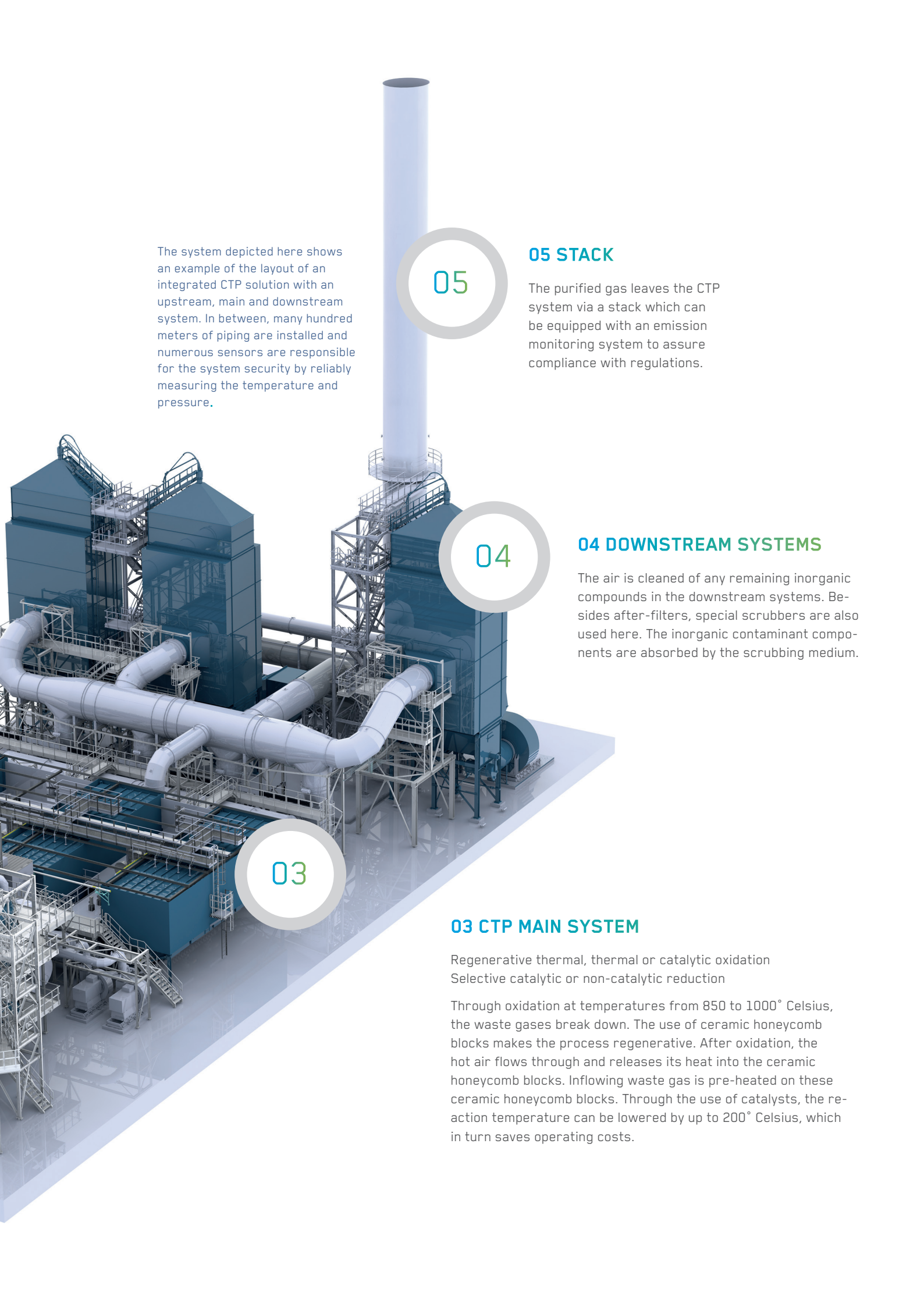
02 UPSTREAM SYSTEMS

Waste gases are usually oxidized in the CTP main system. However, only organic compounds can be oxidized. For that reason, inorganic compounds are filtered out with the help of upstream systems. Pressure or contaminant peaks can be smoothed in upstream systems. Our own CTP rotor that we developed can concentrate a large volume flow with low contaminant concentrations into a much smaller, highly concentrated waste gas flow.



01 INTAKE OF THE WASTE GAS

Waste gases are usually a mixture of organic and inorganic compounds. They can contain odors, fine dust, toxic and unhealthy, environmentally harmful or climate-relevant substances.



The system depicted here shows an example of the layout of an integrated CTP solution with an upstream, main and downstream system. In between, many hundred meters of piping are installed and numerous sensors are responsible for the system security by reliably measuring the temperature and pressure.

05

05 STACK

The purified gas leaves the CTP system via a stack which can be equipped with an emission monitoring system to assure compliance with regulations.

04

04 DOWNSTREAM SYSTEMS

The air is cleaned of any remaining inorganic compounds in the downstream systems. Besides after-filters, special scrubbers are also used here. The inorganic contaminant components are absorbed by the scrubbing medium.

03

03 CTP MAIN SYSTEM

Regenerative thermal, thermal or catalytic oxidation
Selective catalytic or non-catalytic reduction

Through oxidation at temperatures from 850 to 1000° Celsius, the waste gases break down. The use of ceramic honeycomb blocks makes the process regenerative. After oxidation, the hot air flows through and releases its heat into the ceramic honeycomb blocks. Inflowing waste gas is pre-heated on these ceramic honeycomb blocks. Through the use of catalysts, the reaction temperature can be lowered by up to 200° Celsius, which in turn saves operating costs.

OUR MOTIVATION

IS FINDING
THE BEST
SOLUTION FOR YOU

AIR POLLUTION CONTROL.

WHAT HAVE WE THOUGHT UP FOR YOU? SYSTEMS WITH OUTSTANDING PURIFICATION PERFORMANCE, LONG SERVICE LIVES AND EXCELLENT EFFICIENCY.

TOTAL CARE

As a customer of CTP, you can draw on a wide range of trendsetting technologies that we integrate into turnkey complete systems. We take care of the process from the emission source to the stack. A specific concept is created starting with an analysis of the actual situation. Afterwards, detailed engineering is carried out, the system is installed and put into operation. Depending on the system, we offer you two to three years guarantee and the option of continued support by our international service organization.

SPECIFIC SOLUTIONS TO SPECIAL APPLICATION CASES

INTENSIVE ODOR

Ammonia compounds are often behind foul-smelling waste gases. CTP has a patented solution for the removal of ammonia in a closed process cycle that works without adding a reducing agent.

PARTICLES, HALOGENS AND AEROSOLS

For particulates and aerosols of all kinds, CTP offers innovative pre and post filters that allow RTOs to be used on the most difficult applications.

OXYGEN-FREE WASTE GAS

A special burner from CTP makes it possible to dispose of oxygen-free waste gases directly in the oxidation chamber. The energy released that way helps to lower the operating costs of the system.

LARGE WASTE GAS VOLUMES

Excess heat from combustion of the concentrated waste stream is recovered and recycled back into the process. This can allow autothermal operation of the oxidizer which uses less energy and can lower emissions, including CO₂.

COMPOUNDS CONTAINING SILICON

When components that contain silicon are broken down, the result is silicon dioxide (SiO₂), which is accumulated in the combustion chamber area. The channels of the CTP honeycomb blocks can be simply cleaned with water.

WET, CORROSIVE WASTE GASES

Metal coatings, insulation, gas recycle and preheat systems are useful to help assure long, corrosion-free operation.

WASTE GASES CONTAINING CHC

Environmentally harmful chlorinated hydrocarbons (CHC) are destroyed without any residue in the regenerative thermal oxidation system from CTP. By-products such as dioxins or furans are prevented.

SHORT, HIGH CONTAMINANT PEAKS

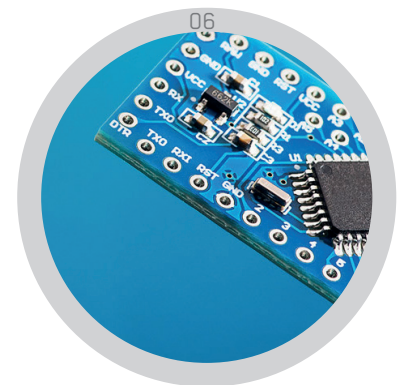
In certain production processes, highly contaminated waste gas may occur temporarily. The concentrations may be explosive. The waste gas is collected in the CTP buffer tank and released evenly over time into the combustion chamber. Not only is the highly concentrated waste gas disposed of, but becomes additional fuel.

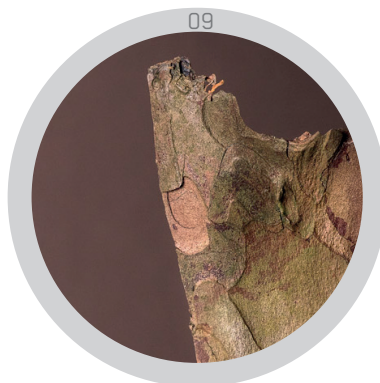
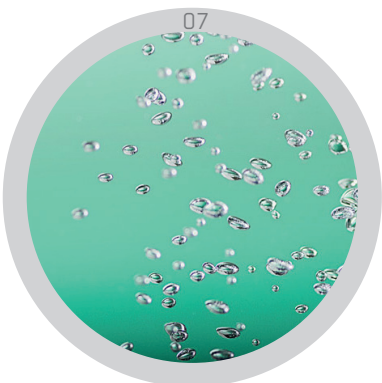
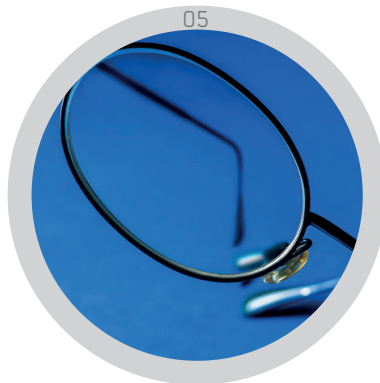
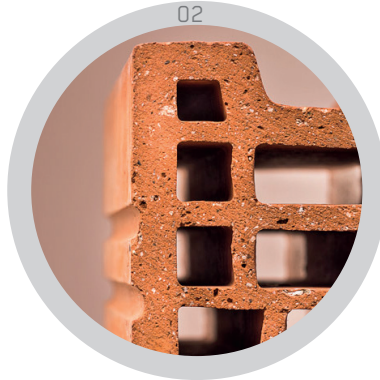
SUCCESSFUL ACROSS INDUSTRIES

WE BUILD UPON THE FOUNDATIONS
OF CONTINUITY AND INTEGRITY AND
TAKE FULL RESPONSIBILITY FOR
OUR ACTIONS.

TOP PERFORMANCE

Not all waste gases are the same. Even in the same industry sector, the requirements can be different. With the experience from more than 800 projects and the will to be the leader in knowledge and technology, the research and development teams of CTP are always working on new, revolutionary solutions. That has yielded nearly 30 patents.





SOME INDUSTRIES THAT HAVE CONFIDENCE IN US

- | | |
|--|-----------------------------------|
| 01 Automotive and vehicle engineering | 08 Food industry |
| 02 Building materials, cement and lime | 09 Forest products |
| 03 Chemical and petrochemical industry | 10 Metals and mining |
| 04 Coating and printing | 11 Oil and gas |
| 05 Consumer goods industry | 12 Pharmaceutical industry |
| 06 Electronics and electrical industry | 13 Recycling and waste management |
| 07 Energy and resources | |

IT'S ALL ABOUT THE AIR



QUALITY THAT CAN BE SEEN

IT MOTIVATES US TO FIND THE BEST SOLUTION FOR YOU. SOLUTIONS WITH THE ECONOMICAL PLUS: UNWANTED CONTAMINANTS IN THE WASTE GAS ARE CONVERTED INTO USABLE ENERGY.

SYSTEMS

THERMAL SYSTEMS

- + Regenerative Thermal Oxidation [RTO]
VOXcube, AutoTherm
- + Direct Thermal Oxidation [TO]
MultiTherm

CATALYTIC SYSTEMS

- + Recuperative Catalytic Oxidation [CO]
RecuKAT
- + Regenerative Catalytic Oxidation [RCO]
AutoKAT
- + Recuperative Selective Catalytic Reduction
RecuNOx
- + Regenerative Selective Catalytic Reduction
AutoNOx

HYBRID SYSTEMS

- + RTO with integrated SCR
RTO-i-SCR
- + RTO with integrated SNCR
VOCNOxTherm
- + Combination of RTO and TO
Hybrid RTO

SORPTIVE SYSTEMS

- + Rotary adsorber
RotorSorbTherm
- + Wet absorber
WetSorbTherm
- + Fixed bed adsorber
VOXsorbTherm

COMPONENTS

CATALYSTS

- + Honeycomb block and random catalysts

CERAMIC HEAT EXCHANGERS

BURNERS

- + Multi-fuel burner
- + HVOC, zone0 and fuel gas injection
- + Liquid fuel injection

VALVES

- + Poppet valves
- + Hot gas valves BVH
- + Butterfly valves BVS

PRESSURE COMPENSATION DEVICES

- + Pendulum flap
- + Vacuum protection/overpressure flap

SPECIAL SAFETY CONDUIT

- + LEL monitoring
- + Safety bypass
- + Explosion flaps/bursting discs
- + Extinguishing systems

ANALYTICS AND MEASUREMENT TECHNOLOGY

VISUALISATION SYSTEMS



AT THE PLACE WHERE WE ARE NEEDED

CTP SYSTEMS ARE LOCATED
IN OVER 40 COUNTRIES WORLD-
WIDE AND ON ALL CONTINENTS

WE DON'T SET LIMITS
FOR OURSELVES.
WE OPERATE WORLD-
WIDE.

SYNERGIES

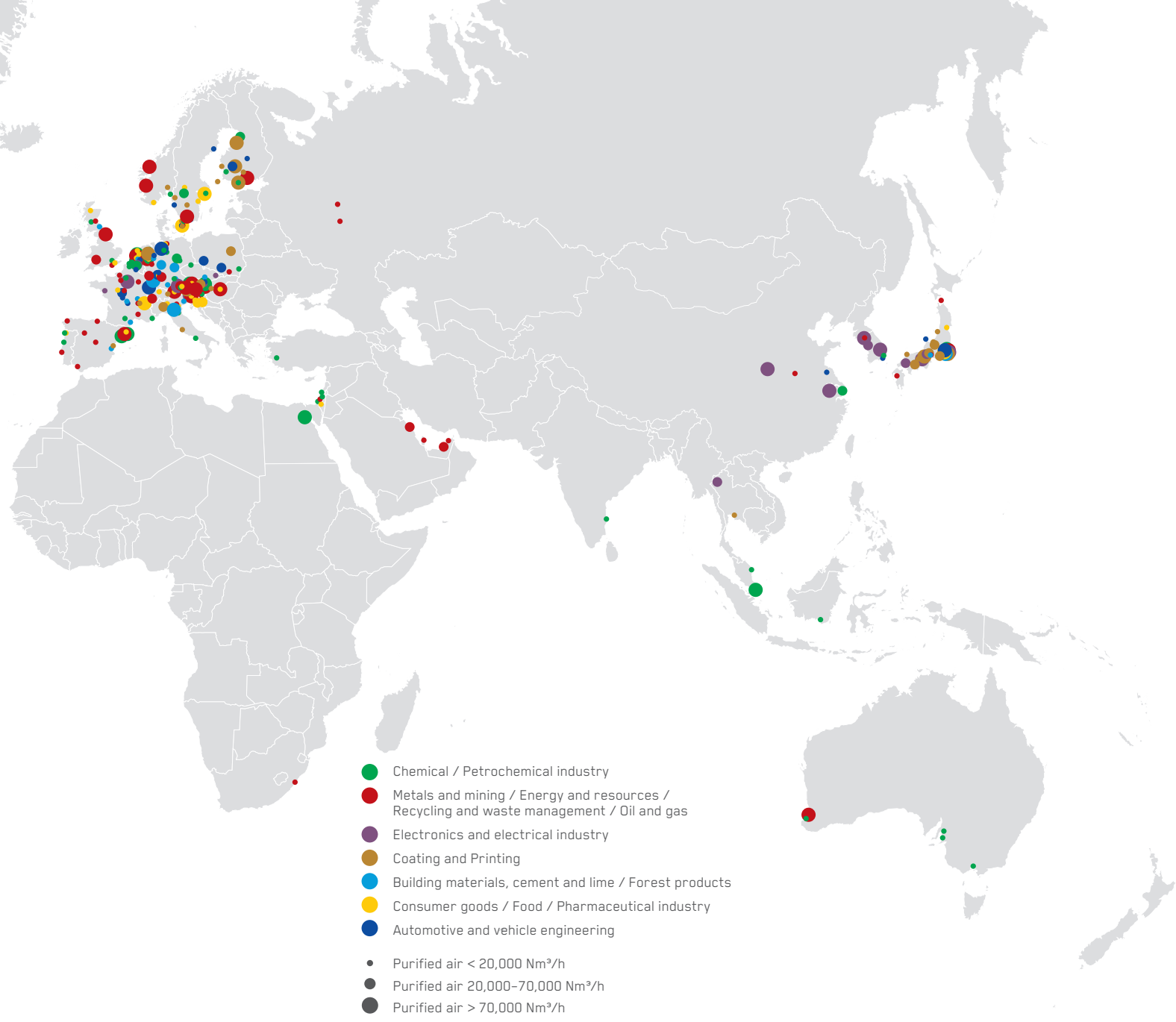
SINTOKOGIO Ltd being the world's largest supplier of foundry equipment and supplies to the leading automotive manufacturers such as Toyota, for example, has had minority interest in CTP since 2010.

When it comes to environmental technologies, SINTO has relied on CTP since 1998 as a licensee of our technology. Synergies are exploited together to strengthen the business in Europe and Japan, continue to develop the market in the Asia-Pacific region and to have strong growth in the United States. Further positive synergies have been made in 2018 with the vertical integration by our longterm partner NCA Container- und Anlagenbau GmbH.

Apart from plant engineering and steel manufacturing you can benefit from the new CTP-NCA as a competent provider of complete solutions.

GLOBAL NETWORK

The global CTP network includes locations and subsidiaries in France, Korea, China and the USA as well as partners in many other countries such as Australia, The Netherlands, Finland and South Africa.



CTP HEADQUARTERS

**CTP Chemisch Thermische
 Prozesstechnik GmbH**
 Schmiedlstrasse 10
 8042 Graz
 Austria
 Phone: +43 316 4101-0
office@ctp.at
www.ctp-airpollutioncontrol.com

**CTP
 Air Pollution Control GmbH**
 Hundsdorf 23
 9470 St. Paul im Lavanttal
 Austria
 Phone: +43 316 4101-0
office@ctp.at
www.ctp-airpollutioncontrol.com

CTP SITES AND SUBSIDIARIES

**CTP Air Pollution Control
 Business Unit France**
 9 Avenue Victor Hugo
 69160 Tassin La-Demi-Lune
 France
 Phone: +33 4 87 62 93 79
office@ctpfrance.fr
www.ctpfrance.fr

CTP China Co., Ltd.
 Room 706, Building 3,
 No. 968 Jinzhong Road
 200335 Shanghai
 P.R. China
 Phone: +86 21 6252 0557
office@ctpchina.com.cn
www.ctpchina.com.cn

CTP Korea Co., Ltd.
 103, Banwol-Dong
 18380 Hwasung-Si
 Kyungki-Do
 Republic of Korea
 Phone: +82 31 2 023 737
office@ctpkorea.com
www.ctpkorea.com

CTP America Inc.
 4630 Delaware Street
 Delaware, OH 43015
 USA
 Phone: +1 614 7636543
office@ctp-us.com
www.ctp-us.com

FOR THE CLEAN



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CTP Chemisch Thermische Prozesstechnik GmbH
Schmiedlstrasse 10, 8042 Graz, Austria
Phone: +43 316 4101-0, office@ctp.at,
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