

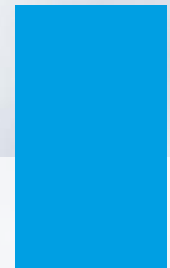
LEADING IN
PRODUCTION
EFFICIENCY



Environmental technology for the wheel painting industry

October 23, 2019
Bietigheim-Bissingen

Werner Zondler, Vice President, Clean Technology Systems



Agenda



1. Environmental technology at Dürr:
History and facts
2. VOC abatement in wheel coating process
TAR / RTO in wheel coating process
Dürr Ecopure® RTO for WCP
3. Environmental technology service
portfolio
4. Technical center of Clean Technology
Systems (walk around)





1

Environmental technology at Dürr: History and facts

History of environmental technology at Dürr



Our expertise: clean air

1968 Foundation

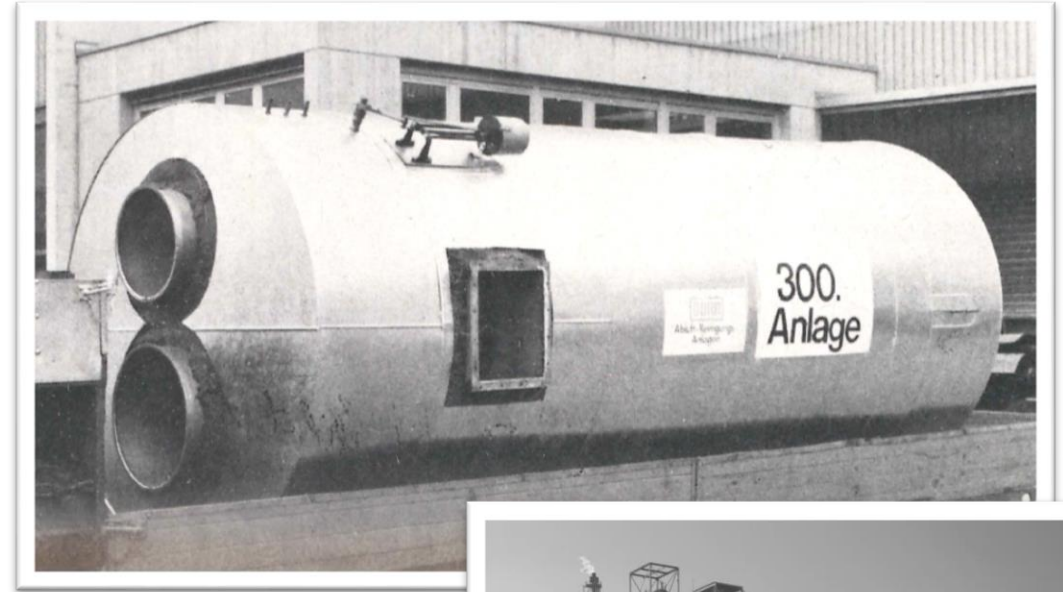
- The Environmental Systems business unit is founded and air purification systems are added to Dürr's range of products

1970 Market entry

- Dürr realizes the first thermal exhaust air purification plant **Ecopure**® TAR in the automotive industry

1970 – 1980 Market expansion

- Entrance into additional industrial segments such as the chemical, printing and coating industries and development of markets in other European countries and USA
- Development of the first **Ecopure**® VAR combustion system for exhaust gases and residual liquids



History of environmental technology at Dürr



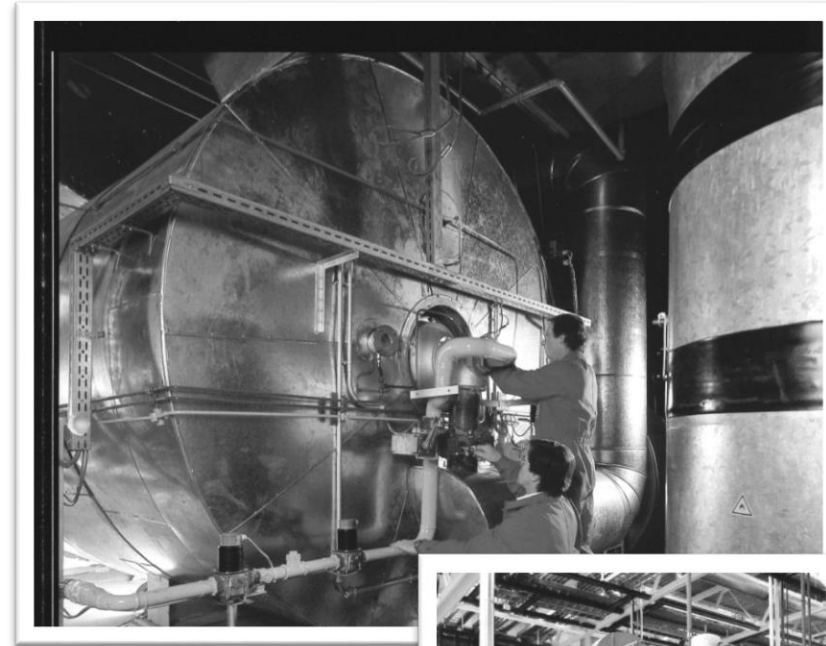
Our expertise: clean air

1980 – 1990 Strengthening the market position

- Development of first **Ecopure**® RTO-type regenerative thermal oxidization plants
- Delivery of the world's first concentrator plants **Ecopure**® KPR
- Entry into the Asian market

1990 – 2000 Consolidation

- Foundation of Environment and Energy Systems as an independent business unit
- Acquisition of the US firms Reeco and Engelhard
- Entry into the energy management



History of environmental technology at Dürr



Our expertise: clean air

2000 – 2010 Market leadership and energy efficiency

- Formation of locations in Italy, China, South Korea, Brazil, India
- Realization of the world's largest exhaust air purification plant at GM Saragossa in Spain
- Foundation of Dürr Cyplan Ltd. (ORC Technology)

2010 – today Sustainable growth

- Acquisition of environmental technology specialists Megtec, Universal, LTB, and KBA-CleanAir
- State-of-the-art acoustic solutions as well as drying and curing technologies
- Worldwide environmental services
- Local aftermarket expertise and support



Clean Technology Systems

Experts for air pollution control



Prediction 2019
OI
Clean
Technology
Systems
0,4 Mrd.
1.470



Dürr Systems AG



Dürr Megtec



MEGTEC

Dürr Universal

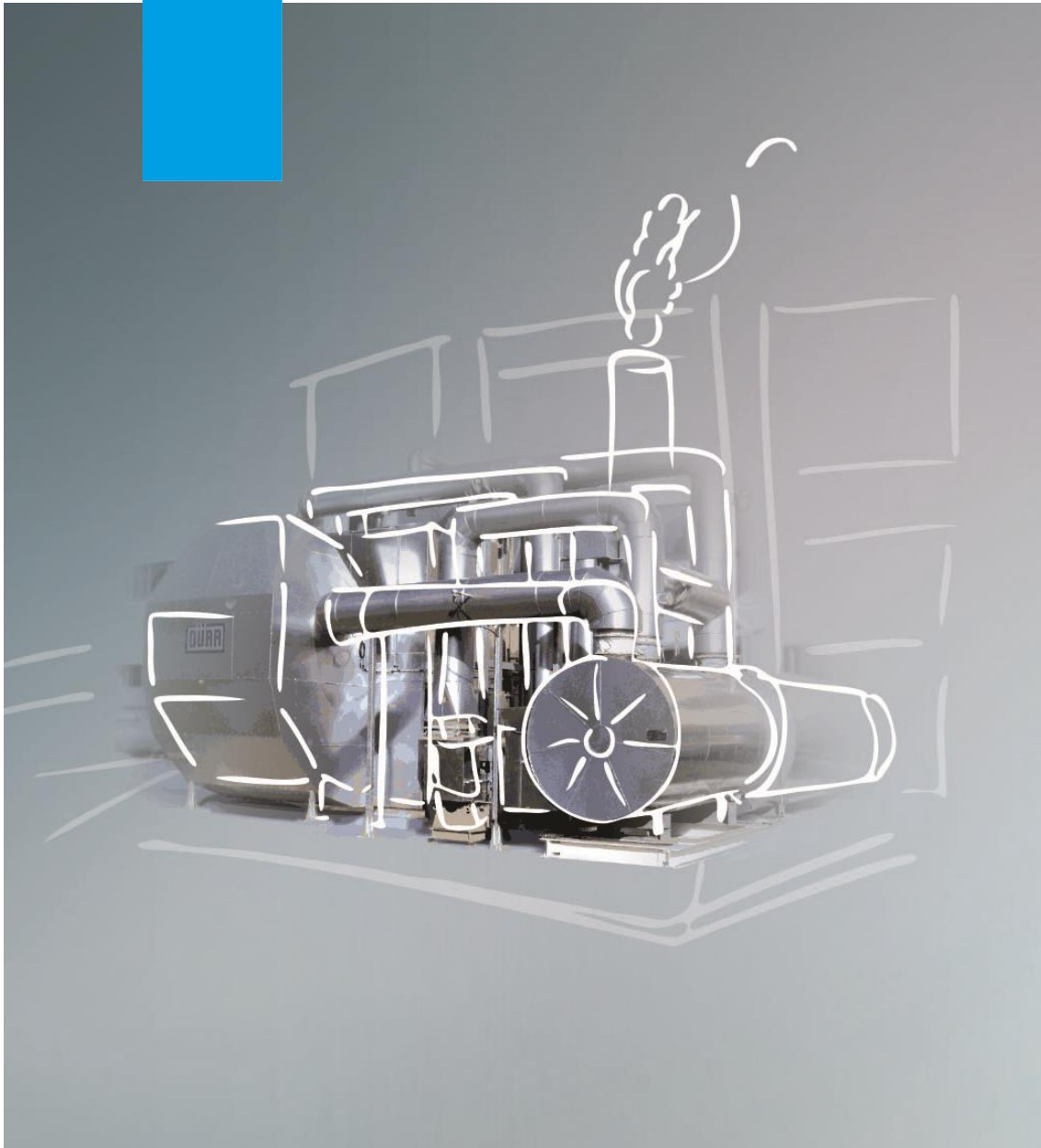


UNIVERSAL

LTB Luft- und Thermochnik Bayreuth GmbH



LTB



2

VOC abatement systems

VOC abatement systems

...for your Industry



Process application field

- Paint/ED/PVC/TC/UBC Oven
- Primer/ Base Coat / Clear Coat/Sealer Oven
- Spray booth
- Primer/Base Coat/Clear Coat spray booth
- Flash off zone
- Intermediate Dryer
- ...

Applicable products

- **Ecopure**[®] CAT
- **Ecopure**[®] RTO
- **Ecopure**[®] TAR
- **Ecopure**[®] CRC

Painting & Surface Treatment

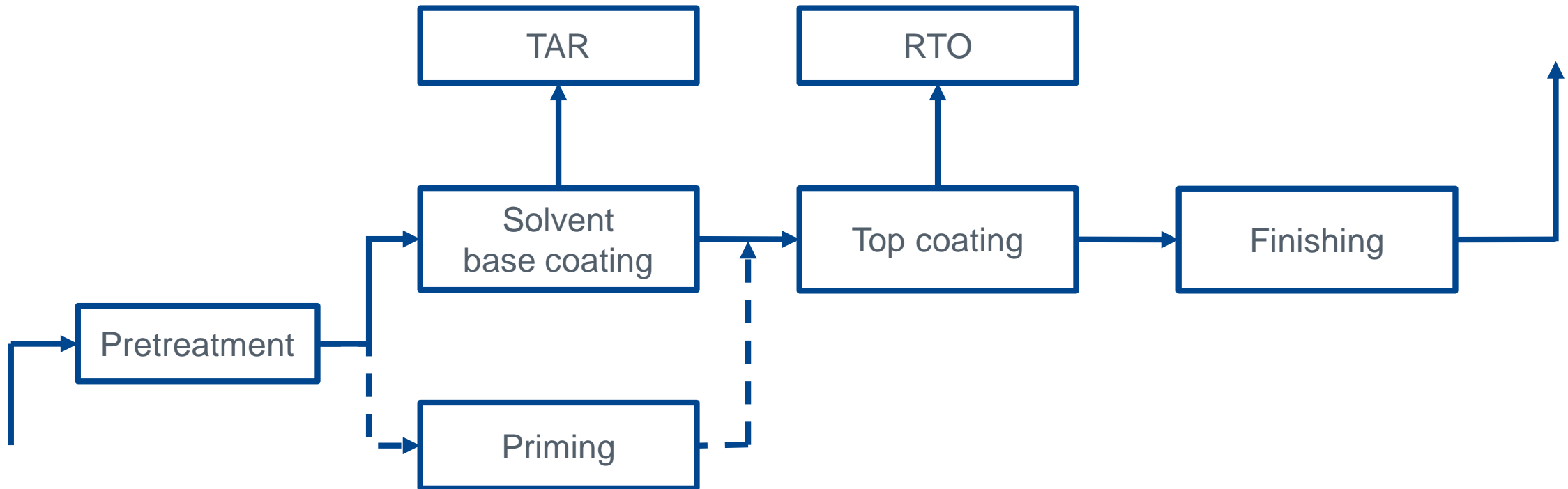


Customer selections

Audi
BMW
Ford
General Motors
Mercedes-Benz
Siemens
Opel
Porsche
Volvo
VW
Ronal
...and more

VOC abatement systems

Wheel coating process



Typical wheel coating process with regenerative and thermal oxidation system

VOC abatement systems

Ecopure® TAR – Recuperative thermal oxidation technology

Process:

Condition for the use of recuperative thermal oxidation are **combustible pollutants**.

Organic and inorganic compounds are in the process exhaust air are **oxidized and/or burnt**.

In **thermal oxidation**, the hydrocarbons contained in the solvent react and combine with oxygen and are transformed into wet steam and carbon dioxide.

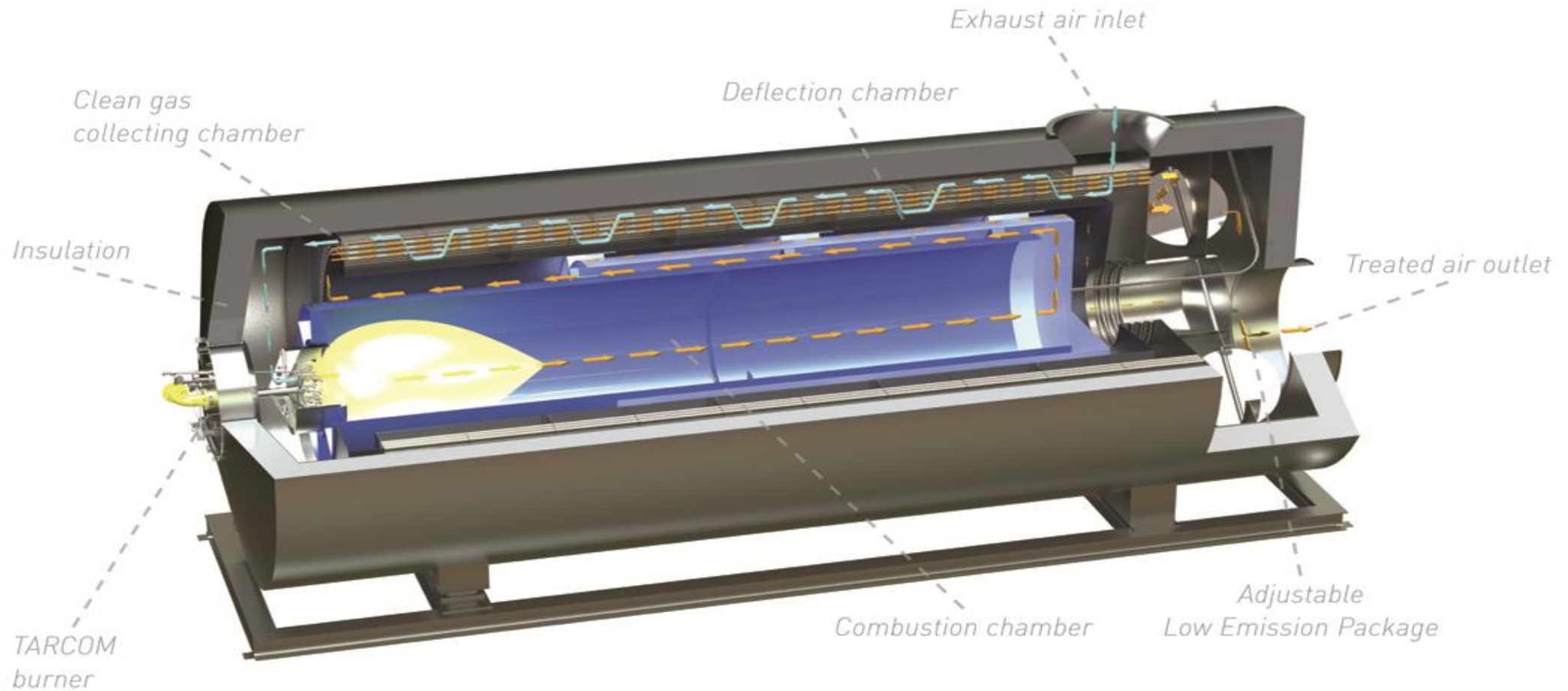
Product range:

- Ecopure® RTO Regenerative Thermal Oxidation
- Ecopure® TAR Recuperative Thermal Oxidizer
- Ecopure® DFTO Direct Fired Thermal Oxidizer



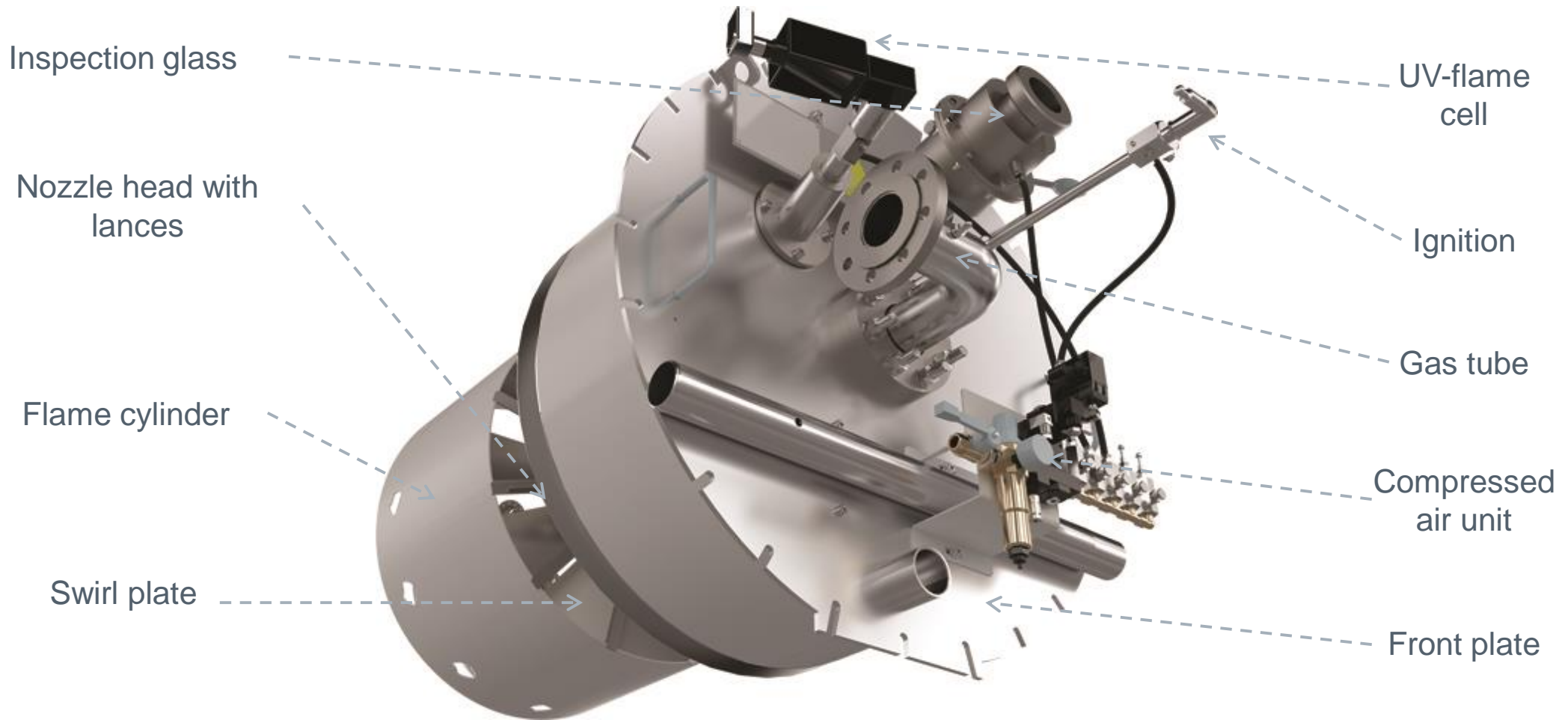
VOC abatement systems

Ecopure® TAR – Recuperative thermal oxidation technology



VOC abatement systems

Ecopure® TARCOM VI burner



VOC abatement systems

Ecopure® RTO – Regenerative Thermal Oxidation



Process:

The organic substances contained in the process exhaust fumes are heated in the **incineration (oxidation)** to a very high temperature so that the contained hydrocarbons connect with oxygen and form water vapor and carbon dioxide.

For the disposal of flammable organic substances, oxidation is the most efficient method of air purification.

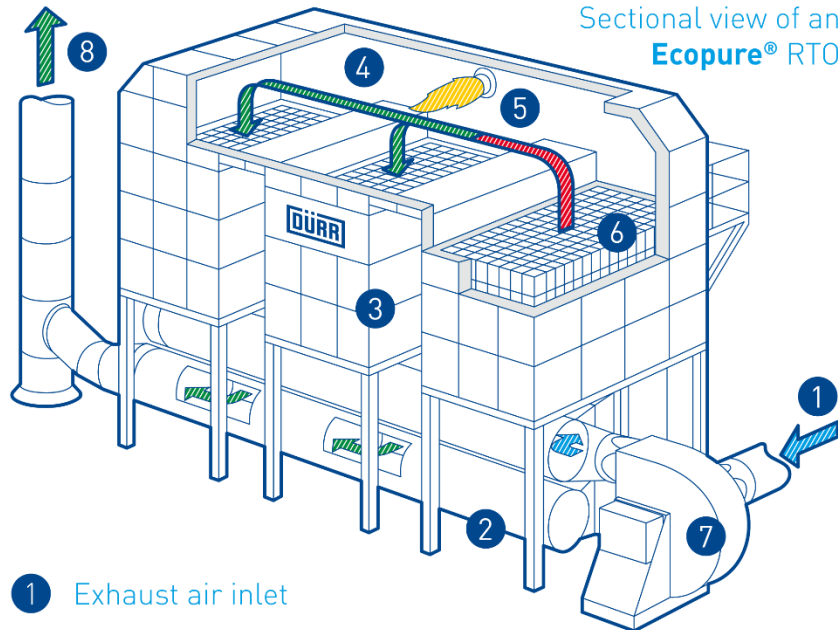
Product range:

- **Ecopure® RTO** Regenerative Thermal Oxidation
- **Ecopure® TAR** Recuperative Thermal Oxidizer
- **Ecopure® DFTO** Direct Fired Thermal Oxidizer



VOC abatement systems

Ecopure® RTO – 3 Tower



Sectional view of an
Ecopure® RTO

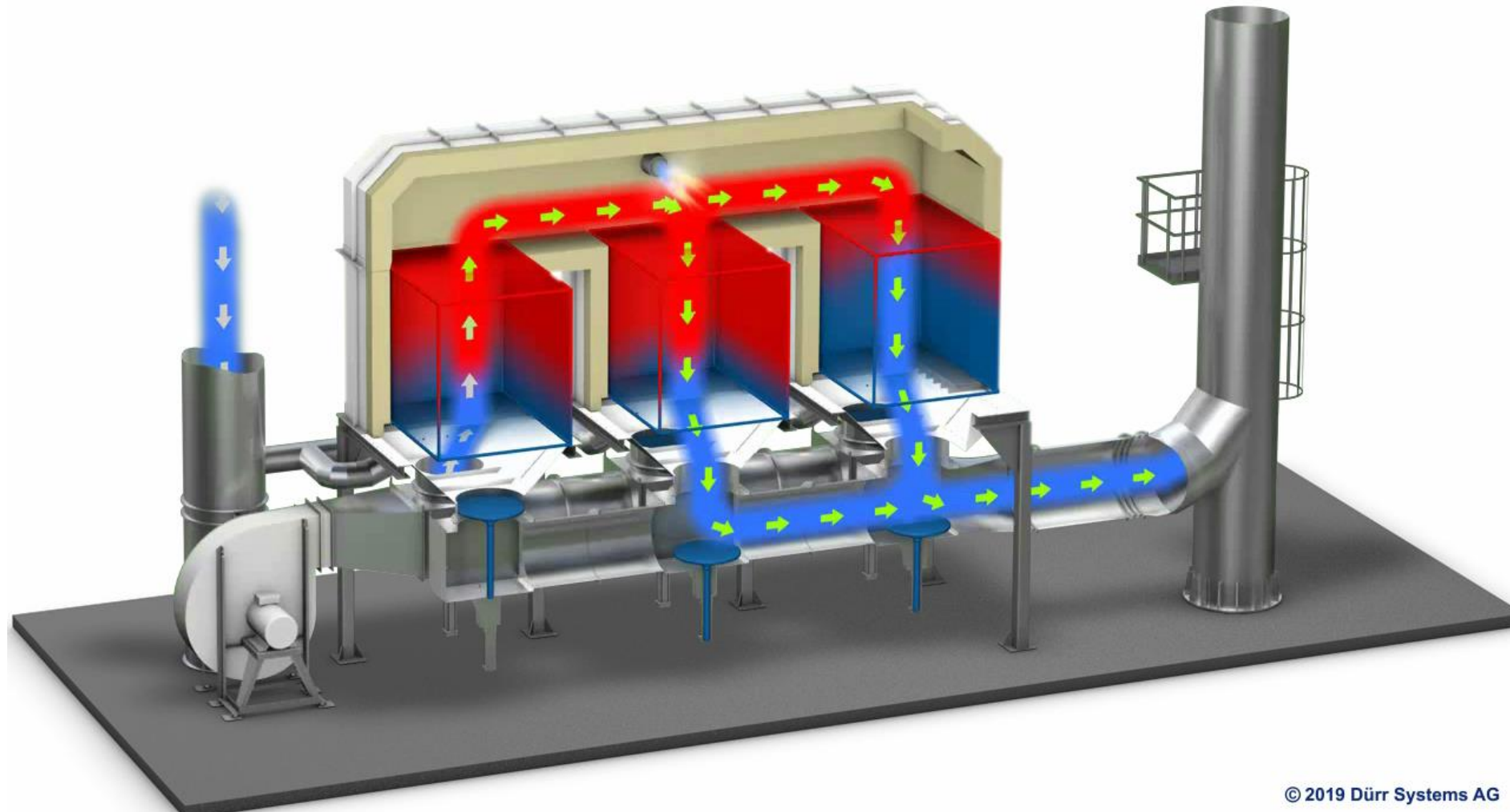
- 1 Exhaust air inlet
- 2 Damper system for air distribution
- 3 Steel canister with inside insulation
- 4 Oxidisation chamber
- 5 Burner system
- 6 Ceramic media XtraComb® for heat exchange
- 7 Exhaust air fan
- 8 Stack

Ecopure® RTO – Reference



VOC abatement systems

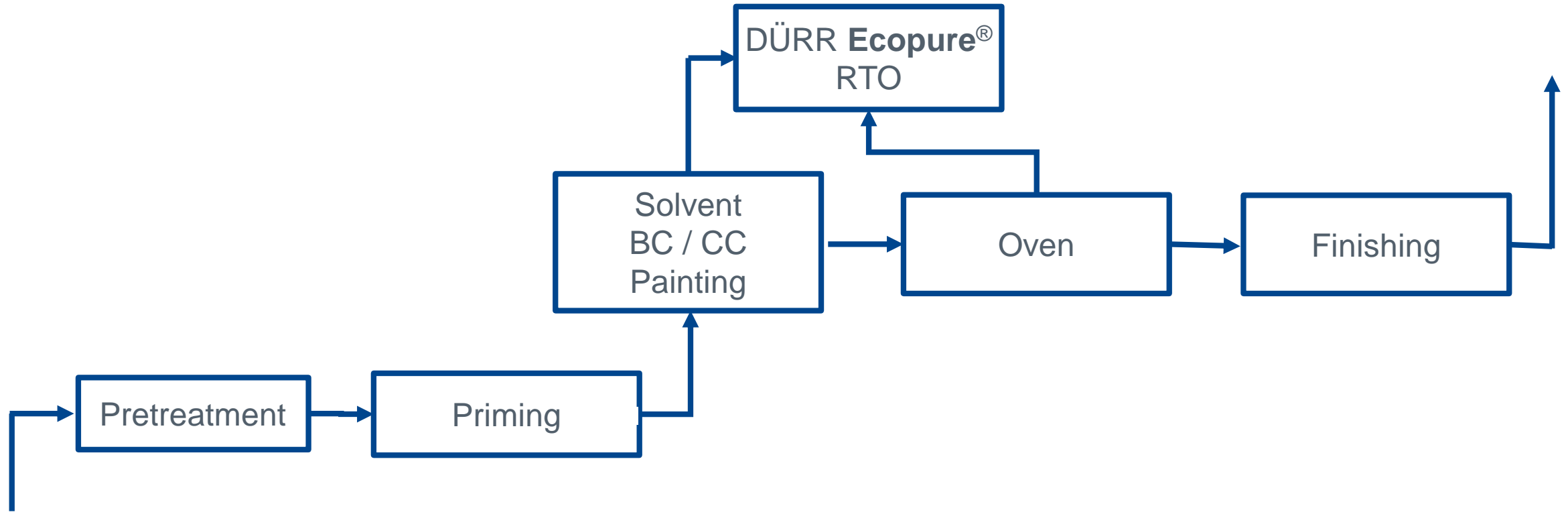
Function of Ecopure® RTO with heat recovery



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VOC abatement systems

Wheel coating process



Typical wheel coating process, new Dürr Ecopure® RTO with split heat-exchanger

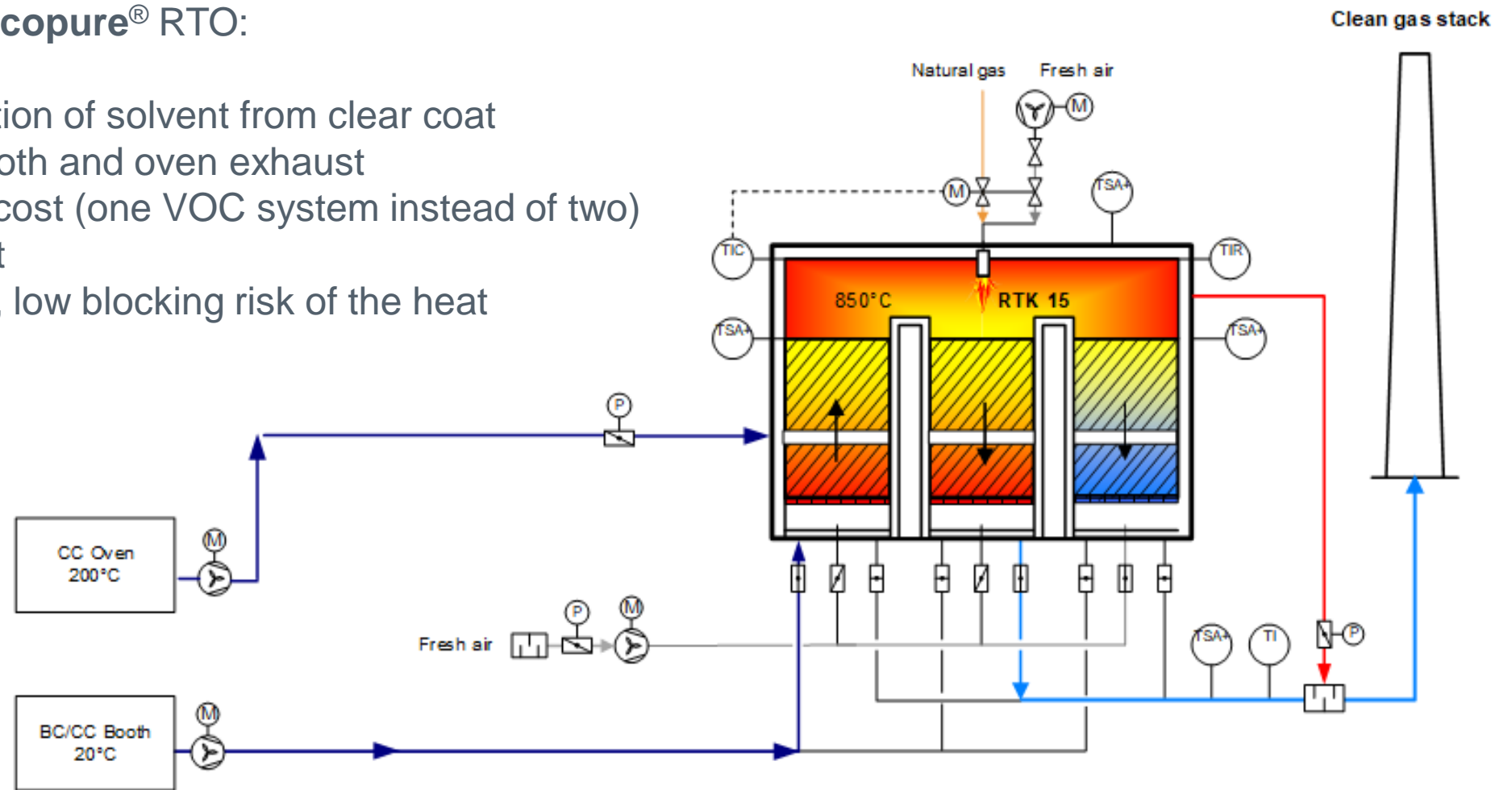
VOC abatement systems

Dürr Ecopure® RTO with split heat exchanger



Advantages of Dürr Ecopure® RTO:


- Prevent condensation of solvent from clear coat
- One system for booth and oven exhaust
- Lower investment cost (one VOC system instead of two)
- Lower running cost
- Less maintenance, low blocking risk of the heat exchanger





3

Worldwide environmental services



**“Your customer doesn’t care
how much you know
until they know how much
you care”**

Damon Richards



Inspection

- High-quality support includes inspection and maintenance
- Short reaction time due to global service network
- Identify weak points proactively



Spare Parts

- Full-service package for spare parts
- A highly efficient spare parts management service from planning to shipping



Revamp

- Modification of your system to meet current production needs
- Upgrade to the latest technology
- Analysis of the existing plant through to engineering and turnkey solutions

Worldwide environmental services

Local aftermarket expertise and support



Trusted deliveries

- Prompt and efficient services

More competence

- Worldwide connected offices

Regional offices

- We speak your language

Proactive services

- Detect irregularities in advance

Skilled technicians

- Combined teams; multiplied knowledge

Maintenance and revamp

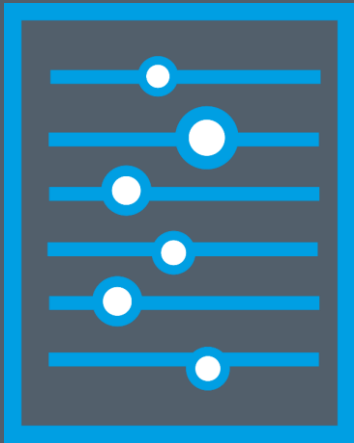
- For all your installations

Worldwide environmental services

Digital revamp



Life cycle assistance



- Download important parameters by request

Optimized system operation



- Actual system parameter
- Analysis of parameters
- Intelligent system operation

**requires Dürr remote maintenance router*

2,000 installations between 0-10 years old

Worldwide environmental services



We are here for you with our expert services for the lifetime of the products you buy from us.



Our job is to provide support 24/7, throughout the year.



Our full after-sales service offers you round-the-clock support – just a phone call away.



4

**Technical center of Clean
Technology Systems**

www.sli.do Your questions are welcome!

*Event code: wheels

Ask your questions after the presentations

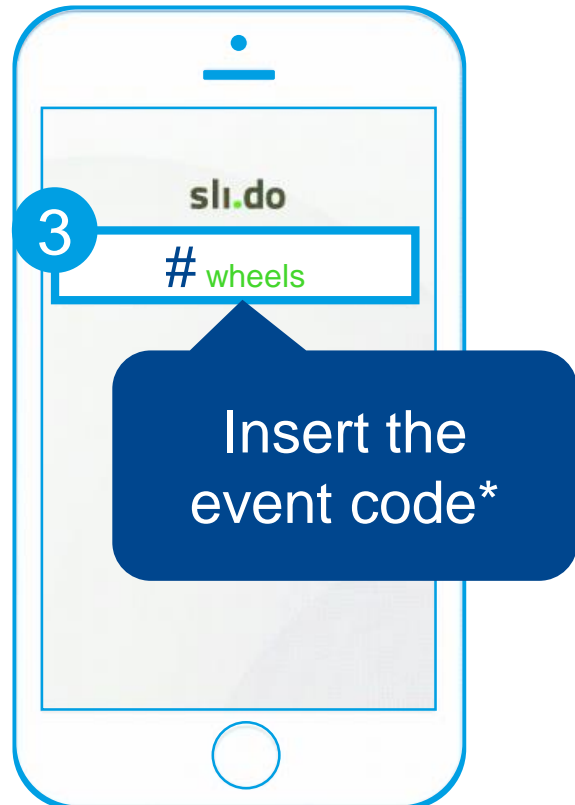
Ask your guides

Use slido for the final panel discussion

1 Open your Browser

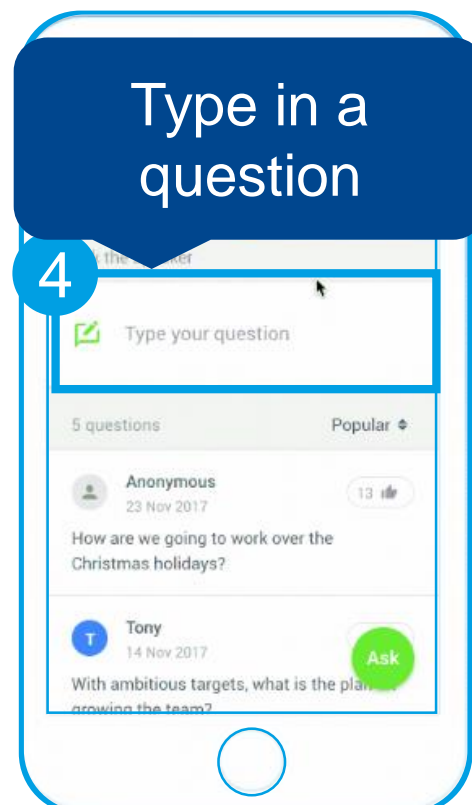
2 Open www.slido.com

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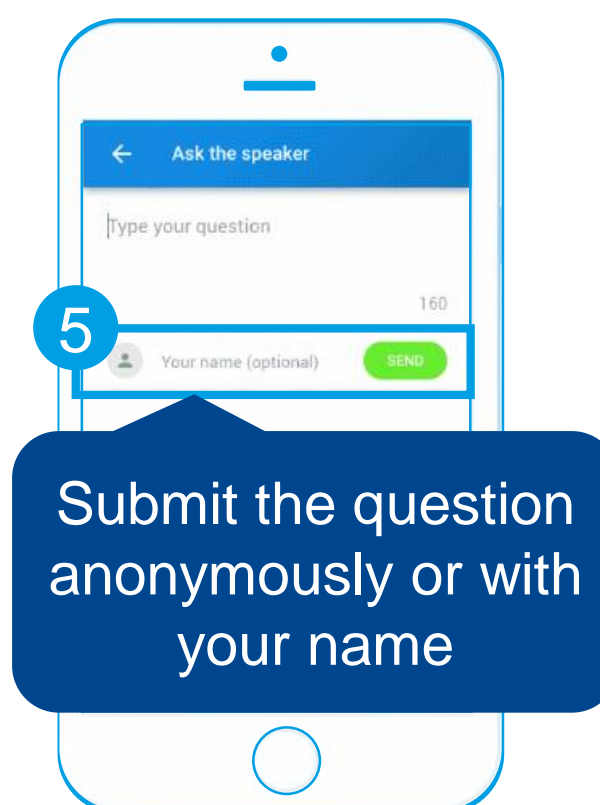
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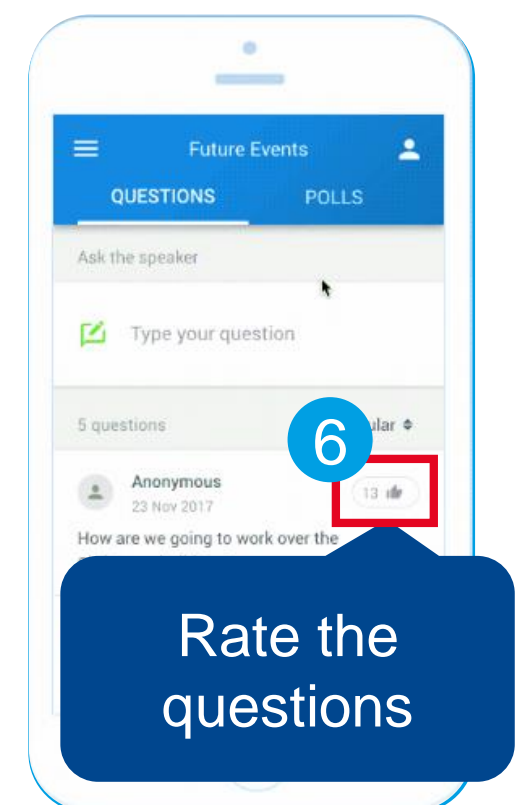
Type in a question

5



Submit the question anonymously or with your name

6



Rate the questions

October 23, 2019
Bietigheim Bissingen
www.durr.com

Werner Zondler, Vice President, Revamp, Clean Technology Systems

Environmental technology for wheel painting industry

“Subject to change. The information in this presentation contains only general descriptions or performance characteristics, which may vary in different cases. The requested performance characteristics are only binding if they are expressly agreed in the contract.”

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