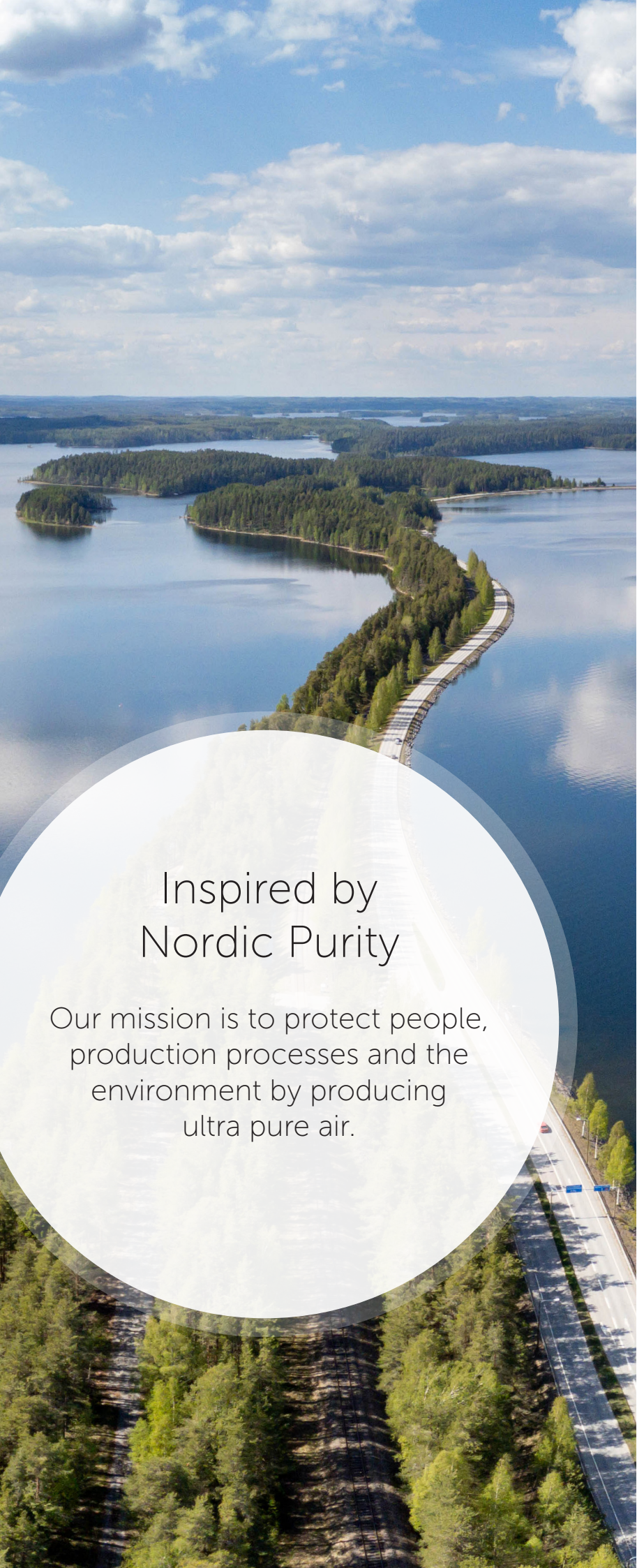




GAME-CHANGING
**GENANO CATALYTIC
OXIDIZERS (RCO)**

FOR VOC ABATEMENT

Genano



Inspired by
Nordic Purity

Our mission is to protect people,
production processes and the
environment by producing
ultra pure air.

Subsidiary of
**Genano
Group**

Company founded in

1999

>5000

air purifiers
manufactured

Operations in

30+

countries

>50

distributors
worldwide

OWN

patented
Genano-technology

> 50

employees globally

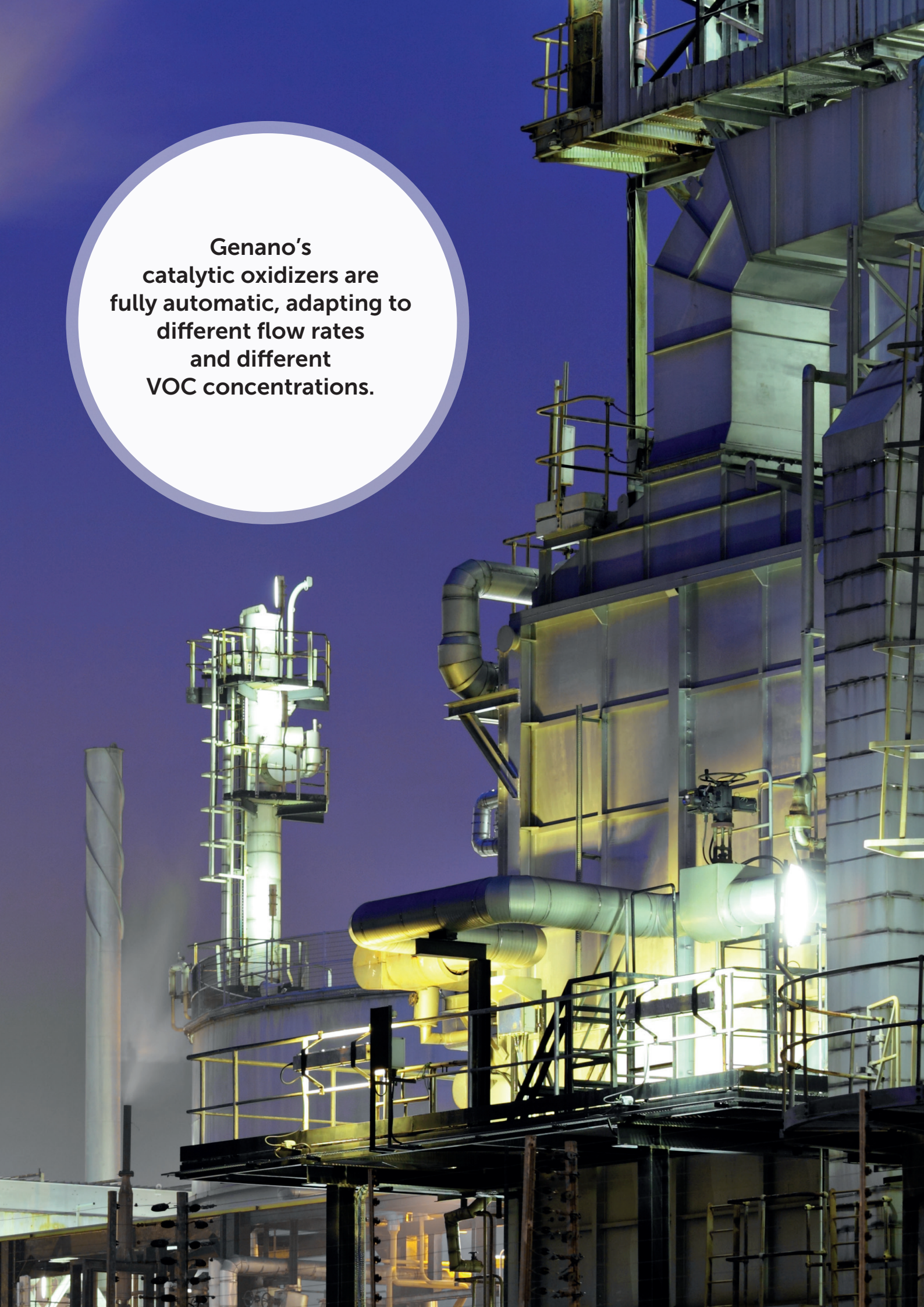


VOC emissions are significant greenhouse gases

Industrial gas waste is a serious problem to the environment and people in many manufacturing processes, such as rubber, pharmaceutical and chemical products and many other industries.

Volatile organic compounds (VOCs) are chemicals that constitute one of the primary elements of air pollution. VOC emissions are significant greenhouse gases, and therefore regulated by national and European directives. VOC's are a concern, as they participate in atmospheric photochemical reactions that contribute to ozone formation and therefore are strictly regulated.

**Genano's
catalytic oxidizers are
fully automatic, adapting to
different flow rates
and different
VOC concentrations.**



Oxidizer

The oxidizer contains two or three parallel chambers operating in a regenerative mode. Contaminated air passes through the first chamber which is hot from previous operation. The air temperature is raised to minimum 300°C, cooling the mass within the chamber and commencing the decomposition reactions of the VOC within the catalyst.

The hot air stream passes through the second bed of catalyst and heat exchange mass, being cooled and heating the mass in the process.

The duty of the beds is rotated as the temperature in the oxidizing bed falls. If the VOC concentration of incoming air is not high enough, it does not produce enough heat to keep the temperature above 300°C. Then the heaters, located in the middle chamber, will heat the air stream further.

Then finally the air stream passes through the induced draught fan to the chimney.

Additional heating energy

During the start-up of the VOC oxidizer, and also in some situations where we don't reach the ATP-Auto Thermal Point, an additional heating energy is required. The heating system is operated by electricity due to its easy maintenance, and relatively small size, but can be also used by gas heating.

Control unit

The system includes a control unit, by which all necessary functions, as well as emergency functions of the catalytic VOC oxidizer can be controlled. The control unit is provided with all necessary inputs and outputs needed for remoting.

Valves & instrumentation

The system includes all instrumentation and electrical equipment needed in normal operations as well as in emergency situations.





Energy consumption in RTO vs. RCO

PROCESS COMPARISON		
	RCO	RTO
Thermal efficiency	94,0 %	94,0 %
Incineration temperature	300 °C	800 °C
Autothermal point	0,79 g/Nm³	2,23 g/Nm ³
Outlet temperature	41,5 °C	71,5 °C
Heating power	17 kW	286 kW
Heating energy	147 MWh/a	2 491 MWh/a

PROCESS SPECIFICATIONS	
Air flow rate	25 000 Nm ³ / h
Inlet temperature	25.0 °C
Operation time	8700 h/a
VOC concentration	0,70 g/Nm ³
VOC net heating value	27,0 kJ/g



**High
purification
efficiency**

**Longer
lifetime due to
lower
operation
temperature**

**Quick
start up time:
even 1 week**

**Low
maintenance
needed**

A circular graphic with a dark blue center and a light blue outer ring. The text is white and centered within the dark blue circle.

Genano is a
trusted partner
on the way to
achieving
corporate ESG
objectives.

Significant benefits that guarantee short pay-back time

Significant cost savings

Catalytic oxidation functions at up to 500 °C lower temperatures than thermal oxidation, enabling lower operating costs.

No harmful by-products

Due to low operating temperature, the system does not produce harmful by-products such as carbon monoxide (CO) and nitrogen oxides (NO_x).

Fully automatic operation

The system automatically adapts to varying flow rates and VOC concentrations.

Compact size container

Catalytic oxidation requires only about one third of the physical space required for thermal oxidation installations. This enables easy transportation and installation.



Outcoming air is within the limits of EU directives, and can be exhausted directly to outside air.

Easy installation

The genano voc system is implemented as an easy external installation at the production facility and connected to the process exhaust. The waste gas is led to the voc abatement system. The voc incinerator has been designed to

enable installation outdoors or inside the production plant if preferred. The needed area required is minimum and doesn't interfere with other existing installations. The container size depends on a capacity need.

Customer case samples

Case: Painting manufacturing

Background

Customer has painting process with solvent based paints. Due to tightening legislation it was not allowed to lead the emission to environment anymore.

Country: EU

Process data

Air flow: max 5000 Nm³/h

Type of VOC compounds: Ethyl Acetate, Ethanol, Acetone and others

Concentration: 1 g/Nm³

Emission limit: 50 mgC/Nm³

Solution

2 bed catalytic oxidiser

Capacity: 5000 Nm³

Auto thermal operation (no extra heating energy)

Outlet emission: <50 mgC/Nm³

Case: Iron casting

Background

Customer had a Odour and VOC emissions problem which were caused by their iron casting process.

Country: EU

Process data

Air flow: max 25000 Nm³/h

Type of VOC compounds: benzene, toluene, phenol, aldehydes, CO

Concentration: 600 mg/Nm³

Emission limit: 10 mgC/Nm³

Solution

3 bed catalytic oxidizer

Capacity: 25000 Nm³

Significantly lower operation costs comparing to the thermal oxidizer

Outlet emission: <10 mgC/Nm³

Our promise to you, our customer:

Trust

built through our understanding of your activities.

Expertise

equals knowledge of air impurities and of ways to remove them.

Ease

offered to our customers by our comprehensive service concept.



Genano

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