 <b>EMISSION PARTNER</b> clean air is our engine	<b>Warrenty conditions</b>	
	Date: 16.09.2024	Revision: 20240916

# Warranty conditions for delivery and maintenance

## 1. Warranty conditions for delivered catalysts

Emission Partner warrants (pro rata temporis) that the catalysts supplied by us comply with the legal limits under the following conditions:

Oxidation catalysts	Conversions	Term	Remarks
Biogas plant	HCHO < 20 mg/Nm <sup>3</sup> CO < 300 mg/Nm <sup>3</sup>	8.000 hours or 1 year from date of installation; maximum 18 months after date of sale	At space velocity < 80.000 h-1
Natural gas operation	HCHO < 30 mg/Nm <sup>3</sup> CO < 300 mg/Nm <sup>3</sup>	16.000 hours or 2 years from date of installation; maximum 27 months after date of sale	At space velocity < 80.000 h-1
Special gas (mine gas and sewage gas)	HCHO < 30 mg/Nm <sup>3</sup> CO < 300 mg/Nm <sup>3</sup>	Delivery according to specification	At space velocity < 80.000 h-1


SCR catalysts	Conversions	Term	Remarks
Natural gas operation without (with) urea dosing by Emission Partner	HCHO < 20 mg/Nm <sup>3</sup> (NO <sub>x</sub> < 100 mg/Nm <sup>3</sup> ) *	16.000 hours or 2 years from date of installation; maximum 27 months after date of sale	At space velocity < 15.000 h-1 <sup>1</sup> < 30.000 h-1 <sup>2</sup>
Biogas operation without (with) urea dosing by Emission Partner	HCHO < 20 mg/Nm <sup>3</sup> (NO <sub>x</sub> < 100 mg/Nm <sup>3</sup> ) *	8.000 hours or 1 year from date of installation; maximum 18 months after date of sale	At space velocity < 15.000 h-1 <sup>1</sup> < 30.000 h-1 <sup>2</sup>
Special gas (mine gas and sewage gas)	HCHO < 30 mg/Nm <sup>3</sup>	Delivery according to specification	At space velocity < 15.000 h-1

<sup>1</sup> Ceramic catalysts, <sup>2</sup> SCR catalysts on metal carrier

\* Based on a raw NO<sub>x</sub> emission of ≤ 500 mg/Nm<sup>3</sup>

Three-Way-Catalysts	Converison rate**	Life time	Remarks
Natural gas operation mode	HCHO < 20 mg/Nm <sup>3</sup> CO < 300 mg/Nm <sup>3</sup> NO <sub>x</sub> < 250 mg/Nm <sup>3</sup>	Delivery according specification	At space velocity < 60.000 h-1

\*\* Based on a gas composition with NO<sub>x</sub> raw emissions of ≤ 6500 mg/Nm<sup>3</sup> and CO raw emissions of <3600 mg/Nm<sup>3</sup> (dry, at 5% residual oxygen).

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### Further prerequisites for the warranty promise

Mechanical damage (e.g. due to impacts, shocks, falling down but also thermal overload of the catalytic converter) during installation and operation must be avoided and will result in immediate loss of warranty if not caused by Emission Partner or Emission Partner's subcontractors. During the warranty period, the operator must observe proper operation and the performance of all necessary maintenance work by Emission Partner Service or its approved service partners.

### Technical conditions

The oxidation catalyst works optimally in the temperature range from 360 °C to 550 °C. Above the specified operating range, the catalytic converter ages more quickly. Above 650°C, a non-reversible reduction in the conversion rate is to be expected. Impurities in the gas and oil reduce the activity of the catalyst. The SCR catalysts operate optimally in the temperature range from 350 °C to 500 °C. The Three-Way-Catalyst should be operated in the temperature range of 500 °C up to 700 °C.

The following maximum values must not be exceeded by the exhaust gas and engine oil:

Parameter	Value
Maximum exhaust gas temperature	550 °C <sup>1</sup> 500 °C <sup>2,3</sup> / 530 °C <sup>4</sup>
Ash content in engine oil	< 0,5 Gew. %
Maximaler Ölverbrauch	< 0,5 g/kWh
H <sub>2</sub> S in fuel gas (biogas, natural gas,...)	< 20 ppm <sup>1</sup> < 150 ppm <sup>2,3</sup>
SO <sub>2</sub> in the exhaust	< 6 mg/Nm <sup>3</sup> <sup>1</sup> < 40 mg/Nm <sup>3</sup> <sup>2,3</sup>
SiO <sub>2</sub> -Aerosole in gas	< 1 mg/Nm <sup>3</sup>
Organosilicon compounds in exhaust gas	< 0,01 mg/Nm <sup>3</sup>
Acids (HCl, HF, ...)	< 0,2 mg/Nm <sup>3</sup>
Phosphorous in exhaust gas	< 0,05 mg/Nm <sup>3</sup>
Arsenic in exhaust gas	< 0,01 mg/Nm <sup>3</sup>
Pb in exhaust gas	< 0,005 mg/Nm <sup>3</sup>
Cr in exhaust gas	< 0,005 mg/Nm <sup>3</sup>
Ni in exhaust gas	< 0,01 mg/Nm <sup>3</sup>
Cd in exhaust gas	< 0,005 mg/Nm <sup>3</sup>
Hg in exhaust gas	< 0,005 mg/Nm <sup>3</sup>
K + Na in exhaust gas	< 0,05 mg/Nm <sup>3</sup>

<sup>1</sup> Oxidation catalyst, <sup>2</sup>ALHS-based oxidation catalysts, <sup>3</sup>SCR catalytic converter, <sup>4</sup>SCR ceramic carrier up to 100 hours, SCR metal carrier up to 1000 Bh

The plant operator is responsible for the verification of the proper fuel gas, oil input and oil consumption.


The following maximum values of ash deposits must not be exceeded on the catalytic converter:

Parameter	Value
Dust	350 g/m <sup>3</sup> catalyst volumes
Pb	< 200 ppm
Hg	< 200 ppm
As	< 200 ppm
Sb	< 200 ppm
Sn	< 200 ppm
Cr	< 200 ppm
Ni	< 200 ppm
Cd	< 200 ppm
S	< 0,5 % <sup>1</sup> / < 1 % <sup>2,3</sup>
P	< 0,5 % <sup>1</sup> / < 1 % <sup>2,3</sup>
Zn	< 0,5 % <sup>1</sup> / < 1 % <sup>2,3</sup>
S + P + Zn	< 1 % <sup>1</sup> / < 1,5 % <sup>2,3</sup>
Si	< 1 % *
Fe	< 2 % *

\* relative to reference

<sup>1</sup> Oxidation catalyst, <sup>2</sup>ALHS-based oxidation catalysts, <sup>3</sup>SCR catalytic converter

Determination of the ash content by gravimetric methods and comparison with reference.  
 Determination of the individual ash components using suitable measuring methods (e.g. RFA or ICP-OES, etc.). Limit value exceeded as soon as an analysis value exceeds the specifications. For proving purposes, Emission Partner or its subcontractors will take the probe and carry out analyses.

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## 2. Warranty conditions for supplied plant technology

Emission Partner warrants (on a pro rata temporis basis) defect-free performance for the equipment components supplied under the following conditions and with the following terms:

Catalyst housings shall be free from defects in materials and workmanship for a period of 12 months from commissioning or 18 months from completion and readiness for delivery, whichever is earlier.

Electronic control components for SCR metering systems and bypass dampers, as well as emission measurement systems and associated electronic components, shall be free from defects in materials and workmanship for a period of 24 months from the date of commissioning by an authorized Emission Partner customer service representative or for 26 months from the date of completion and readiness for delivery, whichever is earlier.

Passive diesel particulate filter products are free from defects in materials and workmanship for 8000 hours of operation or a period of 12 months from the date of readiness for delivery, whichever is earlier.

Exhaust silencer products shall be free from defects in materials and workmanship for a period of 12 months from the date of start-up or eighteen 18 months from the date of completion and readiness for delivery, whichever is earlier.

Spare parts for use with previously installed products ("Spare Parts") shall be free from defects in material and workmanship for a period of 12 months from the date of their commissioning or for eighteen 18 months from the date of their completion and readiness for delivery, whichever is earlier.


Wearing parts such as sensors or similar electronic components located in the exhaust tract are generally excluded from the warranty.

All other products shall be free from defects in materials and workmanship for a period of 12 months from the date of their commissioning or for eighteen 18 months from their completion and readiness for delivery, whichever is earlier.

The effects of corrosion, erosion and normal wear and tear and by exposure to noxious gases are specifically excluded from Seller's warranty.

All stand-alone catalytic chambers, mufflers, exhaust pipes shall be void of Seller's warranty if product modifications are made or if it is operated at an input operating temperature exceeding 550 C° for a period exceeding 500 hours per year.

Seller's correction of apparent or latent nonconformities in the manner and for the period set forth above shall constitute performance of all obligations of Seller with respect to such nonconformities, whether such obligations arise by contract, warranty, negligence, indemnity, strict liability or otherwise in connection with or arising out of the Product.

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### 3. Warranty conditions for maintenance and assembly

Emission Partner warrants that the maintenance and installation of delivered plant components carried out by Emission Partner GmbH shall be free of defects under the following conditions:

The limitation period for claims for defects regarding the Contractor's services under this contract is 12 months after the respective maintenance has been carried out.

Obvious defects in the maintenance work must be notified by the Customer to the Contractor in writing without delay, but no later than within 10 working days after the maintenance work has been carried out, otherwise the Contractor shall be released from its liability for defects.

In the case of justified complaints made in due time, the Contractor shall provide rectification of defects. The Customer shall give the Contractor the necessary time and opportunity to carry out all repairs which the Contractor deems necessary in its reasonable discretion, otherwise the Contractor shall be released from its liability for defects.

In the event of repair, the Contractor shall be obliged to bear all expenses necessary for the purpose of repair, in particular transport, travel, labor and material costs. If the repair is unsuccessful, the Customer may, at its option and after setting a deadline for the repair to no avail, demand a reduction in price or withdraw from the contract.

### 4. General warranty conditions

Buyer represents and warrants that the Products will be purchased and used exclusively by qualified and properly trained personnel for business purposes.

In no event shall Seller be liable to Buyer, its successors or beneficiaries or assigns for any consequential, incidental, indirect, special, additional or punitive damages.

This shall also apply to defects in or failure or malfunction of the Products, whether arising as lost goodwill, lost profits or sales, interest, business interruption, diminution in value of other goods, losses due to shut down or business interruption, increased expenses in operating the Products, loss of use of power systems, cost of purchasing replacement power, or claims by Buyer or Buyer's customers for service interruption. This applies whether such loss or damage arises under contract, warranty, negligence, indemnity, strict liability or otherwise.

It is a condition of the warranty of exemption from defects that the Buyer shall notify the Seller in writing of such defects within the specified time limits and shall cooperate fully with the Seller to remedy such defects. If Seller is notified of a defect arising under this warranty within the specified time periods, Seller shall, upon receipt of timely written notice thereof, remedy such defect by making an appropriate repair to a Product or, if in Seller's opinion it is appropriate, by supplying replacement parts.

It is further a condition that Buyer has installed, maintained and operated the Products in accordance with standard industry practices and has complied with Seller's specific specifications with respect to the Products, including but not limited to Seller's installation, operation and maintenance manuals.

If the maintenance of the equipment is not performed by Emission Partner GmbH or its service representatives, the Buyer shall document the required professional performance of the maintenance and hand it over to the Seller in case of damage. Otherwise the warranty expires.

The Seller shall not be liable for any repairs, replacements or adjustments to the product or for any costs of work performed by the Buyer without the prior written consent of the Seller.

Seller's warranty is void if the products are used improperly, neglected, or used for purposes other than their intended use. Except as specifically set forth herein, Seller does not warrant the Products to be free from defects of any kind.

Furthermore, the Contractor shall not assume any warranty for defects and damages,

- which have been caused by the client or his vicarious agents or third parties through actions or omissions,
- which are caused by force majeure or lightning damage, as well as by wear and tear, mechanical overstraining or use not in accordance with the intended purpose
- which have been caused by extraordinary electrical, mechanical, chemical or
- atmospheric influences,
- which have arisen due to improper work falling within the area of responsibility of the customer, his vicarious agents or third parties,

Liability in the event of a warranty claim is governed by our general terms and conditions, which can be viewed on the Internet: <https://emission-partner.de/de/agb/>

The actual version has been translated from German. The German version shall prevail in case of doubts or disputes.

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Emission Partner GmbH & Co. KG



Dirk Goeman, Dipl. – Ing, MBA  
Managing Director