



ENVIRONMENTAL PRODUCT DECLARATION

DR19: LOCOMOTIVE

ENVIRONMENTAL DECLARATION ACCORDING TO:

ISO 14025:2016

Product Category Rules for developing Environmental Product Declarations for Rolling Stock. PCR 2009:05. Rolling Stock v3.04 - UN CPC 495.

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EPDs within the same product category but from different programmes may not be comparable.

STADLER

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1 - STADLER & ENVIRONMENTAL COMMITMENT

WE BUILD OUR TRAINS WITH PASSION

Stadler designs and builds trains with customers in mind. We listen to our customers and work with them to design and build the ideal vehicle, integrating the environmental dimension in the whole process.

Stadler trains are reliable, safe, and with optimum comfort for the passengers' travels. Our product portfolio includes modular vehicle concepts, a tailor-made line and a full range of services, offering ground-breaking performance, reliability and safety.

We are constantly improving the performance, efficiency and sustainability of our trains using state-of-the-art technology. Our partners can count on over 7000 Stadler employees who are committed to provide maximum precision and first-class service every day.

These Swiss values have shaped and fostered our outstanding reputation. We put reliability, flexibility, innovation and sustainability into practice at 20 locations worldwide.

Stadler Rail Valencia is a subsidiary owned 100% by Stadler Rail Group. Closely linked with the industrial history of railways and with the benefit of more than a century of experience, Stadler Rail Valencia is designing and manufacturing diesel-electric and dual locomotives for freight and passengers' services with proven components, high performances

and environmental standards, with total customer satisfaction. The core business also covers light rail vehicles such as tram-trains and tramways.

STADLER RAIL VALENCIA establishes quality as one of its highest priorities, both in its products and in the services provided. Our objective is to supply them at an adequate cost, in shorter terms and with the best benefits. In order to achieve this goal, our quality system is certified according to ISO/TS 22163:2017 (IRIS).



ENVIRONMENTAL COMMITMENT

Stadler Rail Valencia is committed to improve the environmental performance of its activities and products continuously, applying a whole lifecycle view to their design.

More than 15 years ago the company direction initiated the establishment of an environmental program in order to prevent contamination and to improve the environmental performance in all the company processes. Our environmental management system is certified since 2006 according to ISO 14001:2004; and since 2019 recertified according

to ISO 14001:2015. Also since 2021 ISO 45001: 2018.

The whole company is committed to this environmental aim: directives, employees, products and manufacturing site. Following this environmental commitment and our continuous improvement program we calculate annually the carbon footprint calculation according to GHG PROTOCOL of our company in Valencia.

Our company takes care of the environmental impact since the vehicle's preliminary design phase.

This aim is reached developing a whole life cycle perspective, controlling and minimizing the environmental impact of the design, production, entire operating life and maintenance and dismantling of our rail vehicles and components. Our engineers are always designing and developing products whose impact on environment and society are carefully weighed according to a variety of parameters, resulting in products that:

- have high efficiency thanks to the light weight design, regenerative braking, energy management system, and options such as energy storage systems, driving assistance system, automatic engine start/stop, etc.;
- use Stage V emission compliant engines as per Regulation (EU) 2016/1628
- high efficient electric drivetrain: motors, inverters, mobile controllers and energy storage systems;
- feature information and communication technologies for enhancing transport safety, security, and efficiency;
- have a modular design, providing easy maintenance and easy disassemble at the end of life;
- promote freight transport with multi-talented locomotives homologated in a variety of European countries.

The company works in a daily basis to offer the excellence on its products; this is the combination of three high values: quality, safety and environmental protection.

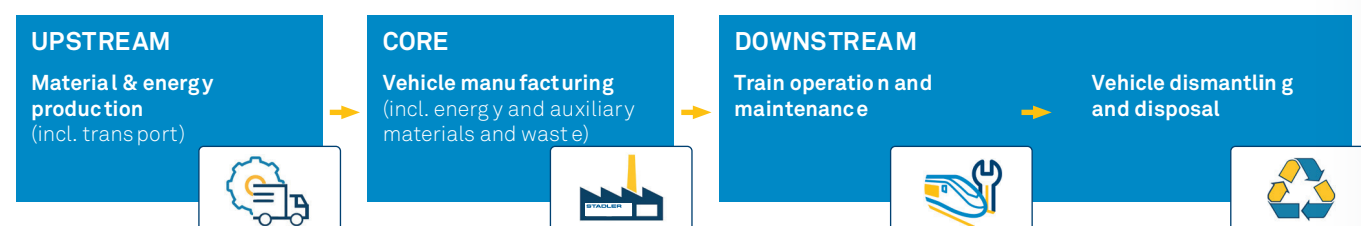
2 - INFORMATION ABOUT THE LIFE CYCLE ASSESSMENT

A Life cycle assessment has been made on the DR19 LOCOMOTIVE following the requirements of the reference Product Category Rules “PCR 2009:05 Rolling Stock” (version 3.04) published by the International EPD System Environdec (www.environdec.com).

The UN CPC of the locomotive is 4951.

The life cycle of the locomotive unit has been separated into three different life cycle stages: Upstream, Core and Downstream, and the environmental performance of the locomotive unit is reported separately for each stage.

The functional unit in this study is the transport of 1 tonne over 1 km.



This assessment is based on actual data for the manufacturing of the DR19 LOCOMOTIVE and for all the life stages of the locomotive:

- Production and extraction of raw materials and components for the locomotive.
- Manufacturing and assembly of the vehicle (using annual primary data for the year 2021) at the production plant in Stadler Valencia. Secondary data are based on the Ecoinvent database 3.8.
- Transportation of the Locomotive from Stadler Valencia to a general customer located in Finland.
- Operation and use of the locomotive during 40 years; during 2.680.000 km, with a reference weight of the locomotive of 1.675 tonne, including the weight of the vehicle, all rail-cars, and the weight of the cargo.
- Production of maintenance materials and spare parts, based on the rail vehicle preventive maintenance program according to a Life Cycle Cost (LCC) study that has been made.
- The end-of-life scenario for the Locomotive has been modelled according to the methodology of the ISO 21106:2019, and applying the material recyclability and energy recovery factors given by the UNIFE Railway Rolling Stock, 2013 - Recyclability and Recoverability Calculation Method.

SIMAPRO 9.3.0.3 was the software used for this study. SIMAPRO is the LCA software tool used for the treatment of the LCI and its subsequent evaluation. It allows ensuring the proper treatment of the data included in the LCA study to obtain easily understandable LCA results. The database used for the LCA Study is the one known as Ecoinvent 3.8.

The Life cycle assessment study has been developed in accordance with the following reference documentation:

- ISO14040:2006. Environmental management. Life cycle assessment. Principles and framework
- ISO14044:2006. Environmental management. Life cycle assessment. Requirements and guidelines
- ISO 14025:2006 Environmental labels and declarations. Type III environmental declarations. Principles and procedures
- Product Category Rules PCR 2009:05 version 3.04 - UN CPC 495 Rolling Stock
- ISO 21106: 2019 Railway applications — Recyclability and recoverability calculation method for rolling stock
- BS EN 50591:2019 Railway Applications. Rolling Stock. Specification and verification of energy consumption.
- Railway Industry Substance List (<https://www.unife.org/activities/environment-and-sustainability/rail-industry-substance-list/>)
- UNIFE Railway Rolling Stock, 2013 - Recyclability and Recoverability Calculation Method



3- DR19: ONE LOCOMOTIVE FOR ALL YOUR NEEDS



Finland's national railway, VR Group, selected Stadler to supply sixty diesel-electric locomotives with central cab to improve the operational efficiency in marshalling yards, freight terminals and on non-electrified lines which make up 45% of the Finnish network. The multipurpose locomotives can be used as shunting locomotive and for hauling freight and passenger trains up to 120km/h.

The 18m long, 90 tonne locomotives have two 950 kW engines complying with Regulation (EU) 2016/1628 related to internal combustion engine emissions. They meet Stage V emission limits which is the latest and most exigent nowadays, meaning a significant improvement compared with the current fleet. Tailored to meet the demands of Finland's extreme weather conditions, they can withstand the effects of the snow and ice and

operate at temperatures as low as -40°C. The top-of-the-range locomotives are fitted with radio remote control equipment and ETCS Baseline 3 with a local STM ATP safety system.

3.1- HIGHLIGHTED BENEFITS

TECHNOLOGY

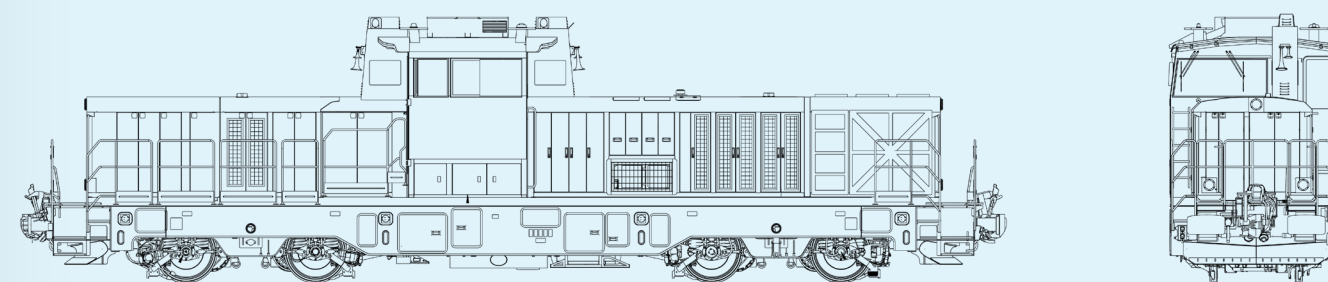
- Multipurpose locomotive for shunting and transport services
- Efficient AC traction system with IGBT, one inverter per axle
- Very high starting and continuous tractive effort
- High performance electric brake with energy recovery on locomotive auxiliaries
- Pneumatic brakes; modular concept with ep/EBO brake for passenger operation
- Designed for multiple unit operation, up to three locomotives
- Automatic coupler
- Coaches communication

PERSONNEL

- Single central cab ergonomically designed with HVAC system
- Two totally equipped driver's desk: right side
- Two doors giving direct access to longitudinal corridors
- Doors control
- Fast desk swap
- Optimal visibility from driver's seat

RELIABILITY / AVAILABILITY / MAINTAINABILITY / SAFETY

- Reduced operation/maintenance costs
- TSI 2014 and Finland's national normative compliant
- Protection against collision with animals. Impact detection
- Winterization Package including snow plow
- Latest generation of vehicle control system including remote diagnosis features and radio remote control
- ETCS Baseline 3, with local STM ATP safety system
- High degree of redundancy

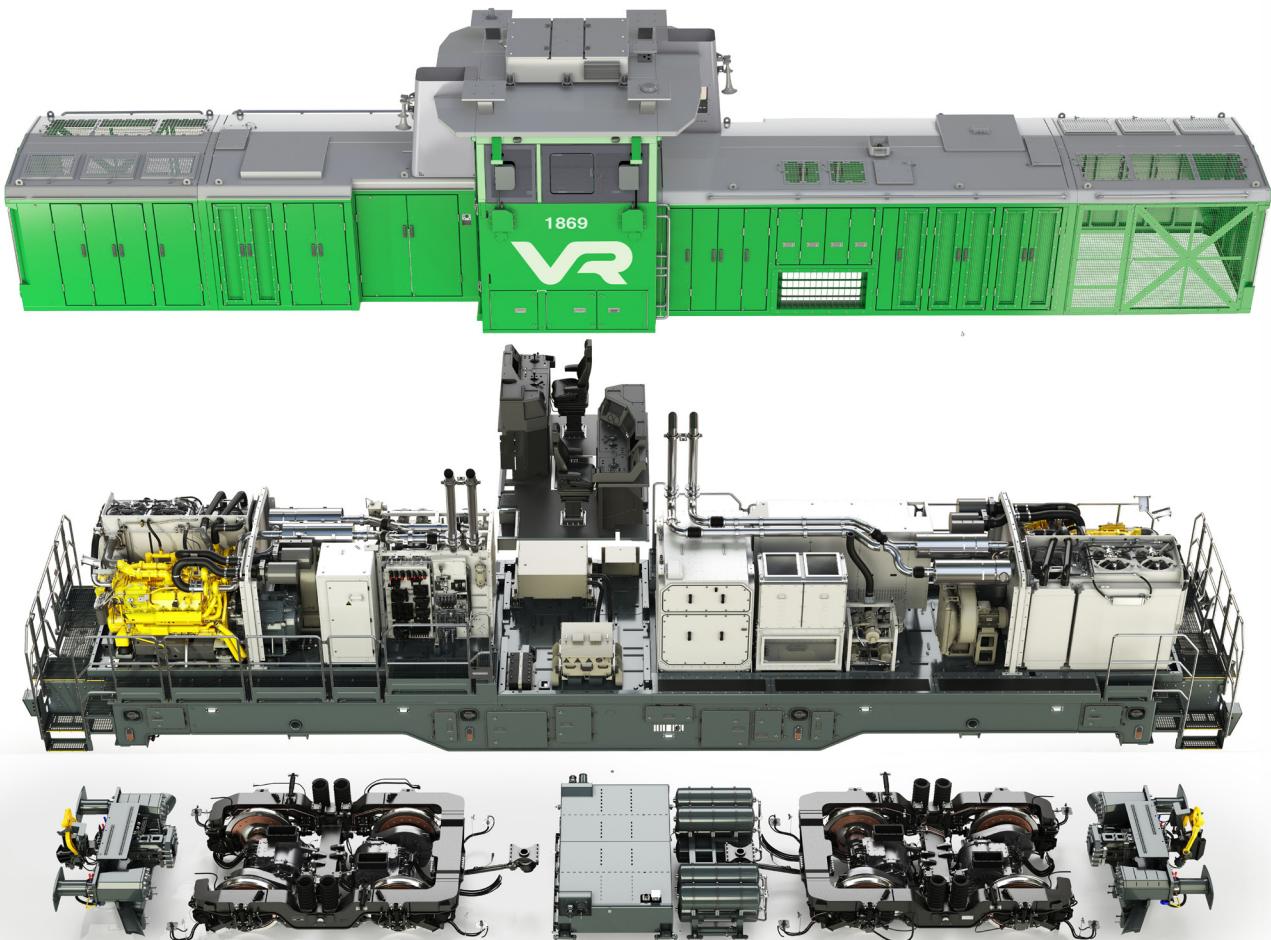


3.2-TECHNICAL DATA

The DR19 locomotive is a diesel electric locomotive with central cab, which is designed to be used as shunting locomotive and for hauling of freight trains and passenger trains on the line in single, and multiple traction.

The locomotive is designed based on a life time of at least 40 years, line work 50.000km/year or shunting work 1.700 hours/year.

The locomotive is designed to be compatible with Finnish railway network including stations, railway yards and depots in the traffic area.



Vehicle data

Customer	VR Group
Region	Finland
Number of vehicles	60
Commissioning	2.022
Locomotive type	Diesel-electric
Track gauge	1.524 mm
Axle arrangement	Bo'Bo'
Diesel engine	2 x CAT C32, Stage V
Diesel power engine	2 x 950 kW
Transmission	AC/AC
Starting tractive effort	346 kN
Continuos tractive effort	277 kN
Weight	90 tons
Fuel tank	3.000 l
Maximum speed	120 km/h
Minimum radio curve	80 m
Brake system	Mechanic: pneumatic Dynamic: regenerative / rheostatic
Suspension	Primary: helical coil spring and triangular guiding rod Secondary: rubber metal



4-MATERIAL CONTENT

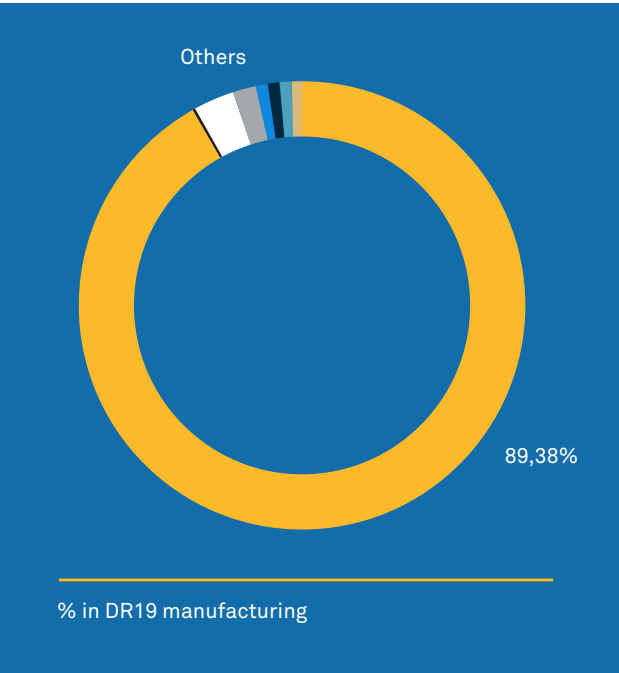
The DR19 LOCOMOTIVE is designed and developed taking into account our commitment to environment, which is also required to our suppliers. Application of “Railway Industry Substance List - RISL” (www.unife-database.org) is done by Stadler and suppliers in order to eliminate the use of regulated materials that could affect the environment or people's health. A detailed inventory methodology has been developed in the design phase of the DR19 LOCOMOTIVE to control the materials and to verify the materials coming from suppliers. This helps our engineers to detect the composition of the materials in the locomotive and to

optimize the use of recycled and recyclable materials. The supply chain declarations prove that the DR19 vehicle contains no substances catalogued as SVHC (Substances of very High Concern) in accordance with regulation 1907/2006/EC – REACH.

The next table and charts give information on the locomotive materials, classified according to ISO 21106. These materials represent the 96,12% of the total mass of the locomotive and are the ones used for the Life Cycle Assessment calculation. The total weight of the locomotive is 90 tonnes.

Materials	DR19 UPSTREAM bill of materials %
Metal	89,38%
Elastomer	0,39%
Polymer	1,34%
Electric & Electronics	1,38%
Acids, cooling agents or similar	1,05%
Oil, grease or similar	4,65%
Others: Inorganic	1,66%
Glass and safety glass	0,04%
Composites	0,11%
Mineral wool	0,00%
MONM (*)	0,00%
Total	100%

* Modified Organic Natural Materials– MONM



	METAL	POLYMER	ELASTOMER	COMPOSITES	GLASS	SAFETY GLASS	OIL, GREASE OR SIMILAR	ACIDS, COOLING AGENTS OR SIMILAR	MONM	ELECTRIC & ELECTRONICS	OTHERS: INORGANIC	MINERAL WOOL	TOTAL
CARBODY	23.744,21	5,56	24,60	0,70	0,00	0,00	0,00	0,00	0,00	0,00	16,62	0,00	24.947,86
	1.151,92	1,01	2,52	0,02	0,00	0,00	0,00	0,00	0,00	0,07	0,63	0,00	
INTERIOR, WINDOWS & DOORS	936,21	52,10	7,55	49,54	0,00	0,00	1.437,17	0,00	0,00	18,20	41,48	0,00	2.710,22
	154,40	0,05	0,31	0,00	0,00	0,00	1,20	12,00	0,00	0,00	0,00	0,00	
	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
BOGIES & RUNNING GEAR	27.378,15	77,65	57,19	0,00	34,00	0,00	0,00	0,00	0,00	0,00	121,56	0,00	35.793,80
	1.347,59	95,20	3,28	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
	1.966,51	20,35	9,51	10,73	3,32	0,00	0,12	0,00	0,05	28,45	11,38	0,00	
	244,17	2,13	13,09	0,00	0,00	0,00	2.507,90	898,96	0,00	0,00	962,50	0,00	
PROPULSION & ELECTRIC EQUIPMENT	12.622,87	64,12	97,05	1,68	0,20	0,00	27,76	0,00	2,64	31,10	160,63	0,00	23.338,07
	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
	1.147,99	21,28	1,81	32,85	0,00	0,00	68,94	0,00	0,00	71,07	57,70	0,00	
	3.382,00	1,19	70,42	0,00	0,00	0,00	0,00	0,00	0,00	0,13	3,39	0,00	
	17,49	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	
	1.065,27	2,50	1,71	0,00	0,00	0,00	0,26	0,00	0,00	1.043,39	3,78	0,00	
	2.414,68	822,94	39,03	0,41	0,00	0,00	0,00	0,00	0,00	0,00	59,78	0,00	
CONFORT SYSTEMS	146,30	2,00	8,80	0,00	0,00	0,00	0,00	2,40	0,00	6,00	0,00	0,00	165,50
TOTAL	77.719,76	1.168,09	336,87	95,93	37,52	0,00	4.043,35	913,36	2,69	1.198,41	1.439,45	0,00	86.955,44

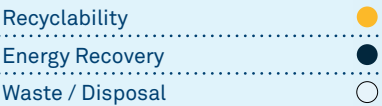
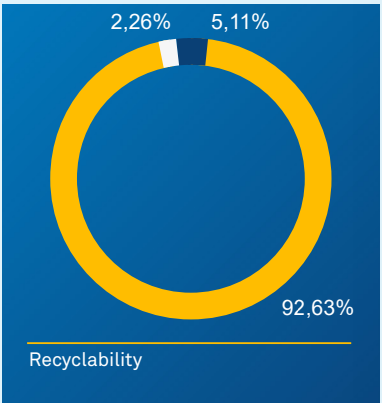
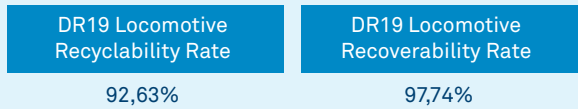
* Data in kg

5- ENVIRONMENTAL IMPACT

5.1- RECYCLABILITY AND RECOVERABILITY

The recyclability potential has been calculated according to:

- ISO 21106:2019“Railway applications — Recyclability and recoverability calculation method for rolling stock, for the methodological approach.
- UNIFE Railway Rolling Stock, 2013 - Recyclability and Recoverability Calculation Method, for the material recyclability and energy recovery factors.



The material selection by Stadler engineers for the design of the DR19 LOCOMOTIVE, and the management of materials throughout its entire life is optimum.

During the design phase the dismantling ability of the equipment has been studied and optimized to achieve a high % of recoverability.

5.2- NOISE

Different design concepts to reduce the noise of the Locomotive were took into account in the design and construction phase.

As a result, the locomotive will exceeds TSI EU 1304/2014 requirements.

TSI Noise 2014 values	Unit	TSI limit [dB (A)]
Stationary noise	LpAeq	< 71
Starting acceleration, dB (A)	LpAf, max	< 85
Pass by noise at 80 km/h, dB (A)	LpAeq, Tp	< 85
Driver's cab, dB (A)	LpAeq, T	< 78
Driver's cab, horns impact, dB (A)	LpAeq, T	< 95

5.3- ENERGY CONSUMPTION

OPERATION

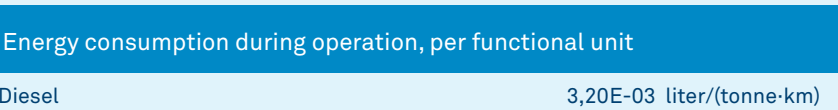
The DR19 LOCOMOTIVE has been optimally designed to feature high energy efficiency, with the benefit of low operating energy costs for its customers.

A combination of main line and shunting operation hauling different loads has been considered for the consumption calculation. The maximum speed considered in simulation in mainline mode is 100km/h while in shunting mode is 30km/h.

The energy consumption during operation of the Locomotive has been calculated according to EN 50591. Simulations were carried out considering the total weight of the locomotive, including the weight of the vehicle, all rail-cars, and the weight of the cargo.

For calculating the energy consumption during operation per functional unit, an average weight of 1.675 tonne was used, taking into account a cargo of 1.585 tonne. Consequently, the load factor of this study is 83,8%.

In view of the above, the energy consumption during operation per functional unit is 3,20E-03L/tonne.km.



POLLUTANTS EMISSIONS

DR19 Locomotive is powered by two CAT C32 engines delivering 950 kW each. The C32 is an EU Stage V engine designed to meet emissions standards while keeping performance high and cost of ownership low.

The CO2, PM10 and NOx emission values for the DR19 LOCOMOTIVE according to TS 50591_2013 were calculated as well for the operating scenario previously described.

The pollutant emissions per functional unit are:

Pollutant emissions, per functional unit	
CO2	8,46E-03 kg/tonne-km
PM	1,76E-07 kg/tonne-km
NOx	4,07E-05 kg/tonne-km



Furthermore, the DR19 diesel engine exhaust emissions comply with the EU Stage V “Regulation (EU) 2016/1628 on requirements relating to gaseous and pollutant emissions limits and type-approval for internal combustion engines for non-road mobile machinery, including railway vehicles”.

MANUFACTURING

Stadler Rail Valencia, according to its environmental and continuous improvement program, has improved the efficiency of its production site as well as being more competitive in its production costs, and it is monitoring the energy consumption of the different production units for a control and optimization process.

The manufacturing of a DR19 LOCOMOTIVE requires 17,40 MWh. Taking into account the functional unit used in this document, the electricity consumption is 3,88E-06kWh/tonne.km.

Electricity consumption for locomotive manufacturing, per functional unit	
Electricity	3,88E-06kWh/tonne-km



For the manufacturing process of the DR19 LOCOMOTIVE two different suppliers of electricity are used. Therefore, two energy mixes were used for the manufacturing stage.

The 2021 energy mix for each supplier was obtained from the data published by the CNME, which is a public body that oversees the Spanish economic sectors, including electricity (<https://gdo.cnmc.es/CNE/accesoEtiquetado.do>).

6- ENVIRONMENTAL PROFILE

ANALYSIS IN DETAIL

The following values have been calculated per functional unit: 1 tonne.km, using the default impact categories, characterisation models and factors available on www.environdec.com/indicators.

ENVIROMENTAL IMPACTS [Ton/km]	UPSTREAM	CORE	DOWNSTREAM				TOTAL
			Down Total	Operation%	Maintenance%	EOIL%	
Global warming potential-fossil [kg CO2 eq]	1,06E-04	5,19E-06	9,88E-03	98,88%	0,69%	0,43%	9,99E-03
Global warming potential-biogenic [kg CO2 eq]	2,75E-07	1,63E-07	3,50E-06	93,92%	5,81%	0,27%	3,94E-06
Global warming potential-land use [kg CO2 eq]	7,72E-07	4,12E-09	5,23E-07	81,75%	18,22%	0,03%	1,30E-06
Global warming potential- TOTAL [kg CO2 eq]	1,07E-04	5,36E-06	9,89E-03	98,88%	0,69%	0,43%	1,00E-02
Acidification potential [mol H+ eq]	2,58E-06	4,35E-08	4,64E-05	99,40%	0,60%	0,01%	4,91E-05
Eutrophication potential, aquatic freshwater [kg P eq]	1,38E-08	6,93E-11	1,64E-08	74,37%	24,50%	1,12%	3,03E-08
Eutrophication potential, aquatic marine [kg N eq]	1,25E-07	1,06E-08	1,79E-05	99,76%	0,23%	0,01%	1,80E-05
Eutrophication potential, terrestrial [mol N eq]	1,52E-06	1,16E-07	1,96E-04	99,75%	0,24%	0,01%	1,97E-04
Photochemical ozone creation potential [kg NMVOC eq]	5,32E-07	3,13E-08	5,02E-05	99,08%	0,91%	0,01%	5,07E-05
Ozone depletion potential [kg CFC-11 eq]	3,94E-10	6,59E-13	3,08E-09	72,98%	27,02%	0,00%	3,47E-09
* Abiotic depletion potential (minerals & metals) [kg Sb eq]	4,32E-08	1,68E-11	8,58E-09	20,58%	79,39%	0,03%	5,18E-08
* Abiotic depletion potential (fossil fuels) [MJ]	1,21E-03	8,30E-05	1,37E-01	99,14%	0,85%	0,00%	1,38E-01
* Water deprivation potential [m3 eq depriv.]	3,46E-05	1,91E-06	3,34E-05	63,35%	36,24%	0,41%	6,99E-05

*The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator

The Locomotive's global warming potential for the overall life cycle is 0,01028 kg CO2 eq /tonne.km. The Upstream global warming potential is 0,00011 kg CO2 eq/tonne.km, and the Core global warming potential is 0,00029 kg CO2 eq /tonne.km.

The Downstream of the DR19 LOCOMOTIVE has a total global warming potential of 0,00989 kg CO2 eq/(tonne.km), and represents the 96,14% of the global warming potential of the Locomotive's life cycle. The operation phase, which includes the energy consumption, represents the 95,07% of the global warming potential; while the maintenance of the Locomotive represents the 0,66%, and the End of life represents 0,14%.

ENVIROMENTAL IMPACTS [Ton/km]	UPSTREAM	CORE	DOWNSTREAM				TOTAL
			Down Total	Operation%	Maintenance%	EOIL%	
Global warming - TOTAL [kg CO2 eq]	1,07%	0,05%	98,87%	97,77%	0,68%	0,42%	100,00%

The results for the primary energy resources (renewable and non-renewable) are listed below:

RESOURCES		UPSTREAM	CORE	DOWNSTREAM	TOTAL
Primary energy resources RENEWABLE	Used as energy carrier [MJ]	1,83E-04	4,64E-06	4,36E-04	6,23E-04
	Used as raw materials [MJ]	1,00E-08	0,00E+00	0,00E+00	1,00E-08
	TOTAL [MJ]	1,83E-04	4,64E-06	4,36E-04	6,23E-04
Primary energy resources NON-RENEWABLE	Used as energy carrier [MJ]	1,18E-03	8,30E-05	1,37E-01	1,38E-01
	Used as raw materials [MJ]	3,29E-05	0,00E+00	0,00E+00	3,29E-05
	TOTAL [MJ]	1,21E-03	8,30E-05	1,37E-01	1,38E-01

DEFINITIONS

GLOBAL WARMING POTENTIAL (GWP) OR CARBON FOOT PRINT

Global Warming is caused by the emission of greenhouse gases (GHG) to the atmosphere. Global Warming Potential, GWP100, translates the quantity of emission of gases into a common measure to compare their contributions – relative to carbon dioxide. There are four GWP indicators, which differentiate the greenhouse gases based on the origin: GWP-fossil, GWP-biogenic, GWP-land use, and GWP- total (the sum of all).

The result is expressed in kg CO2 equivalent.

ACIDIFICATION POTENTIAL (AP)

Acidification originates from the emissions of sulphur dioxide and oxides of nitrogen. This indicator calculates the atmospheric acidification caused by the emission of gas with an acidifying effect.

It is expressed in mol H+ eq.

WATER DEPRIVATION POTENTIAL (WDP)

This indicator quantifies the potential for water deprivation, either for humans or ecosystems. The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator. It is expressed in m3 eq. depriv.

RECOVERABILITY RATE

It refers to the percentage mass of the locomotive that can potentially be recovered, reused or both.

RECYCLABILITY RATE

It refers to the percentage mass of the locomotive that can potentially be recycled, reused or both.

EUTROPHICATION POTENTIAL (EP)

This environmental indicator calculates the eutrophication of water caused by the emission of specific substances (discharge of phosphoric, nitrogenous and organic matter).

There are three different EP indicators, expressed in different units: EP, aquatic freshwater (kg P eq.); EP, aquatic marine (kg N eq.); and EP, terrestrial (kg N eq.).

ABIOTIC DEPLETION POTENTIAL (ADP)

The abiotic depletion is the decrease in the availability of mineral resources and fossil fuels in the environment.

The indicator for ADP of mineral & metal resources is expressed in kg of Sb eq., and the indicator for ADP of fossil fuels is expressed in MJ.

OZONE DEPLETION POTENTIAL (ODP)

The ozone layer depletion potential is the contribution of some substances to the depletion of the ozone layer compared with the impact caused by CFC-11.

It is expressed in kg CFC 11 eq.

PHOTOCHEMICAL OZONE CREATION POTENTIAL (POCP)

The potential for creating tropospheric ozone is caused by the discharge of specific gases which have an oxidizing action under the effect of solar radiation. This indicator calculates the potential for the creation of photochemical ozone from the emission of about a hundred substances.

The result is expressed in kg NMVOC eq.

PROGRAMME INFORMATION

Programme

The International EPD® System
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Box 210 60
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Sweden
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Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

Rolling Stock. Product Category Classification: UN CPC 495. Version 3.04. (2022-05-12).

PCR review was conducted by:
Adriana Del Borghi as review Chair, as well as the Technical Committee of the International EPD® System. A full list of members available on www.environdec.com. The review panel may be contacted via info@environdec.com

Life Cycle Assessment (LCA)

LCA accountability: IK Ingenieria

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
☒ EPD verification by accredited certification body
Tecnalia R&I Certificacion, SL
Auditor: Cristina Gazulla Santos
info@tecnaliacertificacion.com
Accredited by: ENAC nº125/C-PR283 accreditation.

Procedure for follow-up of data during EPD validity involves third-party verifier:

☒ Yes ☐ No

Geographical scope:

Europe

VERIFICATION STATEMENT CERTIFICATE CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD08501

TECNALIA R&I CERTIFICACION S.L., confirms that independent third-party verification has been conducted of the Environmental Product Declaration (EPD) on behalf of:

TECNALIA R&I CERTIFICACION S.L., confirma que se ha realizado verificación de tercera parte independiente de la Declaración Ambiental de Producto (DAP) en nombre de:

STADLER RAIL VALENCIA, S.A.U.
Pol. Ind. del Mediterráneo, Mitjera 6
46550 ALBUIXECH (Valencia) - SPAIN

for the following product(s):
para el siguiente(s) producto(s):

DR19 LOCOMOTIVE
LOCOMOTORA DR19

with registration number **S-P-08078** in the International EPD® System (www.environdec.com).
con número de registro S-P-08078 en el Sistema Internacional EPD® (www.environdec.com).

it's in conformity with:
es conforme con:

- **ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations.**
- **General Programme Instructions for the International EPD® System v.3.01.**
- **PCR 2019:05. Rolling stock v3.04.**
- **CPC 495 Railway and tramway locomotives and rolling stock, and parts thereof.**



Carlos Nazabal Alsua
Manager

Issued date / Fecha de emisión:	14/02/2023
Update date / Fecha de actualización:	14/02/2023
Valid until / Válido hasta:	10/02/2028
Serial Nº / Nº Serie:	EPD0850100-E

This certificate is not valid without its related EPD.
Este certificado no es válido sin su correspondiente EPD.

El presente certificado está sujeto a modificaciones, suspensiones temporales y retiradas por TECNALIA R&I CERTIFICACION.
This certificate is subject to modifications, temporary suspensions and withdrawals by TECNALIA R&I CERTIFICACION.

El estado de vigencia del certificado puede confirmarse mediante consulta en www.tecnaliacertificacion.com.
The validity of this certificate can be checked through consultation in www.tecnaliacertificacion.com.



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