Star Charge

Wanbang Digital Energy Co., Ltd.

EPD ITALY

ENVIRONMENTAL PRODUCT DECLARATION

Products:

Charging Stations: Titan, Venus, Jupiter series

No. 39 Longhui Road, Wujin District,
Changzhou City, Jiangsu Province, P.R. China

In accordance with ISO 14025 and EN 50693

Program Operator	EPDItaly
Publisher	EPDItaly

Declaration Number	WBDE20240129V2
Registration Number	EPDITALY0603

Issue date	27 / 03 / 2024
Valid to	27 / 03 / 2029

Jupiter V3: DC0600EN052-B

GENERAL INFORMATION

EPD OWNER	
Name of the company	Wanbang Digital Energy Co., Ltd.
Registered office	Wanbang Digital Energy Co., Ltd.
The address of the registered office	No. 39 Longhui Road, Wujin District, Changzhou City, Jiangsu Province, P.R. China
Contacts for information on the EPD	Chengxia Lu +86 15906111820 mail to: Chengxia. Lu@wbstar.com

PROGRAM OPERATOR	
EPDItaly	Via Gaetano De Castillia n° 10 - 20124 Milano, Italy

INFORMATION ON THE EPD	
EPD Tpye	Specific Product EPD
Product name (s)	Charging Stations:
Site (s)	No. 39 Longhui Road, Wujin District, Changzhou City, Jiangsu Province, P.R. China
Short description and technical information of the product (s)	Jupiter, Titan and Venus Charging Stations with 20-year life span, Multiphase
Field of application of the product (s)	Electronic and electrical products and systems-Charging Stations
Product (s) reference standards (if any)	
CPC Code (number) https://unstats.un.org/unsd/classifications/Econ	4621 « electricity distributor or control apparatus »
LCA Consultant	The LCA report is written by: TÜV Rheinland (China) Ltd. www.tuv.com Contact person: Sharon Ye (sharon.ye@tuv.com)

Product Series	Model Type
Jupiter V3	DC0600EN052-B
	DC0600EN052-A
Titan V2	DH-DC1800SG56
	DH-DC1500SG56
	DH-DC1200SG56
Venus V2	DH-DC0300HG55-C
	DH-DC0300HG55

VERIFICATION INFORMATION	
PCR (title, version, date of publication or update)	• Core PCR: EPDItaly007 —PCR for Electronic and Electrical Products and Systems, Rev. 3. 2023/01/13 • Sub-category PCR: EPDItaly017 —PCR for Electronic and electrical products and systems – Charging Stations, Rev. 1. 2020/12/11
EPDItaly Regulation (version, date of publication or update)	REGULATIONS OF THE EPDItaly PROGRAMME VER. 6, ISSUED ON 2023/10/30

Project Report LCA	This EPD study is based on the LCA study described in the LCA report <LCA Report_Wanbang Digital Energy Co., Ltd_Titan, Venus, Jupiter series_v3 20240129 >
Independent Verification Statement	The PCR review was performed by Ing. Daniele Pace, Arch. Michele Paleari, Ing. Sara Toniolo - info@epditaly.it. Independent verification of the declaration and data, carried out according to ISO 14025: 2010. ☐ Internal ☑ External Third party verification carried out by: ICMQ S.p.A., via Gaetano De Castillia n ° 10 - 20124 Milan, Italy. Accredited by Accredia.
Comparability Statement	Environmental statements published within the same product category, but from different programs, may not be comparable. In particular, EPDs of construction products may not be comparable if they do not comply with EN 15804: 2012 + A2: 2019.
Liability Statement	The EPD Owner releases EPDItaly from any non-compliance with environmental legislation. The holder of the declaration will be responsible for the information and supporting evidence. EPDItaly disclaims any responsibility for the information, data and results provided by the EPD Owner for life cycle assessment.

OTHER INFORMATION

CONTENTS

PURPOSE & EMBEDDING SUSTAINABILITY

Wanbang Digital Energy Co., Ltd. (The abbreviation is Star Charge) is in the process of seeking their own survival and sustainable development. Star Charge considers achieving the goal of enterprise management and improve enterprise market position, and to keep the enterprise in the leading field of competition and the future expansion of the business environment always maintain sustained earnings growth and improvement of ability, ensure longevity enterprise for a long time.

GENERAL INFORMATION

Star Charge is the head unicorn in the field of digital energy in Asia, and one of the core brands of Wanbang Digital Energy. It provides equipment, platform, user and data operation services for global customers, and builds a user charging full life cycle platform with the help of vehicle sales, private charging, public charging, financial insurance and other businesses. Through the corporate strategy of "one end energy interconnection, one end industry interconnection", finally realize the long-term dream of "promoting the electrification of human transportation and leading the digitalization of global energy".Star Charge has been awarded the National Energy Administration "Energy Internet Major Application Demonstration" project, the National Ministry of Industry and Information Technology "Intelligent Manufacturing 2025 New Model Application" project, the National Ministry of Science and Technology key research and development project, the Ministry of Industry and Information Technology green manufacturing system integration project and other national projects, selected as a national demonstration platform,and led the establishment of new energy vehicle smart energy equipment innovation center, has also obtained a very professional gold content of ASPICE CL1 certification, IATF16949 and VDA6.3 certification, continued to apply for more than 400 R & D patents.

Star Charge is the world's more than 60 well-known car companies charging ecological strategic partner, as the charging field of the national standard formulation unit, Star Charge participated in the drafting of all domestic charging standards, and as a Chinese representative to participate in the drafting of IEC international standards, but also the National Standards Committee designated one of the two leading units of domestic high-power charging.In 2020, Star Charge first proposed the concept of "mobile energy network" : a time-ubiquitous energy interconnection network built by mobile transportation, mobile energy carriers, mobile replenishing facilities and mobile communication terminals.

Innovative "Cloud Pipe End" that is, "Hardware + Software + Service" business model, called the digital energy ecology of China sample. In improving energy efficiency, promoting structural adjustment and energy conservation and emission reduction, helping the national automobile industry to stand on top of the world, and promoting the development and growth of the national new energy industry, Star Charge will always spare no effort.

In terms of product quality, obtained ISO9001&IATF16949 quality system certification.In terms of supplier selection, VDA6.3 audit and annual review of supplier quality are adopted to continuously improve supplier process and product quality. Continuous improvement of product quality through internal audit, such as process audit, system audit, product audit, layered process audit, etc., and establish Six Sigma projects, QCC

projects and lean improvement every year to find improvement space, improve product quality and increase product profits. According to customer requirements and company development, Star Charging has also obtained more than 20 system certifications such as ISO14001, ISO5001, SA8000, QC080000, ISO14064, ASPICE CL1 certification. At the same time, in the product certification, we have obtained CQC certification, CE certification, CB certification, UL certification, EV-Ready certification, PTB certification and other major certifications inboard and abroad, and our products implement important domestic and international standards, and become an Asian unicorn.

Star Charge is committed to providing customers with satisfactory products and solutions through continuous innovation and unremitting pursuit of high quality to bring people a more comfortable and convenient life.

As a responsible company to society and environment, Star Charge applied EPD Italy, conducted LCA study, and is willing to disclosure the actual environmental impact to the public and customers for Charging Stations products.

Declared in this EPD includes the following products and for each product the characteristics and composition were listed below.

Table 1 LCA study related types of Charging Stations

Product Series	Model Type
Jupiter V3	DC0600EN052-B
	DC0600EN052-A
Titan V2	DH-DC1800SG56
	DH-DC1500SG56
	DH-DC1200SG56
Venus V2	DH-DC0300HG55-C
	DH-DC0300HG55

PRODUCT CHARACTERISTICS

Table 2 Product characteristics

Item	Product Series	Model Type	Voltage	Type of operational conditions	Life span
1	Jupiter V3	DC0600EN052-B	AC 400Vac±10%	Multiphase	20-year
2		DC0600EN052-A	AC 400Vac±10%	Multiphase	20-year
3	Titan V2	DH-DC1800SG56	AC 400Vac±10%	Multiphase	20-year
4		DH-DC1500SG56	AC 400Vac±10%	Multiphase	20-year
5		DH-DC1200SG56	AC 400Vac±10%	Multiphase	20-year
6	Venus V2	DH-DC0300HG55-C	AC 480Va（－15% +10%)	Multiphase	20-year

7		DH-DC0300HG55	AC 480Va（－15% +10%)	Multiphase	20-year

Here is the manufacturing process of the charging station in Wangbang Digital Energy Co., Ltd.

MATERIALS COMPOSITION

Table 3 The Charging Station material composition.

Material	IEC62474 Material classes ID	Jupiter V3 DC0600EN052-B	Jupiter V3 DC0600EN052-A	Titan V2 DH-DC1800SG56	Titan V2 DH-DC1500SG56	Titan V2 DH-DC1200SG56	Venus V2 DH-DC0300HG55-C	Venus V2 DH-DC0300HG55	Unit
Core Board	NA	0.0087	0.0087	0.0085	0.0085	0.0085	0.0085	0.0085	kg/p
SD Card	NA	0.0048	0.0048	0.0048	0.0048	0.0048	0.0061	0.0016	kg/p
PC/ABS	M231	0.2778	0.4582	0.8081	0.8081	0.409	0.0515	0.0515	kg/p
Copper	M121	13.6042	13.7184	53.7603	48.1569	40.0705	6.4145	6.4305	kg/p
PVC	M200	0.9702	0.8468	0.7245	0.7245	0.7245	0.0655	0.0655	kg/p
PE	M201	0.0074	0	0.1051	0.1051	0.0036	0	0	kg/p
Switch	NA	0.771	0.771	1.4434	1.4434	1.4434	0.6845	0.6845	kg/p
Router	NA	0.416	0.416	0.416	0.416	0.416	0.416	0.416	kg/p
Cable	NA	30.4265	35.8123	39.0911	39.0911	39.0911	15.3045	15.2705	kg/p
PCBA	NA	0.9825	1.07	0.9627	0.9627	0.9627	0.6111	0.6111	kg/p
PA66	M208	0.2004	0.269	4.4623	4.4623	4.4293	1.52	1.522	kg/p
PA	M208	0.2952	0.1208	0	0	0	0.0284	0.0284	kg/p
Polyamide	M218	0.0188	0	0	0	0	0	0.039	kg/p
Connector	NA	0.0206	0.0211	0.0328	0.0328	0.0328	0	0	kg/p
AC contactor	NA	2.646	2.646	5.163	5.163	5.163	0.039	0	kg/p
Steel	M119	0.2417	0.1842	3.923	3.923	3.094	0.19	0.1926	kg/p
PP	M202	0.0496	0	3.2542	3.2542	8.1356	0	0	kg/p
Glass fiber	M342	2.2371	0	6.7458	5.6733	4.29	1.001	1.1446	kg/p
Epoxy resin	M302	0.0363	0.0925	0.9225	0.9043	0.0726	0.5812	0.5812	kg/p
Ferro	M119	0.314	0.314	0.471	0.471	0.471	0	0	kg/p
Electronics	NA	12.1834	12.8095	6.2079	6.2079	6.2079	2.3092	2.2997	kg/p
Aluminium	M120	7.013	0.0291	51.1442	48.5059	45.6299	16.3068	16.3068	kg/p
PET	M209	2.1945	0.0263	8.6597	7.5872	6.5147	1.9592	1.9592	kg/p
BMC resin	M399	0.0927	0.0247	3.0536	3.0536	3.0536	0.356	0.356	kg/p
Polyvinyl chloride	M200	0	0	0	0	0	0	0	kg/p
Paper	M341	0.0579	0.0579	0.0104	0.0104	0.0104	0.0594	0.049	kg/p
Aluminium alloy	M120	20.084	21.9846	4.6225	4.6225	4.6225	0.0648	0.0648	kg/p
Low alloy steel	M119	1.1737	1.1131	2.3642	2.3642	2.3642	0.4737	0.4737	kg/p
PC	M204	1.3865	0.3981	4.7571	4.7571	4.7571	0.5726	0.7676	kg/p
Zinc	M124	15.6998	0	26.6642	26.8517	26.849	0	0.4531	kg/p
Silicon	M321	0.5787	0	0.9829	0.9898	0.9898	0.095	0.095	kg/p
18/8 steel	M100	146.2988	173.127	245.206	239.4871	233.7682	9.7666	9.3415	kg/p
silicon product	M321	0.0892	0.045	0.1511	0.1297	0.1082	0.02	0	kg/p
polyethylene	M249	0	0	0.018	0.018	0.1195	0	0	kg/p
manganese	M149	0	0	0	0	0	0.0181	0.0181	kg/p

Ethylene glycol	NA	0.2343	0	0.7029	0.5858	0.4686	0.1093	0.1093	kg/p
Integrated Circuit Card	NA	0.0116	0.0116	0.0116	0.0116	0.0116	0	0.0116	kg/p
Tin	NA	0.0365	0	0.01	0.01	0	0.0108	0.0108	kg/p
Display	NA	0.6255	0.6693	2.9	2.9	2.9	0	0	kg/p
Silicon dioxide	NA	0	0	0	0	0	0.5075	0.6537	kg/p
Nickel	M126	0	0	0	0	0	0.0181	0.0233	kg/p
Gold	NA	0	0	0	0	0	0	0.0026	kg/p
Total		261.2889	267.05	479.7654	463.6975	447.1976	59.5689	60.0433	kg/p

As for the weight % for each product, please see the table below:

Material	Jupiter V3 DC0600EN052-B	Jupiter V3 DC0600EN052-A	Titan V2 DH-DC1800SG56	Titan V2 DH-DC1500SG56	Titan V2 DH-DC1200SG56	Venus V2 DH-DC0300HG55-C	Venus V2 DH-DC0300HG55	**Unit**
Core Board	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	kg/p
SD Card	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	kg/p
PC/ABS	0.11%	0.17%	0.17%	0.17%	0.09%	0.09%	0.09%	kg/p
Copper	5.21%	5.14%	11.21%	10.39%	8.96%	10.77%	10.71%	kg/p
PVC	0.37%	0.32%	0.15%	0.16%	0.16%	0.11%	0.11%	kg/p
PE	0.00%	0.00%	0.02%	0.02%	0.00%	0.00%	0.00%	kg/p
Switch	0.30%	0.29%	0.30%	0.31%	0.32%	1.15%	1.14%	kg/p
Router	0.16%	0.16%	0.09%	0.09%	0.09%	0.70%	0.69%	kg/p
Cable	11.64%	13.41%	8.15%	8.43%	8.74%	25.69%	25.43%	kg/p
PCBA	0.38%	0.40%	0.20%	0.21%	0.22%	1.03%	1.02%	kg/p
PA66	0.08%	0.10%	0.93%	0.96%	0.99%	2.55%	2.53%	kg/p
PA	0.11%	0.05%	0.00%	0.00%	0.00%	0.05%	0.05%	kg/p
Polyamide	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.06%	kg/p
Connector	0.01%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	kg/p
AC contactor	1.01%	0.99%	1.08%	1.11%	1.15%	0.07%	0.00%	kg/p
Steel	0.09%	0.07%	0.82%	0.85%	0.69%	0.32%	0.32%	kg/p
PP	0.02%	0.00%	0.68%	0.70%	1.82%	0.00%	0.00%	kg/p
Glass fiber	0.86%	0.00%	1.41%	1.22%	0.96%	1.68%	1.91%	kg/p
Epoxy resin	0.01%	0.03%	0.19%	0.20%	0.02%	0.98%	0.97%	kg/p
PBT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	kg/p
Ferro	0.12%	0.12%	0.10%	0.10%	0.11%	0.00%	0.00%	kg/p
Electronics	4.66%	4.80%	1.29%	1.34%	1.39%	3.88%	3.83%	kg/p
Aluminium	2.68%	0.01%	10.66%	10.46%	10.20%	27.37%	27.16%	kg/p
PET	0.84%	0.01%	1.80%	1.64%	1.46%	3.29%	3.26%	kg/p
BMC resin	0.04%	0.01%	0.64%	0.66%	0.68%	0.60%	0.59%	kg/p
Polyvinyl chloride	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	kg/p
Paper	0.02%	0.02%	0.00%	0.00%	0.00%	0.10%	0.08%	kg/p
Aluminium alloy	7.69%	8.23%	0.96%	1.00%	1.03%	0.11%	0.11%	kg/p
Low alloy steel	0.45%	0.42%	0.49%	0.51%	0.53%	0.80%	0.79%	kg/p

PC	0.53%	0.15%	0.99%	1.03%	1.06%	0.96%	1.28%	kg/p
Zinc	6.01%	0.00%	5.56%	5.79%	6.00%	0.00%	0.75%	kg/p
Silicon	0.22%	0.00%	0.20%	0.21%	0.22%	0.16%	0.16%	kg/p
18/8 steel	55.99%	64.83%	51.11%	51.65%	52.27%	16.40%	15.56%	kg/p
Fan	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	kg/p
silicon product	0.03%	0.02%	0.03%	0.03%	0.02%	0.03%	0.00%	kg/p
Carbon black	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	kg/p
Iron trioxide	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	kg/p
polyethylene	0.00%	0.00%	0.00%	0.00%	0.03%	0.00%	0.00%	kg/p
manganese	0.00%	0.00%	0.00%	0.00%	0.00%	0.03%	0.03%	kg/p
Ethylene glycol	0.09%	0.00%	0.15%	0.13%	0.10%	0.18%	0.18%	kg/p
Integrated Circuit Card	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	kg/p
Tin	0.01%	0.00%	0.00%	0.00%	0.00%	0.02%	0.02%	kg/p
Display	0.24%	0.25%	0.60%	0.63%	0.65%	0.00%	0.00%	kg/p
Silicon dioxide	0.00%	0.00%	0.00%	0.00%	0.00%	0.85%	1.09%	kg/p
Nickel	0.00%	0.00%	0.00%	0.00%	0.00%	0.03%	0.04%	kg/p
Gold	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	kg/p
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	kg/p

DECLARED UNIT (FUNCTIONAL UNIT)

The declared unit is specified in 1 pcs of the Charging Stations. The functional unit is per pcs of Charging Stations with a RSL of 20 years.

SYSTEM BOUNDARIES

The life cycle of the Charging Stations is a "from cradle to grave" analysis and covers the following main life cycle stages.

The following table shows the stages of the product life cycle and the information stages according to EN 50693 and PCR EPDItaly007 and EPDItaly017 for the evaluation of electronic and electrical products and systems.

Table 4 System boundaries

<table>
<tr><th colspan="2">MANUFACTURING STAGE</th><th>DISTRIBUTION STAGE</th><th>INSTALLATION STAGE</th><th>USE & Maintenance STAGE</th><th>END-OF-LIFE STAGE

De-installation</th></tr>
<tr><th>UPSTREAM MODULE</th><th>CORE MODULE</th><th colspan="4">DOWNSTREAM MODULE</th></tr>
<tr><td>extraction of raw materials, including waste recycling processes and the production of semi-finished and ancillary products</td><td>manufacturing of the product constituents, including all the stages</td><td colspan="4" rowspan="4">IN ACCORDANCE WITH EN 50693</td></tr>
<tr><td>transportation of raw materials to the manufacturing company</td><td>product assembly</td></tr>
<tr><td></td><td>packaging</td></tr>
<tr><td></td><td>waste handling processes</td></tr>
</table>

The stages of the product life cycle and the information considered for the evaluation are:

- Manufacturing upstream includes raw materials, and production activities of suppliers, including transport of semi-finished items and subassemblies to Star Charge.
- Manufacturing core includes local consumptions due tomanufacturing of the products, the relevant assembling and waste due to manufacturing.
- The distribution stage includes the impacts related to the distribution of the product from manufacture to the logistic center of the receivers.
- The installation stage includes the impact related to the transportation of packaging waste to recycling place.
- The use stages include the impact related to energy consumption during the service life of the product.
- End of life includes the transportation and operations for the disposal of the product at the end of its service life.

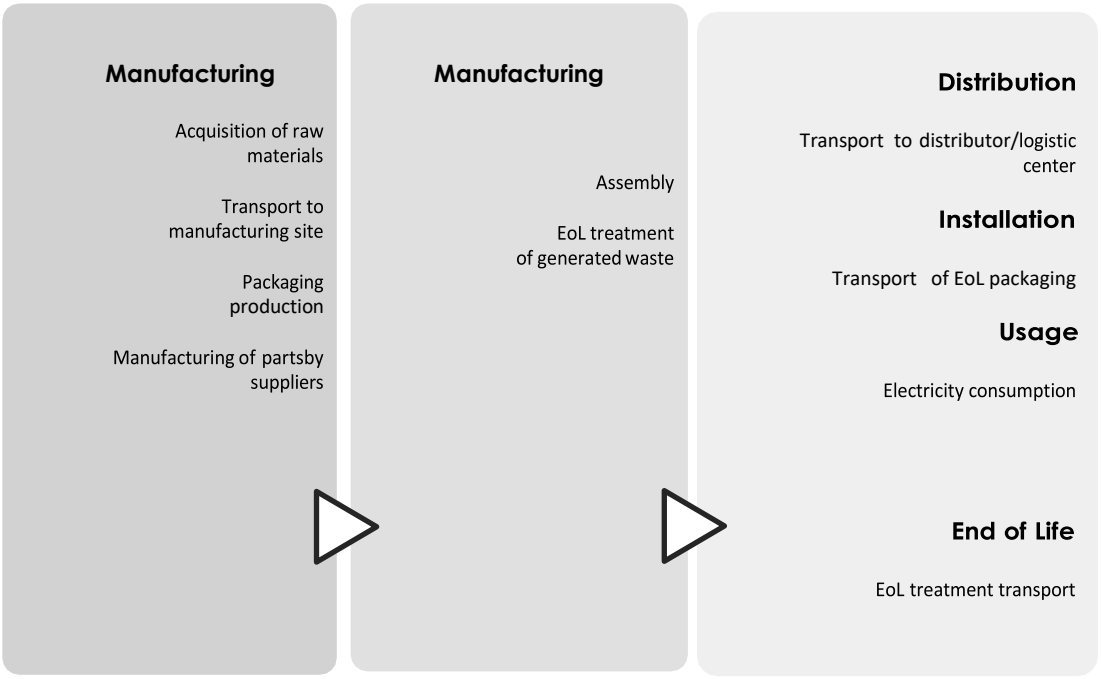

Figure 1 System boundary

TEMPORAL AND GEOGRAPHICAL BOUNDARIES

The Star Charge's component suppliers are sourced: China. All primary data collected from Star Charge factory are from July 2022 to June 2023.

The selected Ecoinvent processes in the LCA model have a global representativeness, due to the unclear origin of each component. In this way, the conservative approach is adopted.

BOUNDARIES IN THE LIFE CYCLE

As indicated in the PCR EPDItaly, capital goods, such as buildings, machinery, tools and infrastructure, the packaging for internal transport which cannot be allocated directly to the production of the reference product, may be excluded from the system boundary.

DATA QUALITY

In this EPD, both primary and secondary data are used. Site specific foreground data have been provided by Star Charge. Main data sources are the bill of materials or weighting photos available on theenterprise resource planning. For all processes for which primary are not available, generic data originating from the Ecoinvent v3.9.1 database, allocation cut-off by classification, are used. The Ecoinvent database is available in the SimaPro 9.5.0.0 software used for the calculations.

ENVIRONMENTAL IMPACT INDICATORS

The information obtained from the inventory analysis is aggregated according to the effects related to the various environmental issues. According to PCR EPDItaly007 PCR, EPDItaly017 and EN 50693 the environmental impact indicators must be determined using the characterization factors and impact assessment methods specified in EN 15804 + A2 Method V1.02 and EF 3.1.

EPDItaly007, EPDItaly017 and the EN 50693 standard establish four indicators for climate impact(GWP-GHG): GWP (total) which includes all greenhouse gases; GWP (fossil fuels); GWP(biogenic carbon) which includes the emissions and absorption of biogenic carbon dioxide and biogenic carbon stored in the product; GWP (land use).

Table 5 Impact indicators used in EPD

Impact category	Unit of measurement
ENVIRONMENTAL IMPACT DESCRIPTIVE PARAMETERS	
Climate change	kg CO2 eq
Climate change - Biogenic	kg CO2 eq
Climate change - Fossil	kg CO2 eq
Climate change - Land use and land use change	kg CO2 eq
Eutrophication, marine	kg N eq
Ozone depletion	kg CFC11 eq
Acidification	mol H+ eq
Eutrophication aquatic freshwater	kg P eq
Eutrophication aquatic marine	kg N eq
Eutrophication terrestrial	mol N eq
Photochemical ozone formation	kg NMVOC eq
Depletion of abiotic resources – minerals and metals	kg Sb eq
Depletion of abiotic resources – fossil fuels	MJ
Water use	m3
PARAMETERS DESCRIBING RESOURCE USE	
Use of non-renewable primary energy excluding nonrenewable primary energy resources used as raw material (PENRE)	MJ
Use of renewable primary energy excluding renewable primary energy resources used as raw material (PERE)	MJ
Use of non-renewable primary energy resources used as raw material (PENRM)	MJ

Use of renewable primary energy resources used as raw material (PERM)	MJ
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ
Net use of fresh water (FW)	m3
Use of secondary materials (MS)	kg
Use of renewable secondary fuels (RSF)	MJ
Use of non-renewable secondary fuels (NRSF)	MJ
WASTE PRODUCTION DESCRIPTIVE PARAMETERS	
Hazardous waste disposed (HWD)	HWD (kg)
Non-hazardous waste disposed (NHWD)	NHWD (kg)
Radioactive waste disposed (RWD)	RWD (kg)
Materials for energy recovery (MER)	MER (kg)
Material for recycling (MFR)	MFR (kg)
Components for reuse (CRU)	CRU (kg)
Exported thermal energy (ETE)	ETE (MJ)
Exported electricity energy (EEE)	EEE (MJ)

As for the calculation of each impact indicators adopted according with SimaPro help center document "How to calculate EN 15804:A2 indicators in desktop SimaPro" and we can find more explanation in LCA report.

ALLOCATION RULES

The energy demand for product line for products is allocated by yield based on total production amount from 2022.07.01 till 2023.06.30.

In the system studied, there is no co-product which is defined as "Partitioning the input or output flows of a process or a product system between the product system under study and one or more other product systems." [Source: ISO 14044:2006]. Therefore, there is no co-product allocation.

LIMITATIONS AND SIMPLIFICATIONS

The data of energy consumption and pollutants emission in the raw material acquisition stage are from the Ecoinvent 3.9.1 database published by the European Ecoinvent Center.

The emission factor of China electricity is from the Ecoinvent 3.9.1 database. This dataset has been extrapolated from year 2015 to the year of the calculation (2020). China state grid launched the green electricity program in late of 2021, however, the green electricity selling information is not public available when creating this LCA report. Thus we use the Ecoinvent data base data for China electricity [Electricity, high voltage {CN}| market group for | Cut-off, S] is deemed conservative as this value is higher than the reality.

INVENTORY ANALYSIS

The Ecoinvent v3.9.1 by classification system processes are used to model the background system of the processes.

Due to the large amounts of components in the module, raw material inputs are modelled with data from Ecoinvent representing a global market coverage. These datasets are assumed to be representative.

MANUFACTURING STAGE

18/8 steel is the most frequently used material, followed by copper. As for the electricity consumed during the manufacturing plant, we assessed the consumption from 2 parts, one is the PCBA process consumption, and another part is the assembly of the whole products. For PCBA process energy consumption was metered in the workshop and the electricity was allocated by output in Pieces during the data period, then PCBA process energy consumption was computed based on the No. of designated PCBA assembled in specified Charging station. And the electricity used for assembly of the whole product was allocated by output in watt. which is the unit used for output capacity. the detailed information for PCBA amount and energy allocation please refer to the below table:

#	Product series	Model	Code	Efficiency/kw	Amount of PCBA/pcs	Average electricity consumptionkw/pcs
1	Jupiter V3 60KW	DC0600EN052-B	D57890021	60	15	41.4285
2		DC0600EN052-A	D57890020	60	16	43.3352
3	Titan V2	（DH-DC1800SG56)	D52830033	180	12	61.3644
4		DH-DC1500SG56	D52830014	150	12	54.9504
5		DH-DC1200SG56	D52830032	120	12	48.5364
6	Venus 30KW	DH-DC0300HG55-C	D54680005	30	9	23.5743

The packaging (Plywood etc.) are also included in the analysis in the manufacturing stage-core. Star Charge receives packaging components from outside suppliers and packages the module before shipping them.

The transport distances and weight from raw materials suppliers to the manufacturing are assumed as below:

Item	By truck distance	Unit
Jupiter V3 DC0600EN052-B	255.6061	t km/p
Jupiter V3 DC0600EN052-A	247.8261	t km/p
Titan V2 DH-DC1800SG56	348.9375	t km/p
Titan V2 DH-DC1500SG56	341.1480	t km/p
Titan V2 DH-DC1200SG56	353.3572	t km/p
Venus V2 DH-DC0300HG55-C	349.1543	t km/p
Venus V2 DH-DC0300HG55	339.7476	t km/p

"Transport, freight, lorry, unspecified {GLO}| market for | Cut-off, S;" is used

The manufacturing of the product is located in Star Charge factory of Wujin DistrictNo.39 Longhui Rd, Changzhou, Jiangsu, Chi na. In the factory, the different components and subassemblies are assembled to abroad.

For the manufacturing phase, the general China high voltage electricity mix from Ecoinvent v3.9.1 is used.

DISTRIBUTION

The transport distances from the plant to the place of use are shown as below: However, the data source is from https://sea-distances.orf/

Table 6 Transportation activity data

Item	By truck distance	By ship distance	Unit
Jupiter V3 DC0600EN052-B	679.1641	23802.9981	t km/p
Jupiter V3 DC0600EN052-A	676.9734	23726.2200	t km/p
Titan V2 DH-DC1800SG56	714.8312	25053.0380	t km/p
Titan V2 DH-DC1500SG56	712.6380	24976.1723	t km/p
Titan V2 DH-DC1200SG56	715.1658	25064.7670	t km/p
Venus V2 DH-DC0300HG55-C	716.6229	25115.8332	t km/p
Venus V2 DH-DC0300HG55	728.4696	25531.0293	t km/p

USE

Use and maintenance are modelled according to the PCR EPDItaly017. Market: worldwide, mainly Italy, Spain, Romania, UK, Germany, France, Hungary, Bulgaria, Israel.

As for the Puse, the Puse is base on measured data. The operarion steps are as follows:

1. Connect the input side of the whole pile with the power analyzer;
2. The charging pile return to the standby state (disconnect the AC contactor, other auxiliary circuits remain connected);
3. Read the active power value on the power analyzer, this active power value is Puse.

And the Puse test result please see below table:

Table 7 The Puse tested result

Product series	**Certified model**	**Stand-by power Consumption Active Power（W）**
Jupiter V3	DC0600EN052-B	22.84

	DC0600EN052-A	22.84
Titan V2	DH-DC1800SG56	32
	DH-DC1500SG56	32
	DH-DC1200SG56	32
Venus V2	DH-DC0300HG55-C	18.5
	DH-DC0300HG55	18.5

As for the electricity consumption, according to the calculation formular in PCR, and RSL=20, we can calculation the Euse of each product. The calculation formular as bellow:

$$E_{use}\ [kWh] = \frac{P_{use} * 8760 * RSL}{1000}$$

However, the usage and maintenance phase, there are some spare parts which are power module and cable which are made of copper, PP and steel. And there is a calculation and assumption we can find it from LCA report. Therefore, here are the summary data of each charging stations during use phase.

Table 8 Data list of **Charging station:**Titan, Venus, Jupiter series

USE & Maintenance	**Jupiter V3 DC0600EN052-B**	**Jupiter V3 DC0600EN052-A**	**Titan V2 DH-DC1800SG56**	**Titan V2 DH-DC1500SG56**	**Titan V2 DH-DC1200SG56**	**Venus V2 DH-DC0300HG55-C**	**Venus V2 DH-DC0300HG55**	Unit
electricity	4001.5680	4001.5680	5606.4000	5606.4000	5606.4000	3241.2000	3241.2000	kwh/p
glass fiber	0.2470	0.2470	38.0000	38.0000	38.0000	1.9000	1.9000	kg/pcs
copper+18/8 steel	31.6800	31.6800	94.7100	78.8700	63.0300	14.7840	14.7840	kg/pcs
cable	16.3396	16.3396	18.0698	18.0698	18.0698	7.7293	7.7293	kg/pcs
copper+PP	0.0000	0.0000	7.8102	7.8102	7.8102	0.0000	0.0000	kg/pcs
By ship	530.9324	530.9324	1744.4893	1570.2493	1396.0093	268.5461	268.5461	t km/p
By truck	14.4800	14.4800	47.5770	42.8250	38.0730	7.3240	7.3240	t km/p
injecttion	0.2470	0.2470	41.9051	41.9051	41.9051	1.9000	1.9000	kg/pcs
Metal working	31.6800	31.6800	98.6151	82.7751	66.9351	14.7840	14.7840	kg/pcs
waste glass fiber	0.2470	0.2470	38.0000	38.0000	38.0000	1.9000	1.9000	kg/pcs
waste copper	15.8400	15.8400	51.2601	43.3401	35.4201	7.3920	7.3920	kg/pcs
waste steel	15.8400	15.8400	47.3550	39.4350	31.5150	7.3920	7.3920	kg/pcs
waste cable	16.3396	16.3396	18.0698	18.0698	18.0698	7.7293	7.7293	kg/pcs
waste PP	0.0000	0.0000	3.9051	3.9051	3.9051	0.0000	0.0000	kg/pcs

END OF LIFE

The end-of-life stage is modelled according to PCR EPDItaly017 and WEEE Directive(2012/19/EU). Thepercentages for end-of-life treatments of the products are taken from WEEE Directive(2012/19/EU). The disposal rate and recycling rate of each material are followed the specific data fro EN 50693 2019.

Here is the table of the summary disposal rate and total material amount of each charging stations during end-of-life, the rest percentage in the recycling rate.

Table 9 Disposal rate and total material consumption of Charging station:Titan, Venus, Jupiter series

Material	Disposal rate	Jupiter V3 DC0600EN052-B	Jupiter V3 DC0600EN052-A	Titan V2 DH-DC1800SG56	Titan V2 DH-DC1500SG56	Titan V2 DH-DC1200SG56	Venus V2 DH-DC0300HG55-C	Venus V2 DH-DC0300HG55	Unit
Steel	20%	22.7081	31.36224	46.5258	45.38202	44.07244	1.99132	1.90682	kg/p
Other ferrous metals	20%	0.0628	0.0628	0.0942	0.0942	0.0942	0	0	kg/p
Aluminium	30%	8.1291	6.60411	16.73001	15.93852	15.07572	4.91148	4.91148	kg/p
Copper	40%	5.44168	5.48736	21.50412	19.26276	16.0282	2.5658	2.5722	kg/p
Other non-ferrous metals	40%	6.29452	0	10.66968	10.74468	10.7396	0.01156	0.19592	kg/p
PP	40%	0.01984	0	1.30168	1.30168	3.25424	0	0	kg/p
ABS	40%	0.11112	0.18328	0.32324	0.32324	0.1636	0.0206	0.0206	kg/p
Rubber	50%	0	0	0	0	0	0	0	kg/p
Other plastic or plastic containing fillers	50%	3.7014	0.84285	14.26305	13.19055	11.94615	2.75135	2.94115	kg/p
Glass	40%	0.2502	0.26772	1.16	1.16	1.16	0	0	kg/p
PCB	100%	1.0076	1.0951	0.9876	0.9876	0.9876	0.6257	0.6328	kg/p
battery	0%	16.5	16.5	16.5	16.5	16.5	16.5	15.4	kg/p

ENVIRONMENTAL INDICATORS

The following tables show the environmental impact indicators of the life cycle of a Charge Station, as indicated by PCR EPDItaly007, sub-PCR EPDItaly017 and EN 50693:2019.

The indicators are divided into the contribution of the processes to the different modules (upstream, core and downstream) and stages (manufacturing, distribution, use and end-of-life).

Table 10 Environmental impacts of per pcs of Charge Station Jupiter V3 DC0600EN052-B

Item	Unit	Total	MANUFACTURING STAGE		DISTRIBUTION	INSTALLATION	USE STAGE	END-OF-LIFE
			UPSTREAM MODULE	CORE MODULE	DOWNSTREAM MODULE			
Climate change	kg CO2 eq	6.39E+03	4.09E+03	5.61E+01	9.38E+01	8.52E+01	1.94E+03	1.21E+02
Climate change - Biogenic	kg CO2 eq	1.61E+02	4.81E+01	-1.19E+00	1.20E-02	6.01E+01	5.36E+01	9.23E-02
Climate change - Fossil	kg CO2 eq	6.22E+03	4.04E+03	5.73E+01	9.37E+01	2.51E+01	1.89E+03	1.21E+02
Climate change - Land use and land use change	kg CO2 eq	1.15E+01	6.92E+00	5.15E-02	1.04E-01	5.54E-02	4.28E+00	1.03E-01
Ozone depletion	kg CFC11 eq	1.90E-04	1.51E-04	3.65E-07	1.46E-06	3.52E-07	3.64E-05	4.66E-07
Acidification	mol H+ eq	6.30E+01	3.91E+01	2.93E-01	2.10E+00	9.95E-02	2.12E+01	2.30E-01
Eutrophication aquatic freshwater	kg P eq	8.23E-01	6.15E-01	1.44E-03	5.30E-04	2.05E-04	2.05E-01	1.59E-03
Eutrophication aquatic marine	kg N eq	8.03E+00	5.42E+00	6.04E-02	5.39E-01	4.01E-02	1.91E+00	5.96E-02
Eutrophication terrestrial	mol N eq	9.57E+01	6.42E+01	6.52E-01	5.95E+00	4.11E-01	2.38E+01	6.50E-01
Photochemical ozone formation	kg NMVOC eq	2.83E+01	1.87E+01	1.91E-01	1.64E+00	1.41E-01	7.37E+00	1.97E-01
Depletion of abiotic resources – minerals and metals	kg Sb eq	1.41E+00	1.23E+00	1.08E-04	1.50E-04	6.06E-05	1.81E-01	2.17E-04
Depletion of abiotic resources – fossil fuels	MJ	9.20E+04	5.08E+04	7.23E+02	1.21E+03	2.82E+02	3.84E+04	5.59E+02
Water use	m3	1.51E+03	8.96E+02	1.29E+01	3.82E+00	1.28E+00	5.88E+02	6.82E+00
Use of non-renewable primary energy excluding nonrenewable primary energy resources used as raw material (PENRE)	MJ	8.71E+04	4.69E+04	3.97E+04	5.60E+02	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy excluding renewable primary energy resources used as raw material (PERE)	MJ	2.45E+04	7.78E+03	1.66E+04	7.53E+01	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable primary energy resources used as raw material (PENRM)	MJ	4.84E+03	4.70E+03	1.37E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy resources used as raw material (PERM)	MJ	1.20E+03	0.00E+00	1.20E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	9.19E+04	5.08E+04	7.22E+02	1.21E+03	2.36E+02	3.84E+04	5.60E+02
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	2.57E+04	7.70E+03	7.85E+01	1.50E+01	5.00E+00	1.78E+04	7.53E+01
Net use of fresh water (FW)	m3	6.66E+01	3.37E+01	3.16E-01	1.41E-01	5.26E-02	3.19E+01	4.47E-01

Use of secondary materials (MS)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hazardous waste disposed (HWD)	HWD (kg)	4.00E+01	4.73E+00	4.76E-01	2.09E-02	2.76E-01	2.48E+01	9.71E+00
Non-hazardous waste disposed (NHWD)	NHWD (kg)	1.65E+03	1.23E+03	5.35E+00	2.77E+01	3.68E+01	3.29E+02	1.64E+01
Radioactive waste disposed (RWD)	RWD (kg)	3.42E-01	9.70E-02	6.45E-04	1.76E-04	5.63E-05	2.43E-01	1.00E-03
Materials for energy recovery (MER)	MER (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling (MFR)	MFR (kg)	6.96E+01	0.00E+00	0.00E+00	0.00E+00	6.96E+01	0.00E+00	0.00E+00
Components for reuse (CRU)	CRU (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (ETE)	ETE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electricity energy (EEE)	EEE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 11 Environmental impacts of Charge Station Jupiter V3 DC0600EN052-A

Item	**Unit**	**Total**	**MANUFACTURING STAGE**		**DISTRIBUTION**	**INSTALLATION**	**USE STAGE**	**END-OF-LIFE**
			UPSTREAM MODULE	**CORE MODULE**	**DOWNSTREAM MODULE**			
Climate change	kg CO2 eq	6.61E+03	4.33E+03	5.83E+01	9.54E+01	8.55E+01	1.94E+03	9.90E+01
Climate change - Biogenic	kg CO2 eq	1.62E+02	4.90E+01	-1.20E+00	1.21E-02	6.01E+01	5.36E+01	2.37E-02
Climate change - Fossil	kg CO2 eq	6.44E+03	4.27E+03	5.94E+01	9.53E+01	2.53E+01	1.88E+03	9.89E+01
Climate change - Land use and land use change	kg CO2 eq	1.18E+01	7.18E+00	5.28E-02	1.06E-01	5.64E-02	4.28E+00	7.21E-02
Ozone depletion	kg CFC11 eq	2.00E-04	1.61E-04	3.70E-07	1.49E-06	3.56E-07	3.63E-05	3.65E-07
Acidification	mol H+ eq	6.51E+01	4.12E+01	3.04E-01	2.13E+00	1.01E-01	2.12E+01	1.52E-01
Eutrophication aquatic freshwater	kg P eq	8.63E-01	6.55E-01	1.49E-03	5.39E-04	2.08E-04	2.05E-01	8.06E-04
Eutrophication aquatic marine	kg N eq	8.30E+00	5.69E+00	6.27E-02	5.48E-01	4.05E-02	1.91E+00	4.53E-02
Eutrophication terrestrial	mol N eq	9.90E+01	6.76E+01	6.77E-01	6.05E+00	4.16E-01	2.38E+01	4.92E-01
Photochemical ozone formation	kg NMVOC eq	2.92E+01	1.97E+01	1.98E-01	1.67E+00	1.42E-01	7.36E+00	1.50E-01
Depletion of abiotic resources – minerals and metals	kg Sb eq	1.47E+00	1.29E+00	1.10E-04	1.52E-04	6.14E-05	1.81E-01	1.60E-04
Depletion of abiotic resources – fossil fuels	MJ	9.46E+04	5.36E+04	7.44E+02	1.23E+03	2.85E+02	3.84E+04	3.63E+02
Water use	m3	1.51E+03	8.97E+02	1.33E+01	3.88E+00	1.30E+00	5.88E+02	4.43E+00

Use of non-renewable primary energy excluding nonrenewable primary energy resources used as raw material (PENRE)	MJ	8.97E+04	4.96E+04	3.97E+04	3.63E+02	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy excluding renewable primary energy resources used as raw material (PERE)	MJ	2.48E+04	8.21E+03	1.66E+04	3.68E+01	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable primary energy resources used as raw material (PENRM)	MJ	4.84E+03	4.70E+03	1.37E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy resources used as raw material (PERM)	MJ	1.20E+03	0.00E+00	1.20E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	9.45E+04	5.36E+04	7.44E+02	1.23E+03	2.40E+02	3.84E+04	3.63E+02
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	2.60E+04	8.13E+03	8.05E+01	1.53E+01	5.08E+00	1.78E+04	3.68E+01
Net use of fresh water (FW)	m3	6.71E+01	3.45E+01	3.28E-01	1.44E-01	5.34E-02	3.19E+01	1.74E-01
Use of secondary materials (MS)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hazardous waste disposed (HWD)	HWD (kg)	3.97E+01	4.41E+00	4.77E-01	2.13E-02	2.76E-01	2.48E+01	9.74E+00
Non-hazardous waste disposed (NHWD)	NHWD (kg)	1.80E+03	1.39E+03	5.51E+00	2.82E+01	3.70E+01	3.29E+02	1.52E+01
Radioactive waste disposed (RWD)	RWD (kg)	3.47E-01	1.02E-01	6.70E-04	1.79E-04	5.72E-05	2.43E-01	4.70E-04
Materials for energy recovery (MER)	MER (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling (MFR)	MFR (kg)	6.96E+01	0.00E+00	0.00E+00	0.00E+00	6.96E+01	0.00E+00	0.00E+00
Components for reuse (CRU)	CRU (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (ETE)	ETE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electricity energy (EEE)	EEE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 12 Environmental impacts of Charge Station Titan V2 DH-DC1800SG56

Item	**Unit**	**Total**	**MANUFACTURING STAGE**		**DISTRIBUTION**	**INSTALLATION**	**USE STAGE**	**END-OF-LIFE**
			UPSTREAM MODULE	**CORE MODULE**	**DOWNSTREAM MODULE**			
Climate change	kg CO2 eq	9.94E+03	5.86E+03	7.74E+01	1.57E+02	1.02E+02	3.49E+03	2.45E+02

Climate change - Biogenic	kg CO2 eq	3.50E+02	8.24E+01	-1.28E+00	1.99E-02	6.60E+01	2.03E+02	1.63E-01
Climate change - Fossil	kg CO2 eq	9.57E+03	5.77E+03	7.86E+01	1.57E+02	3.58E+01	3.28E+03	2.44E+02
Climate change - Land use and land use change	kg CO2 eq	1.68E+01	9.51E+00	5.78E-02	1.74E-01	9.15E-02	6.81E+00	1.85E-01
Ozone depletion	kg CFC11 eq	2.31E-04	1.70E-04	4.18E-07	2.45E-06	5.40E-07	5.74E-05	8.55E-07
Acidification	mol H+ eq	1.27E+02	7.35E+01	3.92E-01	3.51E+00	1.51E-01	4.85E+01	4.19E-01
Eutrophication aquatic freshwater	kg P eq	1.18E+00	7.96E-01	1.82E-03	8.87E-04	3.11E-04	3.73E-01	2.82E-03
Eutrophication aquatic marine	kg N eq	1.34E+01	8.31E+00	8.10E-02	9.01E-01	5.96E-02	3.91E+00	1.11E-01
Eutrophication terrestrial	mol N eq	1.61E+02	9.88E+01	8.79E-01	9.95E+00	6.19E-01	4.96E+01	1.21E+00
Photochemical ozone formation	kg NMVOC eq	4.79E+01	2.92E+01	2.53E-01	2.75E+00	2.12E-01	1.51E+01	3.65E-01
Depletion of abiotic resources – minerals and metals	kg Sb eq	2.12E+00	1.64E+00	1.21E-04	2.50E-04	9.36E-05	4.76E-01	3.92E-04
Depletion of abiotic resources – fossil fuels	MJ	1.38E+05	7.23E+04	9.08E+02	2.02E+03	4.33E+02	6.09E+04	1.01E+03
Water use	m3	2.66E+03	1.52E+03	1.59E+01	6.39E+00	2.08E+00	1.10E+03	1.25E+01
Use of non-renewable primary energy excluding nonrenewable primary energy resources used as raw material (PENRE)	MJ	1.33E+05	6.85E+04	6.31E+04	1.01E+03	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy excluding renewable primary energy resources used as raw material (PERE)	MJ	3.53E+04	1.04E+04	2.48E+04	1.33E+02	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable primary energy resources used as raw material (PENRM)	MJ	4.84E+03	4.70E+03	1.37E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy resources used as raw material (PERM)	MJ	1.20E+03	0.00E+00	1.20E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	1.37E+05	7.23E+04	9.05E+02	2.02E+03	3.83E+02	6.08E+04	1.01E+03
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	3.65E+04	1.03E+04	9.47E+01	2.51E+01	8.01E+00	2.59E+04	1.33E+02
Net use of fresh water (FW)	m3	1.06E+02	5.24E+01	3.99E-01	2.36E-01	8.72E-02	5.26E+01	7.92E-01
Use of secondary materials (MS)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hazardous waste disposed (HWD)	HWD (kg)	1.89E+02	7.27E+00	1.38E+00	3.50E-02	3.04E-01	1.51E+02	2.81E+01

Non-hazardous waste disposed (NHWD)	NHWD (kg)	2.91E+03	2.06E+03	7.00E+00	4.63E+01	4.85E+01	7.19E+02	3.08E+01
Radioactive waste disposed (RWD)	RWD (kg)	4.85E-01	1.27E-01	8.34E-04	2.94E-04	8.99E-05	3.54E-01	1.77E-03
Materials for energy recovery (MER)	MER (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling (MFR)	MFR (kg)	6.96E+01	0.00E+00	0.00E+00	0.00E+00	6.96E+01	0.00E+00	0.00E+00
Components for reuse (CRU)	CRU (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (ETE)	ETE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electricity energy (EEE)	EEE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 13 Environmental impacts of Charge Station Titan V2 DH-DC1500SG56

Item	**Unit**	**Total**	**MANUFACTURING STAGE**		**DISTRIBUTION**	**INSTALLATION**	**USE STAGE**	**END-OF-LIFE**
			UPSTREAM MODULE	**CORE MODULE**	**DOWNSTREAM MODULE**			
Climate change	kg CO2 eq	9.62E+03	5.73E+03	7.04E+01	1.51E+02	9.69E+01	3.34E+03	2.36E+02
Climate change - Biogenic	kg CO2 eq	3.29E+02	7.99E+01	-1.31E+00	1.92E-02	6.24E+01	1.88E+02	1.62E-01
Climate change - Fossil	kg CO2 eq	9.28E+03	5.64E+03	7.16E+01	1.51E+02	3.44E+01	3.14E+03	2.35E+02
Climate change - Land use and land use change	kg CO2 eq	1.64E+01	9.30E+00	5.63E-02	1.68E-01	8.81E-02	6.62E+00	1.81E-01
Ozone depletion	kg CFC11 eq	2.29E-04	1.69E-04	4.03E-07	2.36E-06	5.18E-07	5.58E-05	8.33E-07
Acidification	mol H+ eq	1.17E+02	6.97E+01	3.59E-01	3.38E+00	1.44E-01	4.34E+01	4.10E-01
Eutrophication aquatic freshwater	kg P eq	1.13E+00	7.78E-01	1.70E-03	8.55E-04	2.99E-04	3.50E-01	2.78E-03
Eutrophication aquatic marine	kg N eq	1.28E+01	8.06E+00	7.43E-02	8.68E-01	5.72E-02	3.61E+00	1.08E-01
Eutrophication terrestrial	mol N eq	1.53E+02	9.56E+01	8.04E-01	9.59E+00	5.93E-01	4.55E+01	1.18E+00
Photochemical ozone formation	kg NMVOC eq	4.56E+01	2.82E+01	2.33E-01	2.65E+00	2.03E-01	1.39E+01	3.55E-01
Depletion of abiotic resources – minerals and metals	kg Sb eq	2.02E+00	1.60E+00	1.17E-04	2.41E-04	8.98E-05	4.15E-01	3.83E-04
Depletion of abiotic resources – fossil fuels	MJ	1.34E+05	7.07E+04	8.43E+02	1.94E+03	4.15E+02	5.93E+04	9.86E+02
Water use	m3	2.53E+03	1.46E+03	1.48E+01	6.15E+00	2.00E+00	1.03E+03	1.22E+01
Use of non-renewable primary energy excluding nonrenewable primary energy resources used as raw material (PENRE)	MJ	1.29E+05	6.69E+04	6.15E+04	9.87E+02	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy excluding renewable primary energy resources used as raw material (PERE)	MJ	3.49E+04	1.02E+04	2.46E+04	1.31E+02	0.00E+00	0.00E+00	0.00E+00

Use of non-renewable primary energy resources used as raw material (PENRM)	MJ	4.84E+03	4.70E+03	1.37E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy resources used as raw material (PERM)	MJ	1.20E+03	0.00E+00	1.20E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	1.34E+05	7.07E+04	8.41E+02	1.94E+03	3.68E+02	5.93E+04	9.87E+02
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	3.61E+04	1.01E+04	9.05E+01	2.42E+01	7.71E+00	2.57E+04	1.31E+02
Net use of fresh water (FW)	m3	1.03E+02	5.06E+01	3.69E-01	2.27E-01	8.42E-02	5.06E+01	7.84E-01
Use of secondary materials (MS)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hazardous waste disposed (HWD)	HWD (kg)	1.71E+02	7.12E+00	1.16E+00	3.37E-02	2.89E-01	1.37E+02	2.59E+01
Non-hazardous waste disposed (NHWD)	NHWD (kg)	2.77E+03	2.00E+03	6.44E+00	4.46E+01	4.62E+01	6.46E+02	2.98E+01
Radioactive waste disposed (RWD)	RWD (kg)	4.79E-01	1.25E-01	7.70E-04	2.83E-04	8.65E-05	3.51E-01	1.75E-03
Materials for energy recovery (MER)	MER (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling (MFR)	MFR (kg)	6.96E+01	0.00E+00	0.00E+00	0.00E+00	6.96E+01	0.00E+00	0.00E+00
Components for reuse (CRU)	CRU (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (ETE)	ETE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electricity energy (EEE)	EEE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 14 Environmental impacts of Charge Station Titan V2 DH-DC1200SG56

Item	Unit	Total	MANUFACTURING STAGE		DISTRIBUTION	INSTALLATION	USE STAGE	END-OF-LIFE
			UPSTREAM MODULE	CORE MODULE	DOWNSTREAM MODULE			
Climate change	kg CO2 eq	9.29E+03	5.57E+03	6.37E+01	1.48E+02	1.00E+02	3.19E+03	2.27E+02
Climate change - Biogenic	kg CO2 eq	3.15E+02	7.68E+01	-1.22E+00	1.88E-02	6.60E+01	1.73E+02	1.60E-01
Climate change - Fossil	kg CO2 eq	8.96E+03	5.48E+03	6.49E+01	1.48E+02	3.41E+01	3.01E+03	2.27E+02
Climate change - Land use and land use change	kg CO2 eq	1.59E+01	9.04E+00	5.28E-02	1.64E-01	8.62E-02	6.42E+00	1.76E-01
Ozone depletion	kg CFC11 eq	2.25E-04	1.66E-04	3.82E-07	2.31E-06	5.11E-07	5.42E-05	8.09E-07

Acidification	mol H+ eq	1.07E+02	6.44E+01	3.26E-01	3.31E+00	1.43E-01	3.84E+01	4.00E-01
Eutrophication aquatic freshwater	kg P eq	1.08E+00	7.53E-01	1.56E-03	8.36E-04	2.95E-04	3.26E-01	2.73E-03
Eutrophication aquatic marine	kg N eq	1.21E+01	7.74E+00	6.74E-02	8.49E-01	5.66E-02	3.31E+00	1.05E-01
Eutrophication terrestrial	mol N eq	1.45E+02	9.13E+01	7.29E-01	9.37E+00	5.87E-01	4.15E+01	1.14E+00
Photochemical ozone formation	kg NMVOC eq	4.30E+01	2.69E+01	2.13E-01	2.59E+00	2.01E-01	1.27E+01	3.46E-01
Depletion of abiotic resources – minerals and metals	kg Sb eq	1.89E+00	1.54E+00	1.13E-04	2.36E-04	8.84E-05	3.53E-01	3.73E-04
Depletion of abiotic resources – fossil fuels	MJ	1.31E+05	6.90E+04	7.87E+02	1.90E+03	4.09E+02	5.77E+04	9.63E+02
Water use	m3	2.37E+03	1.37E+03	1.36E+01	6.02E+00	1.95E+00	9.59E+02	1.19E+01
Use of non-renewable primary energy excluding nonrenewable primary energy resources used as raw material (PENRE)	MJ	1.26E+05	6.51E+04	5.98E+04	9.64E+02	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy excluding renewable primary energy resources used as raw material (PERE)	MJ	3.44E+04	9.99E+03	2.43E+04	1.29E+02	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable primary energy resources used as raw material (PENRM)	MJ	4.84E+03	4.70E+03	1.37E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy resources used as raw material (PERM)	MJ	1.20E+03	0.00E+00	1.20E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	1.31E+05	6.90E+04	7.85E+02	1.90E+03	3.62E+02	5.77E+04	9.64E+02
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	3.56E+04	9.91E+03	8.40E+01	2.36E+01	7.59E+00	2.55E+04	1.29E+02
Net use of fresh water (FW)	m3	9.82E+01	4.83E+01	3.38E-01	2.22E-01	8.22E-02	4.86E+01	7.71E-01
Use of secondary materials (MS)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hazardous waste disposed (HWD)	HWD (kg)	1.53E+02	6.94E+00	9.29E-01	3.30E-02	3.04E-01	1.22E+02	2.29E+01
Non-hazardous waste disposed (NHWD)	NHWD (kg)	2.63E+03	1.93E+03	5.90E+00	4.36E+01	4.71E+01	5.72E+02	2.88E+01
Radioactive waste disposed (RWD)	RWD (kg)	4.73E-01	1.22E-01	7.07E-04	2.77E-04	8.52E-05	3.48E-01	1.72E-03
Materials for energy recovery (MER)	MER (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling (MFR)	MFR (kg)	6.96E+01	0.00E+00	0.00E+00	0.00E+00	6.96E+01	0.00E+00	0.00E+00

Components for reuse (CRU)	CRU (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (ETE)	ETE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electricity energy (EEE)	EEE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 15 Environmental impacts of Charge Station Venus V2 DH-DC0300HG55-C

Item	Unit	Total	MANUFACTURING STAGE		DISTRIBUTION	INSTALLATION	USE STAGE	END-OF-LIFE
			UPSTREAM MODULE	CORE MODULE	DOWNSTREAM MODULE			
Climate change	kg CO2 eq	3.22E+03	1.59E+03	7.35E+01	3.07E+01	6.64E+01	1.43E+03	3.00E+01
Climate change - Biogenic	kg CO2 eq	7.93E+01	1.03E+01	6.42E-02	4.03E-03	2.58E+01	4.31E+01	5.58E-03
Climate change - Fossil	kg CO2 eq	3.13E+03	1.58E+03	7.33E+01	3.06E+01	4.06E+01	1.38E+03	2.99E+01
Climate change - Land use and land use change	kg CO2 eq	6.29E+00	2.93E+00	4.89E-02	3.44E-02	1.90E-02	3.24E+00	1.62E-02
Ozone depletion	kg CFC11 eq	1.02E-04	7.48E-05	3.38E-07	4.79E-07	1.50E-07	2.65E-05	8.96E-08
Acidification	mol H+ eq	2.94E+01	1.55E+01	3.38E-01	6.85E-01	4.46E-02	1.28E+01	3.62E-02
Eutrophication aquatic freshwater	kg P eq	4.37E-01	2.90E-01	1.86E-03	1.73E-04	8.70E-05	1.45E-01	1.84E-04
Eutrophication aquatic marine	kg N eq	3.73E+00	2.20E+00	6.60E-02	1.76E-01	1.81E-02	1.26E+00	1.12E-02
Eutrophication terrestrial	mol N eq	4.46E+01	2.62E+01	7.28E-01	1.94E+00	1.89E-01	1.54E+01	1.21E-01
Photochemical ozone formation	kg NMVOC eq	1.31E+01	7.39E+00	2.93E-01	5.37E-01	6.39E-02	4.81E+00	3.64E-02
Depletion of abiotic resources – minerals and metals	kg Sb eq	6.78E-01	5.86E-01	2.06E-04	4.89E-05	2.51E-05	9.11E-02	3.61E-05
Depletion of abiotic resources – fossil fuels	MJ	5.19E+04	2.04E+04	1.69E+03	3.94E+02	1.18E+02	2.92E+04	8.33E+01
Water use	m3	7.95E+02	3.77E+02	1.25E+01	1.25E+00	5.73E-01	4.03E+02	1.12E+00
Use of non-renewable primary energy excluding nonrenewable primary energy resources used as raw material (PENRE)	MJ	4.70E+04	1.74E+04	2.95E+04	8.34E+01	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy excluding renewable primary energy resources used as raw material (PERE)	MJ	1.63E+04	3.33E+03	1.29E+04	8.38E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable primary energy resources used as raw material (PENRM)	MJ	4.84E+03	4.70E+03	1.37E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy resources used as raw material (PERM)	MJ	1.20E+03	0.00E+00	1.20E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	5.19E+04	2.04E+04	1.69E+03	3.94E+02	8.64E+01	2.92E+04	8.34E+01
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	1.75E+04	3.23E+03	9.59E+01	4.91E+00	1.87E+00	1.41E+04	8.38E+00
Net use of fresh water (FW)	m3	3.81E+01	1.40E+01	2.40E-01	4.63E-02	2.08E-02	2.38E+01	4.36E-02
Use of secondary materials (MS)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hazardous waste disposed (HWD)	HWD (kg)	2.03E+01	1.75E+00	2.45E-01	6.84E-03	3.30E-01	1.46E+01	3.35E+00
Non-hazardous waste disposed (NHWD)	NHWD (kg)	4.78E+02	2.41E+02	5.77E+00	9.05E+00	2.00E+01	2.00E+02	3.53E+00
Radioactive waste disposed (RWD)	RWD (kg)	2.36E-01	4.14E-02	8.31E-04	5.75E-05	2.13E-05	1.94E-01	1.07E-04
Materials for energy recovery (MER)	MER (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling (MFR)	MFR (kg)	6.96E+01	0.00E+00	0.00E+00	0.00E+00	6.96E+01	0.00E+00	0.00E+00
Components for reuse (CRU)	CRU (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (ETE)	ETE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electricity energy (EEE)	EEE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 16 Environmental impacts of Charge Station Venus V2 DH-DC0300HG55

Item	Unit	Total	MANUFACTURING STAGE		DISTRIBUTION	INSTALLATION	USE STAGE	END-OF-LIFE
			UPSTREAM MODULE	CORE MODULE	DOWNSTREAM MODULE			
Climate change	kg CO2 eq	3.23E+03	1.60E+03	7.35E+01	3.08E+01	6.65E+01	1.43E+03	3.12E+01
Climate change - Biogenic	kg CO2 eq	7.94E+01	1.05E+01	6.42E-02	3.90E-03	2.58E+01	4.31E+01	7.65E-03
Climate change - Fossil	kg CO2 eq	3.15E+03	1.59E+03	7.33E+01	3.08E+01	4.07E+01	1.38E+03	3.12E+01
Climate change - Land use and land use change	kg CO2 eq	6.32E+00	2.95E+00	4.89E-02	3.41E-02	1.91E-02	3.24E+00	1.73E-02
Ozone depletion	kg CFC11 eq	1.03E-04	7.55E-05	3.38E-07	4.81E-07	1.50E-07	2.65E-05	9.33E-08
Acidification	mol H+ eq	2.95E+01	1.56E+01	3.38E-01	6.88E-01	4.47E-02	1.28E+01	3.90E-02
Eutrophication aquatic freshwater	kg P eq	4.40E-01	2.93E-01	1.86E-03	1.74E-04	8.72E-05	1.45E-01	2.09E-04
Eutrophication aquatic marine	kg N eq	3.75E+00	2.22E+00	6.60E-02	1.77E-01	1.81E-02	1.26E+00	1.18E-02

Eutrophication terrestrial	mol N eq	4.48E+01	2.64E+01	7.28E-01	1.95E+00	1.89E-01	1.54E+01	1.27E-01
Photochemical ozone formation	kg NMVOC eq	1.32E+01	7.46E+00	2.93E-01	5.40E-01	6.40E-02	4.81E+00	3.83E-02
Depletion of abiotic resources – minerals and metals	kg Sb eq	6.85E-01	5.94E-01	2.06E-04	4.91E-05	2.51E-05	9.11E-02	3.82E-05
Depletion of abiotic resources – fossil fuels	MJ	5.21E+04	2.06E+04	1.69E+03	3.95E+02	1.18E+02	2.92E+04	9.00E+01
Water use	m3	8.01E+02	3.83E+02	1.25E+01	1.25E+00	5.74E-01	4.03E+02	1.20E+00
Use of non-renewable primary energy excluding nonrenewable primary energy resources used as raw material (PENRE)	MJ	4.72E+04	1.76E+04	2.95E+04	9.00E+01	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy excluding renewable primary energy resources used as raw material (PERE)	MJ	1.63E+04	3.36E+03	1.29E+04	9.59E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable primary energy resources used as raw material (PENRM)	MJ	4.84E+03	4.70E+03	1.37E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable primary energy resources used as raw material (PERM)	MJ	1.20E+03	0.00E+00	1.20E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	5.21E+04	2.06E+04	1.69E+03	3.96E+02	8.67E+01	2.92E+04	9.00E+01
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) (PERT)	MJ	1.75E+04	3.26E+03	9.59E+01	4.92E+00	1.88E+00	1.41E+04	9.59E+00
Net use of fresh water (FW)	m3	3.83E+01	1.41E+01	2.40E-01	4.63E-02	2.09E-02	2.38E+01	5.21E-02
Use of secondary materials (MS)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hazardous waste disposed (HWD)	HWD (kg)	2.03E+01	1.77E+00	2.45E-01	6.86E-03	3.30E-01	1.46E+01	3.38E+00
Non-hazardous waste disposed (NHWD)	NHWD (kg)	4.78E+02	2.39E+02	5.77E+00	9.08E+00	2.00E+01	2.00E+02	3.61E+00
Radioactive waste disposed (RWD)	RWD (kg)	2.37E-01	4.19E-02	8.31E-04	5.77E-05	2.13E-05	1.94E-01	1.24E-04
Materials for energy recovery (MER)	MER (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling (MFR)	MFR (kg)	6.96E+01	0.00E+00	0.00E+00	0.00E+00	6.96E+01	0.00E+00	0.00E+00
Components for reuse (CRU)	CRU (kg)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (ETE)	ETE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electricity energy (EEE)	EEE (MJ)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

REFERENCES

- ISO 14025:2006, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.
- ISO 14040:2006/Amd 1:2020Environmental management — Life cycle assessment — Principles and framework — Amendment 1
- ISO 14044:2006/Amd 2:2020Environmental management — Life cycle assessment — Requirements and guidelines — Amendment 2
- EN 50693:2019 - Product category rules for life cycle assessments of electronicand electrical products and systems

  EN 15804:2012+A2:2019, Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products
- PCR EPDItaly007:2020 - Electronic and electrical products and systems (rev.3) 13/01/2023
- Sub-category PCR: EPDItaly017 — Electronic and electrical products and systems – Charging Stations(rev.1), 11/12/2020
- Ecoinvent, 2023. Swiss Centre for Life Cycle Assessment, v3.9.1 (www.Ecoinvent.ch).
- PRé Consultants, 2023. Software SimaPro versione 9.5.0.0 (www.pre.nl).
- LCA Report_Wanbang Digital Energy Co., Ltd_Titan, Venus, Jupiter series_v3 2024129

- Jupiter V3 DC0600EN052-B

- Jupiter V3 DC0600EN052-A

- Titan V2 DH-DC1800SG56

- Titan V2 DH-DC1500SG56

- Titan V2 DH-DC1200SG56

- Venus V2 DH-DC0300HG55-C

- Venus V2 DH-DC0300HG55