



Know more about COSMX News
Please scan QR code of official WeChat to follow “Zhuhai CosMX Battery”



Zhuhai CosMX Battery Co., Ltd.

Company address: No.209, Zhufeng Road, Doumen District, Zhuhai

Company website: <http://www.cosmx.com/index.html>

Company email: Public@cosmx.com

Tel: 0756-6321999

Fax: 0756-6321900

Printed in March 2023



2022 Sustainability Report



Driving the Future by
Green Energy

Contents

About CosMX		Building a Shared & Sustainable future		Building a Shared & Sustainable future		Appendix	
Management Foreword	01	Sustainability Management	07	Fulfill Sustainability Commitment	27	About this Report	29
About CosMX	03	Climate action	11	Build up sustainability culture	27		
CosMX business scope	03	Water	23	Honors and awards	28		
Product applications	03	Waste	25	Customer Satisfaction	28		
CosMX business locations	05						



Management Foreword



Double Carbon goal is the common responsibility of the whole human society. As a listed company, CosMX is deeply aware of own responsibilities and obligations. We invest more in decarbonization when the company grows. Since 2019, CosMX has defined Carbon neutrality as an important development strategy. We not only took actions internally, but also built close relationship with upstream customers and drive downstream suppliers to act as well, in order to achieve “30·60” common goal.

Our company set up CosMX Carbon Neutrality Management Team based on double carbon goal and company's characteristics, and also set carbon reduction targets and defined “3-steps” action path:

1. Define carbon emission scope and estimate emissions;
2. Reduce emissions caused by production operation activities:
 - Adjust energy structure, reduce the utilization of fossil fuel, enlarge the utilization of renewable energy;
 - Upgrade public facility & equipment, implement energy-saving projects;
 - Energy management;
 - Purchase green power;
 - Compensate with carbon offset;
3. Drive the reaction of upstream & downstream, build up management system of carbon neutrality in whole supply chain:
 - Select low-carbon suppliers, drive carbon reduction & disclose actions in supply chain;
 - Optimize product design: improve raw material utilization rate, reduce the power consumption during application and use low-carbon packaging materials;
 - Battery recycle and remanufacturing;
 - Low-carbon logistics transportation, reduce air transport and pooling freight;
 - Low-carbon shuttle and travels for associates.

Moreover, we care about domestic and international policies, responded to national call actively, determined to be the leading company of carbon reduction work in industry, to support China Double Carbon Goal. We will further exert our influencing power, devote to provide good products to customers, and make contribution to society.

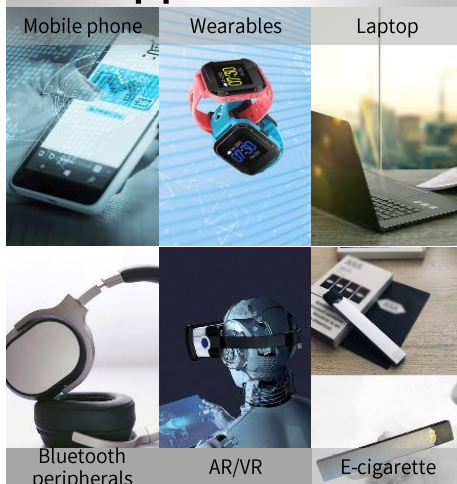
CosMX Chairman Yanming Xu

CosMX Business Scope and Product Applications



- Company Name: Zhuhai CosMX Battery Co., Ltd. (hereinafter called: CosMX, Company or We)
- CosMX is a national high-tech enterprise including R&D, Manufacturing and Sales for lithium battery
- Have 20+ years experience in studying lithium battery technology and its application, we accumulated technology experience in deep, capable to understand market needs from multiple aspects and levels systematically, so as to provide the new energy solution to customers.
- Funded time: 11-May-2007
- Headquarter address: No.209, Zhufeng Road, Doumen District, Zhuhai
- Go public status: Listed on the Science and Technology Innovation Board of Shanghai Stock Exchange on 15-October-2021 (Stock code: 688772)

Consumer Applications



Innovative Applications



EV Applications




ESS Applications





CosMX Business Locations


CosMX headquartered in Zhuhai, and established 15 subsidiaries around the world. It has three main production bases in Zhuhai Guangdong, Chongqing, Jiaxing Zhejiang and a factory in India.



 15 subsidiaries

 3 main product bases

 2000+ R&D associates

 14800+ total associates



Sustainability Management

Our company provide creative products and services, and also integrate sustainability concept into business operation. We set sustainability goal based on challenges due to society development in recent years, focus on climate action, water and waste. Devoting to build up sustainable management system, adhere to ethical and compliance operation, providing the reliable energy solution to customers.

Vision

Driving the Future by
Green Energy

Mission

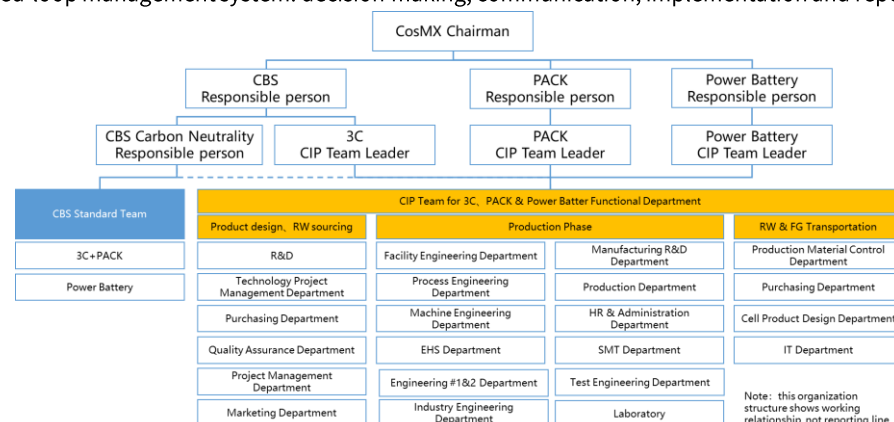
Providing the Reliable
Energy Solution to
Customer

Core Values

Customer, Courage, In
novation, Simplicity

Organization Chart of Carbon Neutrality Management Team

Our company established carbon neutrality management structure from top to down level, to ensure efficient implementation. In 2022, CBS department led 3C、PACK & Power Battery business sectors (by product category) to build up Carbon Neutrality Management Team, defined clear way of working and action plan, ensure continuously development of regular operation under such background. We set three-levels management structure: planning team, standard team and CIP team, formatted as a closed-loop management system: decision-making, communication, implementation and reporting.



Responsibility of Carbon Neutrality Management Team

Planning team

CBS takes full responsibility
(Director/Department manager level)

- Make sustainability development plan, approve and monitor the achievement of targets;
- Evaluate sufficiency of resource, compliance, effectiveness of procedures for sustainability activities, identify risks and opportunities;
- Evaluate the gap between CosMX and domestic and foreign counterparts in development strategy and performance;
- Approve annual sustainability report, ensure the accuracy and completeness, improve its quality continuously.

Standard team

Expert of sustainability from
CBS department
(Manager / Engineer level)

- Make plan for zero-carbon factory and implementation of carbon neutrality/offset, obtain the certificate of zero-carbon factory;
- Establish energy saving and carbon reduction system, distribute targets to each business sectors and define action plan;
- Communicate and understand customer needs about carbon reduction, define related measures;
- Verification of carbon footprint, identify improvement opportunities of energy measurement system and drive for improvement, prepare annual sustainability report;
- Drive to achieve carbon reduction target, responsible for carbon footprint and carbon reduction assessments;
- Collect and summarize national and regional standards and industrial policy about low carbon, assist in preparation of internal standards, provide trainings;
- Promote sustainability mindset, plan low-carbon activities.

CIP team

Owner in subsidiary is responsible for sustainability
(Director level)

- Define sustainability targets and plan for subsidiary;
- Provide sufficient resource for sustainability activities, ensure the process is compliant and effective, identify risks and opportunities in subsidiary;
- Ensure sustainability works to be carried out efficiently to achieve targets in subsidiary.

Facility engineering leads sustainability in subsidiary
(Department manager level)

- Build up and continuously improve sustainability management system in subsidiary;
- Drive all functional department to carry out sustainability activities, report progress to CBS and top management team;
- Apply awards and government subsidies.

Functional head implements sustainability activities
(Department manager level)

- Take care of sustainability action plan defined in headquarter, monitor and drive internally;
- Provide information as required for sustainability report;
- Promote sustainability work and results, improve capability of associates to support sustainability tasks.

Note:

1. CBS stands for COSMX Business System;

2. 3C, PACK & Power Battery business sectors set up CIP (Continuous Improvement) team respectively.

Sustainability Management

Carbon Neutrality Management System

As part of sustainability plan, CosMX Carbon Neutrality Management Team conducts audit of carbon inventory, and invite third-party to certify the results. The emission results are guidance to define reduction goal of following year, including review annual goal, define action plan for energy-saving and carbon reduction, identify the risks and opportunities during implementation of sustainability, and also analyze the effect to our business and stakeholders.

Our company built up following management system to ensure good operation of sustainability:

- Environment Management System (ISO 14001:2015)
- Energy Management System (ISO 50001:2018)
- Occupational Health and Safety Management System (ISO 45001:2018)
- Quality Management System (ISO 9001:2015) / (IATF 16949 - First Edition)

CosMX realized that, besides of above management system, a comprehensive operation system is an effective measure which can guarantee the achievement of targets:

- We organize regular internal meeting to trace the progress of double carbon projects, to support the achievement of annual target;
- We encourage suppliers to report their carbon reduction status and define improvement targets to make contribution to scope 3;
- We report the progress of double carbon projects to our customers regularly, to get their satisfaction.



Building a Shared & Sustainable Future

Climate action

The problem of global climate warming and excessive emissions of greenhouse gases may lead to climate change and impact, it has become an important environmental issue and consensus in the world. China government made a promise about climate change in September, 2020: China will scale up its Intended Nationally Determined Contributions by adopting more vigorous policies and measures . We aim to have CO₂ emissions peak before 2030 and achieve carbon neutrality before 2060.

“Regulation of the European Parliament and of the Council concerning Batteries and Waste Batteries” also called “New Batteries Regulation” , it sets out measures to support efforts to build a battery value chain in Europe, embracing raw materials extraction, sustainable sourcing and processing, sustainable battery materials, cell manufacturing as well as re-use and recycling of batteries, to ensure a safe, circular and sustainable battery value chain for all batteries. This regulation was approved by European Council on 17 March, 2022. including to supply the growing market of electric vehicles. It is necessary to ensure that batteries including local produced entering the European Union market comply with the requirements of this Regulation. Only rechargeable industrial batteries and electric vehicle batteries which can provide carbon footprint declaration are allowed to enter European Union market from 1 July, 2024 onwards.

Based on the sustainability environmental concept and the obligation fulfillment of corporate social responsibility, CosMX devoted to the verification and control of GHG emission proactively, so as to slowdown the effect of global warming, expecting to save energy resource to maintain sustainable development of global ecological environment. CosMX has taken GHG emission reduction and carbon neutrality as our long-term development strategy. By 2025, the GHG emissions per unit product will be reduced by at least 25% compared with 2020, and we will achieve the goal of 100% renewable energy use by 2050. The measures related to climate action are considered in ESG score card for evaluation.

Science based Targets Initiative (SBTi)

We joined SBTi organization to define science based target: strive to set the long-term target of scope 1 & 2 as the same as “The Paris Agreement” , i.e. limiting global temperature raises to 1.5°C; carbon

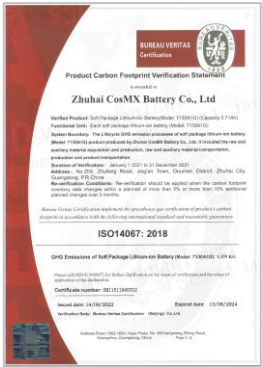
reduction target of scope 3 meets science based targets, fulfill the best practice in the world.

In January-2023, CosMX signed SBTi commitment letter, committed to set these long-term science-based targets to reach net-zero. We will invite SBTi target validation team to validate the target in the middle of 2023.



Carbon Reduction Activities

Under the guidance of “3-steps” action path, CosMX organized carbon footprint verification for one typical product, and also the verification in all production and operation activities under the operational control approach related to GHG emission in organization, issued an "Product Footprint Verification Report" and "Verification Statement of GHG Emissions at the Organization Level” certified by third-party, lay a solid foundation for achieving emission reduction targets, identify carbon emission status in company, then can reduce the pollution and carbon emissions at the same time.



"Product Footprint Verification Report"



"Verification Statement of GHG Emissions at the Organization Level"

Building a Shared & Sustainable Future

Scope 1 and 2 Carbon Reduction Activities

Lever 1 Improve energy efficiency

Since 2019, an annual budget is available for CO₂ reduction in CosMX, such as the electrification of the heat supply or the use of on-site heating, in order to reduce the use of non-renewable energy, including process optimization, machines upgrading and digital technology application, etc.



Efficient refrigeration rooms site photo

Construction project of efficient refrigeration rooms & water cold storage system
R&D building in Zhuhai headquarter considered the requirements of energy saving during construction phase, introduced efficient refrigeration rooms, and have been put into use simultaneously with the main building. The project reduced the energy consumption of 1.755 million kWh in 2022, and reduced 1001 tCO₂ emissions.



Water cold storage system



Efficient refrigeration rooms site photo

Plant No. 7 in Chongqing also introduced efficient refrigeration rooms, the project reduced the energy consumption which results into savings of 1227 MWh in 2022, reduced 700 tCO₂ emissions.

Optimization project of dehumidifier room

Zhuhai plant upgraded dehumidifier in May-2022, we added a function to get heat exchanged from hot water, and use air compressor to recycle waste heat. The planned power of 12 normal and regenerative heating equipment is 1600 kW in total, comparing with previous dehumidifier which the electrical heating power during operation is 60% yearly, actual operating power consumption is 960 KW.

It is expected to save 317 KW by replacing power with heat recycle from 2023 onwards, total power consumption would be 643 KW per year, save 33% power consumption comparing the normal dehumidifier without heat recycle function, reduce the energy consumption of 2.47 million kWh per year, and reduce 1409 tCO₂ emissions.

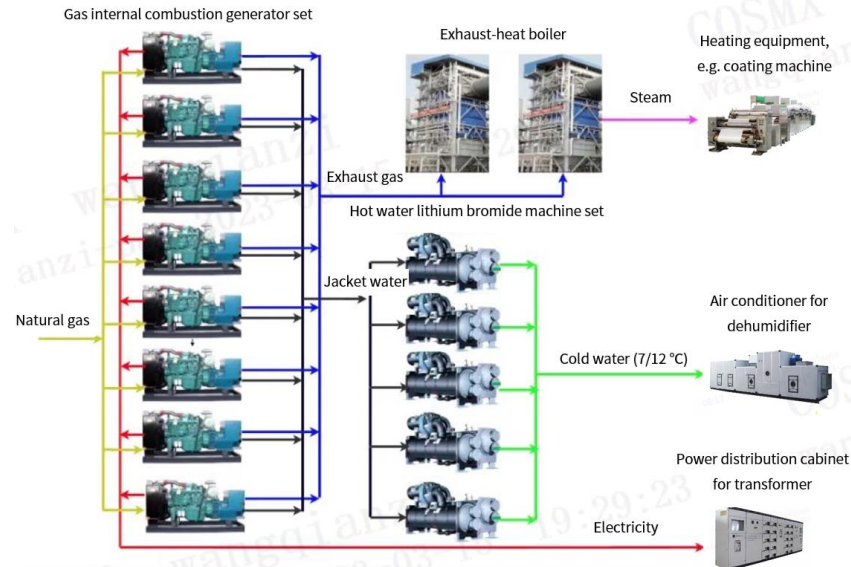


Building a Shared & Sustainable Future

Scope 1 and 2 Carbon Reduction Activities

Distributed energy station project

Chongqing Economic and Information Bureau lead this project, the government invested to build up distributed energy station for supplying electric power and steam to CosMX, the designed installed capacity of machine set is 26.848MW. Natural gas is overproduction in Chongqing, so the unit price of electricity is inexpensive, and the cost of power generation will have further reduction when shale gas can be stable. The government promise to operate on very narrow margins, then our electricity cost will have signification reduction. It's estimated to reduce two-thirds of power flicker by generating power onsite, compensating with power grid, improving the quality of electric power. This project will be launched in July-2023, and such joint supplying system will help to reduce the pollution emission level in Chongqing plant. It's estimated to save about 27058.5 tons of Tce, reduce 66023 tCO₂ emissions, reduce 2029.4 tSO₂ emissions, and reduce 1014.7 tNO₂ emissions.



Distributed energy station schematic diagram



Primary energy-efficiency air compression station site photo

Primary energy-efficiency air compression station project

Zhuhai CosMX South Industrial Park introduced an air compression station project, the designed air displacement during installation is 740m³/min, the designed pressure is 0.8MPa:

- 1 small controller: oil-free screw variable frequency air compressor;
- 4 small controllers: oil-free centrifugal air compressor;

The tolerance of air compressor displacement can be limited within $\pm 5\%$, according to the environmental requirements of air supply, the dew point of compressed air shall be $\leq -40dp^{\circ}C$ in low-dew-point drying room, and shall be $\leq -18dp^{\circ}C$ in other areas. This project has been put into use at the end of 2022, it is expected to reduce the energy consumption of 8.55 million kWh per year from 2023 onwards, and reduce 4876 tCO₂ emissions.



Building a Shared & Sustainable Future

Scope 1 and 2 Carbon Reduction Activities

Construction project of energy management platform

From long-term consideration, more and more system and machines will be available when our company continues to develop, it's necessary to set up energy information management system to improve management efficiency and effectiveness.

Moreover, it's applied as a critical criteria to assess the effect of energy-saving projects after implementation, and in line with the requirements of energy management system (ISO50001).



Digital energy management platform effect picture

We invested to develop a digital energy management platform, added intelligent monitoring points to monitor the energy consumption status in real time for electrical power station, heating and ventilation system, air compressor station and other systems in manufacturing area. The project has been put into use in 2022.

Building a Shared & Sustainable Future

Scope 1 and 2 Carbon Reduction Activities

Lever 2 Enlarge new clean power

CosMX plans to reduce and offset the emissions caused by production and operation activities (including the use of electricity and natural gas) and gradually reduce the use of fossil energy and increase the use of renewable energy, for example, solar power project is under construction. In addition to the implementation of energy conservation and emission reduction projects. The goal is to achieve 100% renewable energy use by 2050.

Large-area roof photovoltaic project

There are two photovoltaic projects were kicked off in Zhuhai CosMX in 2022, and plan to launch in 2023, the facility can resist the typhoon of magnitude 12, to avoid blown over or deformed:

- In South Industrial Park: this project will cover the space of 63000 m², the designed installed capacity is 3.762 MW, and is expected to generate 4.14 million kWh green electricity per year, and reduce 2360 tCO₂ emissions;
- In headquarter Industrial Park: this project will cover the space of 37000 m², the designed installed capacity is 2.3 MW, and is expected to generate 2.53 million kWh green electricity per year, and reduce 1443 tCO₂ emissions.

Lever 3 Purchase green electricity

Besides of those energy-saving projects, in order to reach carbon neutrality as quickly as possible, we will use green electricity as much as possible to provide sufficient green energy for manufacturing.

With the gradual opening of China's renewable energy market, our company has plan to buy more green electricity from the market to offset carbon emission, then will increase the proportion of renewable energy in use. At the same time, we are endeavoring to join RE100 organization, to accelerate the realization of zero-carbon emission.



Schematic diagram of photovoltaic project



Purchasing statement of green electricity

Green electricity purchasing project

Chongqing plant purchased 10 million kWh of non-hydroelectric renewable energy for 2021 power.

To further ensure the ownership of environmental equity, we will buy GECs (Green Electricity Certificate) by area based on customer needs.

Building a Shared & Sustainable Future

Scope 3 Carbon Reduction Activities

Upstream and downstream emissions

CosMX drives the interaction between upstream and downstream, to reduce other indirect emissions in supply chain, establish carbon neutrality management system in the whole supply chain, build up green and low-carbon supply chain gradually.

In upstream of value chain: enhance the selection of suppliers. Choose the one with lower energy consumption per unit product and good results from energy-saving activities, reduce GHG emission during raw material production, enhance the carbon reduction management in logistics phase, reduce emission during transportation. We offered double carbon trainings and seek to engage in close dialogue with 320 suppliers, provided guidance for them to carry out corresponding activities, made survey of carbon emission at supplier' side, identify critical business partners which CosMX purchased more raw materials from and with higher carbon emission to focus on, we coach them to set carbon reduction targets and define action plan.

In downstream of value chain: focus on emissions caused by the use of our products. We can identify additional potential from three aspects for further reduction of CO₂ emission in use phase, boosting energy efficiency during product design, shaping the product portfolio, drive the transformation of energy structure.



In the field of logistics: we will focus on transportation. In addition to reducing air transport and pooling freight, we also consider factors in key cost components such as freight costs or customs duties. The proximity of potential suppliers to our sites is therefore an important selection criterion. We are optimizing the number of transports and their capacity utilization to keep CO₂ emissions as low as possible.

Benefits of carbon reduction

Carbon disclosure project

Since 2021, CosMX has disclosed carbon emission data on IPE (Institute of Public & Environmental Affairs) and CDP (Carbon Disclosure Project) platforms actively.



CDP grade was increased year by year, and it will reach higher level in future. In addition, we will invite our supplier to participate in carbon disclosure action. This way will be helpful to create transparency on the status of carbon accounting and corresponding activities at our suppliers' side. Regarding future business contracting, we will consider CO₂ emissions and associated climate action activities of our business partners as an important criterion.

Carbon reduction indicators

In 2022, to drive carbon neutrality plan in entire value chain of CosMX, we carried out a series of fundamental work, for example, to identify GHG emission from each scope, and evaluate 2022 carbon emissions:

Indicator	Unit	3C Zhuhai	3C Chongqing	PACK	Power battery
Scope 1 emissions	tCO ₂ e	2256.35	30159.18	181.39	12957.36
Scope 2 emissions	tCO ₂ e	141389.52	109062.22	9968.35	24774.73
Total GHG emissions of Scope 1 and 2	tCO ₂ e	143645.87	139221.40	10149.74	37732.09

Note: GHG emissions data of scope 3 is still under collection and evaluation, we will disclose right after the results are confirmed.

Building a Shared & Sustainable Future

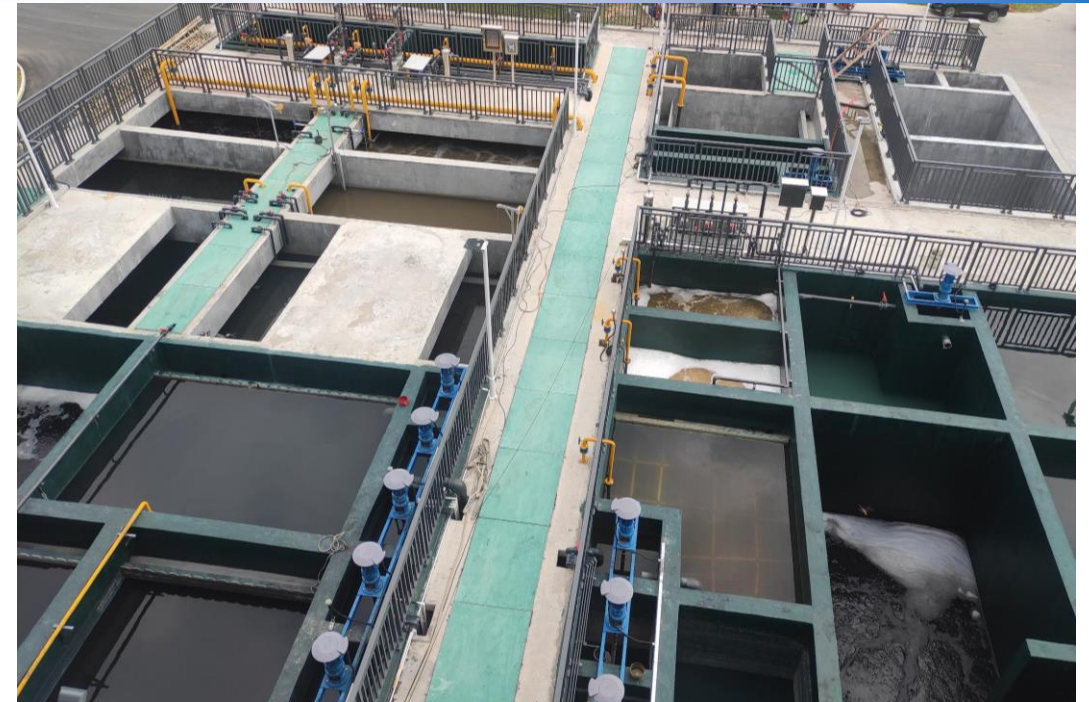
Water

Zhuhai CosMX pay great attention to the intake and protection of water resources, we defined "Evaluation criteria system of clean production in battery industry" during the implementation of water resource management, and distribute water intake quantity internally based on both water intake during clean production and industry standards, allocate quota and water saving target to user departments, monitor the implementation status, coach user departments to adjust water structure, improve the way of water use to avoid waste of water resources and also to reach the water saving target as much as possible.

Assessment report of clean production indicates our management level: quantity of water intake for unit product of clean production is level III, water reuse rate is level I, wastewater discharge is level I.



Replacement of water-saving cooling tower



Wastewater treatment station

Reduce waste: all user departments maintain and manage water supply network, water facilities periodically, and reduce water leakage rate. Making an analysis based on data from main water meter, individual water meter, water displacement, quantity of water intake for unit product. Cross checking whether there is water leakage and waste of water resources.

Recycling: using of recycled cooling water and condensated water, installing reclaimed wastewater treatment system in some industrial park, after the recycled industrial wastewater is treated into reclaimed water, it's used as cooling recycle, flushing toilet, greening, road cleaning, etc.

Building a Shared & Sustainable Future

Waste

Hazardous waste

Main discharge of hazardous waste in CosMX are wasted electrolyte, wiping cloth or alcohol.

According to the requirements of national laws and regulations, we defined hazardous waste management system, built efficient storage warehouse for such wastes according to output quantity in all industrial parks, and entrusted qualified supplier to take the wastes away periodically, realized 100% effective collection and disposal of all hazardous wastes in the company.



General solid waste

Main discharge of general solid waste in CosMX are scrapped copper foil, aluminium foil, polar plate, plastic tray, packaging box, plastic film, etc.

According to the requirements of national laws and regulations, we defined general solid waste management system, built dedicated storage warehouse for such wastes, and entrusted qualified supplier to recycle the wastes periodically.

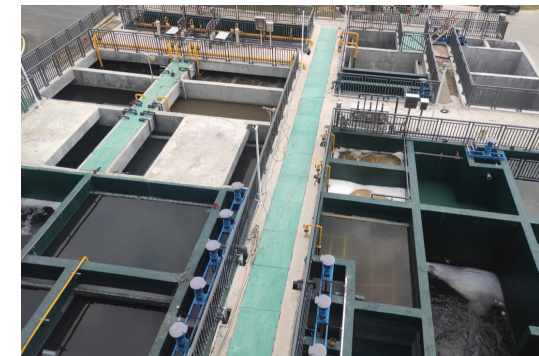
Some industrial parks have been certified as Zero Waste to Landfill (UL2799A).



Wastewater

We installed an industrial wastewater treatment station in several production bases, realized 100% effective collection and disposal of all wastewater in the company.

An online monitoring system has been installed in all industrial wastewater treatment stations, which can carry out 24-hour data monitoring, and we entrusted qualified agency to monitor the data periodically, to ensure the discharge of all industrial wastewater to meet standards.



Waste gas

Main emission of industrial waste gas in CosMX comes from production, main pollution factors are Non-methanehydrocarbon (NMHC) and particulate materials.

We built corresponding waste gas treatment facilities according to requirements of Environmental Impact Assessment Report and comments given from this report, and entrusted qualified agency to verify data periodically, to ensure the discharge of all industrial waste gas to compliance with standards.



Building a Shared & Sustainable Future

Fulfill Sustainability Commitment

Build up sustainability culture

Offer trainings of carbon management: Organize internal trainers or invite external consultants to provide trainings of Double carbon management, in order to improve the capability of our associates.

Industry exchange and cooperation: Participate in “The Founding Conference of China Battery Industry EPD Platform Technical Committee” organized by Power Battery Application Committee of China Industrial Association of Power Sources. Director-Mike Duan who is CBS responsible person was awarded as one of the experts in Technical Committee.



Awarded as an expert in Technical Committee of China Battery Industry EPD Platform

Note: EPD stands for Environmental Product Declaration

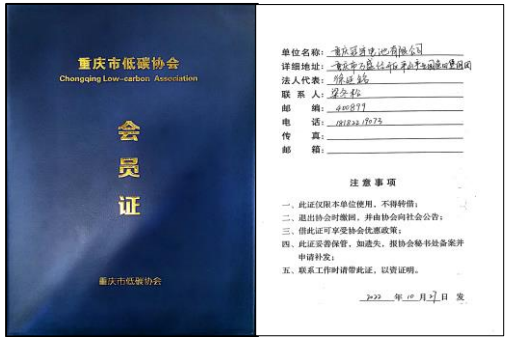
Honors and awards



Vice President Unit of Guangdong Energy Conservation Association



National Green Factory certified by Ministry of Industry and Information Technology



Member unit of Chongqing Low-Carbon Association

Customer Satisfaction

More and more customers raised up strong expectation and clear goal of double carbon to CosMX, our company will work together with strategic partners to achieve the double carbon common goal, so as to get win-win cooperation. Customers are satisfied with our current work, our emission reduction progress can fulfill their requirements. At the same time, customers will provide strong support to our future activities as well.



About this Report

Business Scope

This is 2022 Sustainability Report of CosMX, the report mainly covers sustainability activities happened during 2022, in order to ensure the data continuity and contrast, some data and information is not limited of 2022.

This report covers Zhuhai CosMX Battery Co., Ltd. and its subsidiaries (hereinafter called: CosMX, Company or We).

Time Range

This is an annual report, covering information from 1-January-2022 to 31-December-2022. In case any information beyond this time range, we indicate with explanations.

Reference

This report is edited according to “Sustainability Reporting Guidance” in GRI (Global Reporting Initiative) Standards.

Data Source

Unless otherwise stated, all information and data in this report were extracted from official documents, statistics report, financial report or other published documents. Carbon emissions of 2022 is preliminary data which hasn't been verified by third-party, the certified report shall prevail.

Report Confirmation and Approval

This report has been approved by top management in CosMX, our company commits that there is no false records, misleading statements or major omissions in the content.

Publish Method

This report has both versions in Chinese & English, in case of any conflict during translation, the Chinese version shall prevail.

The report is published once per year in electronic format, audiences can download from CosMX company website: <http://www.cosmx.com/index.html>.

Contact Us

If you have any query to this report or wonder to obtain more information, please contact:

Carbon Neutrality Management Team - Standard Team;

Address: No.209, Zhufeng Road, Doumen District, Zhuhai.

Tel: 0756-6321999

Contact email: Public@cosmx.com