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Guidelines on evaluation of whole vehicle manufacturing green factory in automobile industry

汽车行业整车制造绿色工厂评价导则

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Guidelines on evaluation of whole vehicle manufacturing green factory in automobile industry

1 Scope

This document specifies the terms and definitions, basic requirements, infrastructure, management system, energy and resource input, products, environmental emissions, performance, evaluation methods, etc. of the guidelines on evaluation of whole vehicle manufacturing green factory in automobile industry.

This document is applicable to the evaluation of whole vehicle manufacturing green factory in automobile industry.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, for dated references, only the version corresponding to the date applies to this document; for undated references, the latest version (including all amendments) applies to this document.

GB 8978 Integrated wastewater discharge standard

GB 12348 Emission standard for industrial enterprises noise at boundary

GB 14554 Emission standards for odor pollutants

GB 16297 Comprehensive emission standard of air pollutants

GB 17167 General principle for equipping and managing of the measuring instrument of energy in organization of energy using

GB 18597 Standard for pollution control on hazardous waste storage

GB 18599 Standard for pollution control on the non-hazardous industrial solid waste storage and landfill

GB/T 19001 Quality management systems - Requirements

GB/T 19515 Road vehicles - Recyclability and recoverability - Calculation method

GB/T 23331 Energy management systems - Requirements with guidance for use

GB/T 24001 Environmental management systems - Requirements with guidance for use

GB 24409 Limit of harmful substances of vehicle coatings

GB 24789 General rules for equipping and managing of the water measuring instrument in water-use organization

GB/T 30512 Requirements for prohibited substances on automobiles

GB/T 32150 General guideline of the greenhouse gas emissions accounting and reporting for industrial enterprises

GB/T 32327-2015 Guide for evaluating industrial wastewater treatment and reuse technology

GB/T 33460 Specifications for compiling dismantling manual of end-of-life vehicles

GB/T 33761-2017 General principles for green product assessment

GB/T 36132-2018 General principles for assessment of green factory

GB/T 37393 Digital factory - General technical requirements

GB 37822 Standard for fugitive emission of volatile organic compounds

GB/T 45001 Occupational health and safety management systems - Requirements with guidance for use

GB 50033 Standard for daylighting design of buildings

GB 50034 Standard for lighting design of buildings

GB/T 50353 Standard measurement for construction area of building

GB/T 50878 Evaluation standards for green industrial buildings

QC/T 1157-2022 Method of calculating comprehensive energy consumption for unit output of automobile products

ISO 14001 Environmental management systems - Requirements with guidance for use

3 Terms and definitions

The following terms and definitions apply to this document.

business processes;

d) Ensure that the resources required for green factory construction, operation and maintenance are available;

e) Communicate the importance of effective green manufacturing and the importance of meeting green factory requirements;

f) Ensure that the factory achieves the expected results of its green manufacturing;

g) Guide and support employees to contribute to the effectiveness of the green factory;

h) Promote continual improvement;

i) Support other relevant management personnel to demonstrate leadership, within their area of responsibility.

4.3.2 It shall be ensured that the responsibilities and authorities of relevant roles are assigned and communicated within the factory. Assigned responsibilities and authorities shall include at least the following:

a) Ensure that factory construction, operation, maintenance meet the requirements of this document;

b) Collect and maintain the evidence, that the factory meets the green factory evaluation requirements;

c) Report to top management on green factory performance, including green manufacturing performance.

4.4 Requirements for the factory

4.4.1 There shall be a green factory management organization, which is responsible for the system construction, implementation, assessment, rewards related to green manufacturing; establish a target responsibility system.

4.4.2 There shall be medium and long-term plans for green factories, as well as annual goals, indicators, implementation plans. The above plans, objectives, indicators, programs shall be feasible; the indicators shall be clear and quantifiable.

4.4.3 The concept and knowledge of green manufacturing shall be disseminated; employees shall be provided with education and training on green manufacturing-related knowledge on a regular basis; the results of education and training shall be evaluated.

5 Infrastructure

5.1 Architecture

5.1.1 The buildings of whole vehicle manufacturing green factory in automobile industry shall obtain certificates of land use rights, construction land planning permits, environmental impact assessment approvals, construction project planning permits, etc.

5.1.2 It shall comply with the "three simultaneous" system (i.e., "it shall be designed, constructed, put into production and use simultaneously"), which is stipulated in national laws and regulations, such as environmental protection law, labor law, safety production law, occupational disease prevention law and fire protection law; provide relevant acceptance and evaluation reports.

5.1.3 The dangerous goods warehouse, toxic and harmful operation room, waste treatment room of green factories in the automotive industry, that produce pollutants, shall be set up independently.

5.1.4 The floor of the painting workshop for the pre-treatment of automobiles and the electrophoresis process shall be subject to anti-leakage treatment.

5.1.5 The whole vehicle manufacturing green factory in automobile industry should save materials, energy, water, land, renewable energy in construction, from the aspects of building materials, building structure, lighting, greening and site, renewable resources and energy utilization. It shall conform to the evaluation criteria of GB/T 50878.

5.1.6 The whole vehicle manufacturing green factory in automobile industry should adopt multi-floored buildings.

5.2 Lighting

5.2.1 The artificial lighting of the factory area and each room or place of the whole vehicle manufacturing green factory in automobile industry shall comply with the provisions of GB 50034.

5.2.2 Natural light and other energy-saving measures shall be used. The natural light rate should not be lower than the level specified in GB 50033. The lighting in different places shall be designed in different levels; the lighting in public places shall take measures, such as partitioning, grouping, timing automatic dimming.

5.3 Device used

5.3.1 Enterprises shall phase out high-energy-consuming outdated electromechanical equipment, within a time limit. Enterprises need to provide a list of high-energy-consuming outdated electromechanical equipment and an equipment elimination

6.1.2 The whole vehicle manufacturing green factory in automobile industry should pass the third-party certification of GB/T 19001.

6.1.3 The whole vehicle manufacturing green factory in automobile industry should pass the third-party certification of the automotive quality management system. Refer to IATF 16949, for the third-party certification standards of the automobile quality management system.

6.2 Occupational health and safety management system

6.2.1 The whole vehicle manufacturing green factory in automobile industry shall establish, implement, maintain an occupational health and safety management system, that meets the requirements of GB/T 45001.

6.2.2 The whole vehicle manufacturing green factory in automobile industry should comply with the third-party certification, which is stipulated in GB/T 45001.

6.3 Environmental management system

6.3.1 The whole vehicle manufacturing green factory in automobile industry shall establish, implement, maintain an environmental management system, that meets the requirements of GB/T 24001.

6.3.2 The whole vehicle manufacturing green factory in automobile industry should comply with the third-party certification, which is specified in GB/T 24001.

6.4 Energy management system

6.4.1 The whole vehicle manufacturing green factory in automobile industry shall establish, implement, maintain an energy management system, that meets the requirements of GB/T 23331.

6.4.2 The whole vehicle manufacturing green factory in automobile industry should comply with the third-party certification, which is specified in GB/T 23331.

6.5 Social responsibility report

The annual social responsibility report is publicly available.

6.6 Corporate green development report

Enterprises belonging to whole vehicle manufacturing green factory in automobile industry should prepare a green development report for automobile industry enterprises every year, disclosing the green practices of the factory in design, procurement, manufacturing, logistics, sales, recycling and other links in the previous year. It shall be available through public channels.

7 Energy and resource input

7.1 Energy input

7.1.1 The whole vehicle manufacturing green factory in automobile industry shall have an energy management center, including at least the management organization structure, infrastructure, management platform.

7.1.2 It has carried out energy audit or industrial energy-saving diagnosis within five years; obtained relevant certificates or reports.

7.1.3 The whole vehicle manufacturing green factory in automobile industry should adopt intelligent control systems, such as CIMS, MES, ERP, SCM; carry out digital workshop construction in accordance with the provisions of GB/T 37393; carry out intelligent manufacturing; improve production efficiency; reduce energy consumption per unit of product.

7.1.4 The whole vehicle manufacturing green factory in automobile industry should adopt energy-saving and consumption-reducing measures, such as smart micro-grids.

7.1.5 The whole vehicle manufacturing green factory in automobile industry should use renewable energy (solar energy, wind energy, etc.), to replace non-renewable energy.

7.2 Resource input

7.2.1 The whole vehicle manufacturing green factory in automobile industry should use recyclable materials instead of non-recyclable materials, in terms of packaging materials.

7.2.2 It has implemented or planned to reduce the use of hazardous substances and chemicals; meanwhile established an implementation plan.

7.2.3 In the past three years, there should be two years, where the ratio of the actual annual production capacity of the automobile factory to the annual design production capacity is higher than 70%.

7.3 Purchasing

7.3.1 The whole vehicle manufacturing green factory in automobile industry shall have information traceability requirements for supplier access, requiring suppliers to upload material data information through the industry information platform. The new energy vehicle manufacturers shall also meet the requirements for separate management of battery manufacturers, requiring the supplier to provide relevant information, such as battery code traceability, battery disassembly, dismantling, storage.

7.3.2 The whole vehicle manufacturing green factory in automobile industry shall put

The emission of air pollutants, such as paint mist, organic waste gas, fume generated in the production workshop of the whole vehicle manufacturing green factory in automobile industry, shall comply with the provisions of GB 16297, GB 14554, local atmospheric emission requirements.

9.2 Water pollutants

Degreasing cleaning wastewater, phosphating cleaning wastewater, electrophoresis cleaning wastewater, paint spray wastewater, emulsion wastewater from engine workshops, comprehensive wastewater from other workshops, overflow drainage from circulating water systems such as refrigeration stations and air compressor stations shall comply with the provisions of GB 8978 and local wastewater discharge requirements.

9.3 Solid waste

The facilities and sites, for the storage and disposal of solid waste, which are generated by whole vehicle manufacturing green factory in automobile industry, should comply with the provisions of GB 18599 and GB 18597, as well as the local solid waste disposal requirements. If the factory cannot handle it by itself, it should transfer the solid waste to a treatment plant, which has corresponding capabilities and qualifications for treatment.

9.4 Noise at factory boundary

The environmental noise emission, at the factory boundary of the whole vehicle manufacturing green factory in automobile industry, shall comply with the provisions of GB 12348 and the local noise emission requirements. The stamping workshop shall be equipped with noise reduction equipment and facilities; the ambient noise level in the workshop complies with the relevant provisions of the Occupational Health Law, meanwhile provide the relevant certification materials.

9.5 Greenhouse gases

9.5.1 The whole vehicle manufacturing green factory in automobile industry should adopt GB/T 32150 or applicable standards or norms, to verify and report the greenhouse gas emissions within their factory boundaries; disclose the verification results to the public.

9.5.2 The whole vehicle manufacturing green factory in automobile industry should use the accounting results, to improve their greenhouse gas emissions and establish improvement schemes and plans.

10 Performance

10.1 General requirements

Factories shall calculate or evaluate their performance, based on the following methods provided in this document; use the results for performance improvement. when applicable, each performance index shall at least meet the industry access requirements; the comprehensive performance index shall reach the advanced level of the industry.

10.2 Intensification of land use

10.2.1 The factory shall use the method in Appendix A.2, to calculate the floor area ratio of the factory building. According to the requirements in the "Control indicators for industrial project construction land". The factory floor area ratio of the transportation equipment manufacturing industry should not be lower than 0.7.

10.2.2 The factory shall use the method in Appendix A.3, to calculate the production capacity per unit land area. The production capacity per unit land area for passenger vehicles should not be less than 0.2 vehicles/square meter.

10.3 Harmless raw materials

10.3.1 The selection of steel and non-metallic materials shall comply with the provisions of GB/T 30512.

10.3.2 The limit value of hazardous substances, in vehicle paints, shall comply with the provisions of GB 24409. It should take measures, to replace the used coatings with alternative raw materials that comply with the "Catalogue of toxic and hazardous raw materials (products) substitutes encouraged by the State (2016 edition)"; calculate the green paint usage rate (ε), according to the formula in Appendix A.4.

10.4 Clean production

10.4.1 The CODcr production per unit area of the coating process, the total phosphorus production, the hazardous waste production is calculated, in accordance with the requirements of the "Cleaner production evaluation index system for the coating industry". The VOCs emission per unit painted area of the vehicle model shall be calculated, according to the formula in Appendix A.5.

10.4.2 The CODcr production per unit area of the coating process shall be less than or equal to 10 g/m^2.

10.4.3 The total phosphorus production per unit area of the coating process shall be less than or equal to 0.3 g/m^2.

10.4.4 The generation of hazardous waste per unit area of the coating process shall be less than or equal to 140 g/m^2.

10.4.5 The VOCs emission per unit painted area of passenger cars shall be less than or equal to 20 g/m^2. The VOCs emission per unit painted area of truck driving warehouses shall be less than or equal to 35 g/m^2. The VOCs emission of the painted area of trucks

and vans shall be less than or equal to 55 g/m^2. The VOCs emission of the unit painting area of passenger cars and automobile chassis shall be less than or equal to 80 g/m^2.

10.5 Waste recycling

10.5.1 The factory shall calculate the comprehensive utilization rate of industrial solid waste in whole vehicle manufacturing green factory in automobile industry, according to the formula in Appendix A.6. The comprehensive utilization rate of solid waste should be greater than or equal to 70%.

10.5.2 The factory shall calculate the wastewater reuse rate of the whole vehicle manufacturing green factory in automobile industry, according to the formula in Appendix A.7. The wastewater reuse rate should be greater than or equal to 70%.

10.6 Low-carbon energy

The factory shall use the formula in Appendix A.8, to calculate the comprehensive energy consumption per unit of automobile products; use the formula in Appendix A.9 to calculate the carbon emissions per unit of automobile products.

11 Evaluation

11.1 Evaluation indicators

The whole vehicle manufacturing green factory in automobile industry shall be evaluated, according to the indicators in Appendix B.

11.2 Evaluation methods

11.2.1 Participating green factories shall meet the requirements of mandatory items. Those that do not meet the requirements shall not participate in the selection of green factories.

11.2.2 The green factory evaluation shall be carried out by an independent third-party organization.

11.2.3 The organization, which implements the evaluation, shall check the report documents, statistical statements and original records; carry out discussions with relevant personnel according to the actual situation; collect evaluation evidence by means of on-site surveys, sample surveys, etc.; ensure the integrity and accuracy of the evidence.

11.2.4 The organization implementing the evaluation shall analyze the evaluation evidence and calculate the score, based on the evaluation indicators. The scoring items Q_1, Q_2, Q_3, Q_4, Q_5, Q_6 of each of the six indicators are summed and calculated, according to the actual scores of the scoring items of the indicators, to obtain the final

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