

Environmental Protection / Waste management

1. Introduction

TECO obey its environmental and protection policies. TECO has always been committed through the use of recyclable and life cycle analysis of the results to improve environmental protection products. Products, production processes or flow designs are all reflected the concept of environmental protection. TECO's environmental management system through the ISO 14001 certification is used to implement an environmental policy tool.

The following guidelines only deal with the suggestions of environmental treatment on the equipment. Customer shall be responsible for compliance with local regulations. This manual may not include some of the customer's specific content. Project document provides additional documentation.

2. Materials Average Content

When producing electrical equipment, the average material content used are as follows:

Material	Die-casting Aluminum frame Induction machinery	Die-casting Iron frame Induction machinery	Steel plate frame Induction Machinery
Steel	Majority	Majority	Majority
Copper	Medium	Medium	Medium
Cast iron	Less	Majority	Less
Aluminum	Majority	Less	Less
Insulation materials	Less	Less	Less
Stainless steel	Less	Less	Less
Other	Less	Less	Less

Majority: >30%, Medium: >8%, Less: < 8%

3. Packing Materials Recycling

- When the equipment arrived to the place, the packing materials should be removed.
- All wood-made packing materials can be burned.
- The packing materials used with impregnated wood at sea shipping for some country must be recycled according to local regulations.
- The plastic materials around equipment can be recycled.
- The anticorrosive agent covered on the surface of equipment can be cleaned by gasoline-based cleaner or wipers. Treating the wipers must be complied with local regulations.
- Paper-based packaging materials are to be recycled according to location regulation.

4. Equipment of disassembling

Disassembling equipment is a basic operation because equipment is assembled by bolts. However, due to the heavy weight of equipment, the operator must be required to have received training in handling the transportation of heavy loads to avoid any danger.

5. Classification of different materials

5.1 Frame, Bracket (bearing housing), Cover and Fan

These parts are made of structural steel and can be recycled according to local regulations. All of auxiliary equipment, cables and bearings must be removed before melting.

5.2 Parts with electrical insulation

The stator and rotor are the main part of machinery included electrical materials. Some auxiliary parts also included similar materials and should be used the same methods to dispose. These materials include each insulator in terminal box, exciter, transformer with adjustable voltage and current function, cables, wires, corona discharger and capacitor. Some parts are used for synchronous machineries and some used for few equipment.

All of these parts are in an inert state when equipment were completed. Some parts (especially the components into stator and rotor) including a large number of copper can be separated by appropriate heat treatment and the organic adhesive materials in insulation materials can be gasified. In order to ensure proper gas combustion, burner should provide an appropriate supplementary burner. In the combustion process of heat treatment, following conditions are recommended to minimize the material distributed processing:

Temperature of Heat treatment : 380- 420°C (716- 788°F)

Duration : Processing object should be kept at that temperature for at least 5 hours when reaching to 90% of target temperature. Supplementary gas combustion temperature for adhesives smoke: 850-920 ° C (1562-1688 ° F)

Flow rate: adhesives smoke in the combustion chamber should be kept at least three seconds

Note: The distribution of substances include O₂, CO, CO₂, NO_x, C_xH_y gas and micro-particles.

User shall be responsible to ensure that the process comply with local regulations.

Note: You should pay particular attention to thermal processes and heat treatment equipment maintenance, so as not to bring fire or explosion hazard. Since this work will use a variety of devices, so TECO cannot provide a detailed maintenance guideline for treatment process or equipment, customers will be responsible for dealing with these issues.

5.3 Permanent Magnet

If permanent magnet synchronous machineries will be totally melted, it's no need to deal with the permanent magnets.

In order to achieve a more complete recovery and removal of equipment or if the rotor will be sent out after recovery, we suggest doing permanent magnet demagnetization. Rotor can be heated in the furnace until the temperature of a permanent magnet reaches 300 °C (572 °F) to achieve degaussing purpose.



Open or disassemble permanent magnet synchronous machinery or remove the rotor of such equipment will produce stray magnetic fields. It may interfere with or damage to other electrical or electromagnetic devices and components, such as cardiac pacemakers, credit cards and more.

5.4 Hazardous Waste

The grease in oil lubrication system is hazardous waste and must be treated by local regulations.

5.5 Buried Waste

All insulation materials can be treated as landfill waste.