



REFRIGERATORS TREATMENT PLANT

TECHNICAL DATA

SYSTEM'S CAPACITY: Flow of **40 - 60** incoming refrigerators/hour

CHARACTERISTICS OF THE INPUT MATERIAL:

- Maximum size of a refrigerator in mm 2000x1050x850
- Refrigerators with wool glass coating are not allowed to the shredding phase.
- To limit the energy and utilities consumption, the refrigerators with different insulating systems
- Per contenere i consumi di energia e utilities, i frigoriferi con diversi sistemi di isolamento (PUR with R11, PUR with R600, glass wool, polystyrene, ecc.) should, despite it is not strictly necessary, be processed "campaigns".

CHARACTERISTICS OF THE OUTPUT MATERIAL: The output material is divided by material's type and the gas/oil are collected separately.

The system is built respecting the EU norms and regulations.



GENERAL DESCRIPTION OF THE PROCESS

The plant for the treatment of used refrigerators provides a productive cycle able to obtain the separation of all the different materials collecting also the oils/gasses present in a refrigerator.

The whole installation will provide with the following working phases:

- Reception of the material that needs to be treated
- Addressing to the treatment area
- Gas/oil collection
- Shredding
- Ferrous material extraction
- Grains' refining
- Separation of different materials
- Storage in containers suitable for shipment.

The management of the system occurs through a general electrical command and control panel with PLC technology.



BEGINNING OF THE TREATMENT AND OIL/GAS EXTRACTION

In the first phase the refrigerator is positioned on a roller conveyor, using a special extraction clamp connected to a pump, the content of the compressor and of the refrigeration tube is aspirated. The extracted material goes into a tank where, thanks to a heating system, oil and gas are separated and deposited in appropriate containers (gas is stocked in special tanks).



SHREDDING AND EXTRACTION OF FERROUS MATERIAL

Once the compressors are removed, the refrigerator is loaded on a conveyor belt that will take it to the shredder.

It will be brought to a variable size from 20 to 30 mm.

Once the material is shredded, it gets evenly distributed by a manganese vibrating conveyor where a magnet is positioned (overbelt - magnetic separator) that extract all the ferrous material that will be stored on a container positioned on the side.



GRANULES' REFINING

In the next phase, all the remaining material (plastic, copper, aluminium, polyurethane) gets transformed into granule (from 10 to 12 mm) by a granulating mill.

A rotating separator, after granulation, will remove the polyurethane parts from the other material. The output of this process is gathered and pressed by a briquetting press and successively deposited in an appropriate container.



SEPARATION AND STORAGE OF DIFFERENT MATERIALS

In the last phase the remaining elements are divided: these materials are taken to a vibrating channel and then to a densimetric separator that divides copper, aluminium and plastic. The storage will occur in different containers.



SYSTEM'S COMPOSITION

1. Tipper tire
2. Roller
3. Roller
4. Condensation plant oil/gas
5. Shears group and components
6. Curved roller
7. Roller
8. Curved roller
9. Conveyor belt in metallic decks
10. Pyramid system for refrigerators
11. Four-shaft shredder
12. Vibrating conveyor belt
13. Magnetic separator
14. Rubber conveyor belt
15. Cochlea
16. Magnetic sorter
17. Cochlea
18. Granulating mill with soundproof cabin
19. Cochlea
20. Pulveriser for plastic, copper, aluminium, with soundproof cabin
21. Double-staged rotating cleaning tower
22. Cochlea
23. Densimetric separator
24. Plastic storage
25. Densimetric separator
26. Suction system
27. Briquetting press
28. Dehumidifier
29. CFC system
30. Electrical and command panel







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