



ORE DRESSING AND INDUSTRIAL WASTE RECOVERY PLANTS

Design

Assembly

Start-up



Turnkey solutions

for ore and industrial waste dressing

From the mine to the final product: 100 years of experience in the mining processing sector make Minerali Industriali the ideal partner for the treatment of non-metallic ores, especially for the wet and dry treatments of silica and hard material like quartz and feldspar.

Mining

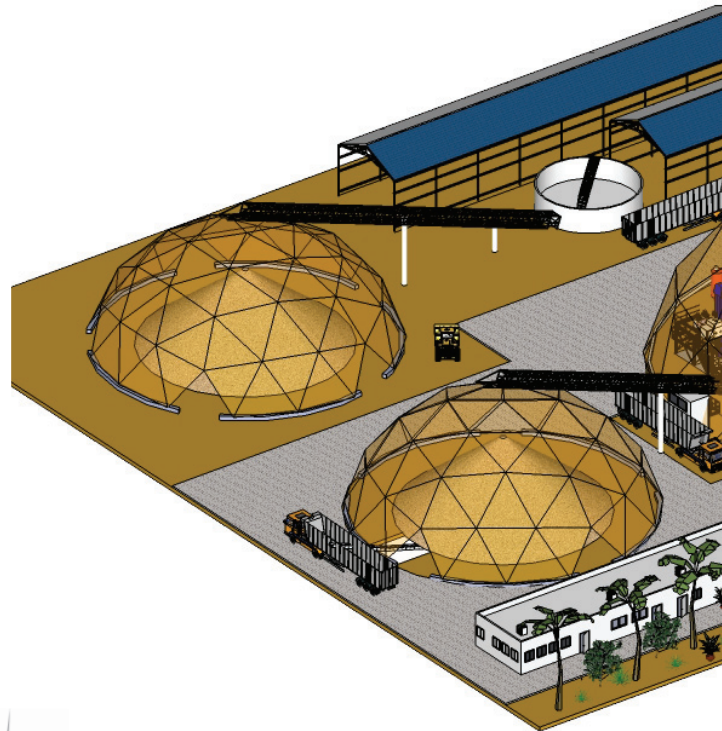
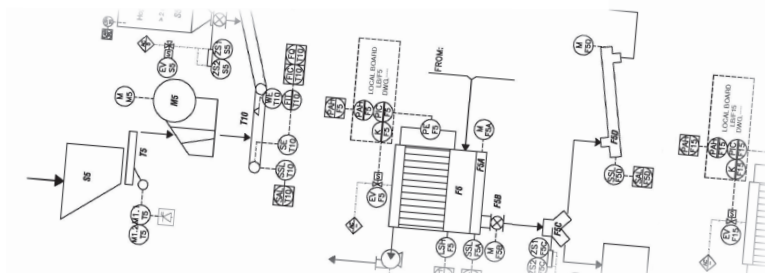
Minerali Industriali geologists and laboratory team is able to evaluate independently the deposit and follow the next mining operations.

Design and engineering

Minerali Industriali offers a complete engineering service: our designers team grants the best plant solutions for any kind of ore's treatment: washing, grinding, drying, sorting, flotation, leaching, magnetic separation, etc... .

Dedicated solutions

Minerali Industriali with its multi-year experience in raw material production and plants construction, is able to choose the best available machines on the market or, where the available equipments are not satisfying, to suggest and research new solutions, for example: RHP high pressure roll mill, HED-13 dryer and MAG-3 magnetic separator.



Assembly

Minerali Industriali technical staff is able to follow and coordinate mounting operations all around the world. If needed Minerali Industriali can provide the installation team also.

Start-up and training

Minerali Industriali turnkey solutions include also start-up assistance and personnel training, even before the first running, in Minerali Industriali's similar plants.

**OUR LATEST REALIZATIONS:*****Flotation plant –TURKEY and PORTUGAL******Scrap tiles preparation and milling plant – ITALY******Milling, pan filtering and air separation plant – RUSSIA******Silica sand dry plant – ESTONIA******Recycled glass milling plant – SWITZERLAND******Silica sand wet plant; feldspar, limestone and dolomite milling and dry plant – BRAZIL******Sanitary ware scraps preparation and milling plant – ITALY******High technology glass cullet plant (laser and optical sorting) - ITALY*****After sale assistance**

If asked by the customer Minerali Industriali can provide a full after sale support: spare parts supply, trouble shooting, existing plants adaptation to the new production requirements.

ORE DRESSING PLANTS



Wet treatments

Since its origins, to refine materials with high potential but with poor initial quality, Minerali Industriali had to resort to the wet treatment of its sands. The experience gained over the years, allowed Minerali Industriali to acquire a solid knowledge and to develop innovative skills in minerals' wet treatment field, extending its application to municipal and industrial wastes recovery. For this reason Minerali Industriali is today a serious and reliable partner for design, building and start-up of turnkey solutions for non-metallic ores processing.

1. Wet treatments: washing plants

Over the time, combining traditional and innovative techniques, Minerali Industriali has been able to shape its plants to its needs. Thanks to this experience Minerali Industriali engineering service is able to suggest to the customers the best solutions to treats a huge variety of sands:



- wet screens, spiral classifiers, attrition cells, pebbles mills, hydro-cyclones and hydrosizers for the organic component separation, for the clay fraction recovery and, generally, for classification purposes;
- spirals and dense medium separation for heavy minerals removal;
- wet magnetic separators for the iron content reduction;
- filter presses, drum or pan filters for dehumidification and fine and very fine fractions enhancement.

2. Wet treatments: flotation plants

To produce quality white glass is necessary to reduce as much as possible the iron and the heavy minerals contained in the sand: Minerali Industriale is able to study, design and supply flotation turnkey solutions for glass sands treatment.



3. Wet treatments: leaching plants

Magnetic separation and flotation not always guarantee the requirements achievement for very high quality white glass. Minerali Industriale has applied the leaching technique to the glass sands, achieving an absolute excellence product. Minerali Industriale is available to study dedicated leaching solutions with the customers, obtaining satisfactory results not only in the mining field, but also in other sectors like, for example, the electronic one.



Dry treatments

In the last years Minerali Industriali has heavily invested in dry processes innovation, especially from the energy efficiency and plant flexibility point of view. Thanks to this work, have been developed original and high performance machineries, such as the HED-13 co-countercurrent dryer and the RHP roll mills. According to specific production requirements were finally enhanced and optimized some machineries normally in trade, for example the MAG-3 magnetic separator.



1. Dry treatments: drying plants

HED-13 co-countercurrent dryers developed and used by Minerali Industriali guarantee low fuel consumption, up to 1 kWh of energy per liter of evaporated water against 1.3 kWh/l of conventional dryers. Minerali Industriali supplies a complete service of design, installation and start-up of drying plants, including sand handling, dust filtration and the product storage in silos.



2. Dry treatments: magnetic separation plants



Minerali Industriali uses and provides complete magnetic separation plants. MAG-3 separators have been specially designed by Minerali Industriali to remove main paramagnetic minerals thanks to 3 high field separation stages built in an extremely compact implementation at the same time easily accessible for maintenance.

3. Dry treatments: fine milling plants (milling, classifying and storage)

Innovative products and increasingly demanding customers have pushed Minerali Industriali to make its milling plants more and more flexible. Based on this experience, Minerali Industriali offers today very sophisticated milling systems, able to return a product with very narrow distribution curves in all fields of fineness required by modern industry.

The heart of Minerali Industriali milling plants is the RHP roll mill, an highly flexible machine that allows a very precise control of the granulometric curve and its variation according to the desired product. Downstream of milling section, Minerali Industriali provides complete and interchangeable classification systems (screening and air separation), adapted for hard materials, equipped with filters and storage system in silos.



WASTE RECOVERY

glass, tiles, sanitary ware, fiberglass and much more...



Glass waste recovery

Minerali Industriali recycled glass treatment combines traditional ore dressing processes with the most recent sorting technologies. In this way, Minerali Industriali ensure the total recovery of the glass waste: an eco-friendly solution with an high quality cullet production.

Treatment stages

The aim of the glass waste treatment is to remove external materials, first of all ceramic (because of the stones problems in the glass factories), metals, plastic and organic residual (with their high carbon rate).

Glass waste treatment is composed by three subsequent stages:

- 1- preparation stage: remove metals and the material part under 10 mm. This fraction's ceramic content is in fact hard to remove by the sorting machines;
- 2- optical sorting stage: remove ceramic by optical recognizing. The outcome of this selection is already an high quality cullet. It's also possible to reduce the Pb rate with UV sorting machines;
- 3- washing and milling stage: so far rejected material represents the 25% of the income waste, with 70% glass content, 30% of ceramic and an high carbon rate. Minerali Industriali is able to successfully recover this part by washing treatment (reduction of carbon rate) and a fine milling (<1 mm), allowing the ceramic melting in the glass factories without stones problems (Glassy Sand).

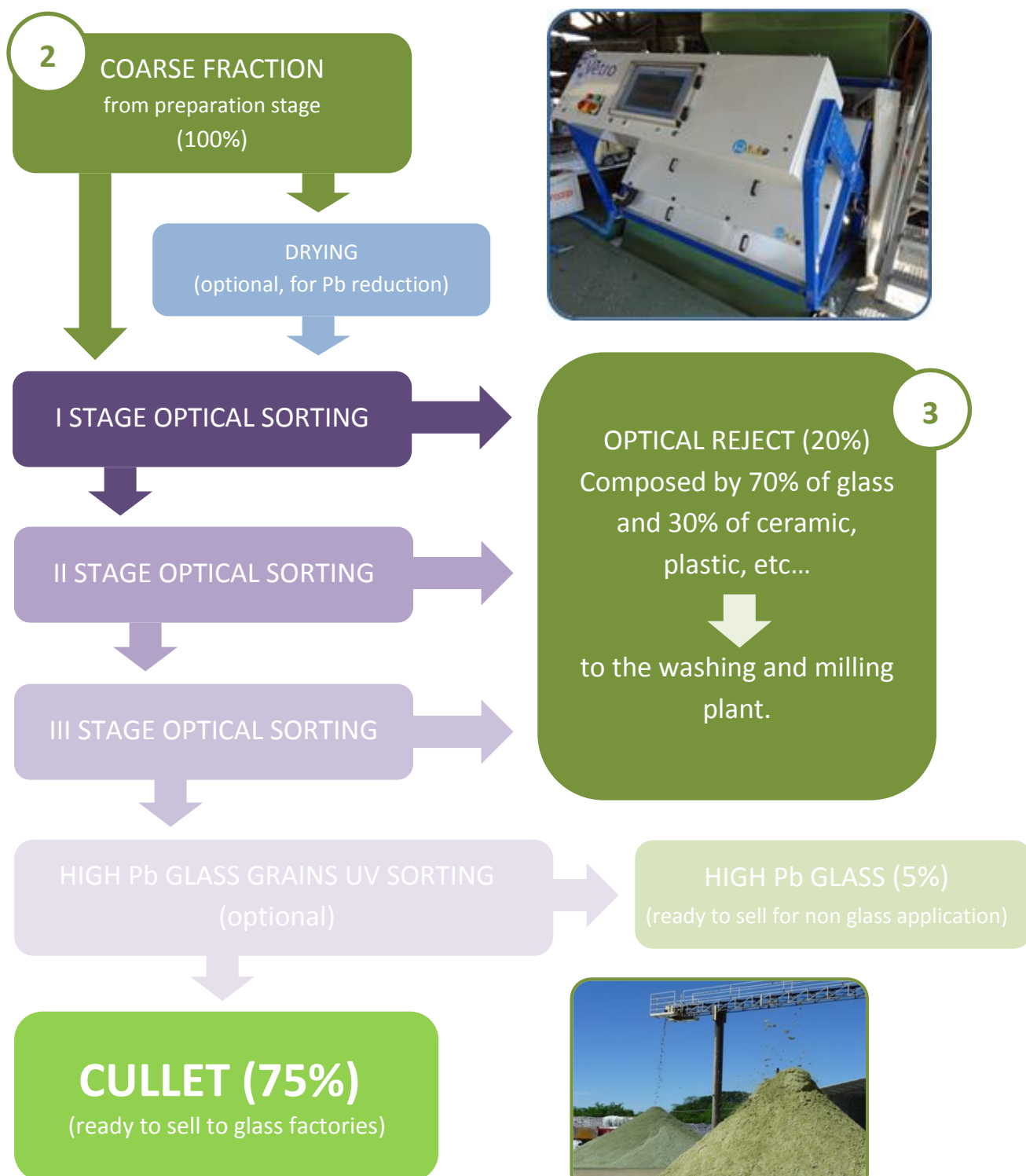
Glass waste recovery - 1st stage: waste preparation

This is the preliminary treatment of the glass waste recovery.



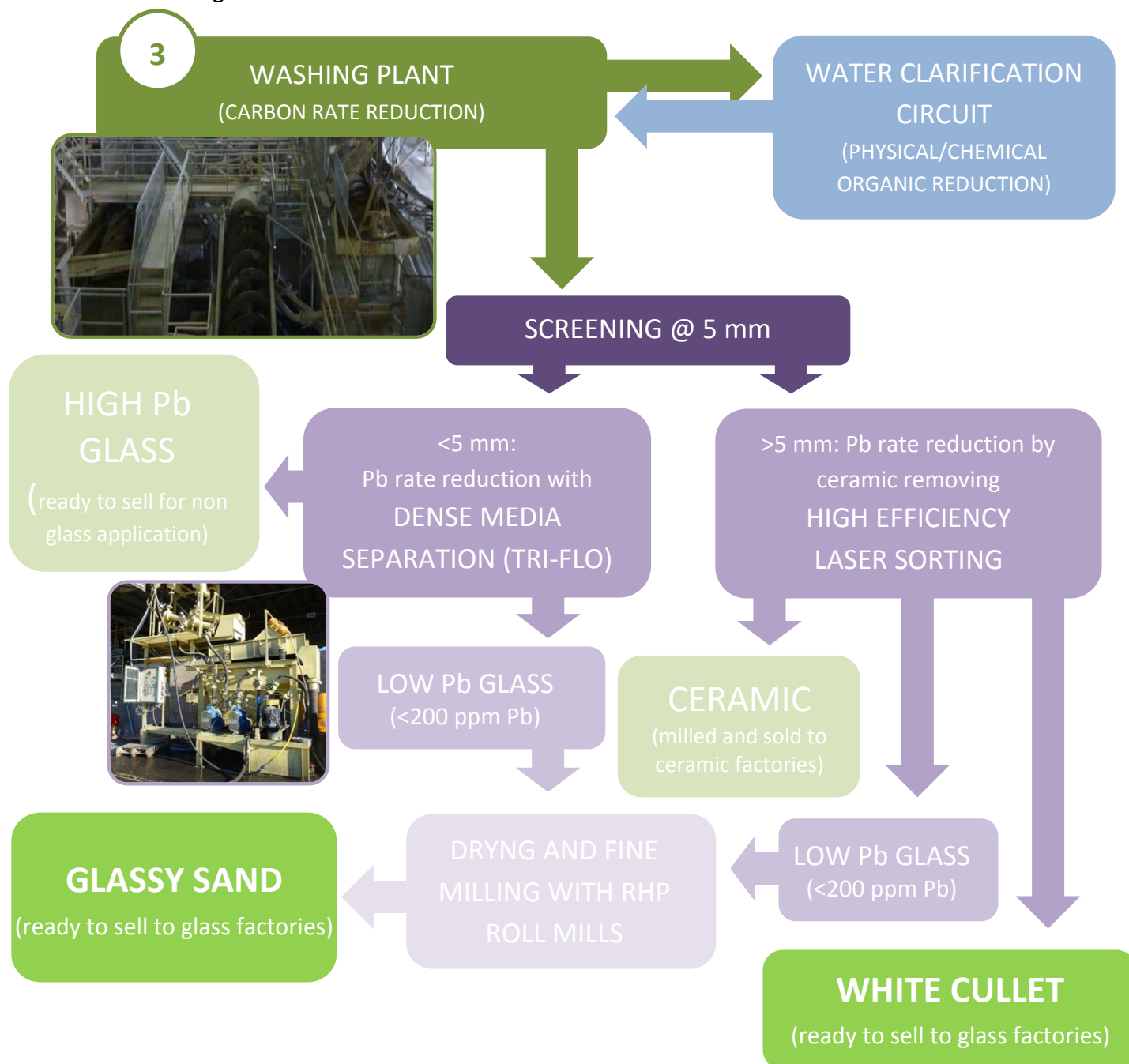
Glass waste recovery - 2nd stage: cullet production by optical sorting

After the preparation treatment, the glass is introduced in the optical sorting stage, to remove the ceramic grains.



Glass waste recovery - 3rd stage: Glassy Sand production

Previous stages rejected fraction has a consistent percentage of high melting material (ceramic) and an high carbon rate (typically 2% in weight) due to the presence of plastic and residual liquids on the bottles: this material can't be used directly in glass melting. Thanks to its ore dressing experience, Minerali Industriali apply a washing treatment to reduce the carbon rate and a fine milling process to allow the remaining ceramic part to be melted without stones problem in glass factories. The result is Glassy Sand. In addition, Minerali Industriali has developed an high dense media treatment and an high efficiency laser sorting to reduce the Pb level in the glass.

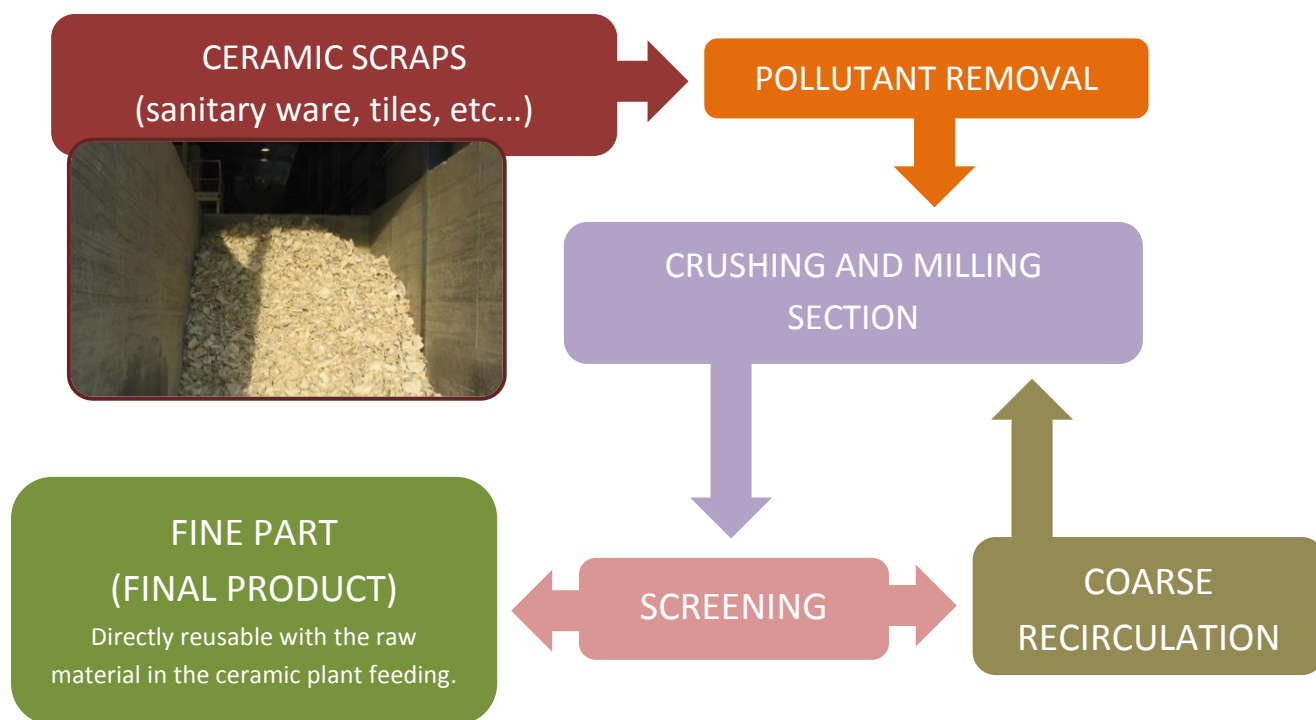


Ceramic waste recovery: sanitary ware and tiles

Sanitary ware and tiles manufacturing processes always produce a small quantity of scraps, but its accumulation may become a problem. Recover this fraction means to reduce the scraps stock and to produce a pre-fired raw material, with the same quality of the final product and with saving firing energy properties.

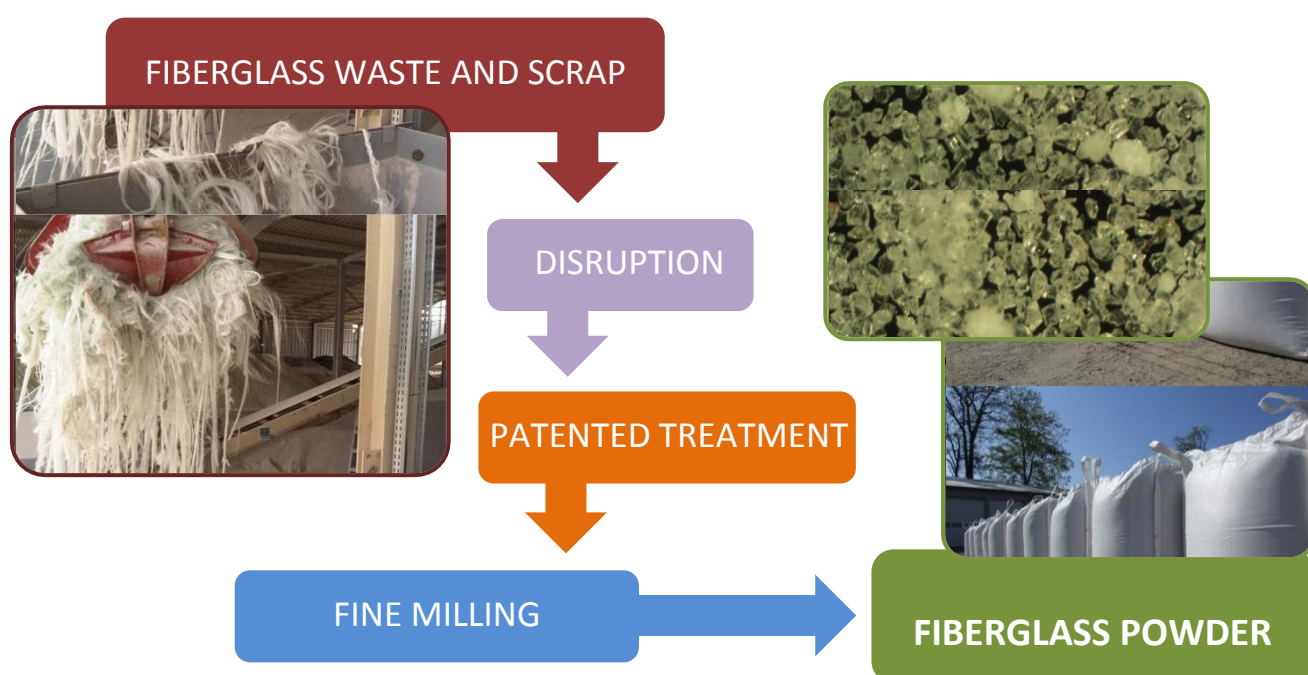


Minerali Industriali ceramic waste treatment plants are a real solution, successfully installed in many ceramic ware factories.



Fiberglass recovery

Fiberglass waste and scrap are usually disposed in landfill: currently fiberglass waste can't be reintroduced in the melting process. Minerali Industriali patented an innovative technology to recover this precious material. The result? A regenerated raw material ready to be used in the normal fiberglass production.



and much more...

Minerali Industriali successfully treats and recovers artistic glass, lamp glass and CRT monitor front glass. Minerali Industriali is also available to study, propose and realize tailored made solutions to recover a large variety of waste or scrap (ashes neutralization, sludge treatment, foundry rejects, etc...).



**Main customers****SOLVAY****OWENS-ILLINOIS**

VIDROS PLANOS



Driven by Innovation

**PILKINGTON****COLOROBIA**Grupo
Parapedra**MISAPOR****Safety**

Minerali Industriali's machines are designed and realized according to the best available standards, ensuring the highest degree of safety for the operators. All machines are CE certified.

Laboratory tests

Minerali Industriali, as raw materials manufacturer for glass and ceramic industry, makes available its laboratories and experimental equipments for analysis and industrial simulations.

Industrial trials

Minerali Industriali plants are available to the customers for industrial trials.

Customer care

Minerali Industriali technical office is available for spare parts supply and for any assistance the customer may need.

Payments facilities

Minerali Industriali collaborates with the leading credit institutions and it is available to study financial dedicated solutions with the customer.



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