



REILING Glas Recycling GmbH & Co. KG

Separation of glass ceramics and leaded glass with X-ray fluorescence technology

CUSTOMER

For more than 100 years the German company Reiling has been working in the field of recycling.

In its founding year, Reiling began simple commodity trading but developed during the 50's into one of the glass recycling specialists in Germany.

The formerly small business, now in its fourth generation, has grown into a substantial group of companies. Nevertheless, Reiling remains largely a family-run business.

Currently, Reiling has 11 branches throughout Germany.

REQUIREMENTS

- Separation of glass ceramics
- Separation of lead glass

Glass ceramics are more heat-resistant than generic glass and therefore cause severe damage in products if included in the glass production process. The non-molten glass ceramics can lead to inclusions and stresses in the new glass, making the new parts more prone to cracking and breakage.

This heat-resistant glass (from sources such as ceramic cook tops) is so detrimental, it could lead to serious mechanical breakdowns or production stops.

Lead glass is the second customer concern as it also represents a challenge for the glass industry. The reduction of lead-containing glass is prescribed by law. These provisions are valid all over Europe and must be observed by glass factories.

SOLUTION

The REDWAVE XRF utilizes X-Ray Fluorescence Technology, which analyzes and evaluates glass on the basis of its elemental composition. The XRF sensor searches for certain elements such as Titanium, Zinc, Zirconium or Lead which enable a precise classification of the glass type. Contaminations are reliably detected and rejected.

This technology provides excellent results as, contrary to other methods, good detection and recognition can still be guaranteed in the case of dirty glass or other kinds of visual impairment.

What also makes this sorting technology unique is the fact that both glass ceramics and leaded glass are rejected reliably with only one sorting machine in one process step.





SITUATION

The REDWAVE XRF-Glass machine has been developed in cooperation with the American company Innov-X Systems who specialize in X-Ray Fluorescence Technology. To demonstrate how this technology can be applied in practice, the method has been developed and tested in many years of collaboration with the German company Bernhard Reiling Glas Recycling GmbH. In mid-March 2009, the enterprise started a trial period with the first X-Ray Fluorescence sorting machines. Large quantities of waste glass cullet have since been successfully separated, rejecting contaminants such as glass ceramics and lead glass. Massive improvements in the production processes of glass factories using this clean cullet are overwhelming evidence of the potential for X-Ray Fluorescence Technology.

Reiling Glas Recycling GmbH presently owns five REDWAVE XRF sorting machines which are utilized in three different production facilities.

TESTIMONIAL

CEO Bernhard Reiling: "We expect to have a competitive advantage from this new plant with X-Ray sorting machines and believe the machines will also ensure success at the Marienfeld location in the future."

Management Marc Uphof: "We had already started in 2004 to search for an adequate technology for detecting glass ceramics. At the beginning we gained initial experiences with X-Ray fluorescence hand-held devices, but after a very short time this gave rise to the desire to have an online machine in our processing plants. We realized that there was a huge demand for such a sorter as the cullet quota within glass factories became constantly higher and contemporaneously more and more glass ceramics (fireplace glasses, ceramic cook tops, etc.) were put into circulation. Long-term viability of high-quality glass recycling is only guaranteed by accurate recognition (clear detection/identification) and removal of these highly problematic glasses in the mass flow. We still maintain this opinion in the matter since the glass industry now also stipulates the separation of leaded glass and glass ceramics."





After innumerable tests with the hand-held devices, we soon realized that the X-Ray fluorescence technology is the most appropriate method for identifying glass ceramics clearly and reliably. The classification is always clear. Another positive side effect of the X-Ray fluorescence technology is that in addition to the heat-resistant glass ceramics, lead glass (also undesirable for melting) can be easily detected.

In 2008 a prototype in form of a stand-alone machine was delivered directly from the United States to our recycling company in Marienfeld. The material detection worked perfectly, and only the removal of impurities and the material guiding within the machine needed to be optimized. Moving forward, we required an experienced mechanical engineering specialist for the production of X-Ray sorting devices. With BT-Wolfgang Binder, a competent partner was soon found and we were able to work together successfully. BT-Wolfgang Binder recognized immediately the potential of this kind of sorting technology and developed the REDWAVE XRF-G machine together with the manufacturer of the hand-held devices and other technical partners. The first sorter of this type has been also delivered to Reiling.

We are proud that we have managed to bring together many competent partners to reach our goal of the online separation of glass ceramics and lead glass. Sales, service and maintenance are solely the responsibility of BT-Wolfgang Binder; however we continue to be the first contact regarding the further development of this very young sorting technology. All experiences made during the operation of the XRF-G sorter are immediately incorporated in the development of new models.

We can only repeat again and again that we appreciate BT-Wolfgang Binder as a very competent partner responding to all issues in a fast and uncomplicated manner.”

TECHNICAL DATA

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| Type of machine | REDWAVE XRF |
| Feeding material | Hollow glass and flat glass |
| Capacity | varies; between 15-20 to/h per sorting machine |
| Sensor system | X-Ray Fluorescence |
| Size | 0-60 mm |
| Working width | 3 machines 750 mm 2 machines 900 mm |

