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Lesen Sie unsere COVER STORY S. 8: Balance-Umschlagbagger SENNEBOGEN 8100 EQ revolutioniert Schrottschlag
Electronic waste sorting (WEEE): The flexible combined solution with STEINERT’S KSS multi-sensor system

Commencing work at STEINERT’s Test Centre in Cologne on May 2015, Swiss company Bühlmann Recycling, prepared an especially demanding sorting task for the applications specialists. The challenge was to use a flexible facility (i.e. one that could be adapted to future input materials) to manufacture a variety of products so that the investment could continue to safeguard the future. The feed bunker contained electronic waste (WEEE). Today, almost two years later, the facility has been commissioned by STEINERT partner MWN in Lyss/Switzerland, where it produces the desired results.

E-Schrott Aufbereitung: Kombiniere und sortiere mit der STEINERT KSS


Hansueli Bühlmann is well-known for his innovative spirit. He is driven by the desire to find ways in which processing can be simplified so that it becomes "less laborious", as he puts it. What is characteristic about him is that he plans investments well in advance and knows the market inside and out whenever he makes a purchase. He doesn’t want to have any residual fraction left over and he processes materials so extensively that every gram of it benefits his company. The goal is to have zero waste. "At the STEINERT Test Centre we were shown in detail what the machines can do. Moreover, we were impressed by the employees’ commitment," says Bühlmann. His business is a family-run enterprise that has to set itself apart from the big companies.

In this way, Bühlmann generates up to 7 different products, using only 2 machines.

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Flexible auf Marktbedürfnisse reagieren


Die Prozesse

Früher war im Prozess nach der Zerkleinerung und der Fe/NE Abscheidung Schluss: Die Reste wurden nicht weiter aufbereitet und deren Weiterverarbei- tung musste bezahlt werden. Im Gegensatz zu heute.
These two STEINERT machines at the end of the Bühmann processing chain enhance product quality to the level that purchasers need for the sorting of electronic waste and the processing of plastic. This part of the facility can best be described as being flexible and compact. The system’s 11 conveyor belts and reversible discharge belts make it flexible. The machines can run either in parallel or in series in order to perform different sorting tasks. The process is simple and the preset recipes enable it to be used for a variety of products. In this way, Bühmann is adapting itself to new legislation, new designs for electrical devices and fluctuating stock market prices. Moreover, it enables the company to sort the materials that maximize profits.

The processes
In the past, the process was finished once the material was shredded and iron separated from non-ferrous materials. The residual fraction wasn't processed any further unless this was specifically paid for. This is no longer the case. The drop of the upstream magnetic separators for iron and non-ferrous metals now goes directly to the STEINERT KSS. In the first step of the process for the 12-30 mm electronic waste, the multi-sensor sorting system STEINERT KSS produces a circuit-board/cable product. Flame-retarding plastics (including black plastic) are separated during this step as well. The rest of the sorting step is performed by the UniSort Black, which uses an NIR sensor to detect and sort out visible plastics (ABS, PE, PS, PP). The UniSort Black sets the remainder to produce a fraction of mixed black plastics that are purchased by the downstream recycling industry. At the same time, the STEINERT KSS sorts the non-ferrous scrap out of the separated non-ferrous materials upstream. The X-ray sensor ensures a pure aluminium product and separates heavy metals. Colour sorting is used to separate the heavy metal product into copper, brass and grey metals. This way, Bühmann generates up to 7 different products, using only 2 machines. Additional combinations of sensors will be added to the recipes in future sorting tasks.

In order to increase the depth of the value added, black plastics could also be sorted by polymer class. STEINERT also supplies the next solution for this purpose: UniSort BlackEye.


www.steiert.de
Hanssoli Bühmann, owner of the Bühmann Recycling AG
Hanssoli Bühmann, Inhaber der Bühmann Recycling AG

The editorial team of recovery had the chance to speak with Hanssoli Bühmann about the new equipment and the future tasks of recycling.

recovery: Why did you decide to purchase the two sorting plants?
Hanssoli Bühmann: Nowadays, sorting plants are essential for the optimal recovery of resources. Now, with our shredders, the material is processed so well that buying new sorting machines was the next logical step. I always examine and analyze very carefully where we should invest next and what is technically feasible.

recovery: How far do your experiences in the recycling industry go back?
Hanssoli Bühmann: I started 36 years ago. In the 1990s, recycling began to develop really effectively. In the last 6 years, we experienced extraordinary growth. Since we have been running the shredder, we process all the materials: mixed scrap, electronic waste, plastic.

recovery: What advantages do the new sorting plants provide to the treatment process?
Hanssoli Bühmann: The new machines can sort all kinds of metals and plastics. Now, we are able to process nearly 100% of the materials to such an extent that they can be further marketed. Previously, a lot of plastics were burnt, today a great deal is reused. In the past, we gave away the mixed metals, today they are further processed and sorted to busses.

recovery: Are the capabilities of the sorting machine already exhausted or do you see further potential for optimization in future?
Hanssoli Bühmann: Currently, we test out the machines very thoroughly. We sort, for instance, stainless steel and aluminium. But the sorting plants are capable of much more. Our goal is to develop new programs so that we can optionally sort out any material almost 100% of the time. The programs are set up by the employees of the company Steinert, whereas small changes can be made by our employees themselves.

recovery: How do you assess the future development of recycling?
Hanssoli Bühmann: The return of recyclable materials needs to be further improved, i.e. we, too, must improve ourselves, for example our recycling rates. The fine fraction often still ends up on the landfill. In future, we should consider already during their production how goods can be recycled at the end of their service life. We will need to react more quickly and more efficiently to new materials and products. And with the new sorting machines we can try out right now what will be standard in recycling tomorrow.