

# Advanced solutions to any mining issue

**CEMTEC** Cement and Mining Technologies is a leading manufacturer of dry and wet mills for the cement and mining industry with over 30 years of experience. Its portfolio spans from single machines, spare parts and engineering services to the erection and commissioning of turnkey projects in the cement, mining and recycling industry.

In 2020, CEMTEC was awarded with the execution of a turnkey slag processing plant for a big Austrian steelmaker. The customer previously had a contractor operating a manual sorting plant at the planned site before but wanted to use a more modern, innovative and flexible plant to test different process parameters and gain valuable experience for further optimisation. Due to already existing permits for the old plant as well as lower costs, the new plant had to be erected inside the previously used concrete building. With the new plant, the customer wanted to further reduce waste by internally recycling valuable material, and reduce costs at the same time. With its experience in the mineral processing business, CEMTEC – in close cooperation with the customer's engineering staff – was able to develop an optimal flowsheet.

The plant consists of three major parts: comminution and screening to liberate the

steel inside the slag, sorting of coarse material by an X-ray sorter and magnetic separation for the fine material. One of nine different steel slags is fed with a wheel loader from feed boxes to a jaw crusher. After primary crushing the material is classified into three particle size ranges by a vibrating screen. The coarsest fraction (>90mm) is directly removed from the plant as it mostly contains coarse steel parts.

The middle fraction (10–90mm) is fed to an X-Ray sorting machine, which uses the density of the material as its sorting criteria. Particles under the detection limit can either be directly discarded as slag or alternatively fed to a rotary crusher to liberate further steel particles. The product of this secondary crusher is united with the product of the primary crusher and rescreened.

The remaining fine fraction (0–10mm) is fed to a two-stage dry magnetic separation.

To improve magnetic separation efficiency the fine fraction below 1mm is removed by a dynamic air separator.

The now dedusted material is fed to the first stage magnetic drum separator and the second stage magnetic belt separator, which efficiently separate slag from steel particles.

The plant's electrical system needed to be installed in two containers outside the building as there was no more indoor space available after equipment installation. With around 800kW of installed power this plant is on the smaller side of processing plants built by CEMTEC. But what this plant lacks in power it makes up for in complexity in the interplay of different machines from different manufacturers. The control system is using modern decentralised IO with a powerful PLC. The operator station of the plant is located in a separate office building which is connected, via fiber-optic network, to the plant control system in the containers. A mobile operator panel can be connected in the plant for control during maintenance. Highly qualified programmers did all programming and visualisation development in house.

Detail engineering was finished in spring of 2021, and in early summer the first parts of the steel structure and equipment arrived on site. Mechanical erection of the plant was carried out by AGIS, one of CEMTEC's corporate subsidiaries and could be finished on time in early fall of the same year. The simultaneously-started electrical installation was completed in early winter of 2021. After commissioning and operator training in spring of 2022 the plant could be handed over. Experienced CEMTEC engineers accompanied and supervised all erection steps. ●



A newly-manufactured automatic sorting plant built for CEMTEC's client.

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