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150 tons revert-based briquettes produced and processed in a blast furnace

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The sinter plant plays a key role in processing internal by-products and waste materials from various processes within the steelmaking industry. However, sinter making is energy intensive, with no 100% green alternative, leading to substantial CO2 emissions. As a results, the sinter plant is not utilized in future green scenarios. An alternative could be found in cold bonded briquetting: a practical bridging option for both internal circularity and CO2 reduction.

Cold bonded briquetting was studied in the COACH (Cold bonded agglomerates for Blast Furnace ironmaking with chemically engineered binders) project, EU-funded by RFCS. It focussed on the preparation and assessment of cold bonded briquettes from reverts, initially with tailor made, polyamide based binder for blast furnace ironmaking.

Two reverts were selected for making the briquettes: classifier sludge from the steelshop and so-called bunker-dust from the blast furnace. The finer dust from the blast furnace in combination with the coarser dust from the steelshop resulted in acceptable strength due to optimized particle size ditribution. The briquettes were produced at the pilot plant for extrusion at Tata Steel Netherlands. The produced briquettes were characterized by testing their green strength, cold strength and metallurgical strength. It was found that particle size distribution and moisture content of the raw material were key for a high performing briquette.

A total of 150 tons of briquettes were produced, cured on the field for several weeks, and subsequently transported to the blast furnace. During a 10-hour trial, the briquettes were burdened during regular blast furnace operation. No evidence was found that the briquettes had a negative impact on overall operation or dust production.

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