

ThinkTank BSW

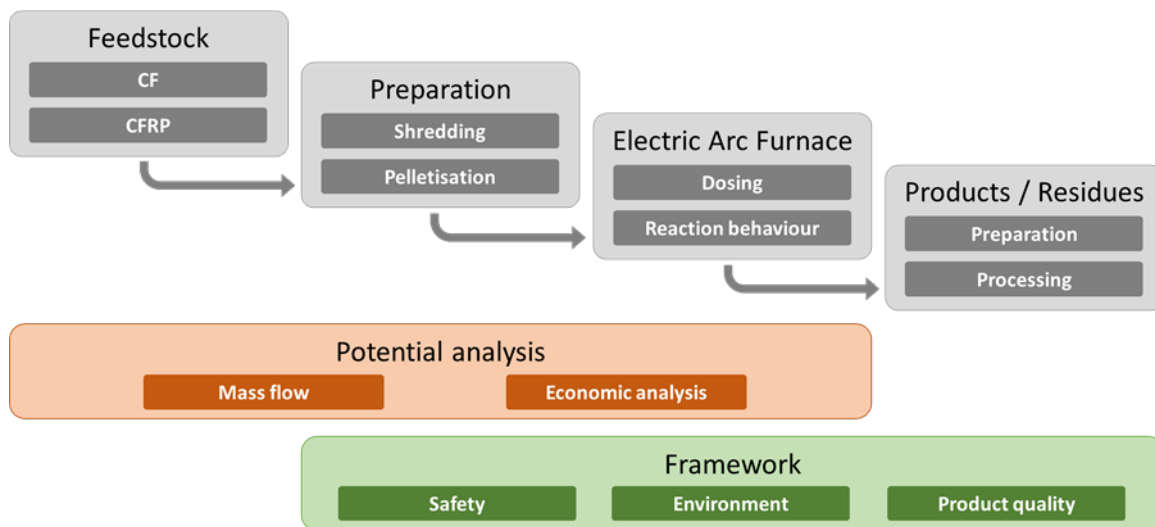
Utilization of carbon fibers and carbon fiber reinforced plastics in steel production in an electric arc furnace

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Partners: **THINKTANK Industrielle Ressourcenstrategien, KIT-ITC, Badische Stahlwerke Kehl**

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In this project, the principal suitability of the electric arc furnace (ELBO) for recycling carbon fibers (CF) and carbon fiber-reinforced plastics at the end of their life cycle will be examined.

To this end, the process of steel recycling in the ELBO will be described in detail in a first step in cooperation with Badische Stahlwerke GmbH, and the current status regarding the substitution of fossil carbon carriers in the process will be researched. Based on these results, the entire steel recycling process chain from material delivery to the handling of residual materials is examined, with the focus on potential fiber release and the resulting possible risks with regard to occupational safety, process stability, product quality and the handling of residual materials.

In the further course of the project, experimental investigations will be carried out on the thermal behavior of an industrially used blown carbon in direct comparison with commercially available CF. These investigations will be supplemented by characterization of the two carbon carriers, including elemental analysis and BET measurements.

Furthermore, a method for the reproducible comminution of CF by means of a planetary ball mill on a laboratory scale will be developed and an evaluation routine for the quantification of ground CF by light microscopy will be worked out.

Publications of the project results are available at:

<https://primo.bibliothek.kit.edu/permalink/f/smlk5/KITSRCE1000138406>



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