



CARBON CAPTURE OPTIMISATION SERVICE

Help your plant maximise the success and reduce the cost of carbon capture

KEY BENEFITS

- Prepare for decarbonization
- Maximise the success of carbon capture
- Reduce OPEX costs for carbon capture
- Minimal impact to existing operations

Carbon capture, utilisation and storage (CCUS) is the lynchpin for the cement industry's net zero hopes. But while you're developing your carbon capture investment plans, you should also prepare your process to optimize the overall approach.

Energy-intensive carbon capture

Carbon capture technologies are highly energy-intensive. These energy demands – whether thermal or electrical – can double the existing energy consumption of your cement plant. This equates to high ongoing OPEX costs in addition to the high CAPEX costs of installing a carbon capture plant. But there is potential to reduce this energy demand with a few relatively small modifications to your pyro process.

Preparing for carbon capture success

Our CCUS optimisation service helps prepare your plant for successful carbon capture. We'll identify the simple, low-risk modifications to your pyro system that can increase the consistency of your gas flow rate and the concentration of CO₂ within the process, so you can reduce the CAPEX and OPEX of a capture plant.

What does CCUS optimisation include?

The scope of a CCUS optimisation service includes:

- A feasibility study, including false air audit, cooler balance audit, materials/fuels analysis.
- A baseline simulation with scenario analysis including modelling of e.g., existing component sealing, low-leakage component upgrades, mill bypass heat exchanger implementation, CO₂ transport gas integration, future fuel mix/bypass changes, and related water demand/effluent production.
- CO₂ enhancement recommendations for optimal configuration based on the above analysis.
- Evaluation and proposal with capture technology providers (as per customer request).
- A heat balance assessment and recommendations (primarily plant-side, to maintain heat needed for material/fuel drying, potentially with some integration of reject streams from capture unit).

We'll use our proprietary process simulation tool to model the modifications and results and even save the plant model for future reference. Therefore, if you decide you want to make further process changes, for example O₂ enrichment, H₂ firing, alternative fuel change, etc. you can evaluate the impact on the process and on your carbon capture plant.



The results of optimisation

After optimisation, the amount of CO₂ to be captured will be the same. However, the CO₂ concentration in the flue gas to the carbon capture unit will increase – making the process more efficient. As a result, the cost of capture will be reduced by 15 – 20%, depending on your specific energy costs – a saving that could equate to millions of dollars. Savings regarding your CAPEX investment may also be achieved in some cases.