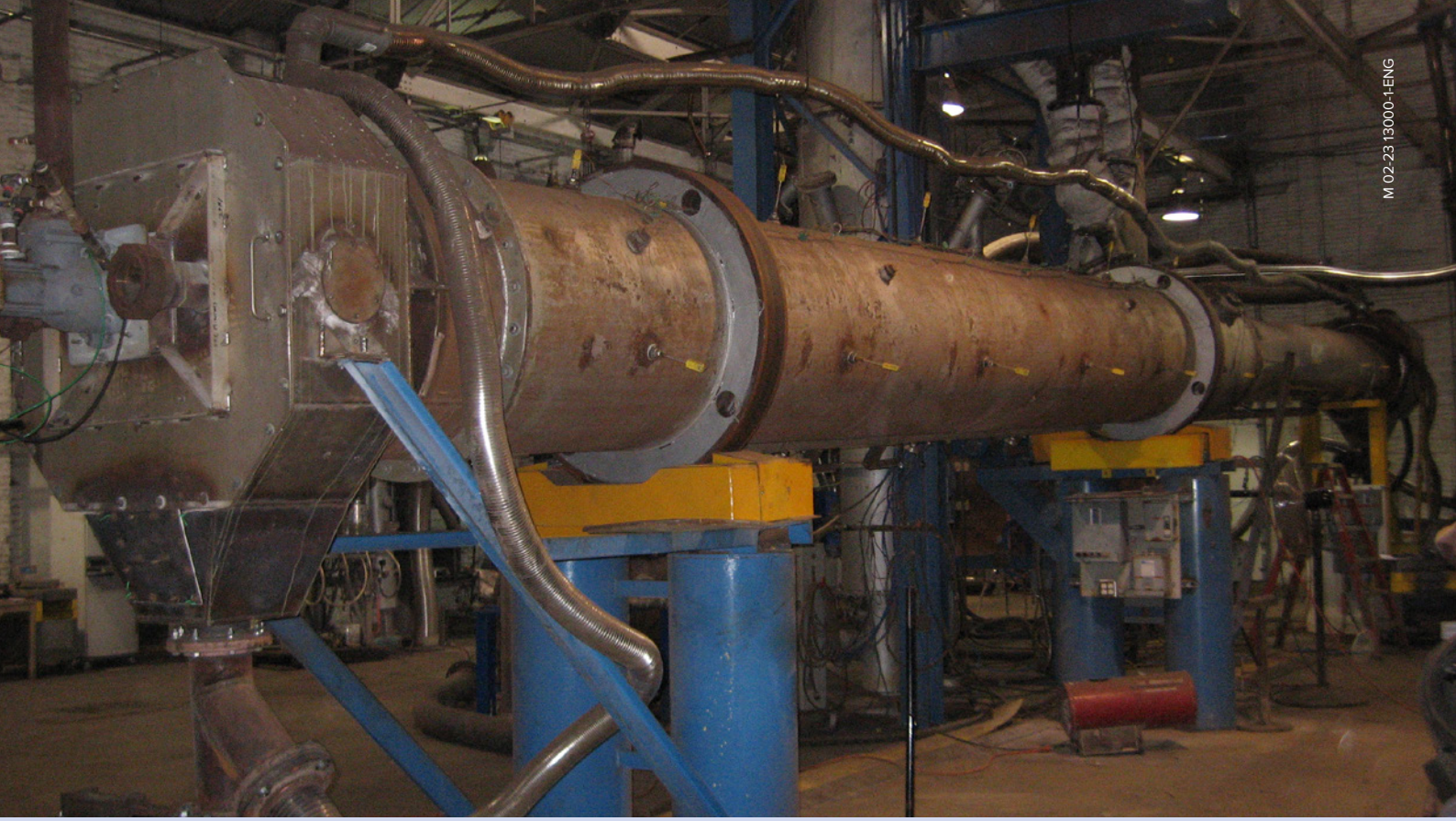

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Product datasheet

Green Hydrogen Burner Kiln

Hydrogen-fired combustion: How will switching to H_2 affect my product quality?

Test the conversion of your combustion process from conventional natural gas to hydrogen – a substitution that can result in mixtures of up to 100% H_2.

World's first 100% hydrogen-fired rotary kiln pilot plant It's time to decarbonize. Our Green Hydrogen Burner for Mineral Processing is a milestone on the path to 'green' mineral pyroprocessing, enabling up to 100% hydrogen burning. Swapping coal, natural gas, or oil for 100% hydrogen would eliminate harmful CO_2 emissions from fuel. We'll carry out combustion tests using your materials – in both natural gas combustion and with up to 100% hydrogen – to analyse the effects of hydrogen combustion on product quality.

- We'll test various parameter settings to ensure the required product quality
- We'll calculate transition costs to ensure profitability
- We'll carry out project-specific analyses together with you to demonstrate optimisation possibilities and any necessary adjustments in existing plants

How you benefit

- You'll gain a competitive advantage and prepare for the future with insights into climate-friendly processing using hydrogen fuel
- Potential to reduce CO_2 emissions and the associated costs, e.g. taxation
- Transition towards climate-friendly industrial production

FLS

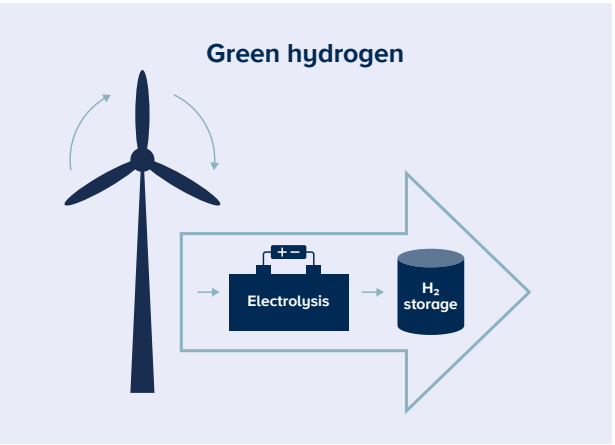
How does our hydrogen-fired kiln work?
Our rotary kiln pilot plant can operate with a mixture of hydrogen and natural gas (up to 100% hydrogen possible) at temperatures ranging from 800° to 1,300° C. Nearly all ores and other raw materials such as kaolin, magnesite, and hematite can be tested. The material can be fed directly or via a cyclone preheater.

Hydrogen burns differently from natural gas:
- Faster flame front
- Higher temperature
- Darker flame
- More water in the exhaust gas
- No CO_2 in the exhaust gas

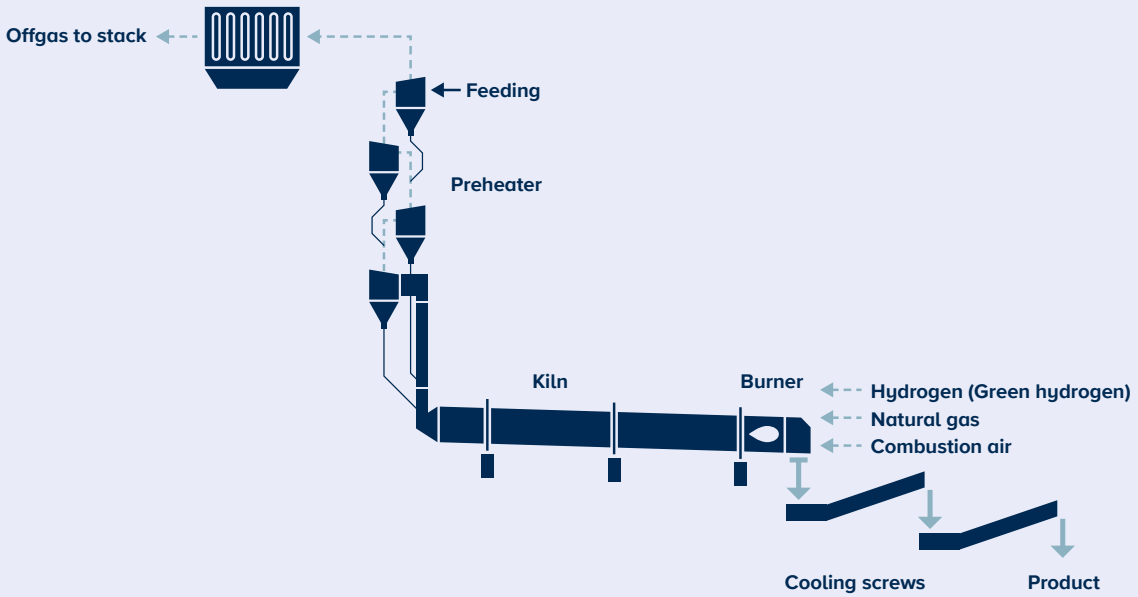
That adds up to 100% CO_2 savings with 100% H_2 combustion, i.e. zero CO_2 emissions. This figure has to be relativized when, for example, carbonic minerals are calcined as they give off CO_2 in the mineral phase, but this has nothing to do with the actual combustion. The increased amount of water in the exhaust gas may, under certain circumstances, damage the dust extraction system and the increased exhaust gas volume may limit output. All these influencing factors are theoretically calculable. However, it is not usually possible to estimate the effects of the influencing factors on the product quality.

Comparative tests needed
With our R&D rotary kiln it is possible to test and verify the effects on the treated material when you burn pure hydrogen or hydrogen/natural gas mixtures using varying parameter settings. Our customers are informed on whether and how their plants can be operated with hydrogen in the future and what effects this could have on their product.

Moreoverwe'll also give you basic advice on how you can optimise your process technology, e.g. exhaust gas composition or emissions [NOX, H_2O etc.].



Hydrogen-fired combustion – milestone on path to clean pyroprocessing



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