



ROCKTEQ

Pyroprocessing

**PYROPROCESS - ENGINEERING
FOR CEMENT & LIME PLANTS**



More than 30 years of engineering and operation experience in the cement & lime industry for energy-intensive equipment.



Products & Services



Pyroprocess-Optimizations

we offer a pre-study to check the pyroprocess as support for AF increase



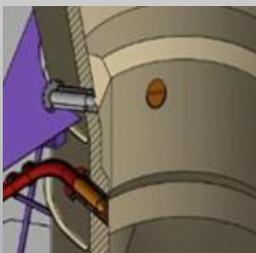
Combustion Systems for Kiln & Calciner

efficient burner systems for lowest fuel- and operation costs



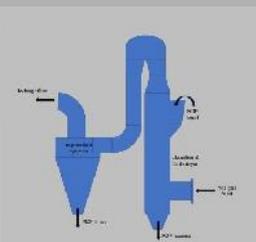
Satellite Burners - specific designed for AF

to increase the thermal substitution rate with alternative fuels



Calciner Burners

increase the burn-out and reduce CO-formation in the calciner



Flash Dryer for Alternative Fuel Drying

waste heat dryer to increase the NCV of AF-Fuels



AF-Booster Sytem® to increase the TSR over 90%

that system is drying and classifying the AF for improved combustion conditions



Products & Services



Gas- & Fuel Oil Handling Systems

full automatic fuel valve skids designed according valid safety standards



Hot Gas Generators

to provide hot air for drying of coal or raw materials



**Plant Visits and Audits
Inspections & Supervision
Technical Documentation**

Solid Alternative Fuels (RDF) Studies:

Data Gathering

- Analysis of fuels
- Check of dosing equipment
- Analysis of clinker quality
- Check of kiln inlet, gas circles, emissions
- Check of kiln shell and sintering zone

Concept Report

- Guideline on how to increase the alternative fuel substitution rate on the kiln
- Commercial calculations of ROI



Kiln Burners



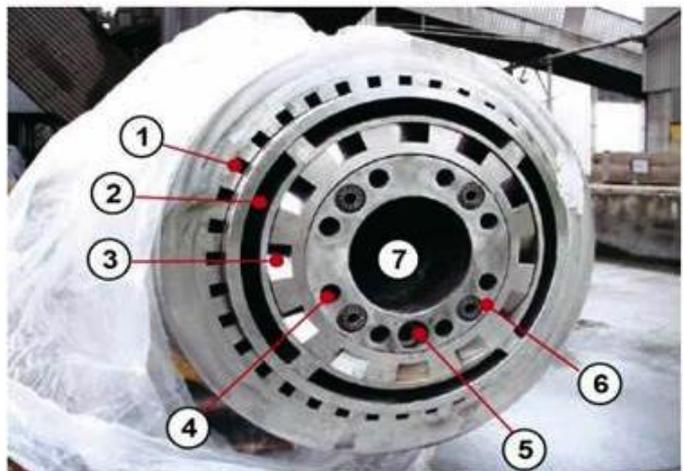
ROCKTEQ's high impulse burners are basically characterized by:

- Single air jets for enhanced recirculation with hot secondary air
- Concentric injection of all fuels and primary air components
- Adjustable central air for increased AF-Combustion (avoids double flame)
- Primary air supply by means of rotary blowers (high momentum)
- Each primary airflow and pressures are measured (prepared for full-automatic mode)

- Optimized burner diameter in relation to kiln diameter
- Modular designed burner and easy adaptable for a fuel change
- Less wear parts / low maintenance costs

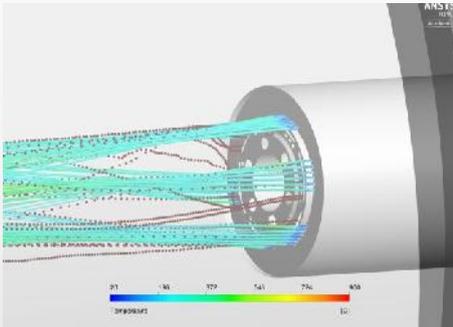
Design concept	Channel position (from periphery to centrum)
Burner air is divided into: axial, swirl and central air	Axial – Fossil fuel – swirl- Central

- 1 axial air
- 2 fossil fuel/coal
- 3 swirl air
- 4 central air
- 5 guide pipe for the ignition burner
- 6 four channels for fluid AF
- 7 solid alternative fuels channel

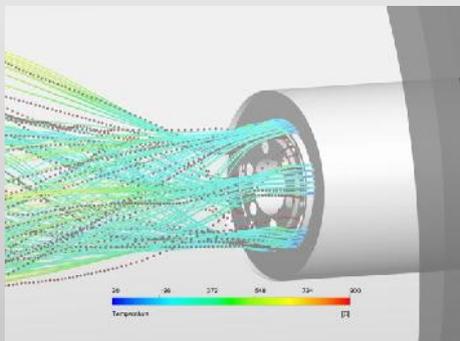




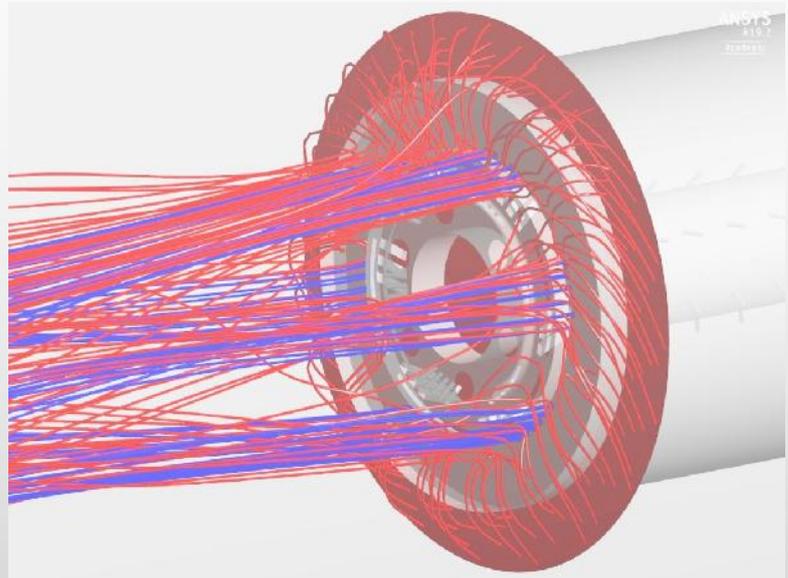
Advantages



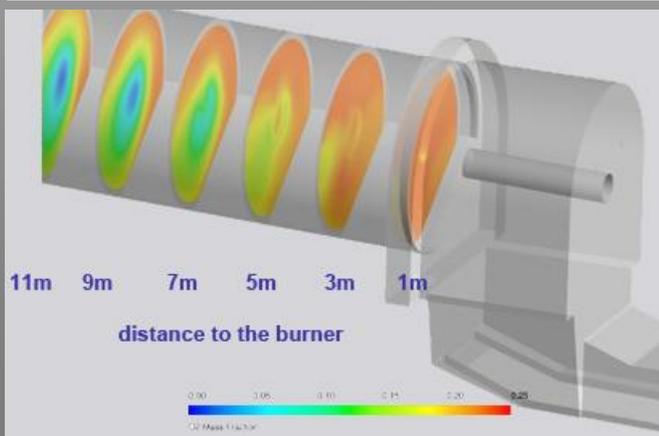
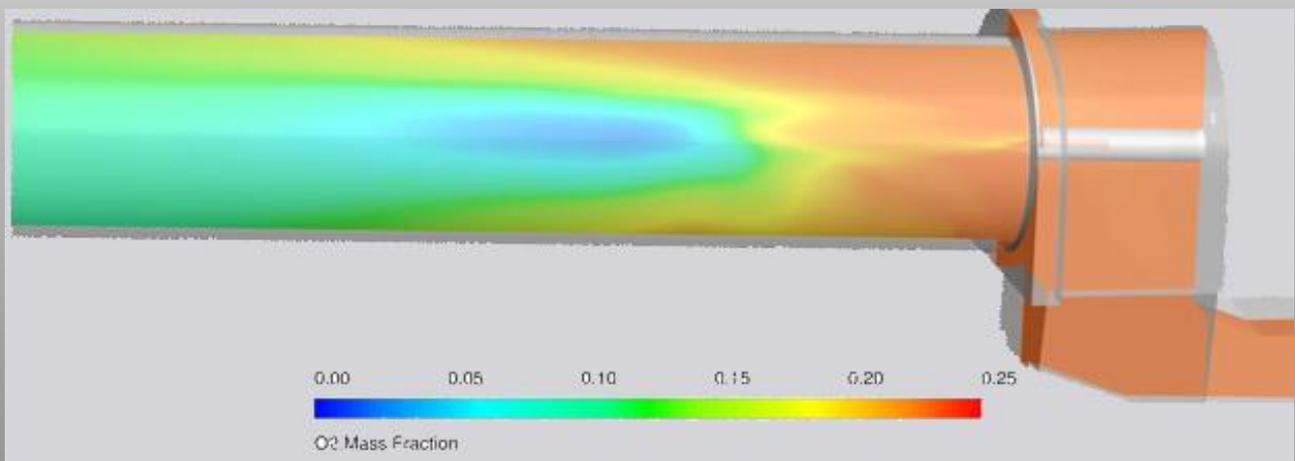
Easy flame setting:
slim hot flame



short hot flame



The the hot secondary is drawn into the flame by high impulse of axial air. The mixing with central air provides optimized fuel ignition and flame control for AF combustion.



CFD modeling is supporting us to design specific combustion systems at complex kiln situations with main burners and satellite burners.



AF Booster System®

The AF-Booster System® allows an increase of AF while reducing CO₂ Emissions along with the stabilization of the pyroprocess for clinker production.



Maximize RDF use over 90% TSR with our new type of system that is using waste heat for step-wise drying of RDF and feeds the fine fraction to the kiln burner and the coarse fraction to the AF satellite injector or to the calciner, according to adjusted fuel size. The dry and classified AF-fractions with increased LHV are prepared most effective for the enhanced combustion conditions at the kiln.

The result is an optimized pyroprocess for stable burnability to avoid longer double-flames and high kiln inlet temperatures. It provides the required retention time and increase the clinker quality while reducing your OPEX and CO₂ emissions.

That technology allows to consider also biomass (CO₂ neutral) or other residues with low LHV to be processed and classified for the most fitting combustion location at the kiln line.

The AF-Booster System® (applied for patent), will be specific designed and implemented to the existing pyroprocess in your cement plant.

This process is designed to increase the combustion quality and the TSR, while working with a stabilized kiln operation. The usual RDF can be taken for the AF-Booster System® and it is designed to be implemented to existing or new RDF handling systems within the cement plant.

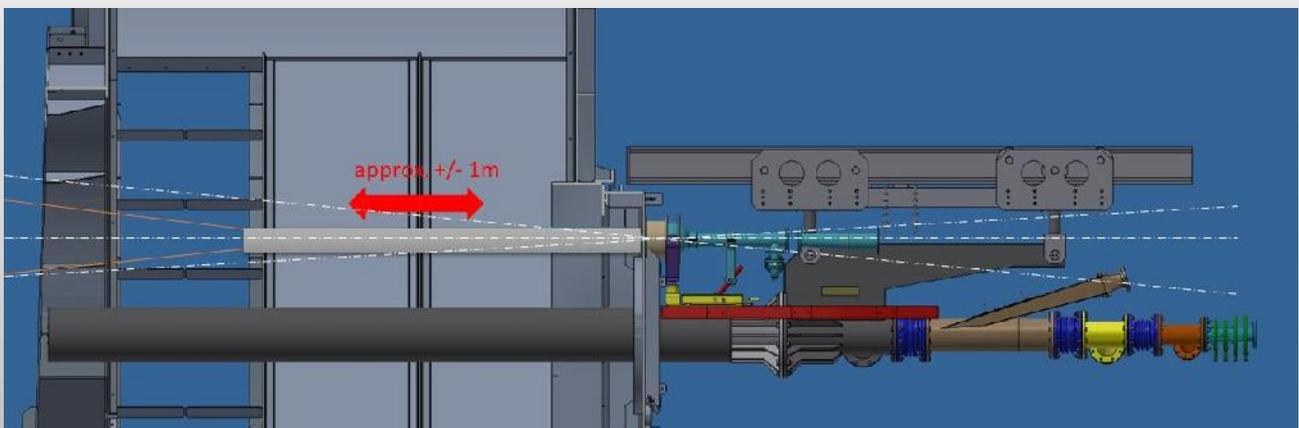
- Reduce your fuel costs
- Reduce CO₂ certificates
- Be more flexible on the AF-fuel market
- Stabilize the process even with high TSR





RDF Satellite Injector

A ROCKTEQ satellite injector is an additional smaller burner for the increased use of alternative fuels as RDF (SRF) or CO₂ neutral biomass. Individual settings, pivoting in directions (inclined) and adjustable length independent from the main burner are an advantage to control the AF- combustion process. Our specific designed injector is avoiding an early AF-fuel drop out into the burning zone to provide a high thermal substitution rate (TSR) of AF-Fuels.

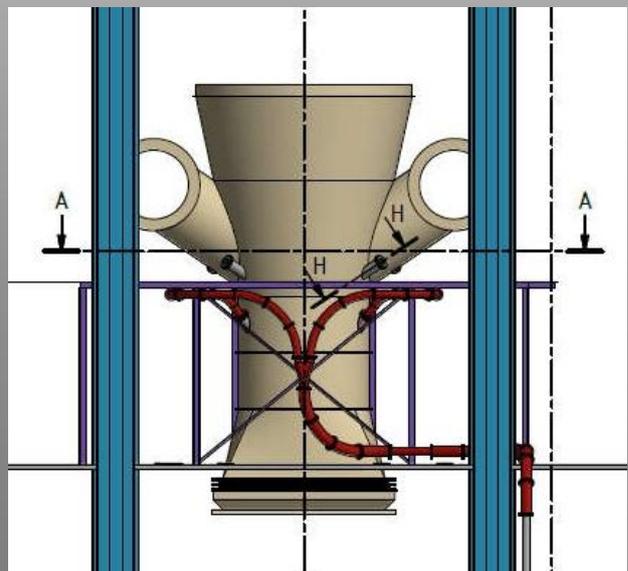


Calciner Burners

Calciner Burners provide the suitable injection velocity for fuels. They can increase the fuel air mixture at the calciner for a faster burn out and shorter reaction time of fuels.

We can supply calciner burners equipped with a start-up fuel (gas, oil) to control the preheating process.

Especially alternative fuels require a special design at the injection point to allow a fast fuel ignition and a uniform heat dispersion.



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