

Energy from Waste in the Cement Industry

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Holcim Hrvatska

Holcim in Croatia:

- 320 employees
- 1 cement plant
- 6 RMX plants
- 2 cement terminals
- 3 aggregate quarries

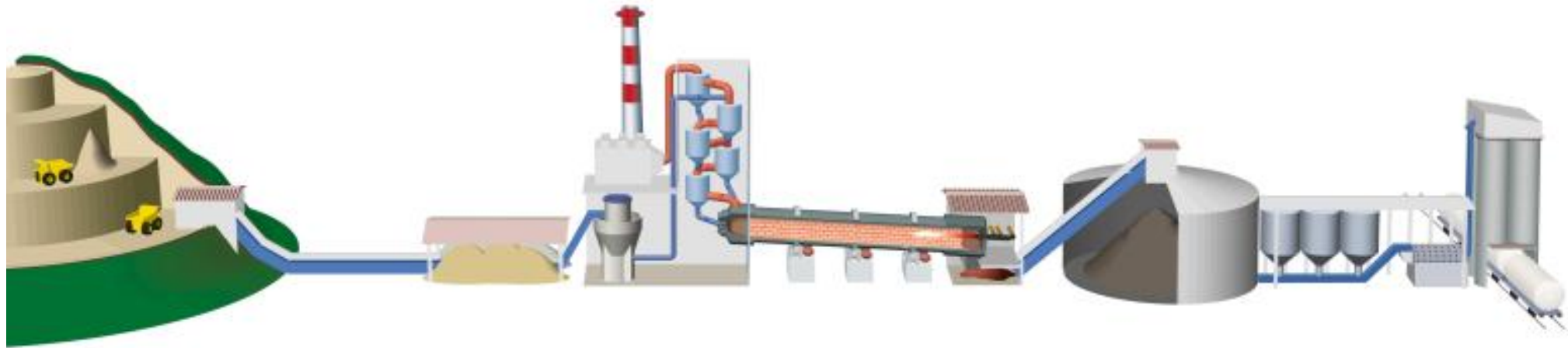


Why waste treatment at all?



- The production of cement is an energy (and material) intensive process
- Price pressure is tremendous, costs are increasing (fossil fuels, workforce, CO₂), so
- Expensive fossil fuels have increasingly been replaced by alternative combustibles, therefore
- Cement works contribute to a great extent to waste disposal
- Treatment in cement kiln is a treatment without residues.

Impacts of the cement production process



Quarrying and raw materials preparation

- consumption of non-renewable resources
- impacts on local landscape, ecology and communities

Clinker production

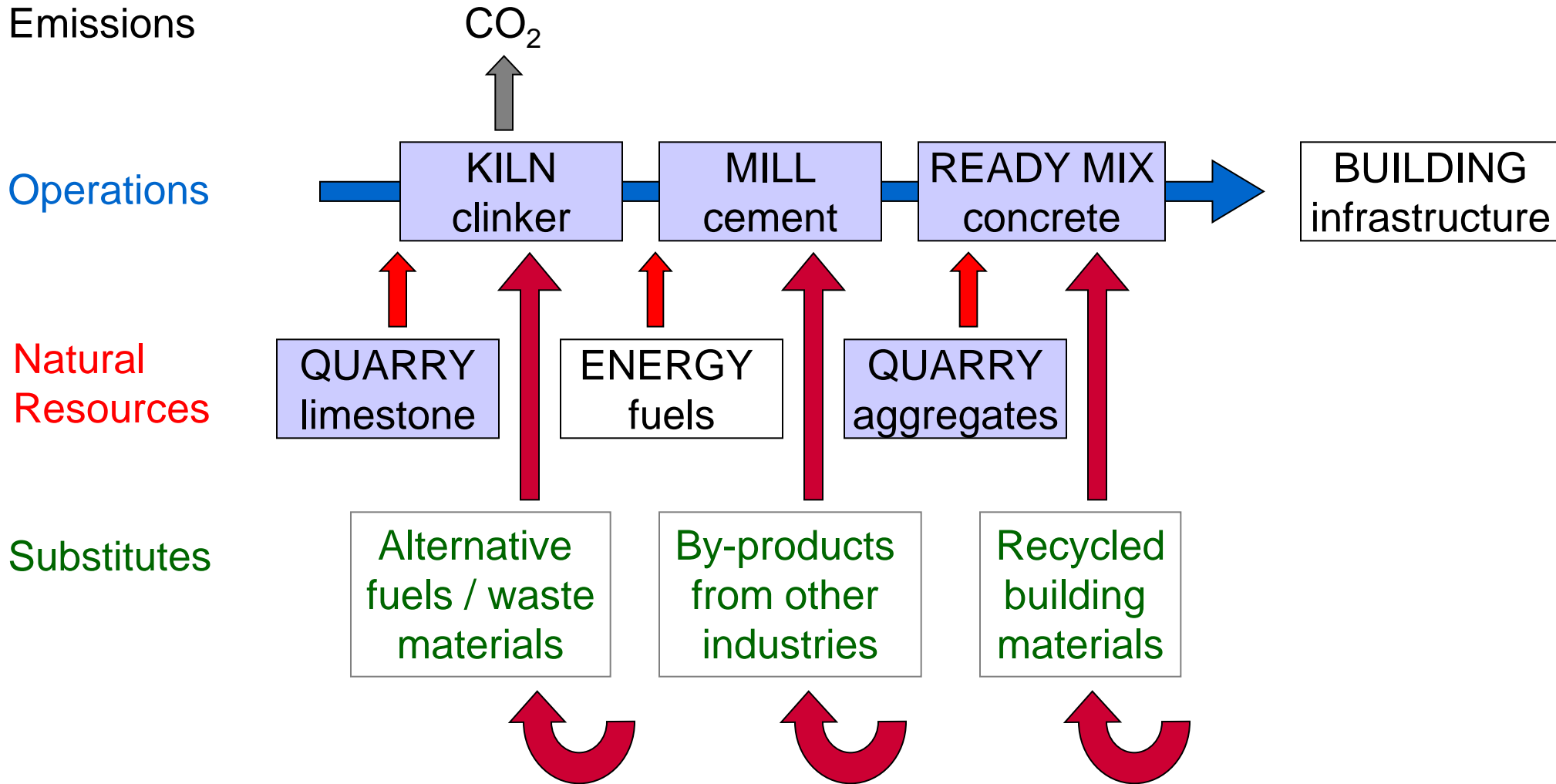
- use of fossil fuels
- atmospheric emissions, especially CO₂

Cement grinding and distribution

- use of raw materials and electricity
- can have impacts on local communities

- occupational health and safety of our employees, subcontractors and visitors

Resources utilization - Eco-efficiency in the cement industry value-chain



Waste problem – resource opportunity

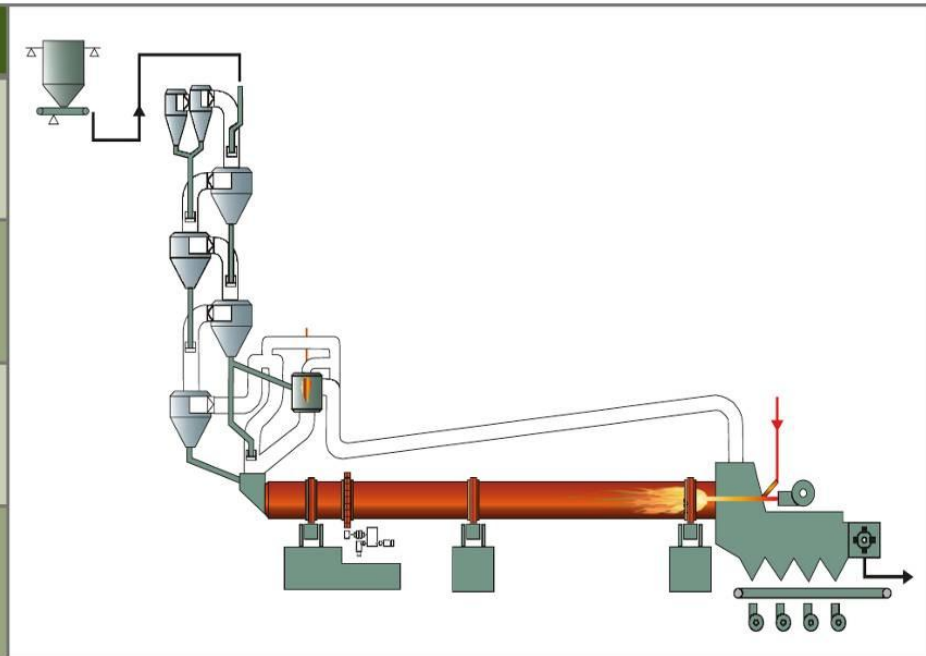


What is co-processing?

Co-Processing refers to the use of waste materials in industrial processes, such as cement (or lime, steel production and power stations). **It is a recovery of energy or material from waste.**

The cement industry is **the only industry** which does both at the same time.

Characteristics	Temperature and time
Temperature at main burner	>1450°C: material >1800°C: flame temperature.
Residence time at main burner	>12-15 sec and >1200°C >5-6 sec and >1800°C
Temperature at precalciner	>850°C: material >1000°C: flame temperature
Residence time at precalciner	>2 - 6 sec and >800°C



Basic Principles

- Co-processing respects the waste hierarchy
- Additional emissions and negative impact on human health must be avoided
- The quality of cement product remains unchanged
- Companies engaged in co-processing must be qualified
- Implementation of co-processing has to consider national circumstances

Alternative fuel and raw material



Since 1999, we have co-processed:

Waste tires:	53.000 t
Waste oil:	12.500 t
Animal meal:	16.500 t
Saw dust:	8.000 t
SRF:	10.000 t

Disposal or Recovery?

- Co-processing has been recognised as a recovery operation under EU legislation
- Recovery operations in cement plants are carried out in compliance with the provisions of both Directives on the Incineration of Waste and Integrated Pollution Prevention and Control (IPPC), and are recognised as a Best Available Technique (BAT)
- Judgement of the European Court of Justice (2003)

Waste tires co-processing installation



Monitoring of emissions



Koromačno



Brovinje



what's this?





what's this?





**2 million of plastic bottles,
dumped every 5 minutes**



Holcim

cement ■ beton ■ agregat