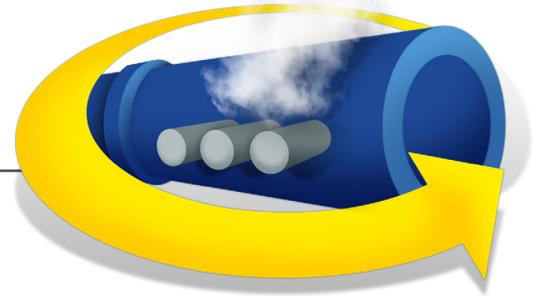# KilnCooler

Control your kiln shell temperature

Reliable and effective cooler for kiln shell

Due to the increasing usage of secondary fuels, which are relatively inhomogeneous, there are more fluctuations in the burning process. This leads to increased burden for the refractory and the kiln shell—hot spots may occur. In order to reduce this burden, large cooling fans, which are blowing ambient air, are widely used.

Unfortunately this type of cooling shows some disadvantages:

- due to the low heat capacity of air a huge throughput is needed
- the consumption of electrical energy is high
- the cooling cannot be targeted specifically to a hot spot on a circumference
- fans emit a substantial amount of noise

Efficiency by water cooling

To overcome these disadvantages KIMA's KilnCooler uses waterspray nozzles and precise dosing valves, which are controlled by an infrared temperature sensor. The waterspray of an individual nozzle is switched on only, while its infrared sensor detects a hot spot.

The waterspray cooling is efficient and „on the spot".

Flexibility due to modular set-up

KilnCooler can be used stand alone as a mobile unit for hot spots.

Also several units can be „daisy chained" in order to cool the complete kiln.

Benefits:

- efficient cooling
- flexible usage for hot spots and complete kilns
- easy installation or relocation
- targeted cooling on kiln's circumference
- low noise emission

Basic set-up

temperature sensor

closed loop controller

water nozzle
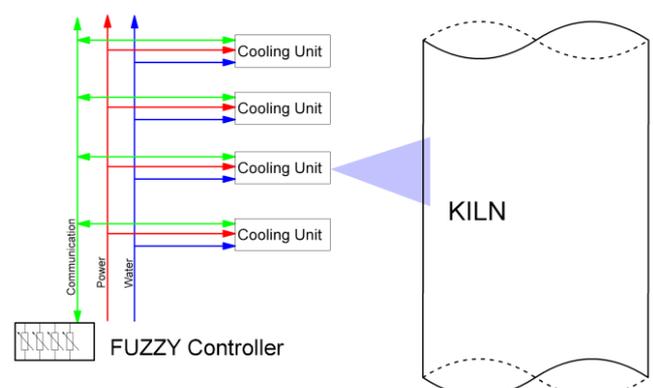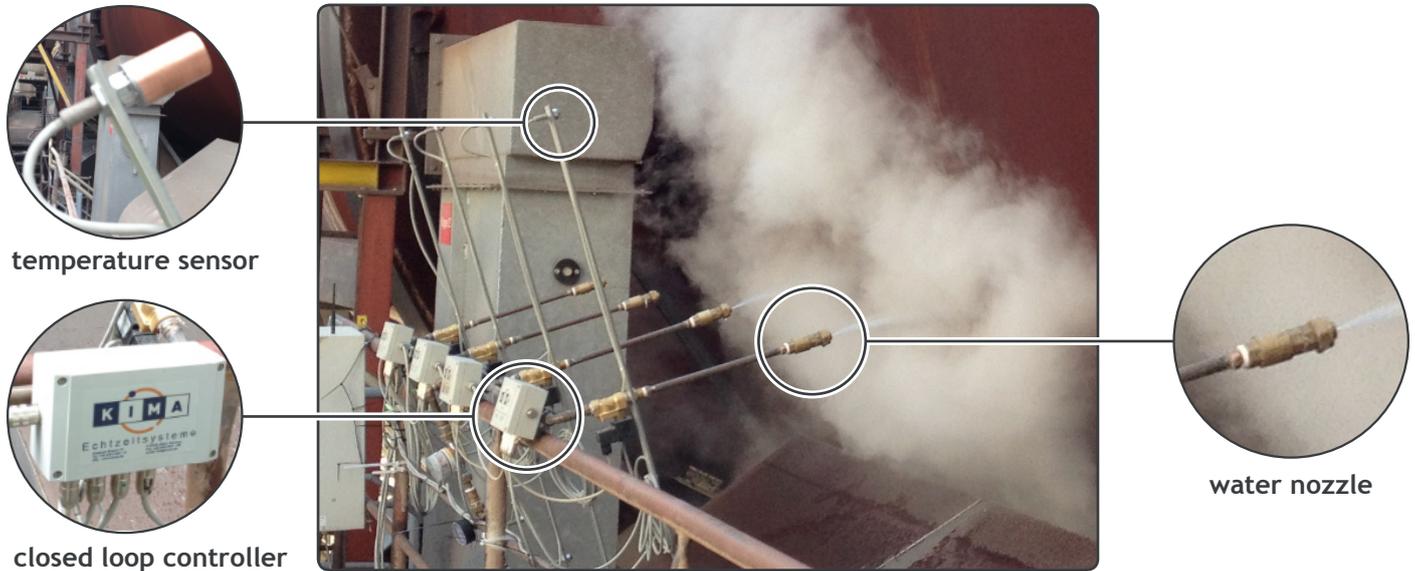
The waterspray is controlled by a FUZZY-controller which uses infrared sensors to precisely locate hot spots on a circumference.

This means: only the hot spot is cooled down, not necessarily the entire circumference.

The „hot spot temperature" can be set individually for every nozzle.

Cooling down a hot spot

By application of KilnCooler, a hot spot can be cooled down rapidly but careful, avoiding any shrinkage of the kiln shell—cooling rate is up to 2 Kelvin per minute.

After cool down the shell temperature is kept on its nominal value, thus eliminating mechanical tensions.

temperature trend of hot spot

average temperature of hot spot

nominal value

temperature [°C]

time [min]