

## SUCCESS STORY 62 INCINERATION OF CHEMICAL WASTE



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What is the most reliable way to monitor short rotary kilns used to incinerate chemical waste that rotate at extremely slow speeds?

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### Situation and background

To avoid any harm to the environment from chemical waste, it is incinerated in a rotary kiln at very high temperatures. To increase combustion efficiency, the kiln rotates at very slow speeds - typically 4 to 6 revolutions/hour. Over time, the refractory brick protecting the kiln wall will degrade and need to be replaced. There is also the possibility that a single brick could fall, leading to a hotspot on the kiln shell and causing catastrophic failure. Taking action too soon will negatively impact productivity, while waiting too long may put a high cost capital asset at risk.

### The winning solution

- The Raytek® CS210 system is able to synchronize thermal imaging at speeds as low as 2 revolutions/hour.
- In addition, these kilns are typically quite short, 10 to 15 m (33 to 49 ft). The CS210 is specifically designed to detect each potential refractory loss across the shell lengths by providing a gapless sampling of pixels.

### Savings made

- The operational life of the refractory is extended. With no monitoring system, the refractory will be changed after a set period. Typical values may be 12 months between changeovers with a changeover cost of \$500,000. Hence, by using the CS210 system, each month that the changeover can be deferred saves approximately \$48,000.

### KEY FACTS

**Industry**  
Waste Management

**Customer's End Product**  
Incinerated Waste

**Kiln Shell Temperatures**  
100 to 500°C/212 to 932°F

**Distance to Object**  
2.5 to 5 m (8 to 16 ft)

### PRODUCT AND BENEFITS

#### CS210 Process Imaging System for Kiln Shell Temperature Monitoring

- Prevent catastrophic failure by detecting hotspots due to refractory loss, damage or wear
- Optimize process by detecting abnormal operating conditions, such as faulty flame position and shape
- Reduce costs by extending operational life of kiln and refractory
- Reduce downtime by providing data to plan refractory replacement and avoid unscheduled maintenance