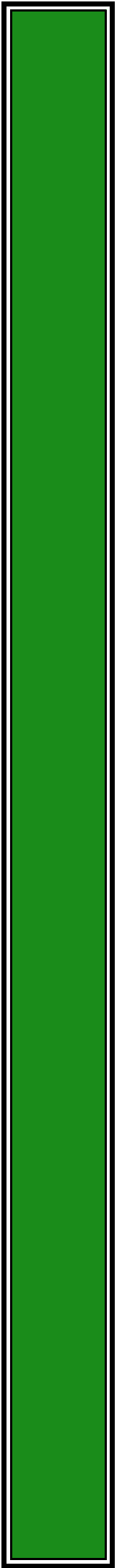


Attachment 10

Malaysian kiln confirmation



15/12/2014

Mr Ben Sawley
Chief executive Officer
ResourceCo Asia
PO Box 542
Enfield Plaza
SA 5085

Subject: Kiln emissions performance at _____ Malaysia

Dear Ben,

I am writing to confirm the kiln emissions performance at Kiln _____ following the introduction of Process Engineered Fuel (PEF) as a part replacement for coal in the cement manufacturing process.

_____ has reported no adverse impact upon emissions from the kiln when using PEF and have advised that in fact there has been a decrease in Nitrous oxide emissions.

A declaration of compliance with the Malaysian Department of Environment emission requirements when using PEF has been provided by _____ is included as an attachment to this letter.

This outcome is entirely consistent with the experience of hundreds of cement plants around the world following the introduction of an alternative fuel to replace coal or natural gas.

The overwhelming observations at these plants has been that the emissions from the cement kiln are not negatively impacted with a fuel change but such a change can have, in certain circumstances, a positive impact upon Nitrous oxide emissions and Carbon dioxide emissions. The extent of this impact depends upon the fuel injection location and fuel combustion characteristics in the case of Nitrous oxide emissions and the biogenic component of the fuel in the case of Carbon dioxide emissions

There are sound technical reasons for these observations that relate to the inherent characteristics of the cement manufacturing process. The emissions profile cited in the compliance declaration can be grouped into five emission categories to provide greater understanding of their impacts: Dust, Nitrous oxides, Organics, Acid gases and Metals. The parameters included in each of the groupings is given in the following table.

Grouping	Parameters
Dust	Dust
Nitrous oxides	NOx
Organics	Dioxin &Furan, Opacity
Acid gases	SOx, HCl
Metals	Mercury, Antimony, Arsenic, Cadmium, Copper, Lead, Zinc

Dust: The particulate emissions from a cement kiln bear no relationship to the fuel being used but are purely a consequence of the type of dust collector that is used and the standard to which it is maintained and operated.

Nitrous oxides: The _____ experience has seen a 20% reduction in NOx emissions with PEF. The formation of NOx in a cement kiln is largely driven by the peak flame temperature in the main burner which can be offset by a phenomenon known as reburn in the kiln calciner where staged combustion of the fuel can produce reducing conditions that destroys a portion of the NOx.

Organics: The presence of additional chlorine in the system in the plastics component of PEF raises the question of whether there will be an increased risk of emissions of dioxins and furans. In the cement kiln system the principal determinant of the dioxin and furan emission is the cooling rate of the gas from the preheater exhaust temperature of 360 degrees C to under 200 degrees C and not the chlorine concentration in the gas stream. It is the time the gas spends in this temperature window that determines the dioxin and furan emission. The raw milling system provides the ideal quenching system to avoid dioxin and furan formation, with limestone at ambient temperature being contacted with the hot preheater gases. The exhaust of a cement kiln stack has a characteristically low dioxin and furan number as a consequence. The opacity is used to measure smoke in the emissions. The temperatures at which the kiln operates and the oxidising atmosphere mean that visible smoke can never be produced in the exhaust stack.

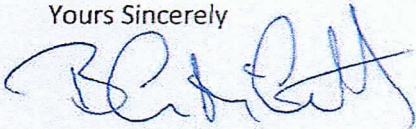
Acid gases: Although there is additional chlorine entering the system with PEF and there is the potential to form HCl from hydrogen radicals from the fuel combustion, the chlorine has a greater affinity to form compounds with potassium and sodium which remain trapped in the system. However in the event that HCl did form, the scrubbing action of the limestone in the preheater will ensure no impact upon emissions of acid gases. Similarly, any sulphur in the system preferentially reacts with potassium and sodium and calcium and exits the system with the clinker.

Metals: The major impact on metals emissions from a cement kiln is the metal component in the limestone. Effectively, by reducing the dust emissions the metal emissions are reduced. The impact of any change in metal components in the fuels is immaterial.

ResourceCo supplies PEF to _____ under a specification where the major parameters that are controlled are calorific value, ash, moisture and chloride content. Chloride is included in the specification not because of any concerns regarding higher chlorine based emissions arising from PEF but to control process impacts. Chlorine concentrates in the cement kiln system and at high levels of addition can lead to blockages that require the kiln to be shutdown for cleaning. There are numerous examples of kilns that suffer high chlorine inputs having to install a chloride bypass to remove the chlorine from the system.

_____ are satisfied that the introduction of PEF has had no adverse impacts upon the process, the product quality or the emissions to the environment. With the recent commissioning of the new PEF storage and feed system the plant is looking to capitalise on the initial success and to increase the thermal substitution rate of coal with PEF.

Yours Sincerely



Brian McGrath
Principal OLM Technical Services