

Reference Projects – AFR / Alternative Fuels and Raw Materials

REF. NO	PROJECT DESCRIPTION	PROJECT RESULTS	SITE	CUSTOMER
1	<p>Identified supplies and preparation of liquid waste derived fuels for front end feed in light-weight aggregate kiln in cooperation with kiln owners.</p> <p>Installation and operation of onsite storage and dosing system to main burner of light-weight aggregate kilns to replace fuel oil as primary fuel.</p> <p>Total project management including supply, permit support, logistics and supply of alternative fuel.</p>	<p>Expanded into VA and FL kilns, later purchased by the Giant Group.</p>	<p>Saugerties, NY USA</p>	<p>Northeast Solite (now Giant)</p>
2	<p>Implementation of first commercial use of waste derived fuels in cement kilns on ongoing basis in the US.</p> <p>Identified supplies and preparation of liquid waste derived fuels for front end feed of wet process cement kilns in Bath, PA.</p> <p>Responsible for supply, permit support, logistics and supply of alternative fuel.</p>	<p>Preparation of quality assurance program and supply of liquid waste derived fuels for direct firing into the main burner of wet process kilns.</p> <p>Keystone Cement Company and Giant Cement Company later joined to become part of Giant Group Limited and after subsequent restructuring acquired by Cementos Portland in 1999.</p>	<p>Bath, PA USA</p>	<p>Keystone Portland Cement (now Giant)</p>
3	<p>Redesign of oil storage and delivery system to handle flammable liquids and oil based alternative fuels.</p>	<p>Permit support, operations, logistics and supply of alternative fuel.</p>	<p>Cementon, NY USA</p>	<p>Lehigh Cement (HeidelbergCement)</p>

REF. NO	PROJECT DESCRIPTION	PROJECT RESULTS	SITE	CUSTOMER
4	Design, permitting, stack test, construction, operations, supply, quality assurance of liquid and slurry alternative fuel programs to 3 long dry kilns.	Continued operation until Southdown acquisition; program being renewed under CEMEX (see below).	Wampum, PA USA	Medusa Cement (now CEMEX)
5	Design, permitting, stack test, construction, operations, supply, quality assurance of waste oil and non hazardous alternative raw material programs to long dry kiln.	Converted existing heavy oil tanks for blended alternative fuels for front end feed; developed pre-processed silica replacements for back end feed. Kiln later permitted for mid kiln tire introduction and replaced by new calciner pre heater kiln in 2000	Union Bridge, MD USA	Lehigh Cement (HeidelbergCement)
6	Design, permitting, stack test, construction, operations, supply, quality assurance of liquid alternative fuel programs to 2 long wet kilns.	Total project management including on-site laboratory, rail and truck unloading and supply to provide minimum 50% replacement.	Logansport, IN USA	ESSROC Cement (Cement Francaise and later Italcementi)
7	Design, permitting, stack test, construction, operations, supply, quality assurance of liquid and solid alternative fuel programs.	Front end feed of liquid and dry alternative fuels. Storage for dry bulk solid fuels and closed pneumatic dosing system for processing dry alternative fuels. Total project management included coordination of consultants, permitting, construction management and operation of KA facility.	Independence, KA USA	Heartland Cement Co. (Unicem S.p.A, now Buzzi – Unicem) Buzzi - Unicem
8	Design, permitting, stack test, construction, operations, supply, quality assurance of liquid al-	Total project management of major RCRA permitted storage,	Festus, MO	River Cement

REF. NO	PROJECT DESCRIPTION	PROJECT RESULTS	SITE	CUSTOMER
	<p>alternative fuel programs to 2 long dry kilns.</p>	<p>blending and delivery system to the Festus plant.</p> <p>On site laboratory and logistics including rail and truck unloading to accept alternative fuels from suppliers throughout the US and CN.</p>	USA	(Unicem S.p.A, now Buzzi – Unicem)
9	<p>Provide installation for the processing and disposal of petroleum hydrocarbon residuals and contaminated soils collected (approximately 1 million tons) in open lagoons in the Ploiesti region.</p> <p>Complete project management including design, permitting, stack test, construction, operations of liquid and solids AFR materials to three pre-heater kilns in Campulung Muscel, Romania.</p>	<p>Installation and operation of technology to process PHC wastes into alternative fuels and raw materials for 3 cement kilns in Romania.</p> <p>Total project management included coordination of foreign technicians, design, construction, permitting, logistics, excavation, monitoring, and quality assurance.</p> <p>Sotem Group a JV was formed to provide AFR programs for all Holcim locations in Romania.</p>	Bucharest & Campulung, Romania	Holcim Cement Group
10	<p>Provide installations for the processing and disposal of petroleum hydrocarbon residuals and wastewater treatment sludges generated by the MOL, Hungarian Oil & Gas Co.</p> <p>Complete project management including design, permitting support, stack test, construction, operations of liquid and solids AFR materials to one preheater / calciner kiln in Hungary.</p>	<p>Supply contracts to pre-process wet sludges into liquid and solid AFR materials for introduction into the main burner and calciner sections of the kiln.</p> <p>Program later expanded to include paper/plastics/cardboard AFR materials.</p>	Vac, Hungary	HeidelbergCement

REF. NO	PROJECT DESCRIPTION	PROJECT RESULTS	SITE	CUSTOMER
11	Evaluation and participation in feasibility studies at Neftochim Bourgas for extraction and processing oils and tars from lagoons at Port Terminal "ROSSNETS", oil and process sediments from "PRE-POND" area and various pits, ponds and lagoons at the refinery complex.	Analysis and treatment protocol established to dewater and prepare solid and liquid alternative fuels for Italcementi and Holcim cement kilns in Bulgaria.	Sofia & Bourgas, Bulgaria	LUKOIL Neftochim
12	Contract to use dried Class A Biosolids to be processed by regional drying facilities built and operated by E2.	Permitting and contracting underway for host sites to process wet municipal Biosolids.	Union Bridge, MD & Evansville, PA, USA	Lehigh Cement (HeidelbergCement)
13	Supply agreement for Engineered Fuel, a non hazardous solid alternative fuel for front end feed at one or more long dry kilns.	Stack test performed in mid 2008 resulting in a permit to use up to 50% replacement in the kiln.	Wampum, PA, USA	CEMEX
14	Cooperation with FLSmidth (FLS), to evaluate the feasibility to utilize waste derived fuels for TITAN America in Florida, USA.	Co-processing agreement to support the use of alternative fuels in cement/lime kilns & utilities in the Americas and elsewhere.	Varied	Varied
14	Joint venture with Titan Cement SA to form GAEA Green Alternative Energy, an alternative fuels development company to serve Titan kilns in Southeast Europe & Eastern Mediterranean regions.	"Mapping Studies in Bulgaria, Albania & Macedonia. Subsidiary operating entities in each country.	Balkans	TITAN Cement
15	Completed "Mapping Study" of environmental, commercial and technical conditions to establish waste to fuel processing facility at Zlatna Panega Cement in Bulgaria.	Long-term contract to provide know-how exchange, training, develop supply chain, technology and operations to process RDF from City of Sofia into alternative fuel to replace coal in cement kiln.	Bulgaria	TITAN Cement

REF. NO	PROJECT DESCRIPTION	PROJECT RESULTS	SITE	CUSTOMER
15	Provide dosing equipment on lease/purchase basis to feed Process Engineered Fuel (PEF) and tire-derived fuel (TDF) to South Florida cement kiln. Evaluate supply chain and sources of suitable raw materials	Contract to supply pre-processed recycling residuals and dry commercial wastes as alternative fuel to the cement kiln.	Miami, FL USA	TITAN Cement