



Green Cement Inc.

Leading in technological innovation to eliminate carbon emissions from construction materials

www.greencement.com

LOW CARBON CEMENT FOR THE AGES

Cement is the New Coal



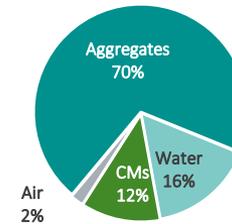
The global cement industry produces ~8% of global annual GHG emissions

Situation Overview

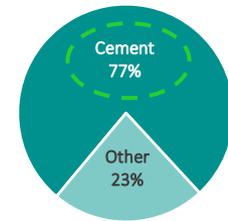
- Global Cement production accounts for 8% of the world's greenhouse gas emissions
- The energy input in one ton of cement is 4.4 million Btu— ~389 pounds of coal which heats the limestone to almost 3000F
- Most of the emissions come from the chemical release of carbon dioxide when limestone is converted to calcium oxide (primary ingredient of Portland Cement)
- The world requires cement to grow and prosper BUT it needs to solve the increasing problematic emissions
- Pozzolanic cement by contrast can be made at room temperature with virtually no emissions – a near zero carbon cement

Portland Cement is the Problem

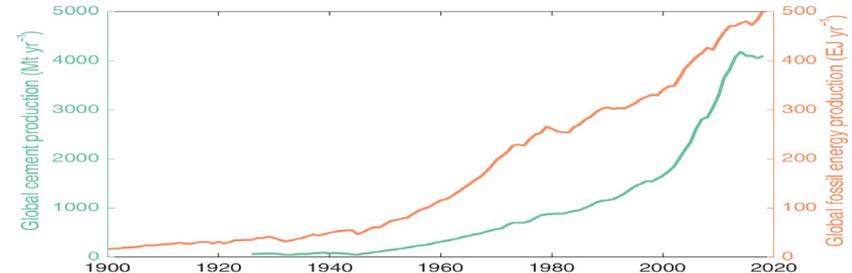
While cement is ~12% of concrete...



...it represents ~77% of the CO₂ emitted



US Cement Emissions



Sustainability Needs to Address Materials



Europe and North America have made significant strides in slowing the growth of greenhouse gas emissions. US coal fired electrical production has dropped over the last 40 years from 52% of US generation to 17%.

During the same period zero carbon power has grown from 19% to 38%, with renewable (wind and solar) accounting for nearly all the growth

Emissions tied to materials has not generated similar public awareness, nor generated the mandate to mediate emissions. Focus is now changing.

There is growing recognition of the fact that three materials, cement, steel and aluminum account for as much pollution as all the world's automobiles



A traditional Portland cement plant

“Cement is a great example. It's over 6% of worldwide emissions. And yet, we don't have a way of doing it that's clean, that doesn't cost dramatically more, more than twice the price. So, if people think it's just passenger cars and electricity, they're going to miss what we need to do to get to zero.” Bill Gates Feb 17, 2021

How Does Green Cement Help?



MISSION: To transform byproducts and natural minerals into sustainable products that eliminate the greenhouse gas emissions from cement while making it stronger and more economical

VISION: To transform the cement industry into a **net-zero carbon emitter** – saving 4 billions tons annually of CO2 emissions

VALUES:

Integrity & Excellence: in everything we do

Customer Focused: Serve our customers through the highest quality products and services.

Health, Safety, & Sustainability: To promote a healthy work environment that includes respect for people and the environment

Collaboration: as a team to achieve our vision for the company



Why is Green Cement Different?



POZZOLANIC CEMENT:

The cement that built Rome and Athens 2000 years ago is still standing today because it is stronger and more durable than our current cement, Portland Cement

Portland Cement is a major source of carbon pollution accounting for about 8% of global carbon emissions

Pozzolonic Cement was replaced by Portland Cement almost 200 years ago because Portland Cement sets faster in one day than Pozzolanic Cement

Green Cement reengineered Pozzolanic Cement to make it react faster – matching the one-day performance of Portland Cement. Green Cement is 20% stronger than Portland Cement in 28 days and continues to gain long term strength.

Green Cement's products eliminate nearly all carbon emissions



50%+ immediate replacement of traditional cement



2x the longevity of traditional cement



10+ years of cement sales in DOT & FAA certified projects

Green Cement is Growing Rapidly



Green Cement's proprietary product line, PozzoSlag®, can replace a significant portion of the Portland cement required to make high-strength, durable concrete.

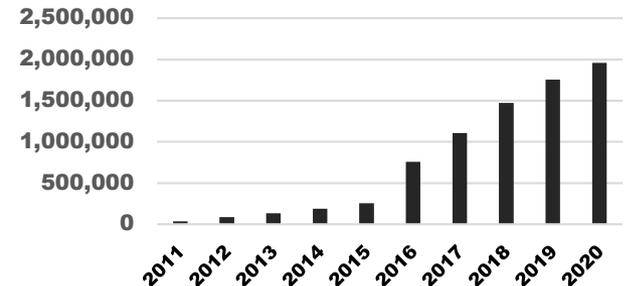
The product has been commercially deployed in Texas, where it has been used in highways, roads, building foundations, airports, down hole cement, and precast concrete products.

We are rolling out the technology nationwide and potentially in Europe with more efficient and newer versions of our existing plant.

These plants will utilize natural pozzolans and fly ash to create our near zero emission products.



Cumulative Tons Sold



A Decade of Growth to Scale



Rebranding to Green Cement Inc

1,000,000 Tons of cumulative sales
First sales of **zero carbon cement** (“Roman Cement”)
First sales of a natural pozzolanic mineral processed

500,000 Tons cumulative sales of Pozzoslag

First sales of rapid set cement

Pozzoslag created – 50% carbon reduction achieved

100,000 Tons of cumulative sales

Company Formed - \$24mm venture investments

2011 2013 2015 2017 2019 2021



Cement Is Critical to Everyday Life

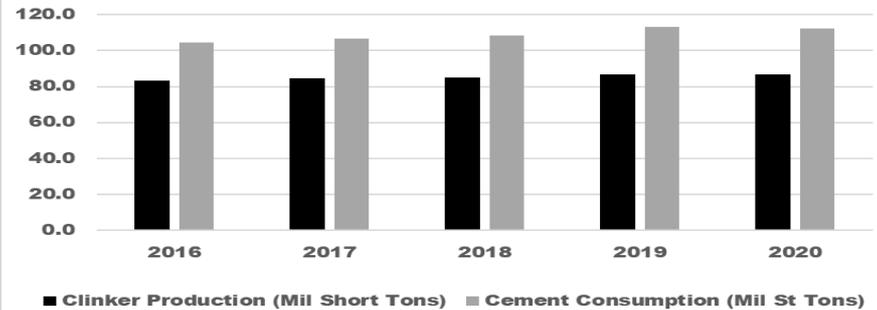


The global cement industry is critical to the American manufacturing sector, providing an essential material infrastructure and construction

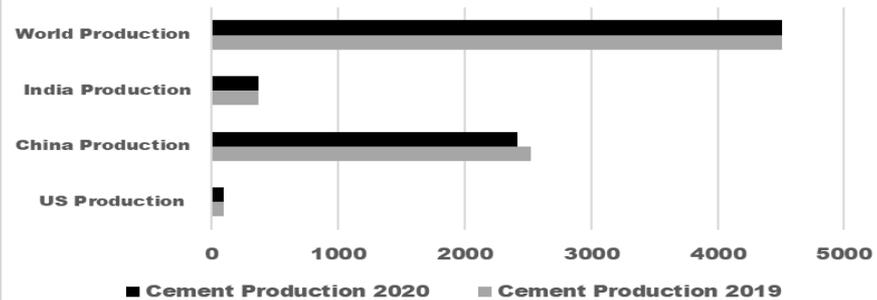
Market Highlights

- Cement is a critical material for energy, transportation, infrastructure, commercial and residential construction
- 2020- U.S. cement production fell 1% to 95 Mil St tons
- 2020 US Consumption -112Mst- imports typically 15%-20%
- US Cement production - 96 plants in 34 states
- 2020 cement value-\$12.7 billion-ready mix concrete = 70% to 75% of cement use
- Logistics cost drive regional production/distribution
- Truck delivery - 98 percent of delivery to end customer
- Coastal states utilize imports or gateway to nearby states

US Cement Production & Consumption



Global Cement Production (Mil STons)



But Coal Trends Portend Poorly for SCMs



The global cement and coal industries are tied together in various ways and with coal's decline, cement must adapt

Situation Overview

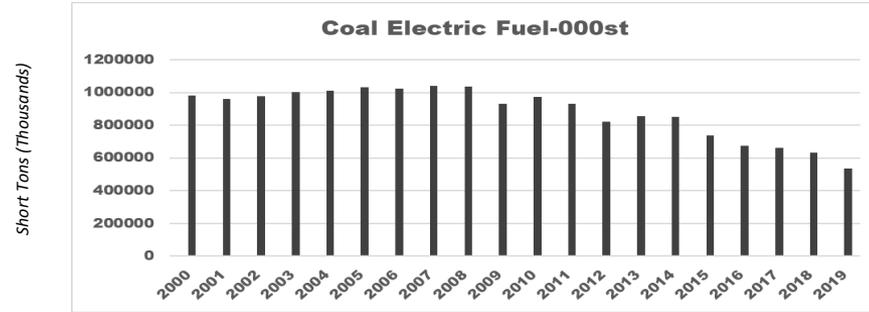
The global cement industry relies on coal as a source of energy and on coal combustion byproducts as a source of raw materials.

Cement producers globally and especially in the USA will have to find new ways to source raw materials like fly ash that are becoming harder and more expensive to acquire and new environmentally friendly ways of powering their production processes.

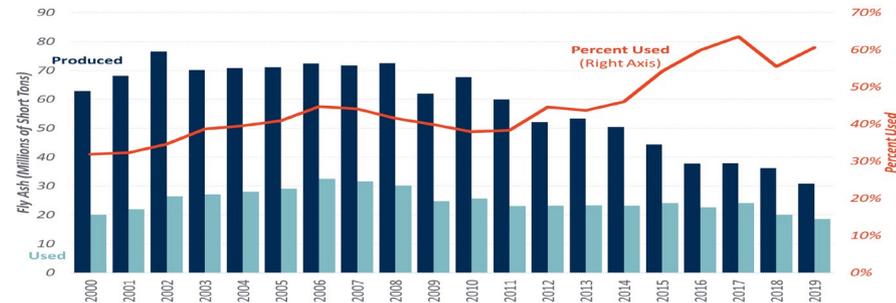
SCM Trends:

- Costs of fly ash have tripled in the last 10 years due to scarcity
- Imported fly ash is available at somewhat competitive costs - mostly from India and Turkey, but require added port infrastructure
- Mining landfills containing disposed fly ash is challenging because of comingling of other coal combustion byproducts – some of which degrade or even ruin the properties of cement
- Natural pozzolans have not been effectively treated to economically compete with fly ash – until now

US Coal Consumption is Rapidly Declining



Less Fly Ash is Being Produced as Demand Increases



There are Several Approaches to Lower CO2 From Cement or Concrete Products



There are five approaches/technologies to lower carbon emissions from Portland Cement

Fly Ash Replaces Cement:

- Spec Grade fly ash replaces up to 20% of traditional Portland cement



Cement With Limestone Inter-grind – 5-15%



Modified pozzolans:

- Ground Granulated Blast Furnace Slag - Replaces up to 50% of OPC 
- Processed fly ash and natural pozzolans - Replaces 50 - 100% of OPC 

CO₂ injection into Concrete 5 – 20%: **CarbiCrete**

Lower Energy Clinker coupled w/CO₂ curing - 20 - 50%: **Solidia Technologies**

Green Cement's Technology is Industry Leading



Fly ash has traditionally replaced cement in concrete to reduce carbon intensity while improving durability of the concrete. This is proven practice but is limited in replacement to typically 15%- 20%.

Technologies that use carbon injection require a change in concrete operations – tanked CO_2 is needed, adds cost and complexity. Carbon savings is unclear because added pozzolans compete with CO_2 for available calcium and likely requires more cement for the same hardness. Net of everything determining CO_2 reduction is complex.

CO_2 solidification has similar issues with CO_2 injection, but likely results in better carbon savings. Requires CO_2 piping under the cement and likely only useable for pre-cast concrete.

We treat fly ash and pozzolans – which fits with current practice, provides the largest carbon reduction (up to 100%), does not add cost and is scalable and competitive with Portland Cement.



Green Cement's Competitive Strengths



- ✓ Customers – Hard Cost Value = Lower Cost/PSI versus Cement
- ✓ Customers – Soft Cost Value – Non-Monetary Values
- ✓ CO2 Footprint Reduction For Their Finish Products
- ✓ Faster Set Time – Quicker Form Turns
- ✓ Consistency Of Manufactured Product Quality v FA Variability
- ✓ Project Access Based On Green Specifications
- ✓ Public/Private Project – Specified Sustainability Requirements

Produced over **1.1 million tons** of cement

Used in over **1,000 miles** of highway

10+ years of cement sales in DOT projects

Multiple runways built in the USA



New Natural Pozzolan Source Material Allows Unimpeded Growth



In 2020, GCI invented a method and chemistry that greatly enhances the reactivity of natural pozzolans. Natural pozzolans meet regional Fly Ash shortages.

Portland cement rapid set time now matched by GCI enhanced natural pozzolans with near zero carbon footprint

Short Term and 28 days strengths of GCI match Portland cement.

GCI pozzolanic cement:

- No carbon emissions
- Strength Performance Equivalent
- Greater durability
- Lower cost
- Improved flow characteristics



Waste Ash Recovery Increases Feedstock Availability, Improves the Environment & Creates a Carbon Sink



The USA has billions of tons of previously landfilled fly ash from coal fired power plants – with coal plants shuttering this is an excellent replacement source of supplement cementitious materials

Green Cement can recover and process landfilled materials and reclaim pozzolanic value and cleaning up a hazardous waste site

Green Cement is starting to recover landfilled product for re-use at our Texas Facility and others are starting to mine this source of material though none have the ability to turn it into the manufactured product that GCI does

GCI will partner with utilities who will subsidize capital to promote the clean up and beneficiation of these previously waste sites

