



LOW CO<sub>2</sub> CEMENT  
INSPIRED BY NATURE



# **FORTERA**

Low CO<sub>2</sub> Cement Inspired By Nature



**COSTS LESS TO PRODUCE**



**60% REDUCTION IN CO<sub>2</sub> EMISSIONS**



**MEETS EXISTING REGULATIONS**



**SAME HANDLING AND PERFORMANCE**



**LEVERAGES EXISTING RAW MATERIALS  
AND INFRASTRUCTURE**

## CEMENT IS AN OPPORTUNITY TO GLOBALLY REDUCE CO<sub>2</sub>

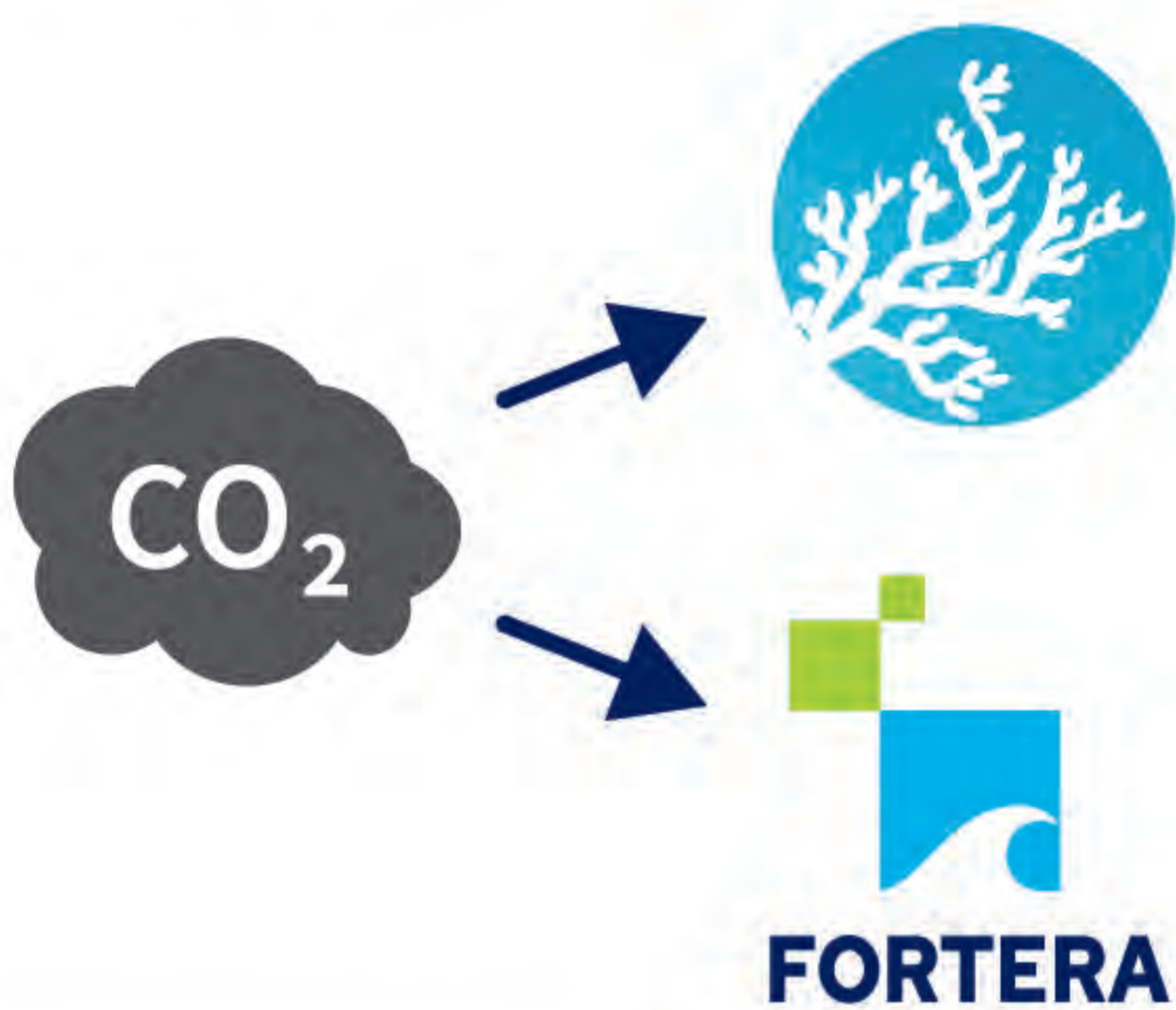
 **2<sup>nd</sup>** most consumed product on Earth, behind water

 **4.2 Billion** tons of cement produced per year

 **3.5 Billion** tons of CO<sub>2</sub> produced per year

 **8%** of global CO<sub>2</sub> emissions

## FORTERA BRINGS NATURE TO THE CEMENT INDUSTRY



Coral reefs and seashells use CO<sub>2</sub> as a cement ingredient in order to form hard materials in the ocean

Fortera adapted this natural process into a method for making cement that uses CO<sub>2</sub> instead of emitting it

## COSTS LESS TO PRODUCE AT EVERY STEP AND SCALE

### CEMENT

4 inputs

1450°C processing

1/3 feedstock lost as CO<sub>2</sub>

\$40-70 per ton

### FORTERA

Only 1 input simplifies production

900°C processing enables less energy use

100% feedstock utilization means no product loss

10% lower production cost

## CONVERTS WASTE STREAM INTO FINISHED PRODUCT

### Calcined Limestone

**0.57 tons**

Calcium and Alkalinity  
(CaO)

+

### Kiln Exhaust

**0.43 tons**

Carbon Dioxide  
(CO<sub>2</sub>)

=

### Fortera

**1.0 ton**

Reactive Calcium Carbonate  
(CaCO<sub>3</sub>)

# 60% REDUCTION

## IN CO<sub>2</sub> EMISSIONS PER TON



### ADDRESSES CO<sub>2</sub> EMISSIONS DIRECT FROM THE KILN

#### PORTLAND CEMENT

CO<sub>2</sub> from Equipment

10%

CO<sub>2</sub> from Energy Use

40%

Process CO<sub>2</sub> from Converting Limestone to Lime

50%



Same Equipment

10%

Less Energy Use

30%

No CO<sub>2</sub> Lost from Limestone to Lime Conversion

0%

Can achieve ZERO CO<sub>2</sub> emissions through integration with clean energy

#### LOWER SITE EMISSIONS



Prevent up to 2.5 GT CO<sub>2</sub> per year

#### CARBON TO VALUE



Create a saleable material

#### PERMANENT STORAGE



Ready for use in concrete

# MEETS EXISTING REGULATIONS AND IS READY TO SCALE



## TECHNOLOGY PROVEN IN LAB

10 years and 100k hours of R&D



## PILOT PLANT PRODUCTION

100k pounds of material produced



## COMMERCIAL PROJECTS

Infrastructure and flatworks projects



## 1<sup>st</sup> COMMERCIAL PLANT

Commercial production in 2022



STARTING MATERIALS ARE AFFORDABLE AND GLOBALLY AVAILABLE



SEAMLESS INTEGRATION WITH EXISTING CEMENT INFRASTRUCTURE



LESS ENERGY DEMAND WITH A SIMPLER CHEMISTRY



FINISHED PRODUCT IS MADE OF 44% MINERALIZED CO<sub>2</sub>



MEETS SAME PERFORMANCE STANDARDS AS OPC AT A LOWER PRODUCTION COST

THE FIRST LOW COST LOW CARBON CEMENT ENGINEERED TO REDUCE CLIMATE CHANGE ON A GLOBAL SCALE

FORTERA IS DEDICATED TO THE GLOBAL GOAL  
OF REDUCING CO<sub>2</sub> EMISSIONS BY A **TERATON**



**FORTERA**

*forterausa.com*

