
CarbiCrete
Carbon-Negative Concrete Production Using Steel Slag

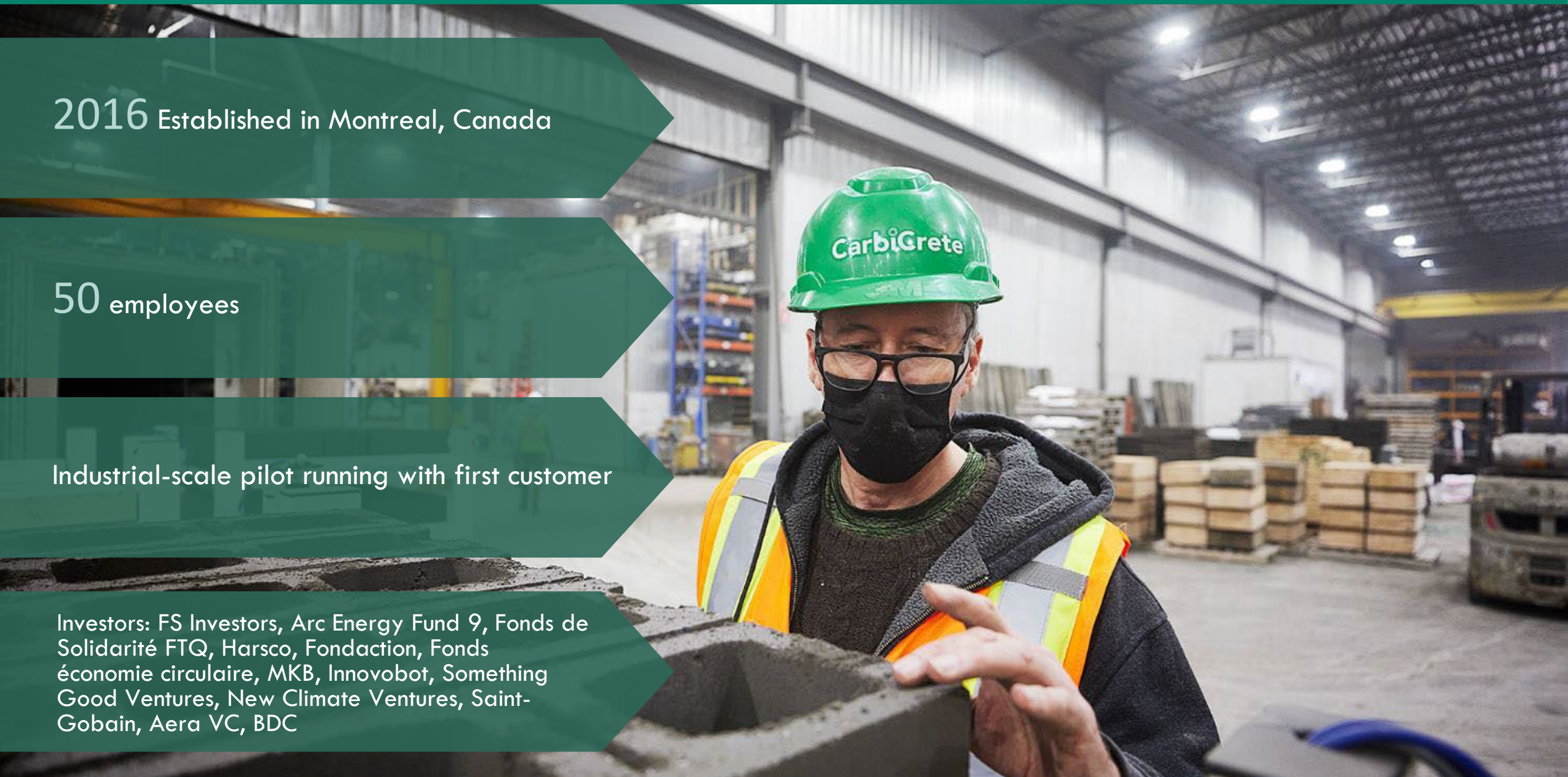
Company Information

2016 Established in Montreal, Canada

50 employees

Industrial-scale pilot running with first customer

Investors: FS Investors, Arc Energy Fund 9, Fonds de Solidarité FTQ, Harsco, Fondaction, Fonds économie circulaire, MKB, Innovobot, Something Good Ventures, New Climate Ventures, Saint-Gobain, Aera VC, BDC



Cement Emissions: A Global Problem

Concrete is the most consumed substance on Earth after water

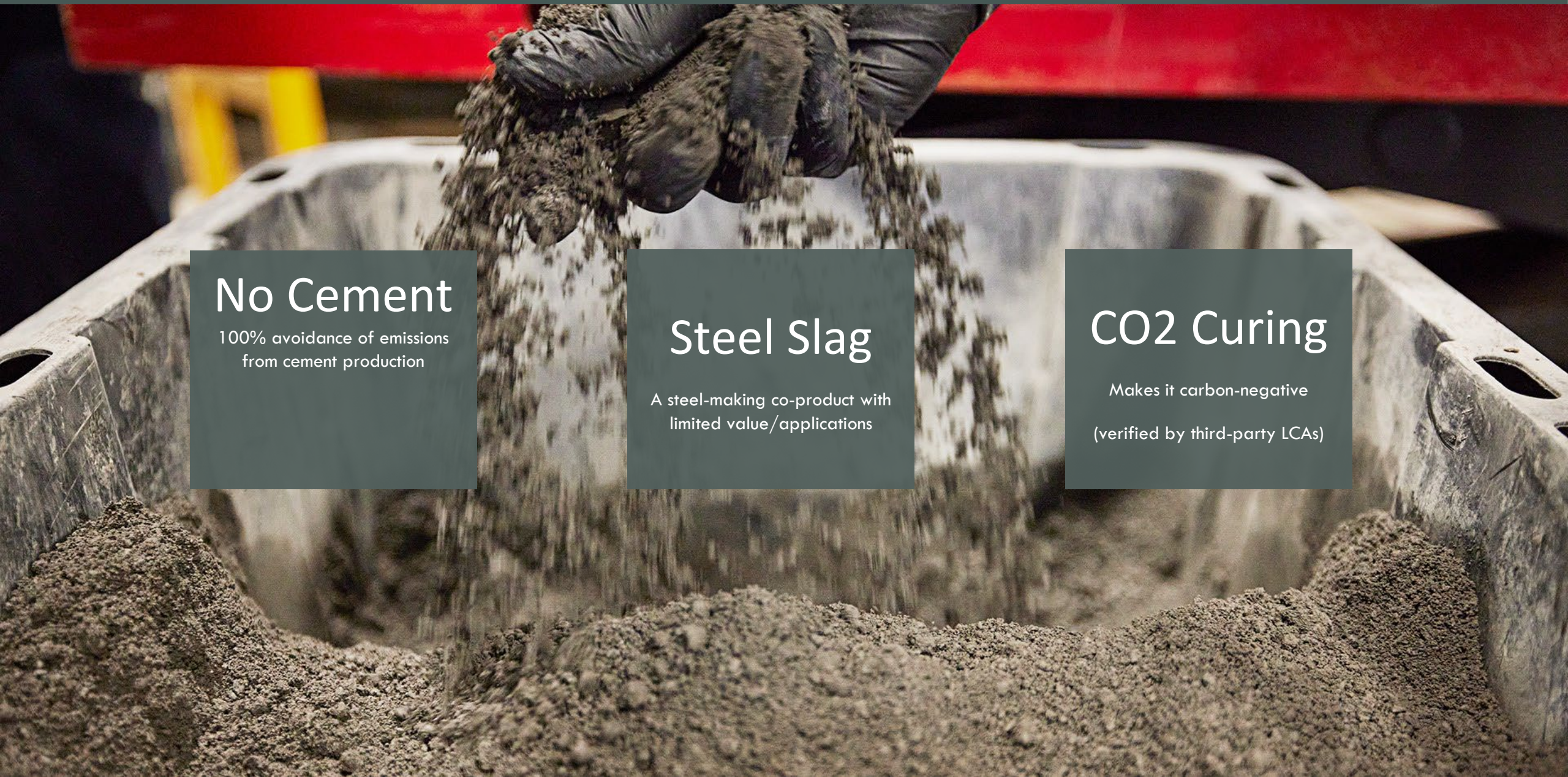
8%

Of global GHG emissions are from cement production

$200+

Cost per tonne of cement in Canada and could double in the next 3 to 5 years

CarbiCrete: A Circular Solution



No Cement

100% avoidance of emissions from cement production

Steel Slag

A steel-making co-product with limited value/applications

CO2 Curing

Makes it carbon-negative

(verified by third-party LCAs)

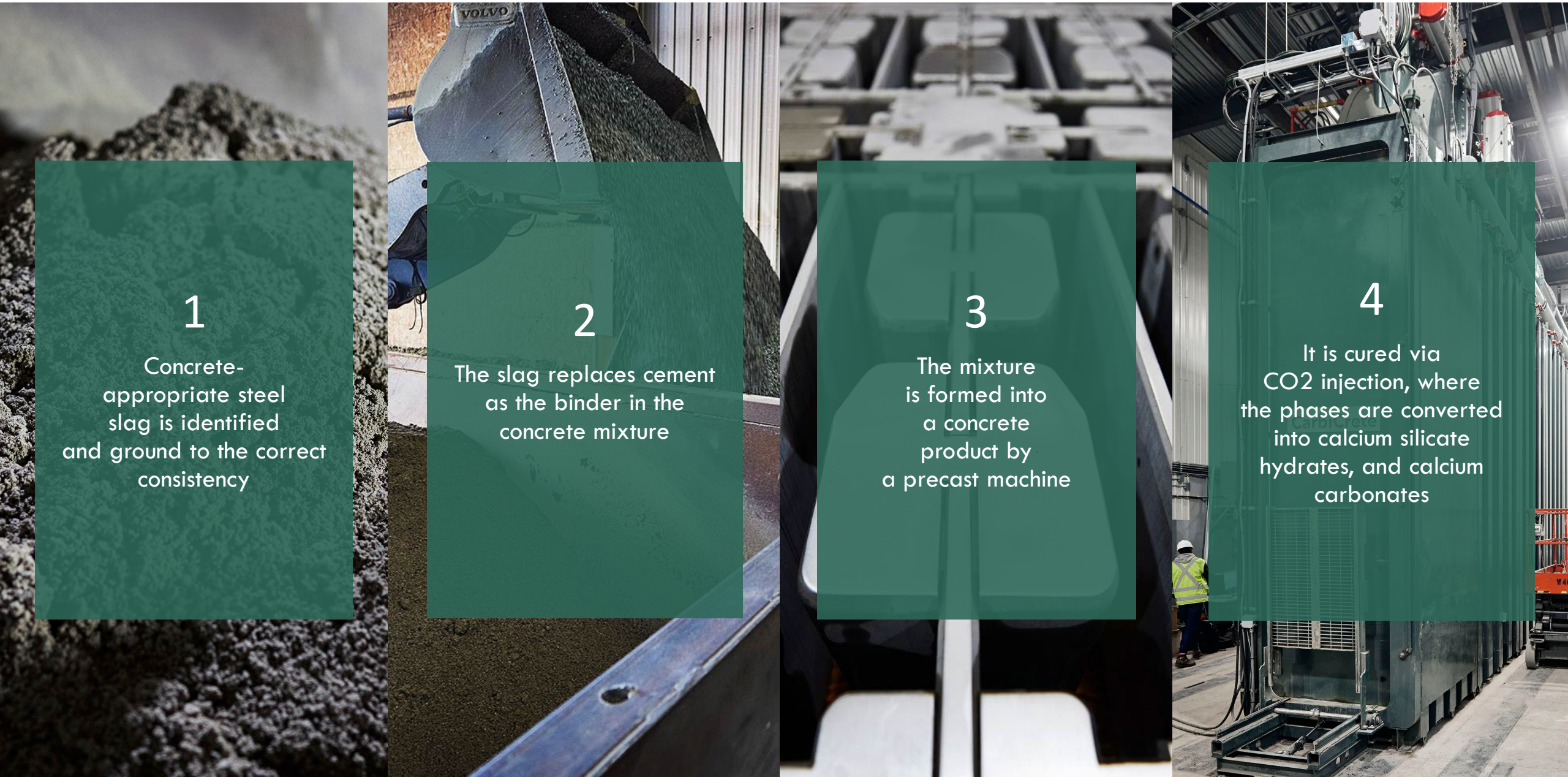
Carbon-Negative Concrete Products

- Reduce GHG emissions and permanently remove CO2
- Lower material costs, more durable, more sustainable than cement-based concrete
- Promote a circular economy through the use of recycled materials from the steel industry
- Patents granted in Canada, US, Europe, India, Japan and Brazil

Product Range

- Concrete Masonry Units (CMUs)
- Pavers
- Retaining walls

The CarbiCrete Process



1

Concrete-appropriate steel slag is identified and ground to the correct consistency

2

The slag replaces cement as the binder in the concrete mixture

3

The mixture is formed into a concrete product by a precast machine

4

It is cured via CO2 injection, where the phases are converted into calcium silicate hydrates, and calcium carbonates

Comparing Chemical Reactions in Curing Techniques

Cement

Hydraulic:

Can be cured through a reaction with water

Strength gain comes from formation of calcium silicate hydrates and calcium hydroxide

Cured using Hydration

Steel Slag

Limited hydraulic properties:

Requires a reaction with CO_2 to be cured

Strength gain comes from formation of calcium silicate hydrates and calcium carbonates

Cured using Mineralization

Performance Compared with Cement-Based CMUs

	Cement-based CMU	CarbiCrete
Density (kg/m3)	2250	2250
Water absorption (%)	7.0	6.0
Compressive strength (MPa)	15	>20
Moisture content (%)	1.5	1.5
Fire resistance rating (hours)	1.8	1.8

Carbon-Negative Concrete Blocks

2Kg

CO_2 emissions avoided per 18Kg CMU by replacing cement with steel slag

+

Up to **1Kg**

CO_2 removed per CMU during curing

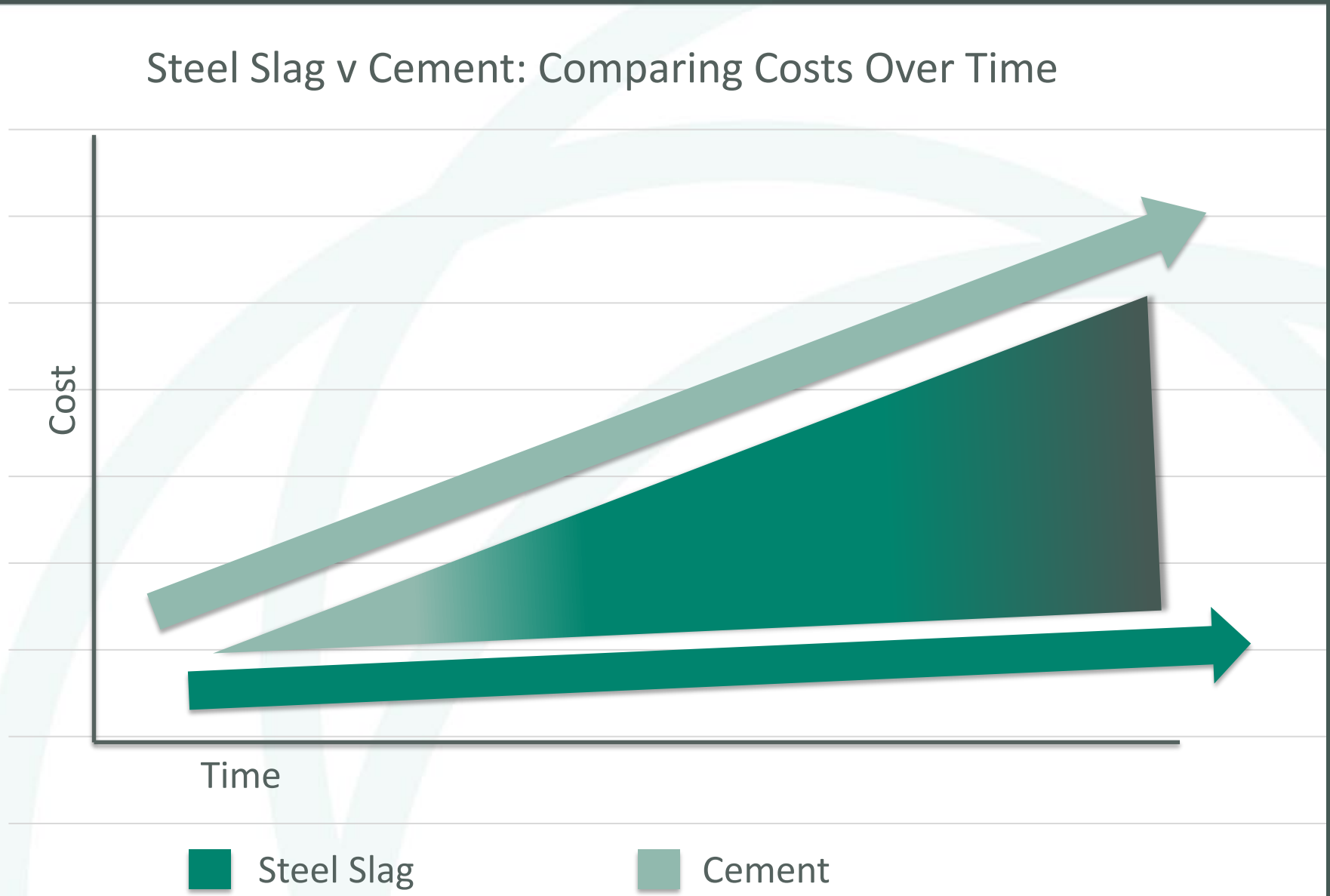
(Subject to mix and process)

=

3Kg

Up to 3 Kg of CO_2 emissions avoided and captured per CMU

CarbiCrete: Unit Economics



Cement price is increasing rapidly and will continue to rise while the cost of steel slag will remain relatively stable.

Making CarbiCrete CMUs less and less expensive to produce compared to cement-based CMUs

Value Streams and Customer Benefits

Hedge Against Cement Price Increase

Our value proposition improves as cement costs increase (#1 customer buying motive)

Low Carbon Concrete

Entering the green products market will increase customer sales (#2 customer buying motive)

Carbon Credits

Owned by CarbiCrete but benefits can be used to offset CAPEX or shared with customer in exchange for higher license fee

Improved Working Capital Management

Reducing curing time from 28 days to 24 hours substantially improves workflow

Disrupting the Concrete Manufacturing Process

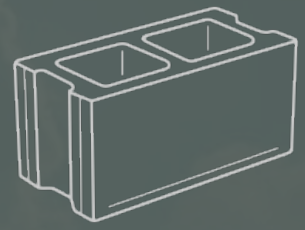
Cement-Based Process

Raw Material Extraction

Use of fossil fuels, explosives, extraction of finite resources

Crushing, Grinding, Calcination

Kilns burn fossil fuels, limestone breaks down into CO2



Concrete-Making

No mitigating or positive environmental impacts

Disrupting the Concrete Manufacturing Process

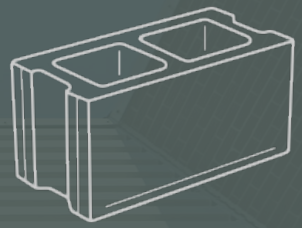
CarbiCrete Process

Steel-Making, Slag Generation

Slag generated after metal recovery

Grinding & Prep by CarbiCrete

Grinding to proper fineness and consistency uses electricity



Concrete-Making

Reduces and removes CO2 to produce value-added product

Supply Chain

Steel Slag

600+ sites worldwide (not including China)

175+ years of collective expertise sourcing, evaluating and grinding slag at CarbiCrete

CO2

Current source: Biogenic

Captured from by-product sources

Future sources: DAC and flue gas

CarbiCrete: Ready to Scale

Commercial production

Began in Dec 2022

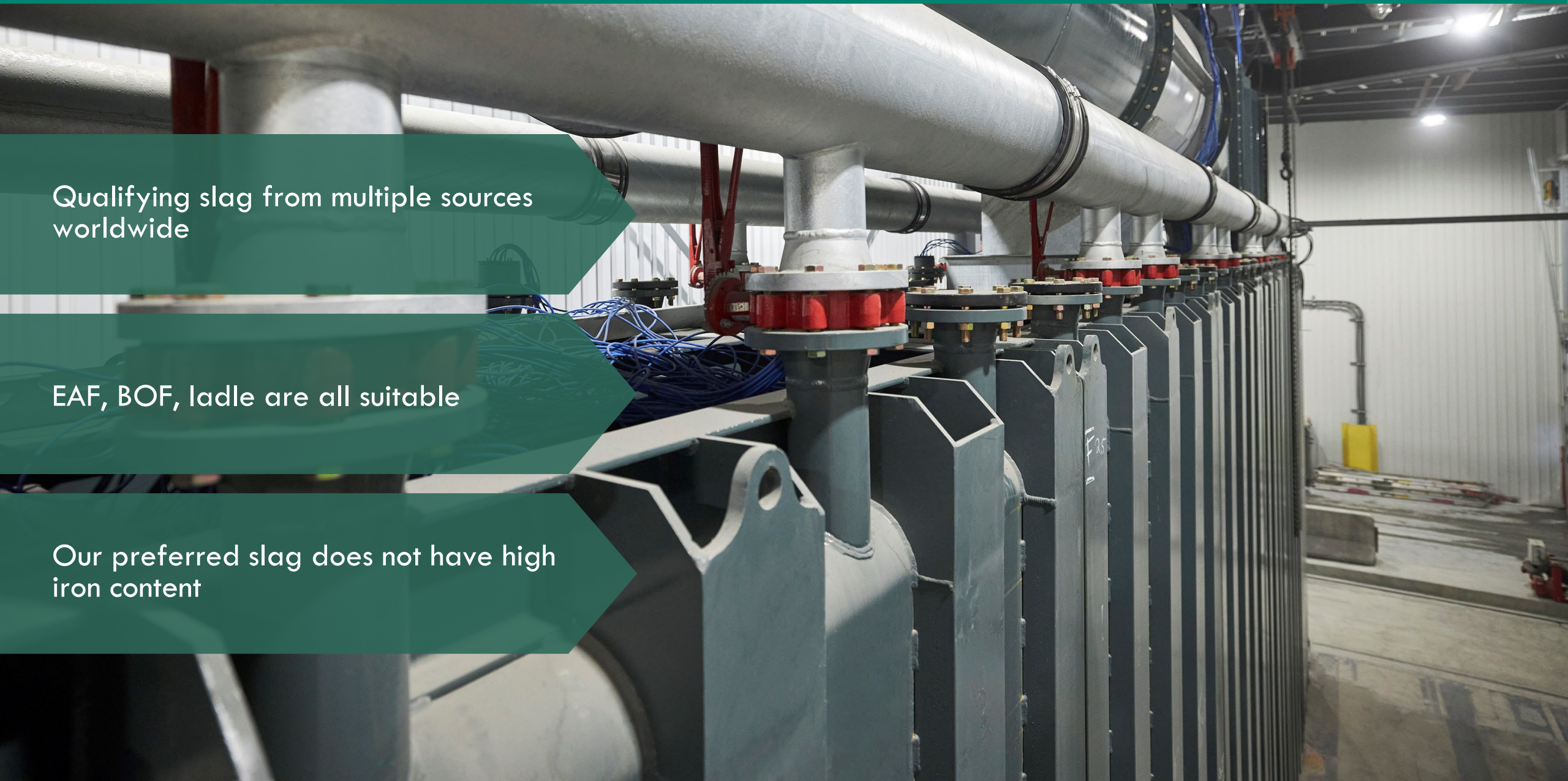
2,400

Units per day

Global Opportunities

- France: Working with Saint-Gobain's POINT.P to produce CarbiCrete blocks in France
- Europe: Cement and concrete company looking to pilot and scale
- India: Multinational conglomerate looking to pilot and scale
- Canada: Steel company looking to build a fence-to-fence concrete operation using locally sourced slag and CO2
- North America: Multiple concrete makers under MOU looking to convert or build greenfield plant

Slag Qualification



Qualifying slag from multiple sources worldwide

EAF, BOF, ladle are all suitable

Our preferred slag does not have high iron content

Key Conclusions

Valuable building products that eliminate cement, CO_2 and steel slag

Positive economics that improve over time

Ready-to-scale carbon removal technology looking to qualify more slag sources worldwide

CarbiCrete

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