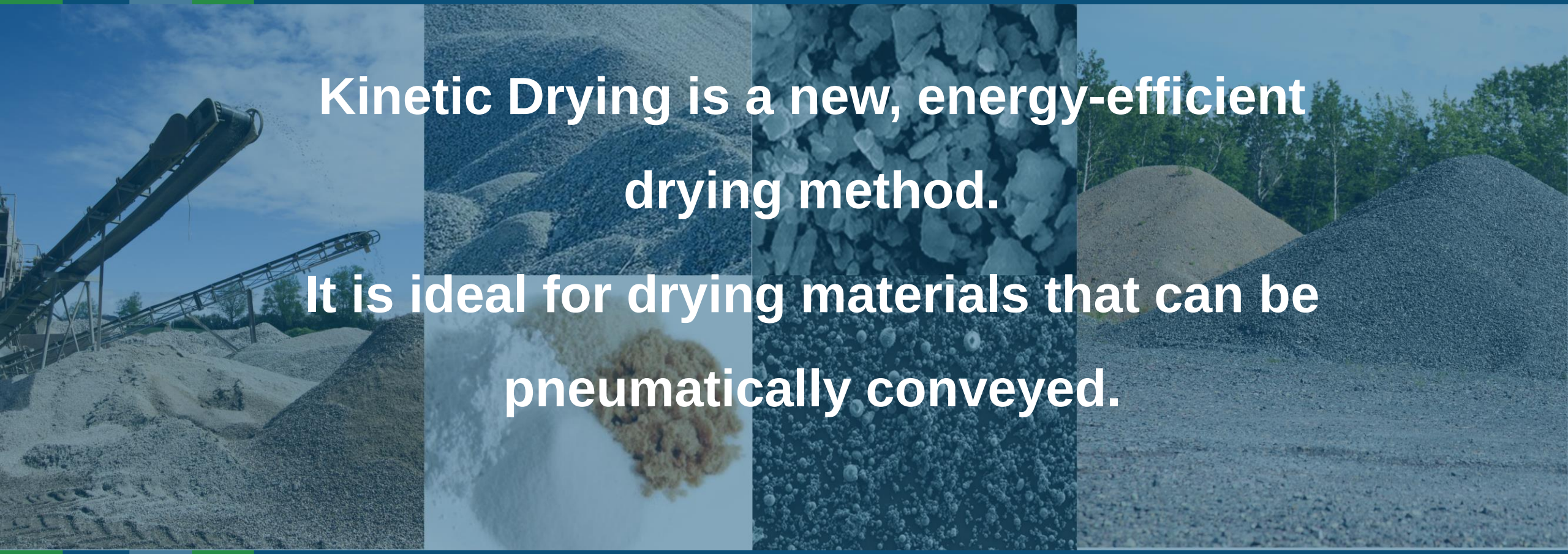
The Future for Bulk Powders & Fine Material Drying

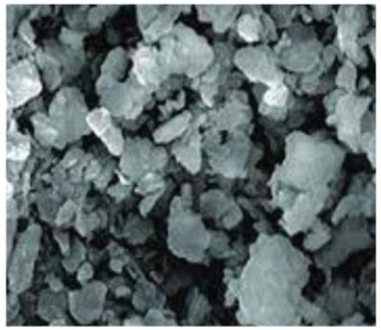
Up to 75% less energy & CO_2 emissions

Richard Atkinson, VP Americas



Kinetic Drying is a new, energy-efficient drying method.

It is ideal for drying materials that can be pneumatically conveyed.

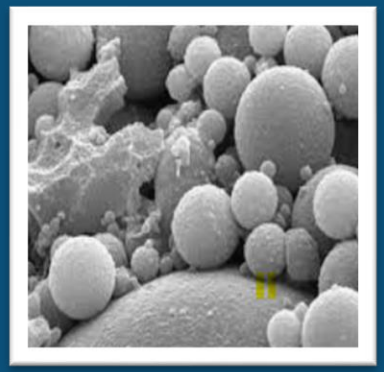


Ground Blast Furnace Slag

Limestone

Sands

Lignite



Pulverised Fuel Ash (PFA)

Mica Flake

Waste Coal

Brewers' Grains

Crushed Basalt

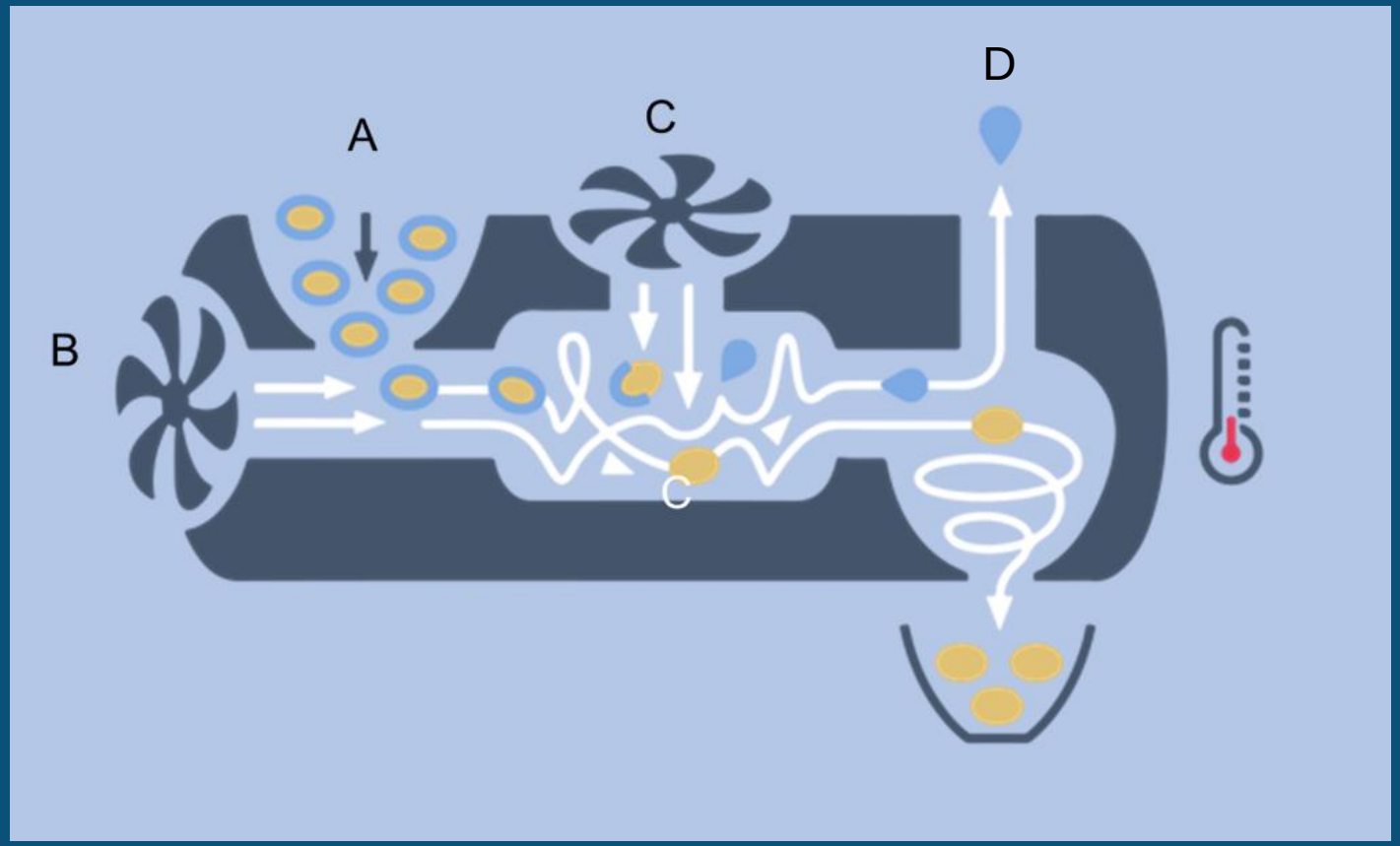
Natural Pozzolans

The issues with Thermal Drying

- ✗ Highly energy intensive
- ✗ “Cooks” material at up to **400ºC** to vaporise moisture (+dwell time)
- ✗ Generates significant levels of CO2 emissions

The Coomtech Solution

The Magic



A Material is fed into the system

B Into a flow of warm air (85°C)

C Managed turbulent air is injected, physically stripping moisture from the particles of material.

D The removed moisture is carried off as humidity, diverted via cyclone at the end of the process.

How It Works

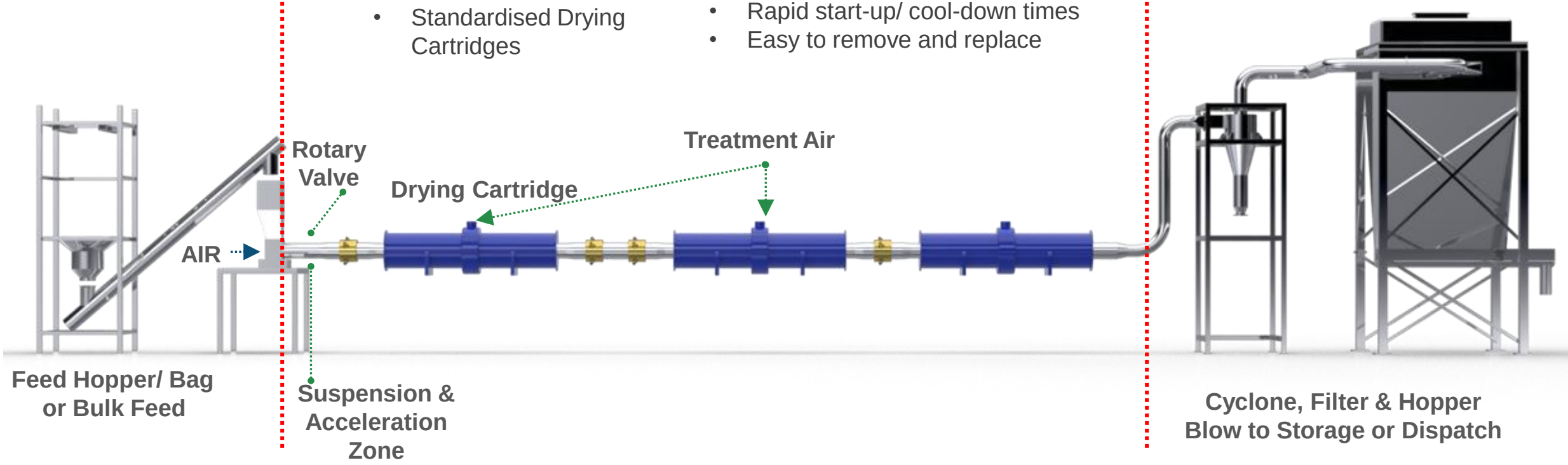
A SINGLE LINE PROCESS VIEW

FEED ZONE
Off the Shelf Equipment

DRYING ZONE
Patented Kinetic Drying Cartridges

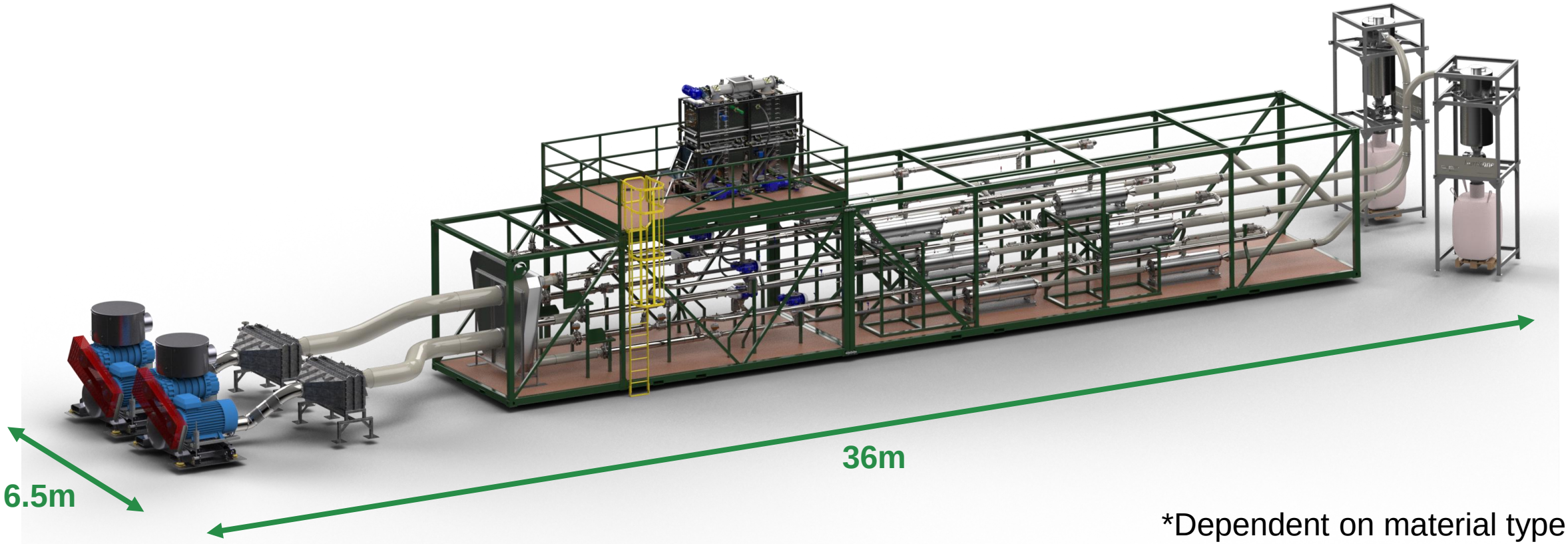
- Standardised Drying Cartridges
- Rapid start-up/ cool-down times
- Easy to remove and replace

RECEIVING ZONE
Off the Shelf Equipment



As configured for the UK pilot testing line at Coomtech's R&D Facility.

Single Module
50 - 100,000* MT per annum
6 - 12* MT per hour



*Dependent on material type

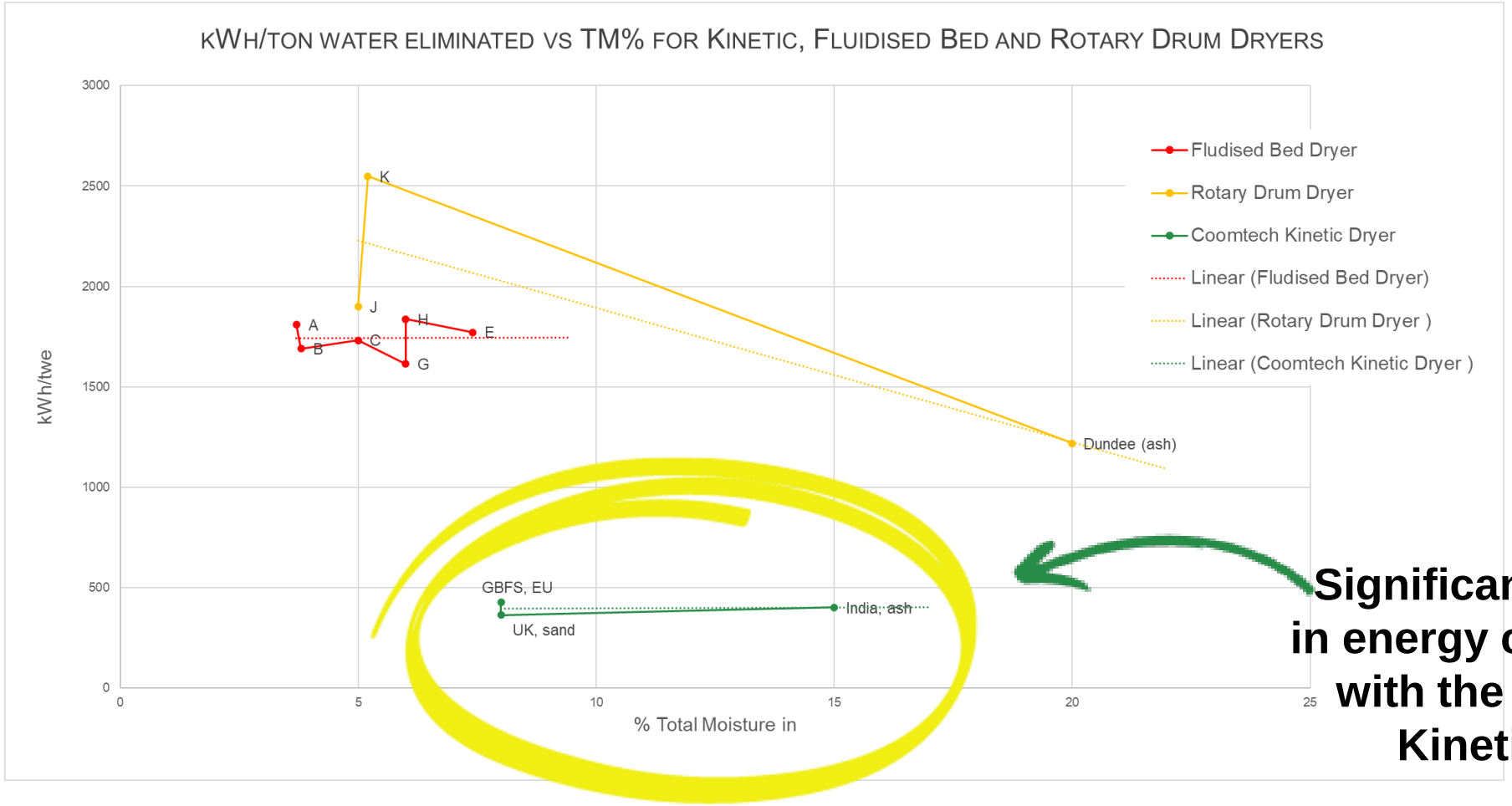
Plug & Play

Customer install 2023

Flexible, Modular, Scalable & Cost Effective

The Science

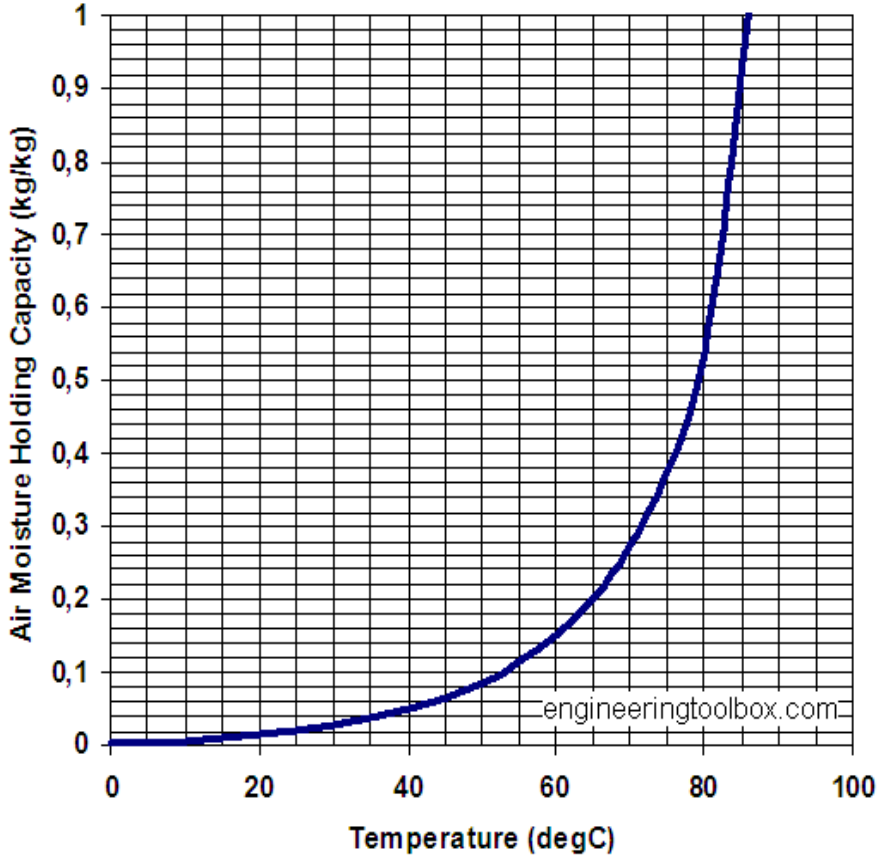
Comparison of fluidised bed, rotary drum and kinetic drying technologies



Significant reduction in energy consumption with the Coomtech Kinetic Dryer

‘Just-warm-enough’ air holds moisture as vapour, avoids re-condensing

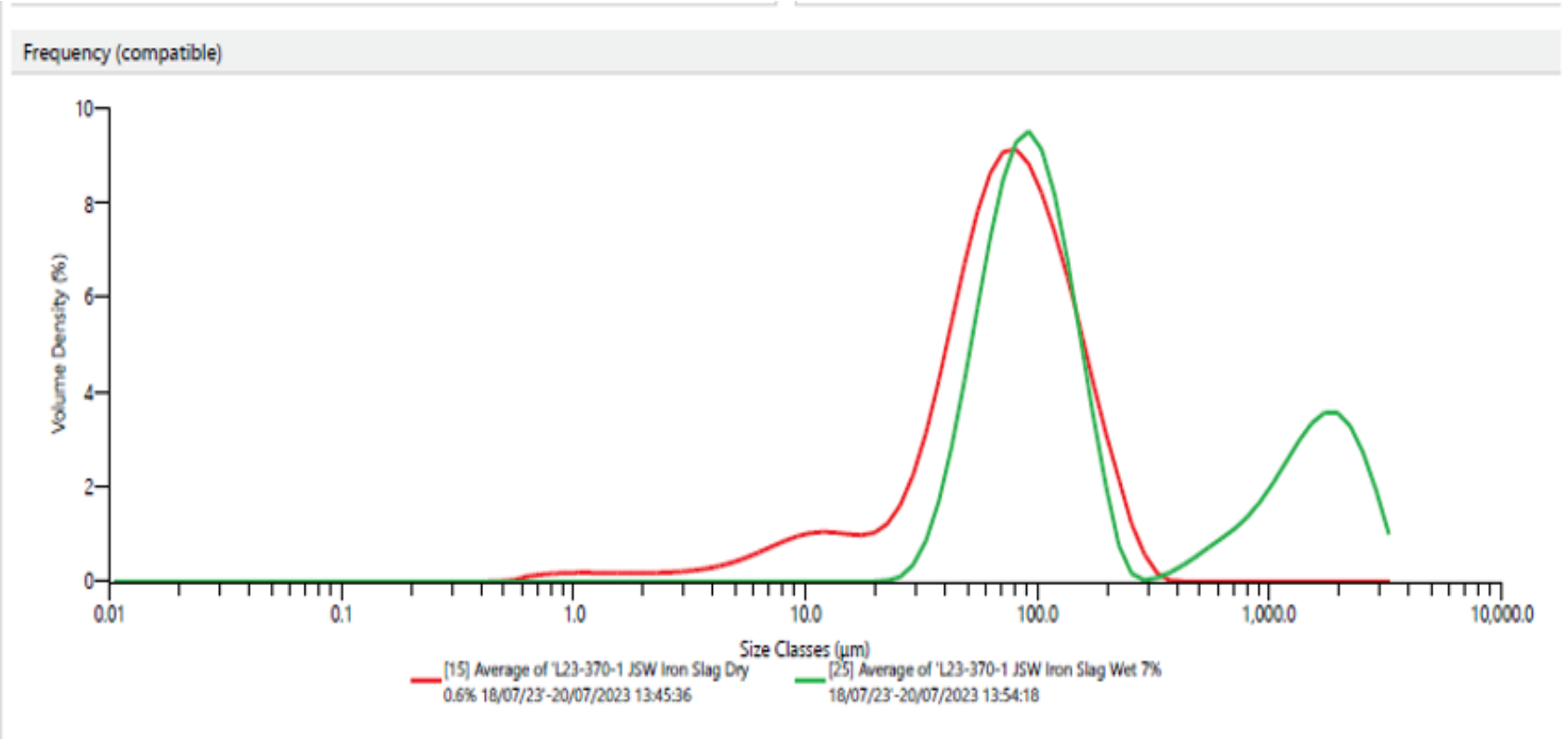
- High-volume, low-temperature treatment air
- Just above dew point to prevent water re-condensing
- Moist air and dry materials separated at end of process



Kinetic Drying vs Thermal Drying

Customer Drying Trial	Thermal Drying Energy Consumption	Kinetic Dryer Energy Consumption
Harvested fly ash, 15% to 0.8% moisture *India* *Cementitious applications*	244 kWh/mt	60 kWh/mt **-75%**
Coarse angular sand, 8% to 0.1% *UK* *Coarse Angular Sand*	120 kWh/mt	29 kWh/mt **-75%**
Ground blast furnace slag, 8% to <0.5% *European top three GBFS suppliers*	120 kWh/mt	34.1 kWh/mt **-71%**
Crushed limestone, 3% to 0.2% *Major UK quarrying business* *Construction, industrial and consumer applications*	70 kWh/mt	29 kWh/mt **-58%**

PARTICLE SIZE DISTRIBUTION IMPROVEMENT



Coomtech Kinetic Dryer breaks up agglomerates and drives PSD to the finer end, to the extent that can be seen on these trials – using GBFS from India.

Projects

Pulverised Fuel Ash Project - UK

Project:

To establish a low energy, low emission and cost-effective method to dry stockpiled fly ash for reuse in the cement industry.

Value:

Energy saving: Projected at 103 kWh/t (75%)

Initial plant install in 2024

3 further production plants scheduled

Ca. 300k mtpa

Customer:	Hive Energy
Partner:	Aggregate Industries (Holcim UK)
Offtake:	Holcim (world's largest cement company)

Hydrogen Project - Australia

Project:

Drying lignite for use in hydrogen gasification program for Japan.

Value:

Energy saving: Projected at 91 kWh/t (75%)

Pilot project with Australian Government grant.

Production plant would be multi-million mtpa.

Partners:	Victoria State Government ACE. Locally commissioned engineering company
Offtake:	Hydrogen Energy Supply Chain (HESC)

Innovandi Challenge – Global Cement & Concrete Association

Project:

Evaluation of Kinetic Drying for consortium of GCCA members. Production trials of a range of materials for global cement businesses.

Value:

Indian participants Ultratech and JSW trialled fly ash and GBFS.

Savings of 75% relative to thermal drying achieved on both materials.

Partners:

JSW cement

Ultratech cement

CRH

Buzzi Unicem

Who is Coomtech?

Production Plant Adlington, UK

“At Holcim, we are continuously working to implement greener operations for a net-zero future, and to increase the use of recycled materials in our products to drive circular construction.

Coomtech’s low-emission drying technology helps us meet both these goals. I look forward to working with them as a key partner in our journey to decarbonize building.”

Edelio Bermejo, Head of Global R&D

HOLCIM

Next Steps…


Stage 1:
Engage
Stage 2:
Evaluate
Stage 3:
Trial (POA)
Stage 4:
Proposal

Thankyou

coomtech
clean technologies

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Stage 1: Engage → Stage 2: Evaluate → Stage 3: Trial (POA) → Stage 4: Proposal