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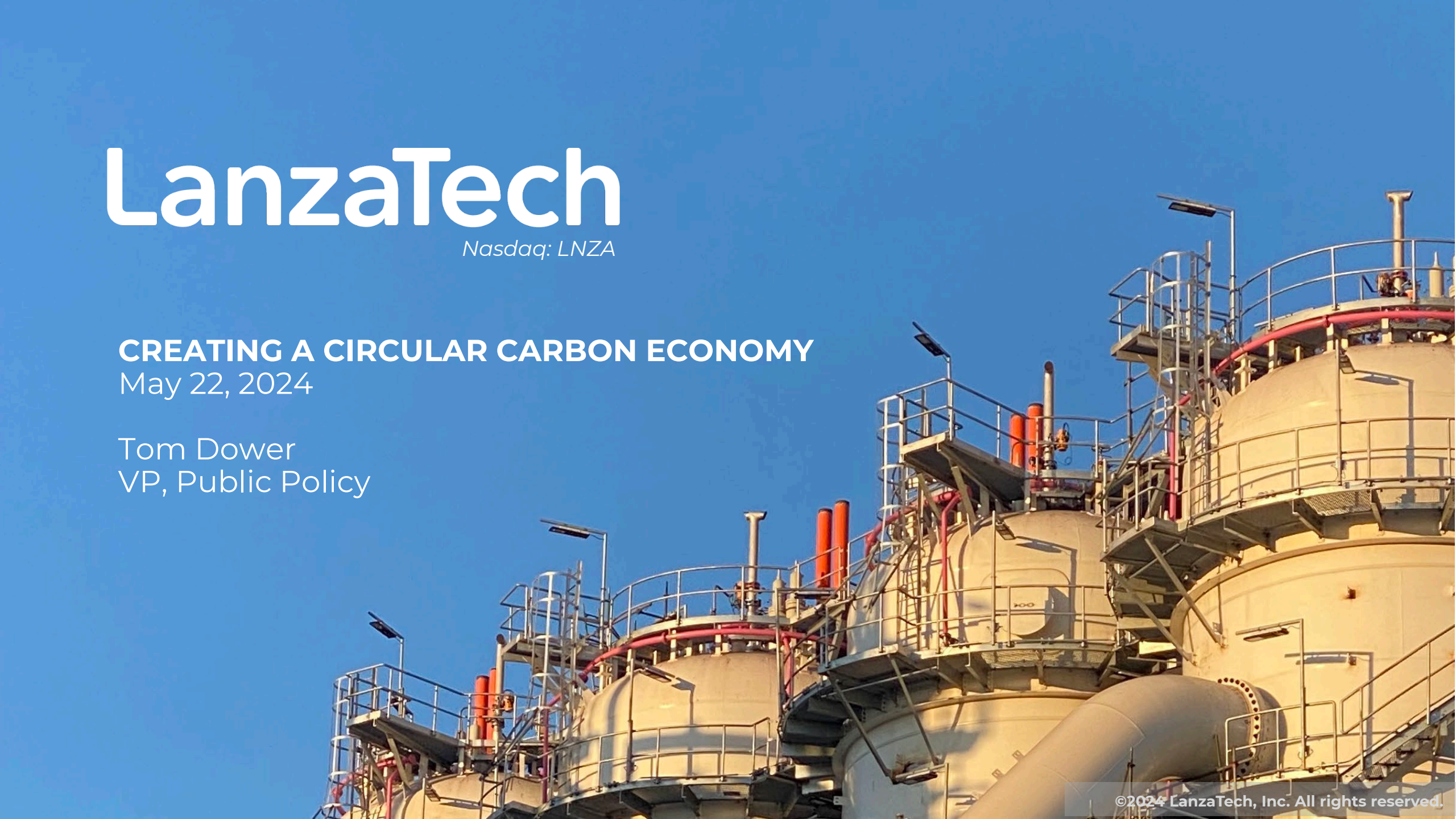
Nasdaq: LNZA

CREATING A CIRCULAR CARBON ECONOMY

May 22, 2024

Tom Dower
VP, Public Policy



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OUR “CLIMATE TIME BOMB IS TICKING”
– Antonio Guterres, U.N. Secretary-General
The fact that we are making our planet inhospitable is not new

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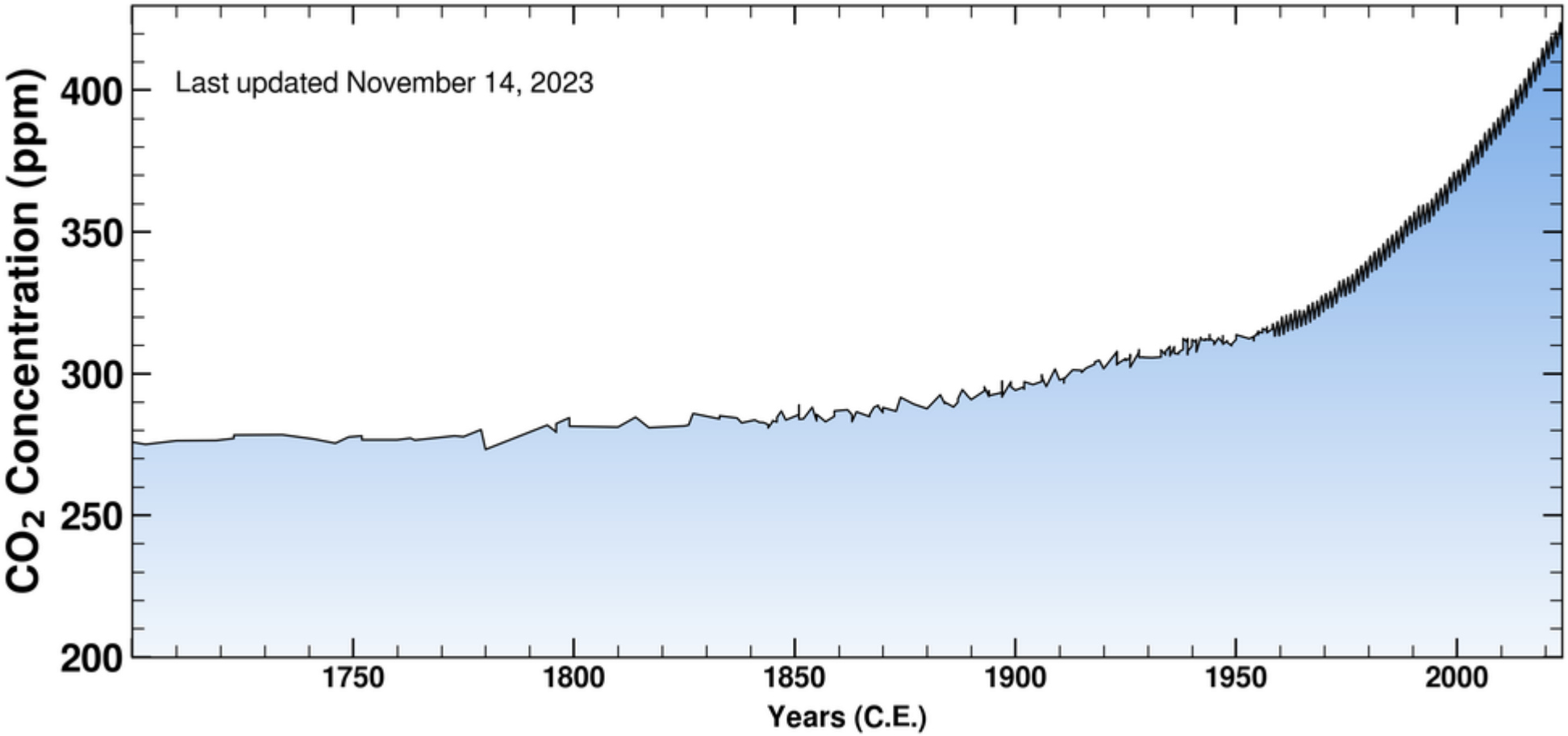
ATMOSPHERIC CO_2 PARTS PER MILLION

Mauna Loa Observatory, Hawaii
Monthly Average Carbon Dioxide Concentration



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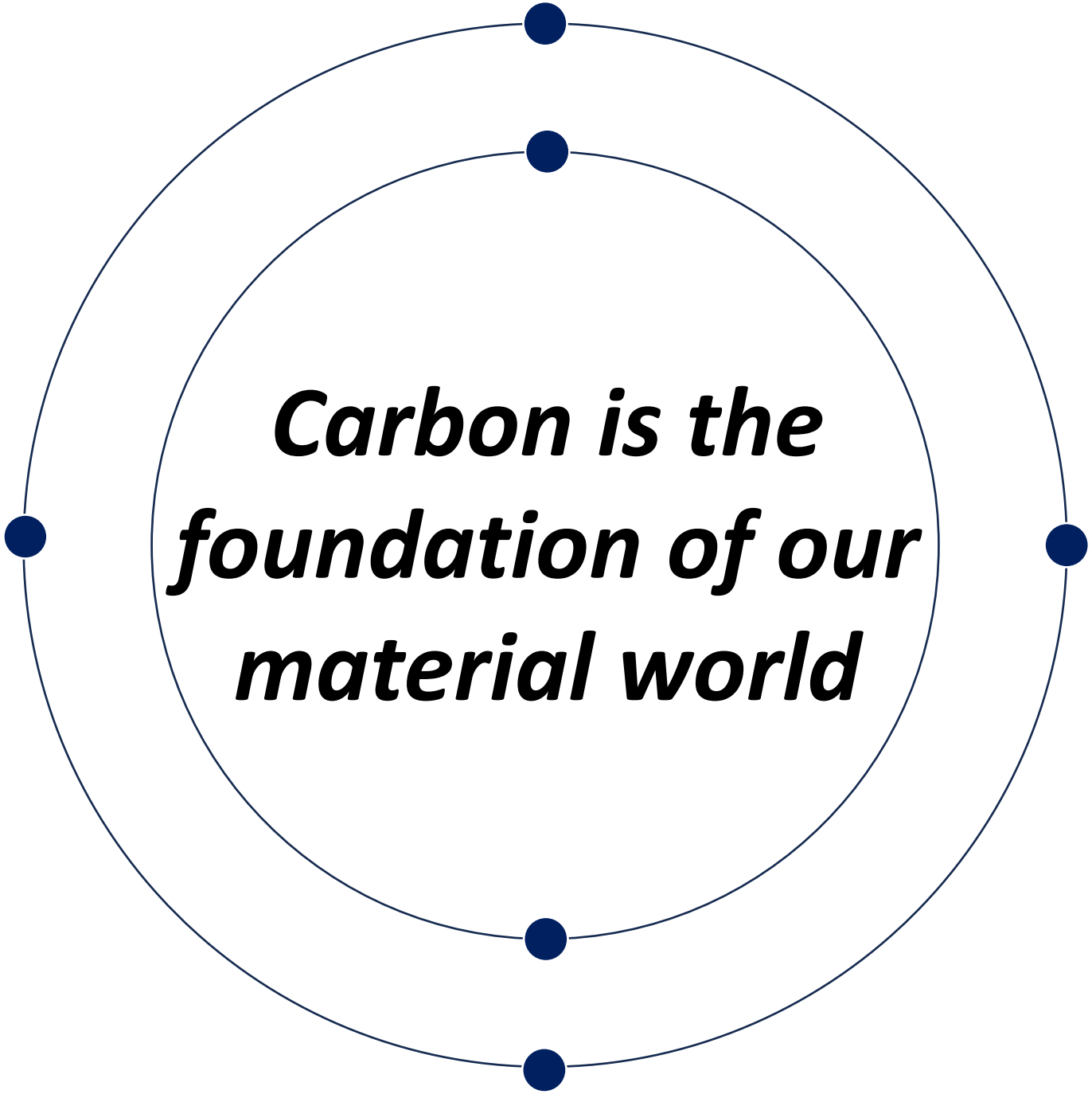

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Carbon is in

the products we use

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Carbon is in

the clothes we wear

LanzaTech

Carbon is in

the planes we fly

LanzaTech

Carbon is in

the natural world

LanzaTech

Carbon is in

…us!

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THE WORLD HAS ENOUGH CARBON ABOVE GROUND TO MAKE EVERYTHING WE NEED

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RECYCLE CARBON

STEP 1

REDUCE CARBON EMISSIONS

STEP 2

POWER THE CIRCULAR ECONOMY*

*STEADY STATE

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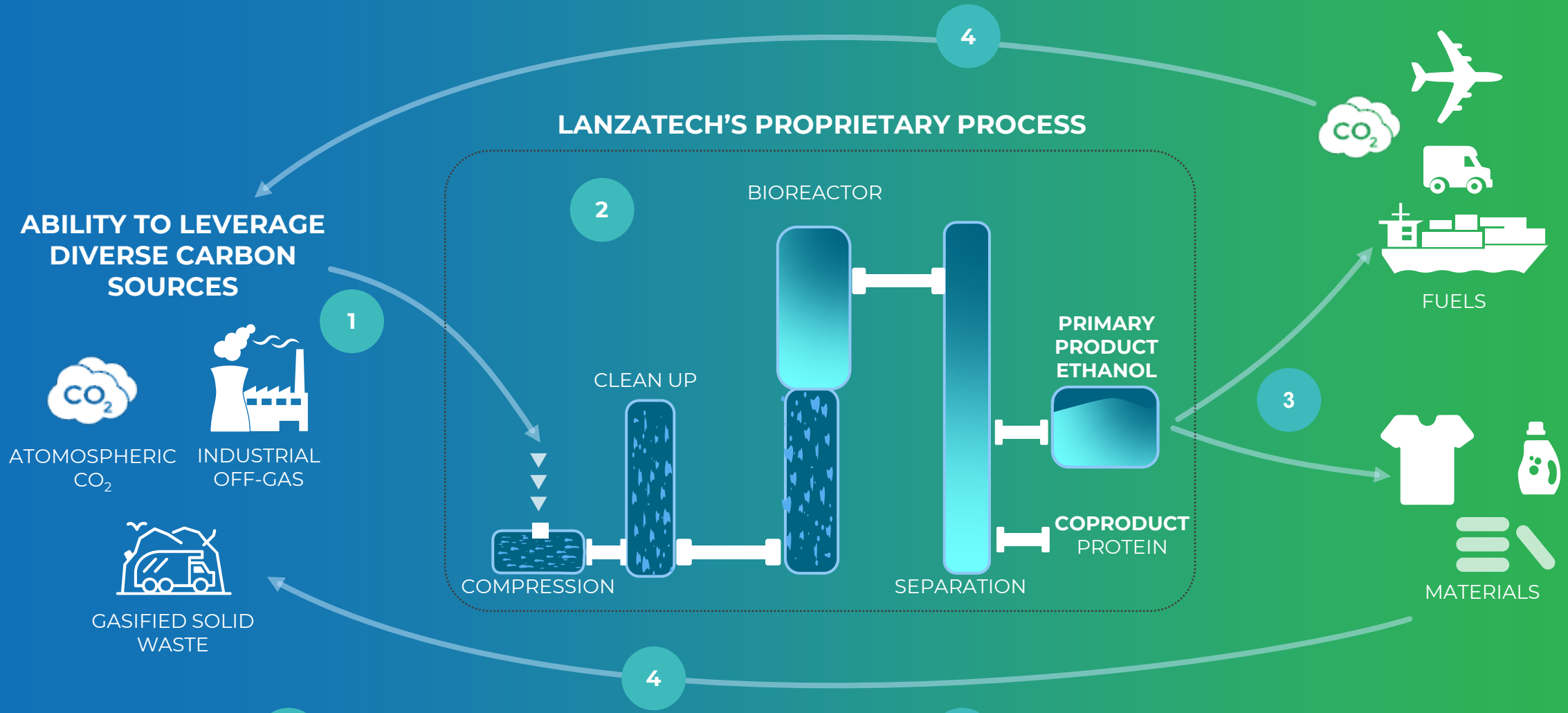
A NOVEL CIRCULAR SOLUTION, RECYCLING WASTE CARBON INTO VALUABLE PRODUCTS



1. Carbon rich waste gases enter compressor. Solids must first be gasified.
2. LanzaTech Process occurs within proprietary bioreactor; microbe consumes carbon in gas and produces ethanol and protein coproduct.
3. Ethanol is an intermediate product that can be further upgraded and converted into high value sustainable materials and fuels.
4. Circularity enabled with solid waste carbon gasified and emitted carbon captured and returned to the process.

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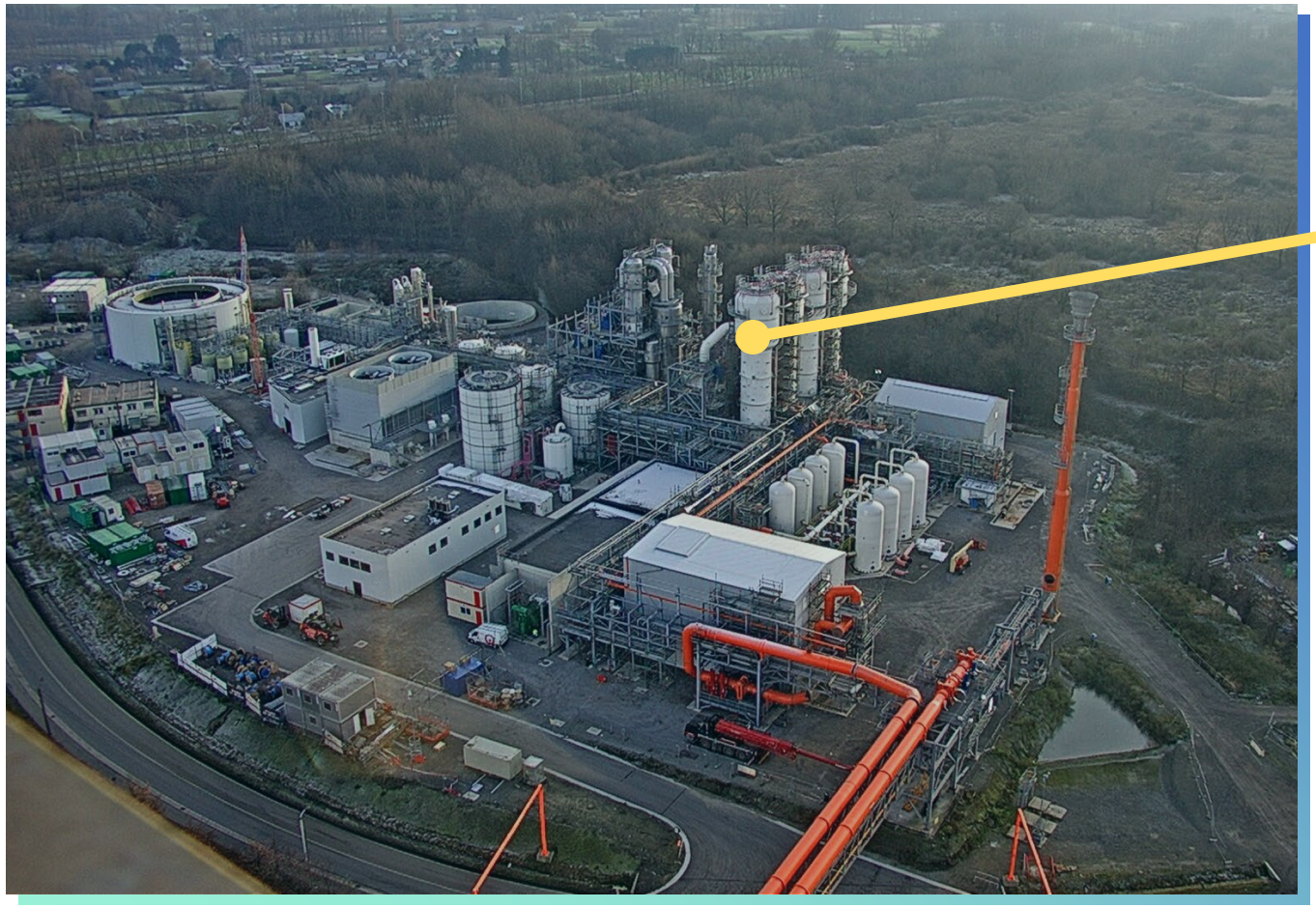
A BREWERY THAT PLUGS INTO AN INDUSTRIAL PLANT



GAS FERMENTATION

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GLOBALLY LICENSED & COMMERCIALLY OPERATIONAL TODAY

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2023 GAS FERMENTATION PLANT START UPS

Project/Partner	Carbon Source	Ethanol Production Volume (tonnes/year)	CO_2 Abated (tonnes/year)	Location
IndianOil	Refinery Off Gas	33,500	~60,000	India
ArcelorMittal	Steel Off Gas	64,000	~125,000	Belgium

*Total of **6** commercial-scale gas fermentation facilities online with cumulative* ***nameplate capacity of +300,000 tonnes per year***

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500,000 tonnes CO_2

ANNUAL ABATEMENT CAPACITY

300,000 tonnes EtOH

ANNUAL PRODUCTION CAPACITY

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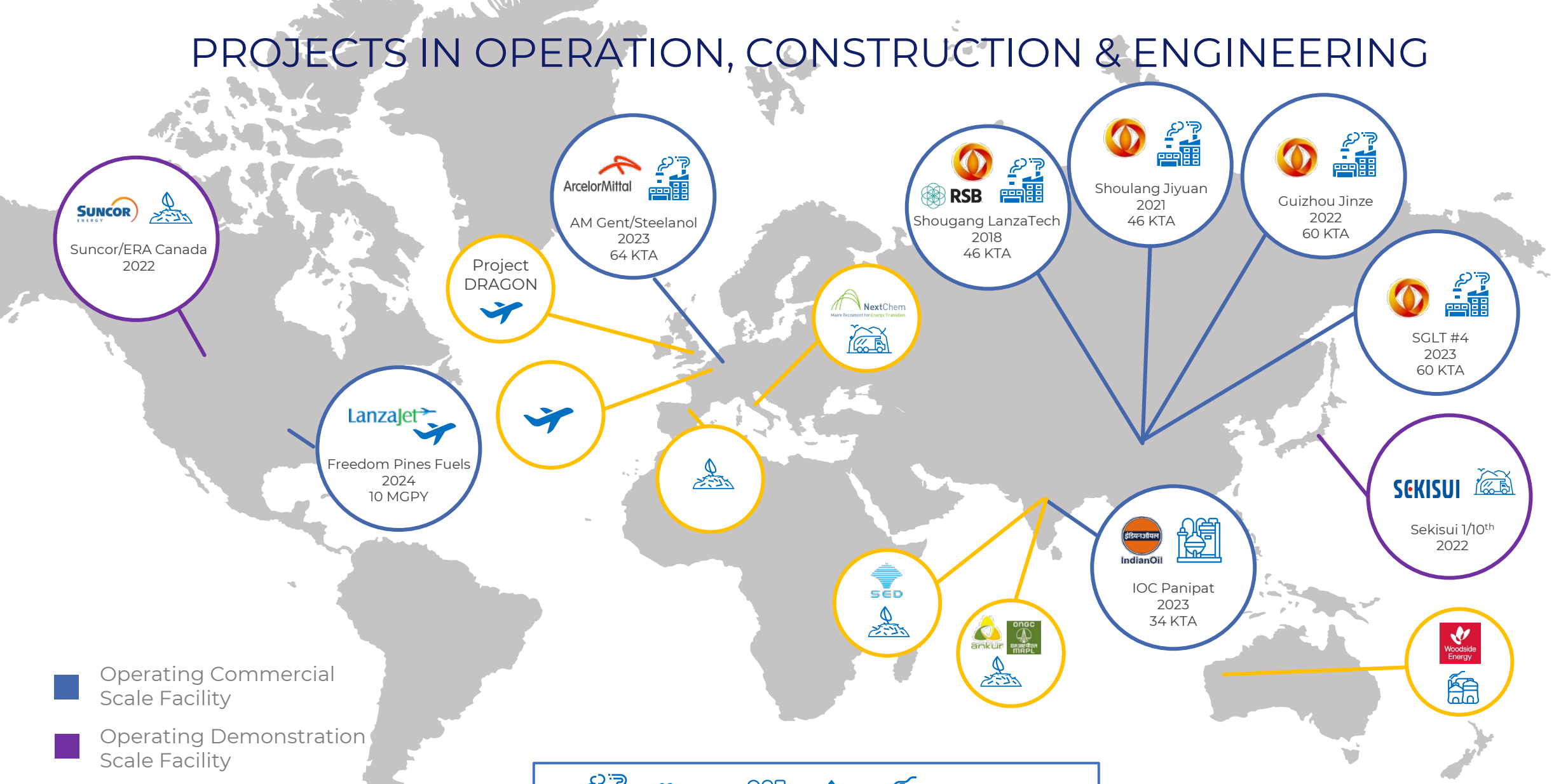
PROJECTS IN OPERATION, CONSTRUCTION & ENGINEERING



[1]Partners not yet publicly announced for all opportunities

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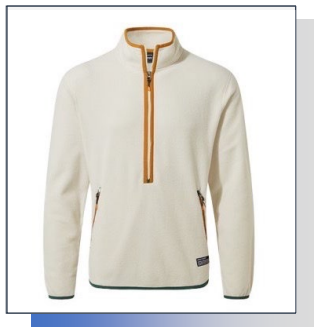
LANZATECH IS ENABLING LOWER CARBON SUPPLY CHAINS

DRESSES

YOGA PANTS

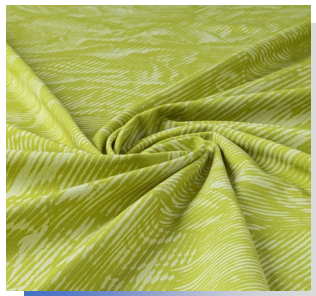
FLEECE JACKETS



SHOE SOLES

PACKAGING

ATHLETIC SHORTS



FRAGRANCES

CLEANING PRODUCTS

SHIRTS

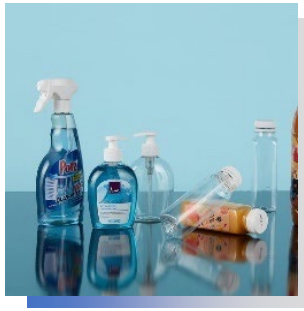
SUSTAINABLE AVIATION FUEL

TENNIS SHOES

ATHLETIC DRESSES

DETERGENTS

PACKAGING



SURFACTANTS

COTY SINCE 1904 ZARA MIGROS mibelle GROUP CRAGHOPPERS Unilever L'ORÉAL virgin atlantic H&M MOVE

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TOTAL END MARKETS FOR PRODUCTS ENABLED BY THE LANZATECH PLATFORM

$1T Addressable Market

Potential for **>1 billion** tons/year of product from waste feedstocks

Ethanol[1]

LanzaTech ethanol may be sold into fuel markets

Jet fuel via ethanol[2]

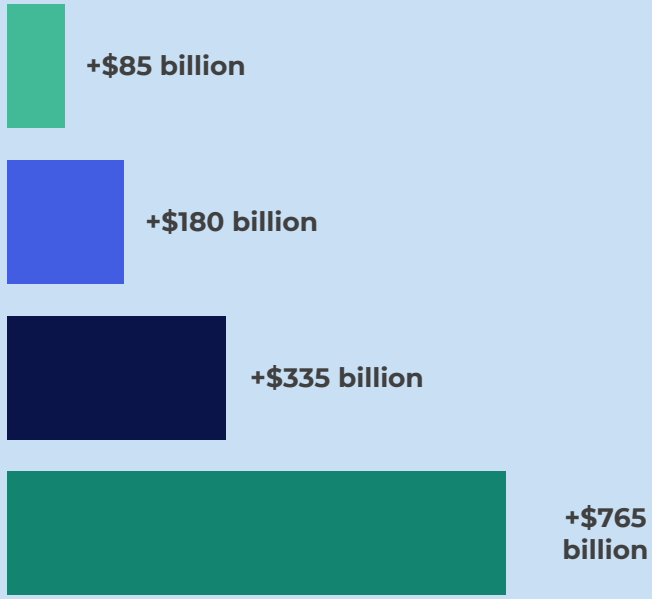
LanzaJet™ Alcohol-to-Jet process can convert LanzaTech ethanol to SAF

Materials via ethanol[3]

LanzaTech ethanol can be converted into a wide range of materials, such as plastics, polymers, and textiles.

Other chemicals and materials[4]

Synthetic biology enables the production of other chemicals, which can be upgraded to materials.



Fuels **Materials** **Polymers** **Monomers** **Fragrances** **Chemicals** **Solvents**

[1] Ethanol ($89.1B, 2019, Grand View Research, [2] Jet fuel ($179.2B, 2018, Allied Market Research), [3] Ethylene ($222B, 2019, The Business Research Company), Ethylene Oxide ($45B, 2020, Research and Markets), PET ($43.8B, 2019, The Business Research Company), MEG ($26B, 2018, Market Research Future), [4] Acetone ($4.6B, 2019, Grand View Research), Isopropanol ($2.7B, 2019, Grand View Research), Isoprene ($2.6B, 2019, Technavio), Polypropylene ($116B, 2019, Grand View Research), Methyl Methacrylate (MMA) ($12.6B, 2019, Fortune Business Insights), Specialty chemicals ($630B, 2019, Grand View Research),

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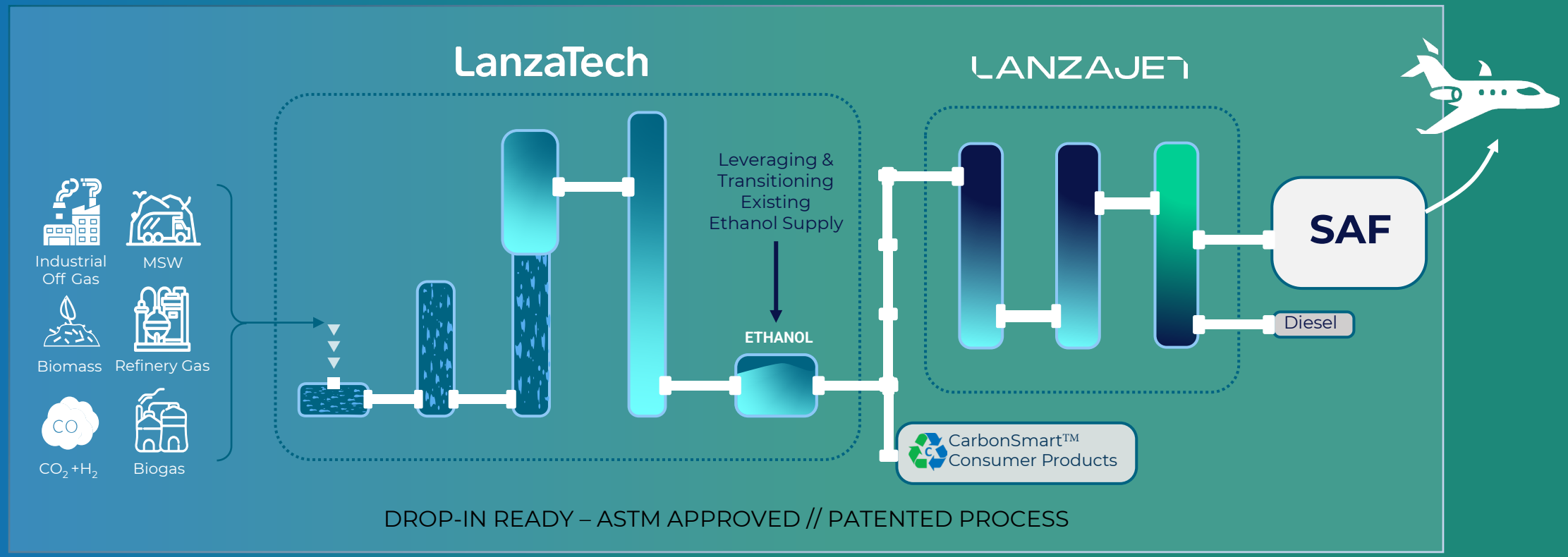
DOWNSTREAM FLEXIBILITY TO INTEGRATE WITH LANZAJET'S SAF PLATFORM



LanzaJet Formed in 2020

BRITISH AIRWAYS ANA Microsoft U.S. DEPARTMENT OF ENERGY LanzaTech MITSUI & CO. SUNCOR ENERGY Breakthrough Energy

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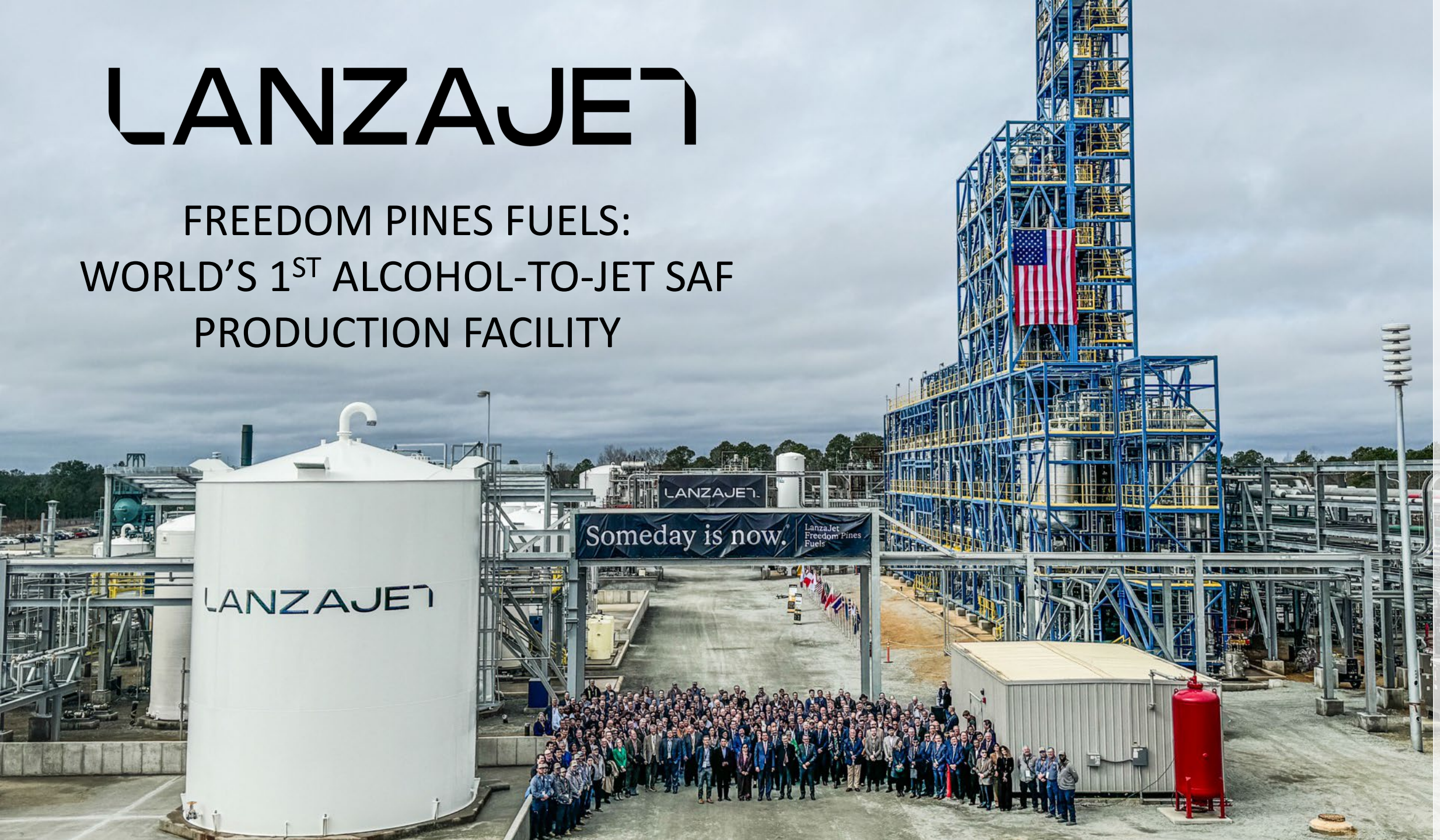
LANZAJET

FREEDOM PINES FUELS: WORLD'S 1ST ALCOHOL-TO-JET SAF PRODUCTION FACILITY



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LANZATECH ENABLES CARBON NEGATIVE PRODUCTS TODAY WITH FORESEEABLE IMPROVEMENT OVER TIME

Renewable Energy

Further reduces carbon intensity of LanzaTech process and products

Carbon Negative Feedstocks

Enable increasingly negative product carbon intensity

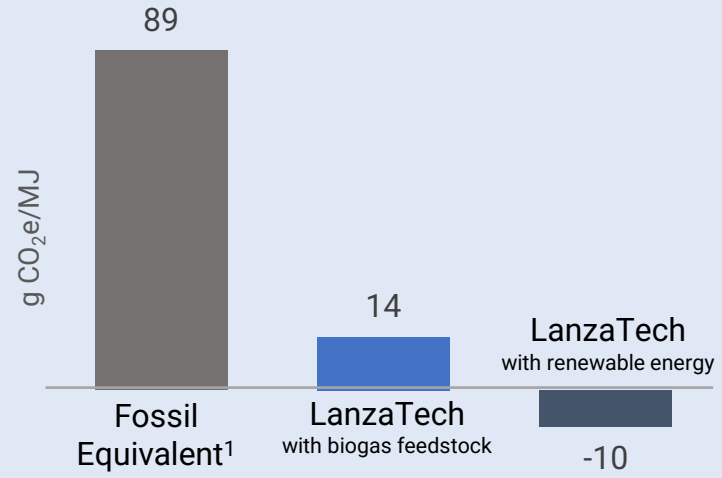
Net Zero Economy

Supported by LanzaTech products

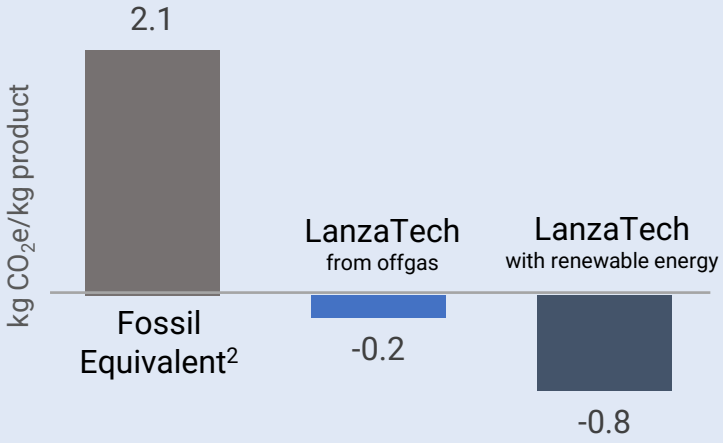
Certifications

RSB & ISCC certifications for value chain integrity

Sustainable Aviation Fuel with LanzaJet Process



Monoethylene glycol (MEG) as a chemical intermediate



[1] ICAO Sustainable Aviation Fuels Guide, Version 2, December 2018, Page 6; [2] The ecoinvent database, version 3

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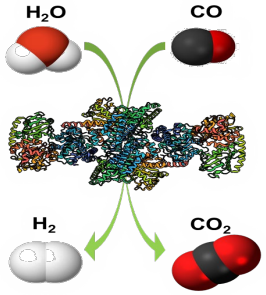
ACETOGENS CAN USE A WIDE RANGE OF INPUT GAS COMPOSITIONS

Gas Composition		H_2:CO Ratio	Energy Efficiency
CO	$6\ CO + 3\ H_2O \rightarrow C_2H_5OH + 4\ CO_2$	0:1	72.8%
CO + H_2	$3\ H_2 + 3\ CO \rightarrow C_2H_5OH + CO_2$	1:1	78.5%
CO + H_2	$4\ H_2 + 2\ CO \rightarrow C_2H_5OH + H_2O$	2:1	80.6%
CO + H_2 + CO_2	$5\ H_2 + 1\ CO + 1\ CO_2 \rightarrow C_2H_5OH + 2\ H_2O$	5:1	82.1%
H_2 + CO_2	$6\ H_2 + 2\ CO_2 \rightarrow C_2H_5OH + 3\ H_2O$	1:0	85.2%

Organism making **H_2 on demand** through **Biological Water-Gas-Shift**



CODH Enzyme

Multiple avenues to reach **maximum carbon utilization** by flexibly adding **Green H_2**

[1]Köpke & Simpson (2020) *Curr Opin Biotechnol* 65: 180

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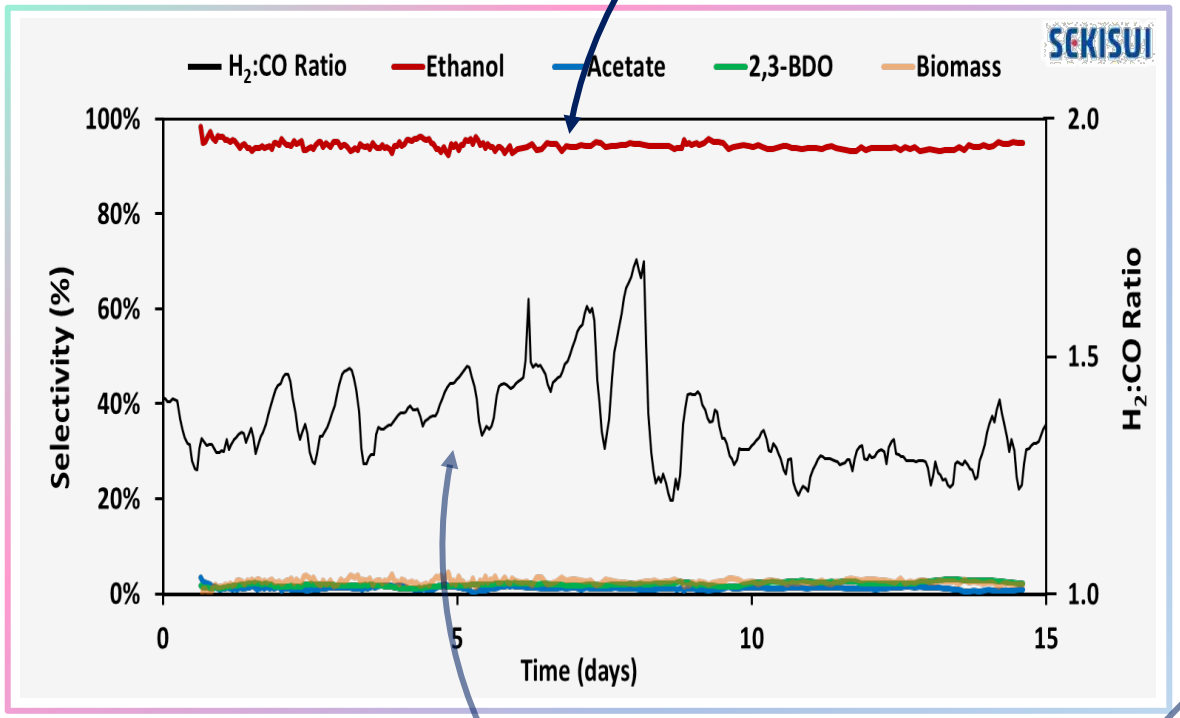
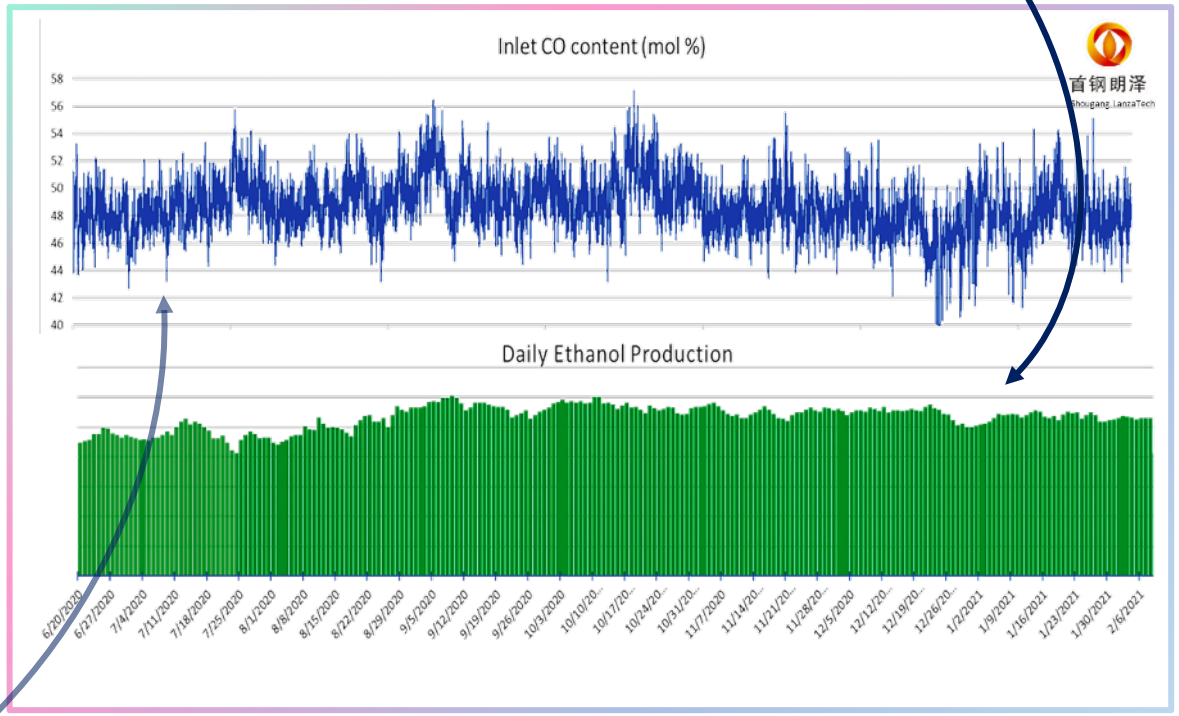
FERMENTATION TRANSFORMS CHAOTIC INPUTS INTO SELECTIVE OUTPUTS

SPECIFIC, NEAR-CONSISTENT ETHANOL PRODUCTION

INPUT: MUNICIPAL SOLID WASTE[1]



INPUT: STEEL MILL GAS[2]



INCONSISTENT WASTE CARBON INPUT

[1]Köpke & Simpson (2020) Curr Opin Biotechnol 65: 180-189; [2]Fackler, […] Köpke (2021) Ann Rev Chem Biomol Eng 12: 439-470

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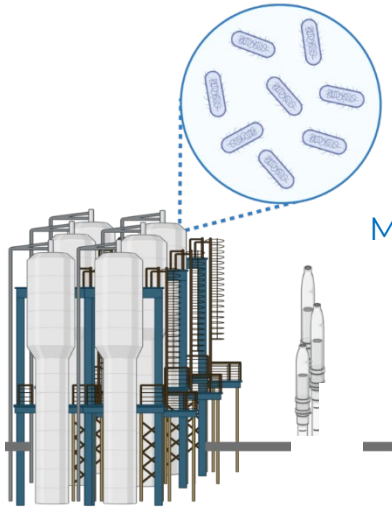
WHERE WE'RE HEADED: DIRECT PRODUCTION OF BULK COMMODITY CHEMICALS ON A DISTRIBUTED SCALE

"Hardware"

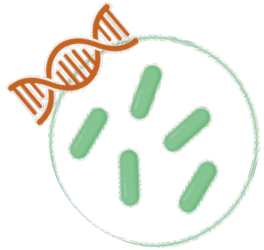
Existing Commercial Plants



Microbe 1.0
Ethanol

"Software"

New Strains To Expand Product Portfolio & Efficiency



Microbe 2.0
Isopropanol

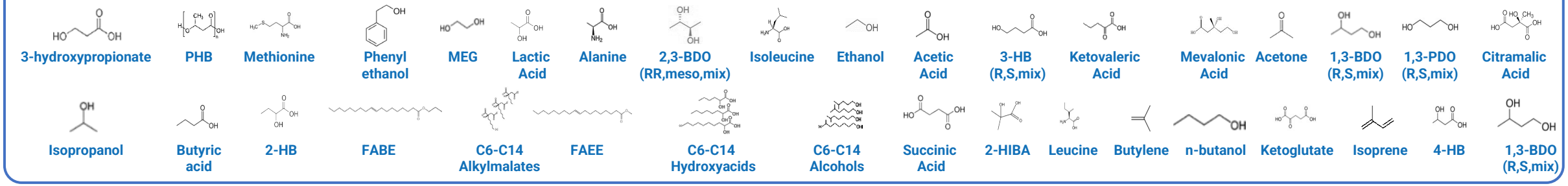
Microbe 3.0
Acetone

Microbe 4.0
MEG

Microbe …

✓ **Same reactor** ✓ **Same feedstock** ✓ **Same process**

100+ Potential Chemicals Identified



New product development and direct production of high value chemicals expands TAM and increases demand for Biorefining CCU licensing

Images generated with Biorender.com.

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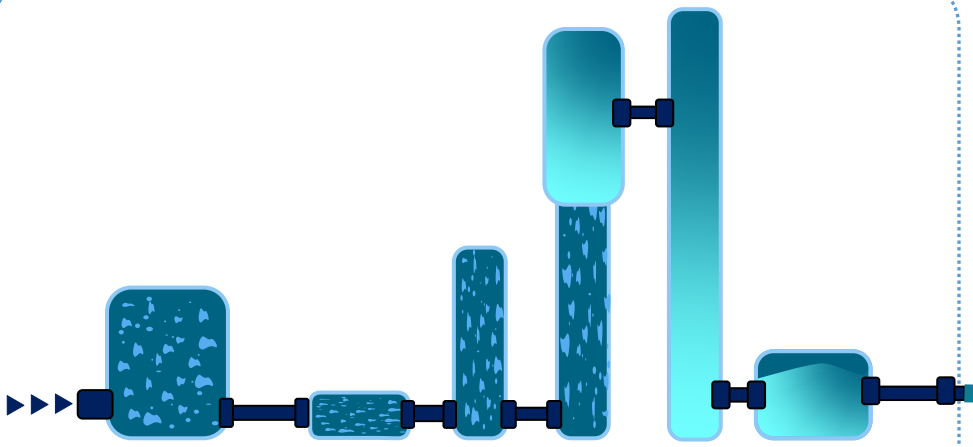
THE SAME CARBON RECYCLING TECHNOLOGY CAN REGENERATE PRODUCTS & MATERIALS INTO NEW SUSTAINABLE RAW MATERIALS



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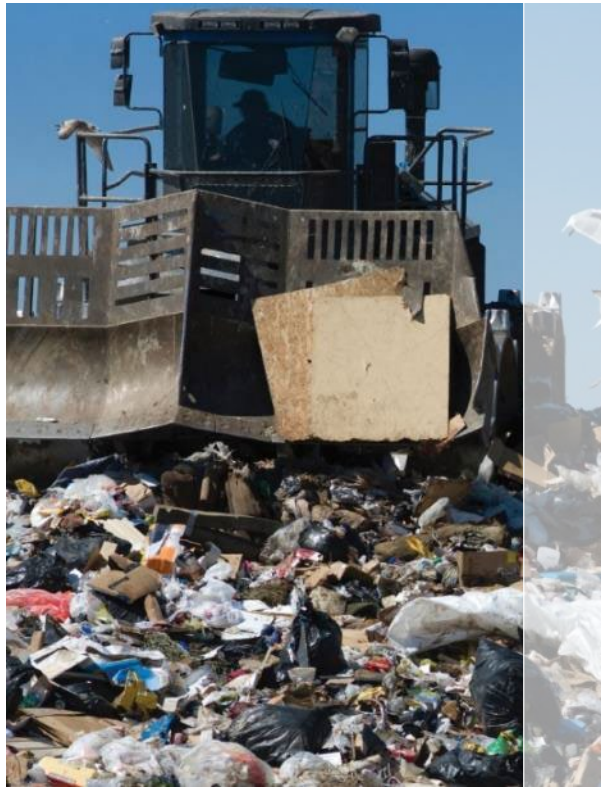

Every waste is a resource

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Including CO_2

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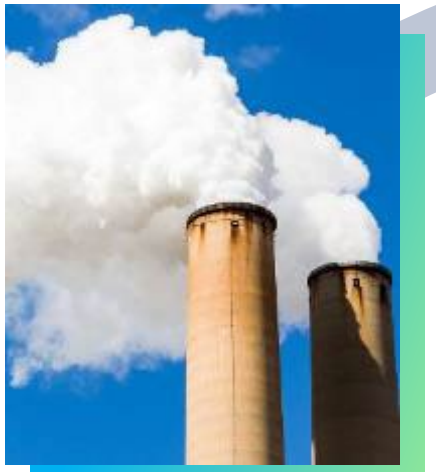
THE NEW CARBON ECONOMY IS DISTRIBUTED AND CIRCULAR



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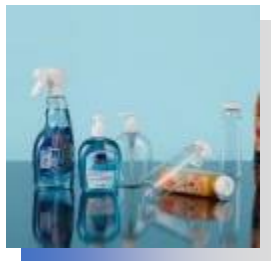

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THE WORLD HAS
ENOUGH CARBON ABOVE
GROUND TO MAKE
EVERYTHING WE NEED

WE CREATE VALUE
WHERE OTHERS
SEE WASTE

JOIN US ON THIS JOURNEY

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RECYCLE CARBON WITH BIOLOGY