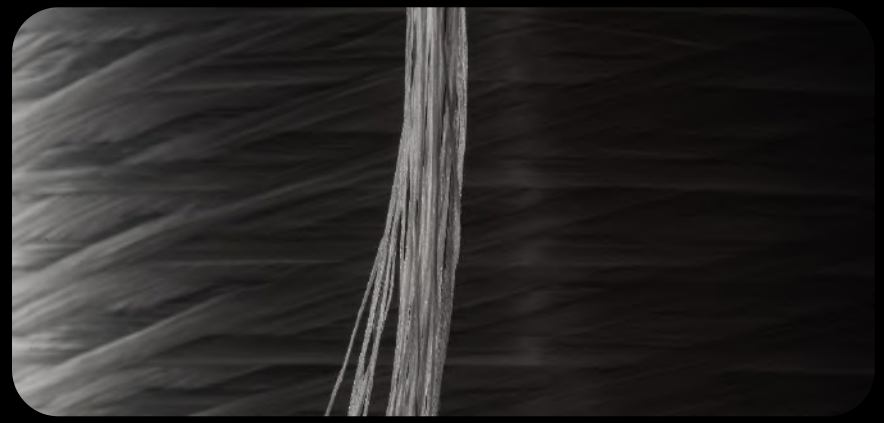
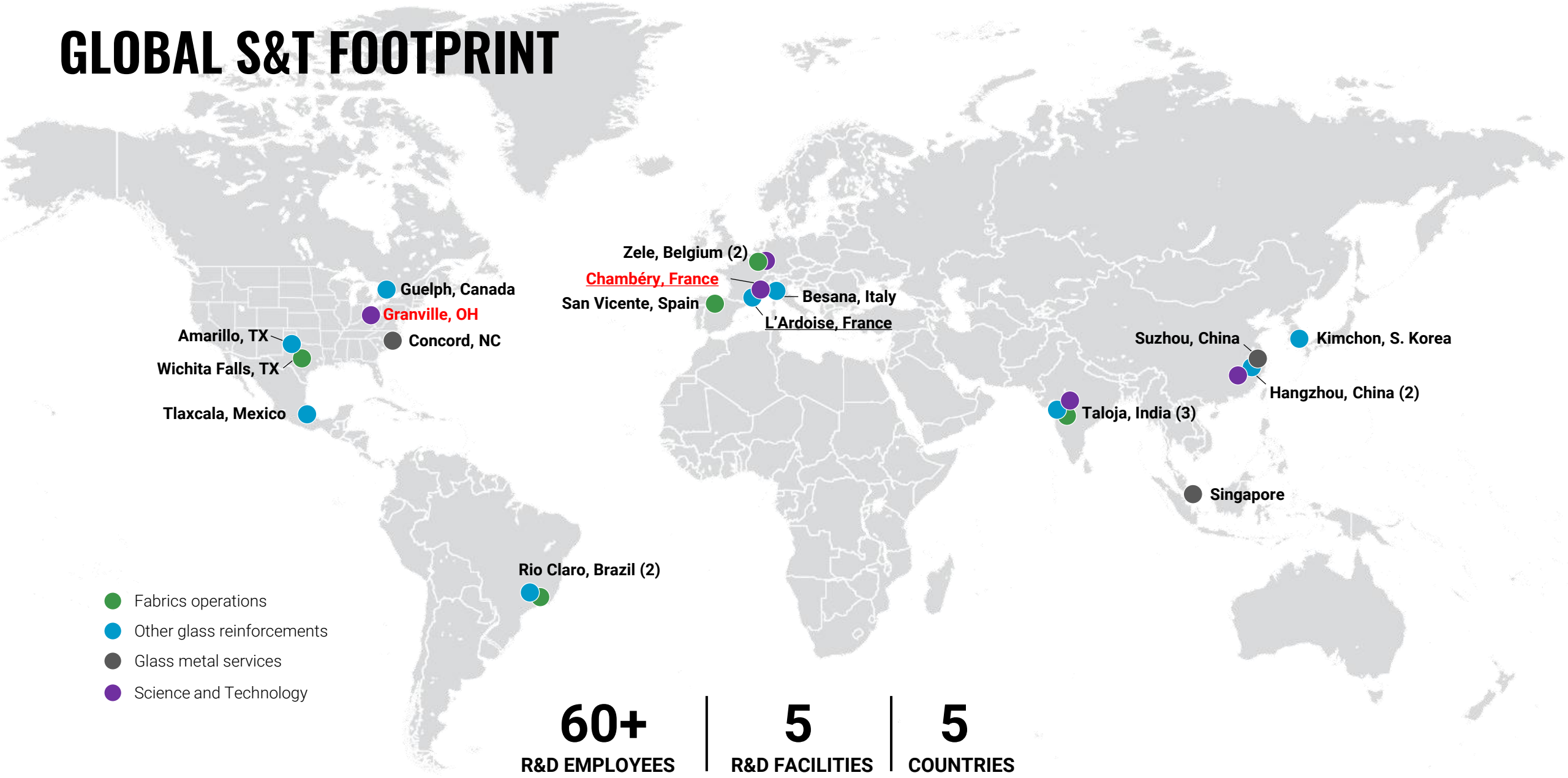


TOWARDS SUSTAINABLE COMPOSITES: INNOVATIONS IN CIRCULAR AND LOW-CARBON GLASS FIBER MANUFACTURING

Amandine Ridouard, Owens Corning, Chambéry, FR

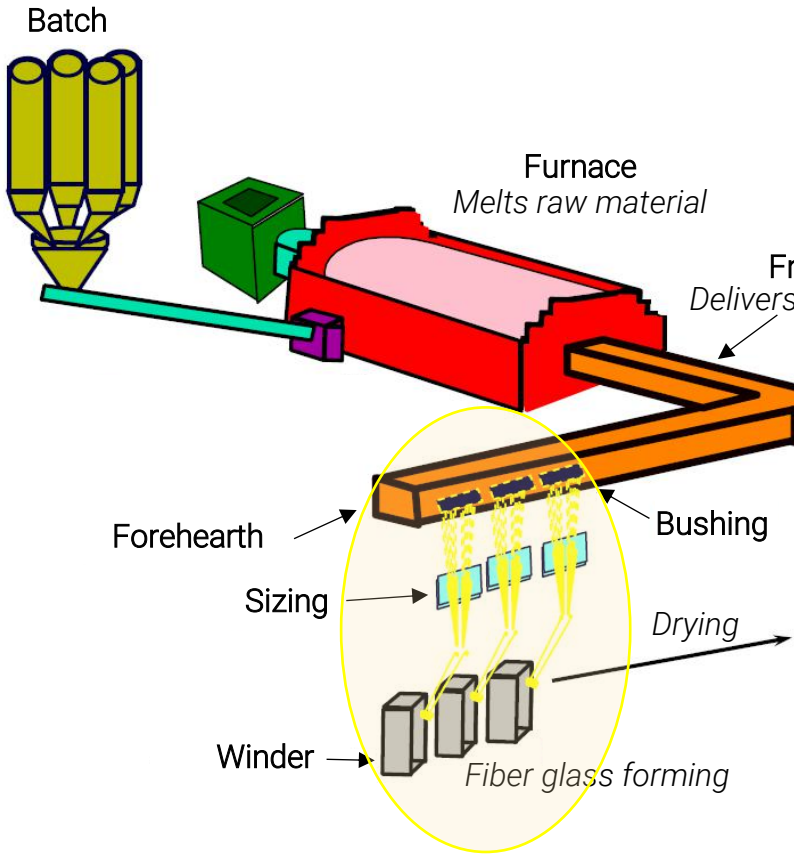
Journées du verre, 5-8 novembre 2025

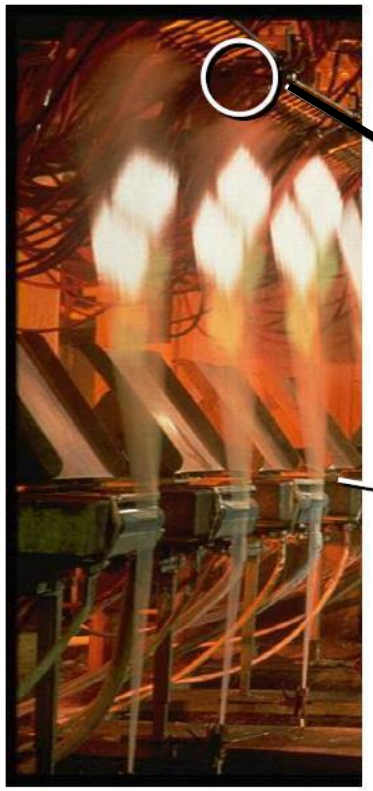
GLOBAL S&T FOOTPRINT



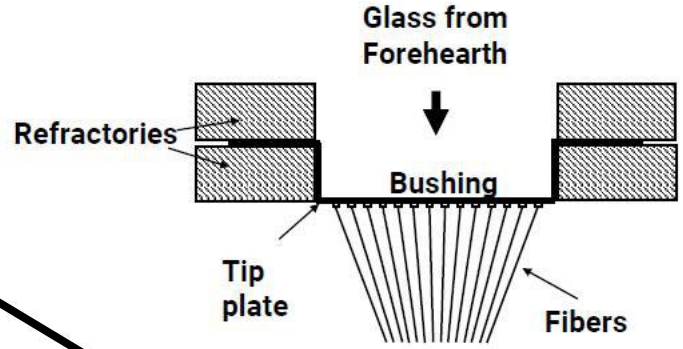
60+ R&D EMPLOYEES | **5** R&D FACILITIES | **5** COUNTRIES

GLASS FIBER MANUFACTURING

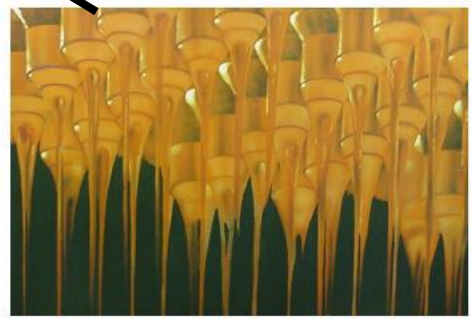




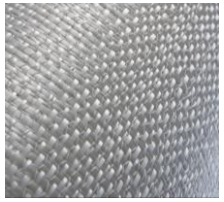
Fiber forming



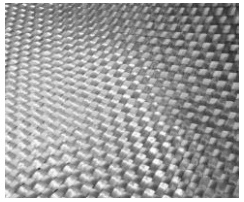
Sizing Application



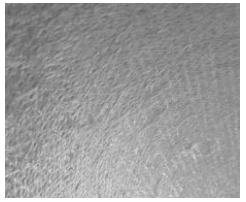
WHAT WE MAKE



Knitted fabrics
Wind, pipe, thermoplastic composites, industrial, recreational

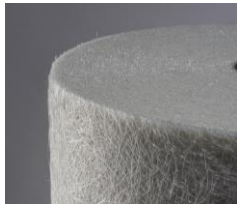


Woven fabrics
Wind, pipe, thermoplastic composites, industrial, recreational



Complexes
Wind, pipe, thermoplastic composites, industrial, recreational

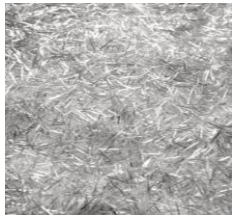
Continuous filament mat
Marine, transportation, construction



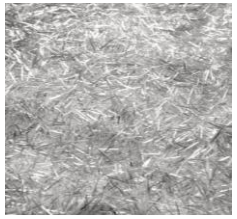
Chopped strand mat
Marine, transportation, recreation, corrosion resistance, construction

Continuous Fiber Type 30® single end roving
Chemical and sewage, oil, water processing (pipe and tanks), industrial (high-pressure vessels, pultruded items), wind energy, aerospace, ballistics, transportation (muffler filling), electrical (optical cable)

Continuous fiber multi-end roving
Construction (panels and translucent panels), corrosion resistant pipe and tanks, consumer (sanitary, recreational vehicles), transportation (headliner, body parts, semi-structural parts)



Chopped strand, dry-use
Automotive applications, electrical applications and industrial specialties



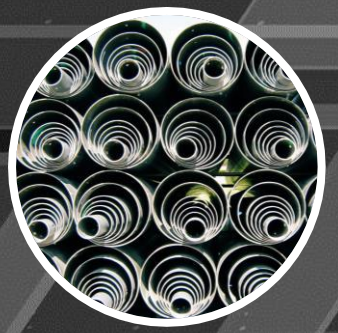
Chopped strand, wet-use
Building products (roofing and gypsum), industrial specialties

GLASS REINFORCEMENTS









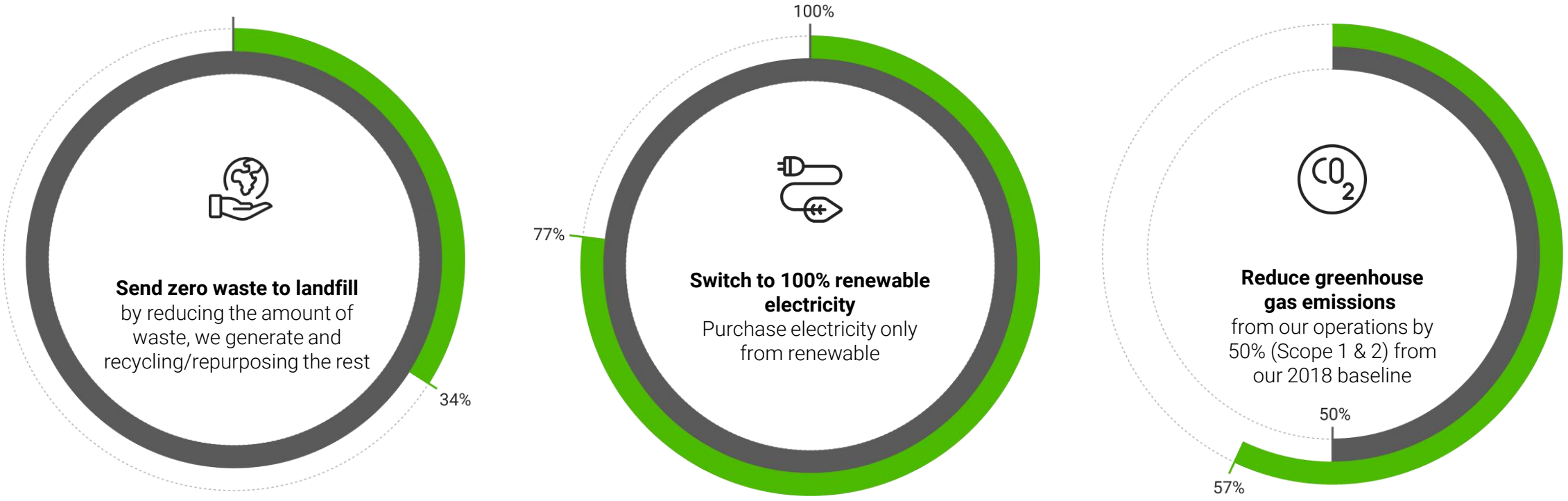



MAKE MORE POSSIBLE™

USTV
UNION POUR LA SCIENCE & LA TECHNOLOGIE VERRIÈRES

SUSTAINABILITY GOALS

2030 SUSTAINABILITY GOALS
2024 OC GR EU PROGRESS TOWARDS CLIMATE ACTION



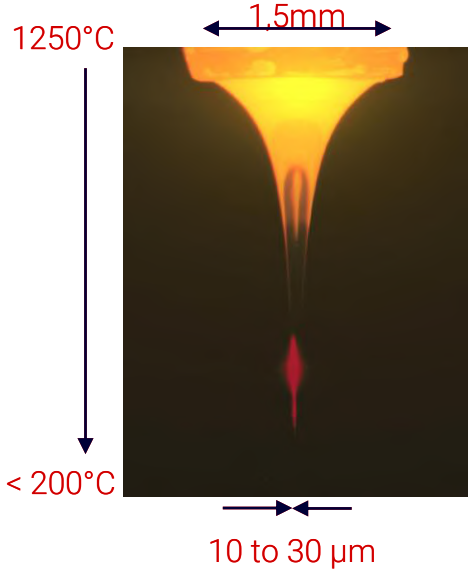
For more information: http://sustainability.owenscorning.com/

*Preliminary numbers subject to change pending publication of 2024 Sustainability Report.

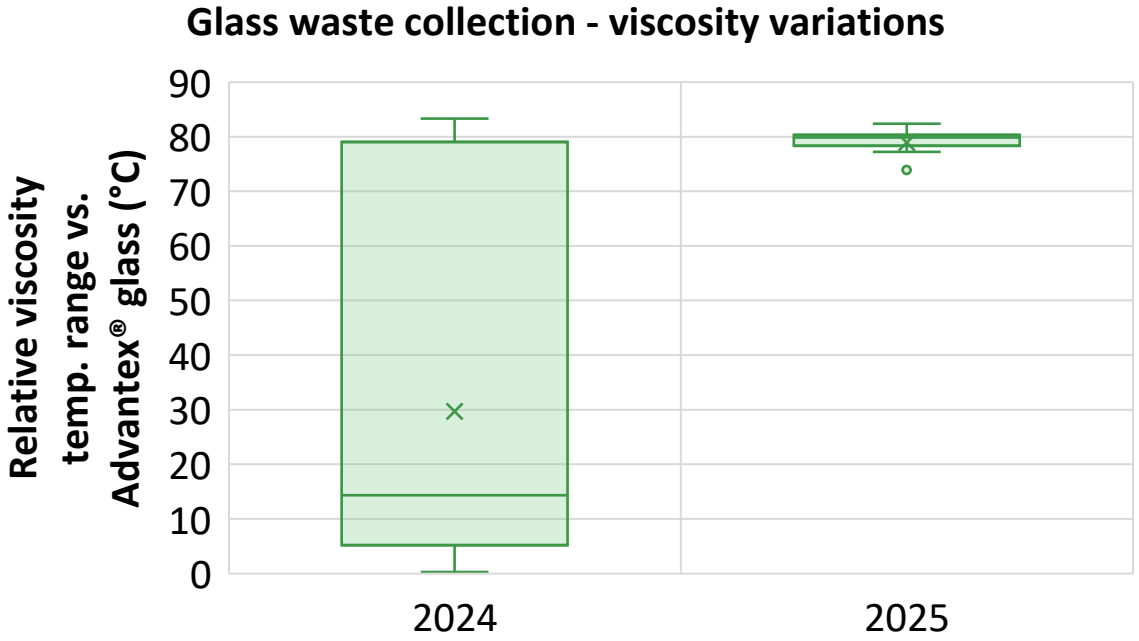
PROGRESS ON GLASS FIBER CIRCULARITY THROUGH REMELTING

CHALLENGES FOR GLASS FIBER AND REINFORCED COMPOSITE RECYCLING THROUGH REMELTING

- Glass composition control → direct impact on glass viscosity



1. Viscosity stability required for fiberizing
2. Compliance to ASTM D578 « Boron free modified E Glass compositions »
3. Same Performance as standard product



- Glass contaminants
  1. Ferrous & nonferrous metals damaging bushing (alloy)
  2. Non fusible particle causing bushing breaks
  3. Organic materials changing glass redox

→ Too much glass viscosity variation in 2024
→ In 2025 effort with supplier to provide waste with stabilized viscosity

GLASS DESIGNED FOR A CIRCULARITY TODAY

DISCOVER SUSTAINA® LOOP

SUSTAINA® Loop is OC's **circular glass solution**, made with **up to 100% circular glass fiber** through an **ISCC+ certified mass balance approach** for circular, traceable sourcing.

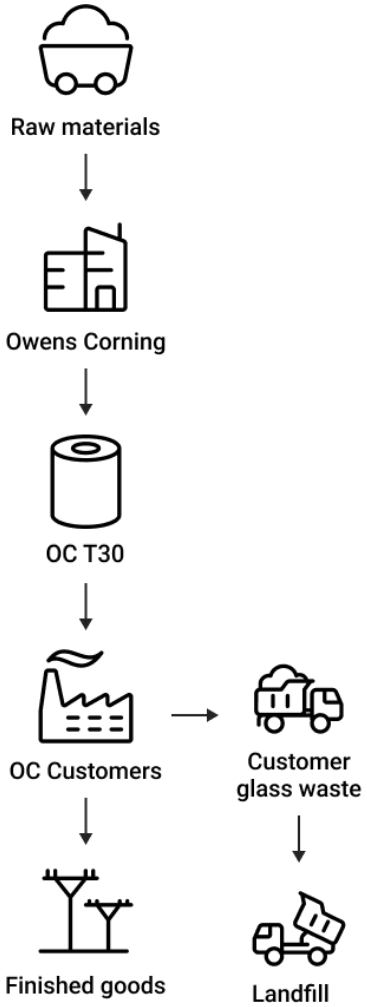
Produced in **L'Ardoise, France**, it **reduces waste** by integrating glass fiber waste with raw materials, enabling companies to **return waste for remelt**.

Fully compatible with Type 30® Long Fiber Thermoplastics and Single-End Roving products like SE4860, SE4849, SE4850, PULSTRAND® 4100 and SE1200.

Seamlessly replace conventional materials while delivering the same high performance as ADVANTEX® E-CR Glass.

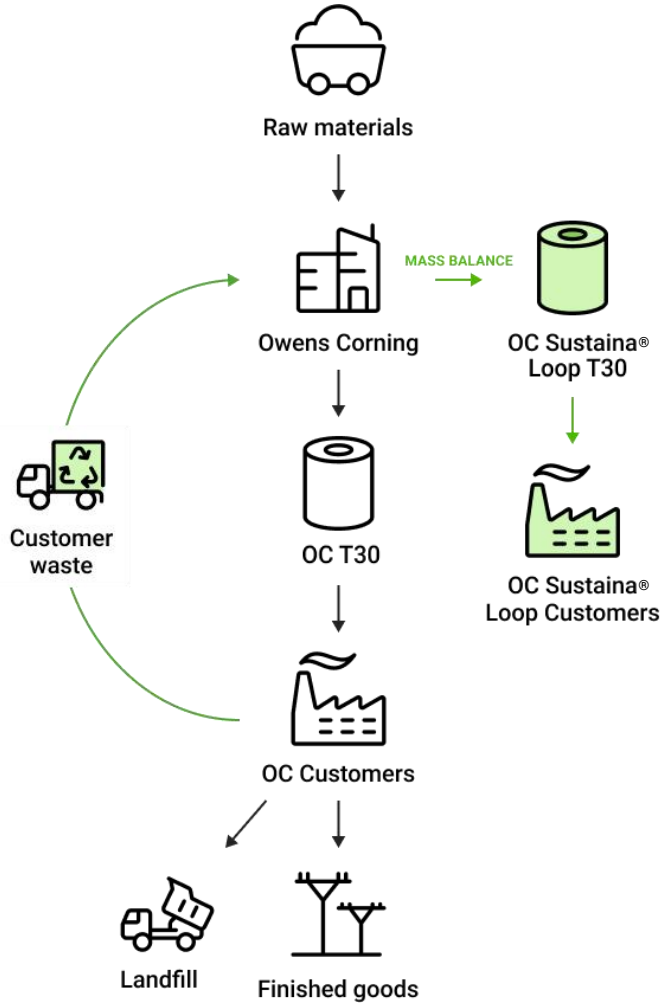
WHERE WE ARE NOW

STANDARD ADVANTEX® GLASS



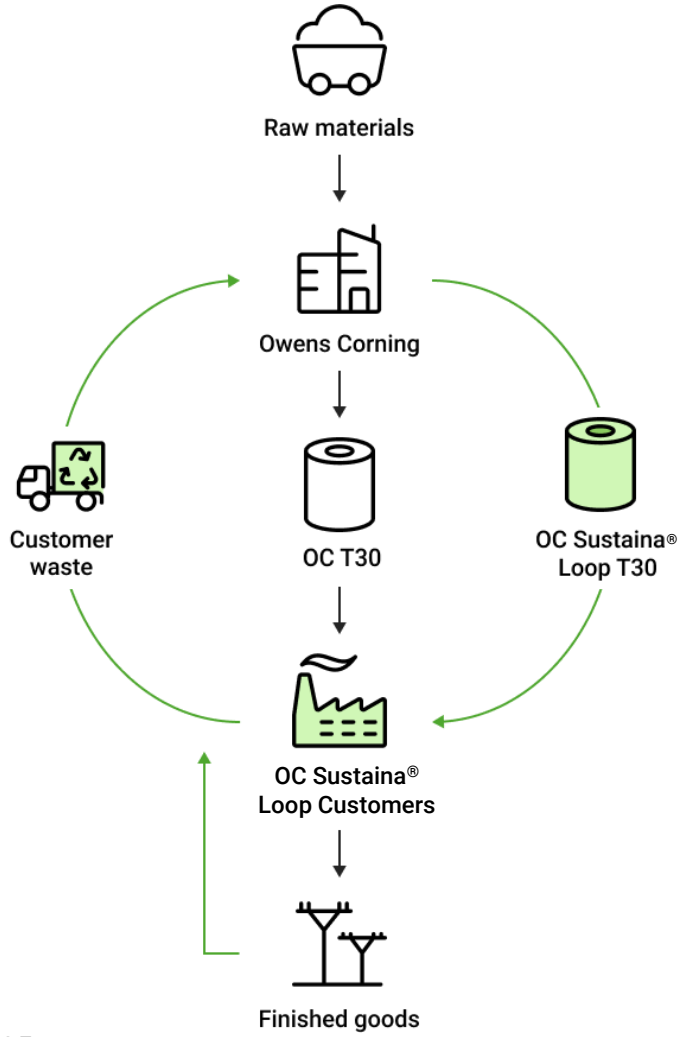
☑ SUSTAINA® LOOP (WASTE TAKE BACK)

Industrial line capability at L'Ardoise plant Q4 2025



NEXT STEP

☐ FUTURE STATE (EOL COMPOSITES)



PROGRESS ON DECARBONIZING GLASS FIBER PRODUCTS

REDUCE GREENHOUSE EMISSION – USING H_2 COMBUSTION FOR MELTING

DECARBONIZATION

Consortium

H_2GLASS DECARBONISING OUR FUTURE

Co-funded by the European Union

Alternative Fuels – Hydrogen

- H_2GLASS Co-Funded by European Union
- 4 years project: 2023-2026
- 23 partners from 8 countries
- Coordination: SINTEF Energy R&D
- 5 industrial glass manufacturing sites

Objective: H_2GLASS aims to create the technologies that glass manufacturers need to

- realize up to 100% H_2 combustion in their production facilities
- ensure the required product quality
- manage this safely

Ashreet Misha, Alex Lohse, Bruno Purnode, OC Granville USA
Etienne Roux, Rino Fabris, OC Chambéry Fr

REDUCE GREENHOUSE EMISSIONS – USING H_2 COMBUSTION FOR MELTING

SUCCESSFUL TRIALS AT L'ARDOISE PLANT (GARD, FR)

Platform for trucks & electrolyzer

Two trials of 1-week done in 2024

- Full conversion resulting in low emission furnace operation
- No impact on product quality and plant efficiency

H_2 piping (500m) – outside/inside plant

H2GLASS DECARBONISING OUR FUTURE
Co-funded by the European Union

Ashreet Misha, Alex Lohse, Bruno Purnode, OC Granville USA
Etienne Roux, Rino Fabris, OC Chambéry Fr

HYDROGEN COMBUSTION TRIALS

NOV-24 & DEC-24, OC L'ARDOISE MELTER

H2GLASS DECARBONISING OUR FUTURE

Co-funded by the European Union

→ First successful industrial glass fiber production using only e-boost + Oxy/H_2.

Key numbers:

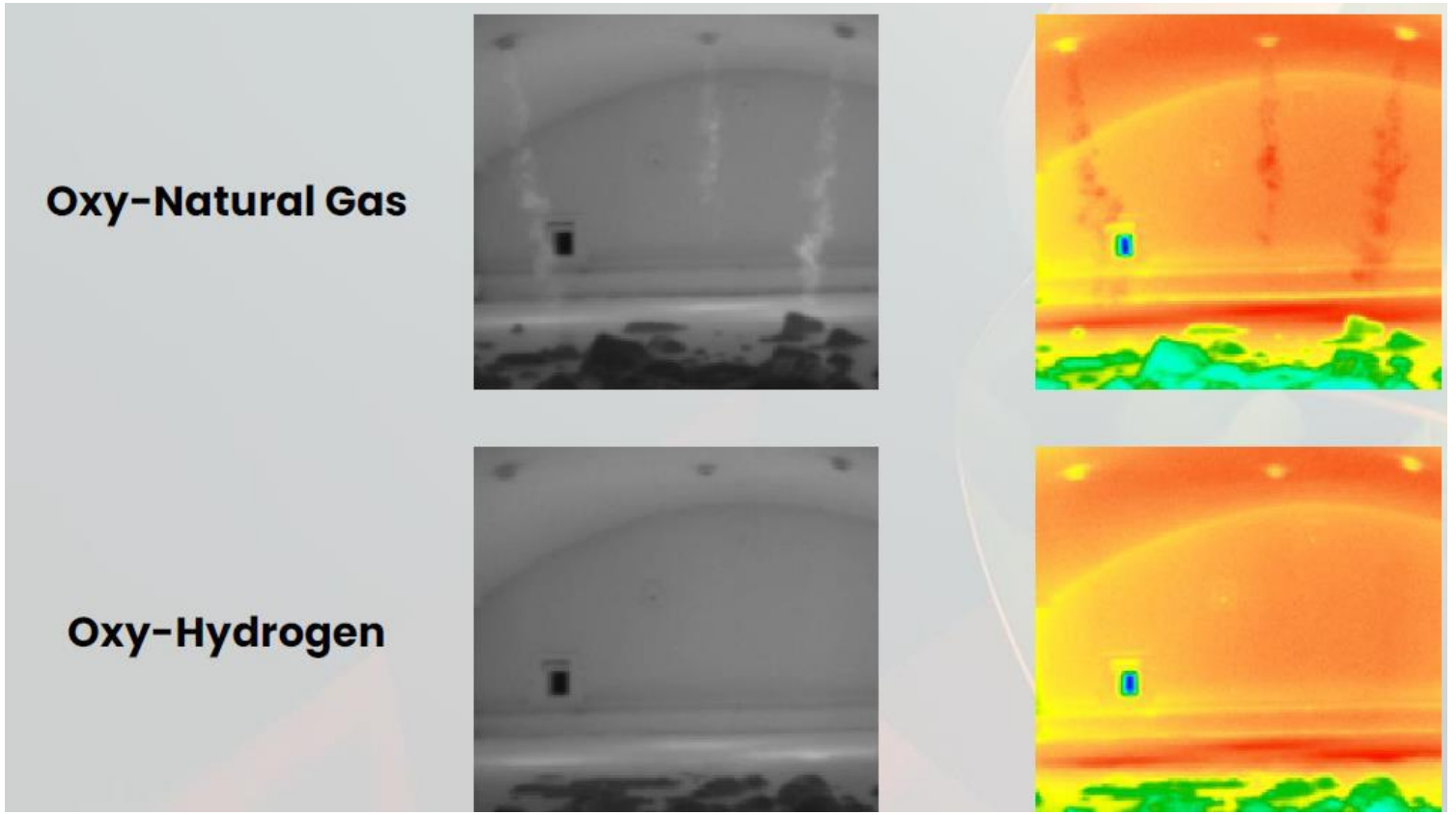
- H_2 injected with 14 trailer rotations.
- 72h full Oxy-H_2 combustion, replacing Oxy-gas.

→ Equivalent heat transfer of H_2 flame on bath heating vs natural gas flame.

→ No change on refractory temperatures.

Seeds in glass fiber

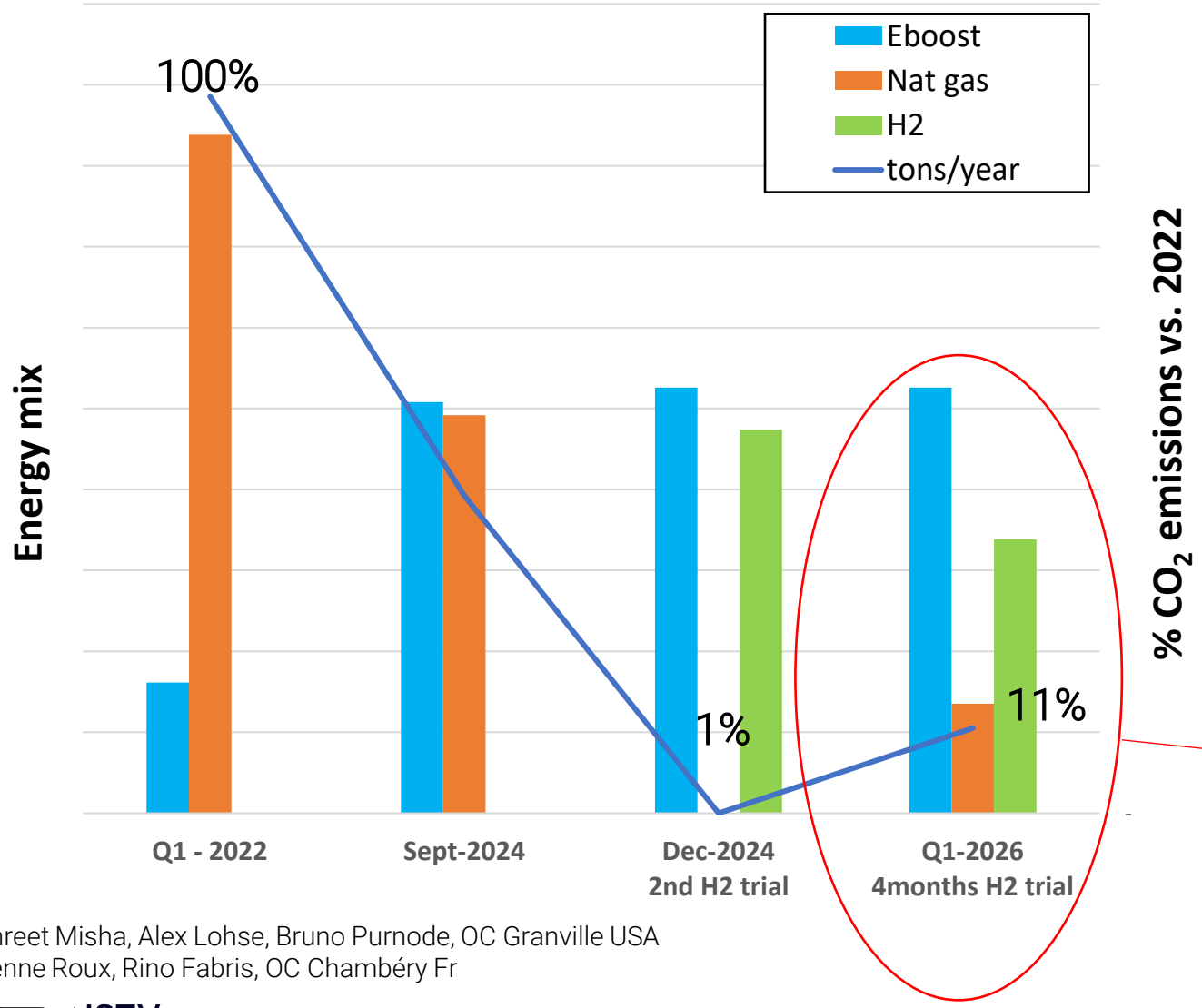
Flame visibility: NG/O2 VS H2/O2



Ashreet Misha, Alex Lohse, Bruno Purnode, OC Granville USA
Etienne Roux, Rino Fabris, OC Chambéry Fr

HYDROGEN COMBUSTION TRIALS

OC L'ARDOISE MELTER, ENERGY MIXES & CO_2 REDUCTION



→ Achieved up to 95% CO_2 reduction in melter emissions during Dec-2024 trial.

Target for next steps

Product of combustion with natural gas

$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

Product of combustion with H_2 gas

$2H_2 + O_2 \rightarrow 2H_2O$

Ashreet Misha, Alex Lohse, Bruno Purnode, OC Granville USA
Etienne Roux, Rino Fabris, OC Chambéry Fr

HYDROGEN COMBUSTION TRIALS

OC L'ARDOISE MELTER, ENERGY MIXES & CO_2 REDUCTION

H2GLASS DECARBONISING OUR FUTURE

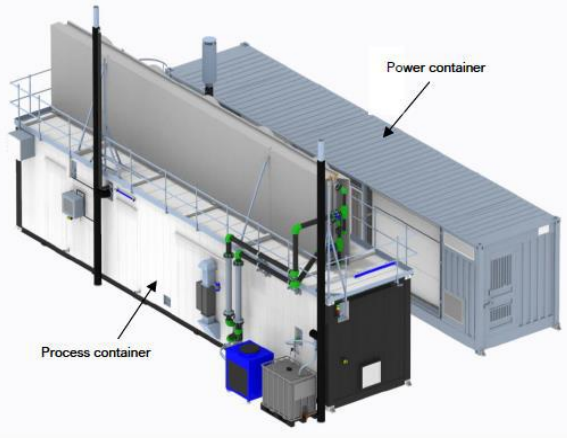
Co-funded by the European Union

Objectives:

→ Replacing H_2 supply from trucks to an electrolyzer = use "Green Hydrogen" sources

→ Run trials in a longer period of time = Verify reliability and running cost of electrolyzer

→ Capture all learnings regarding O_2/H_2 flame and impacts on our melters : Glass quality, refractories impact - effect on asset life



PEM Electrolyzer

2022	2023	2024	2025	2026
- agreement - external funding H_2glass - project definition - expectations	- burner math modeling - burner cold test - burner tests in pilot - contract with AL	- work preparation at L'Ardoise plant - 1st trials Nov - 2nd trials Dec	- install electrolyzer in L'Ardoise site - 4 months run with electrolyzer - green H_2	

CONCLUSION

- SUSTAINA® Loop: 100% circular glass fiber, industrial line capability in L'Ardoise plant.
- Decarbonization: Hydrogen combustion enables up to 95% reduction in melter CO_2 emissions
- Successful industrial production at plant using hydrogen and oxygen
- Next step: on-site green hydrogen production via PEM electrolyzer (2026) and process reliability and impact on glass quality

- Other approach → being sustainable by design
  - New glass composition developed for higher performance material – Pierre-Emmanuel Bes de Berc Poster