



**Chemours™**

Meeting [REDACTED] &  
[REDACTED]

Chemours is a different kind of chemistry company, driven by our purpose to create a better world through the power of our chemistry

Founded

**2015**

Employees

**6,600** (~5,000 in manufacturing)

HQs

**Delaware**



# Chemours in Europe

## Manufacturing, Technology and Offices

- Antwerp (Kallo), Belgium
- Mechelen, Belgium
- Brussels, Belgium
- Dordrecht, the Netherlands
- Villers-Saint-Paul (Oise), France
- Meyrin, Switzerland
- Gijon, Spain
- Neu Isenburg, Germany



**+900 employees**

in Europe across all business units

**EMEA Sales**

20% of total Chemours sales (2022)



# Our activities

TITANIUM  
TECHNOLOGIES



ADVANCED PERFORMANCE  
MATERIALS



THERMAL & SPECIALIZED  
SOLUTIONS



# Our Corporate Responsibility Commitment

We invest in responsible chemistry that meets today's needs while providing a better future for all.



## Corporate Responsibility Commitment

We announced 10 bold goals in 2018 to bring responsible chemistry to life by 2030.



## Bold Emission Goals

We aim to achieve net-zero Greenhouse Gas Emissions (GHGs) by 2050, with an interim target of 60% absolute reduction of operations-related GHGs by 2030.

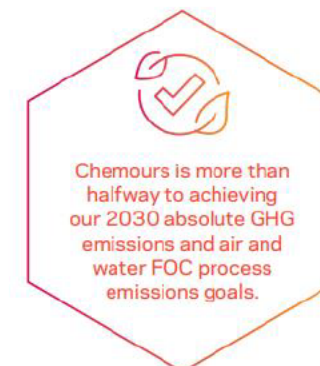


## Leading by Example

Committed to 50% of our revenue coming from products that positively impact UN Sustainable Development Goals.

# Our progress

| Our Pillars                          | Our 2030 CRC Goals                                                                                                                                                                                                                                                               | 2022 Progress                                                                         | UN SDGs                      |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------|
| INNOVATION AND SUSTAINABLE SOLUTIONS | <b>Sustainable Offerings</b> <ul style="list-style-type: none"> <li>Ensure that 50% or more of our revenue comes from offerings that make a specific contribution to the UN SDGs</li> </ul>                                                                                      |    | 2, 3, 6, 7, 8, 9, 11, 12, 13 |
|                                      | <b>Sustainable Supply Chain</b> <ul style="list-style-type: none"> <li>Establish a baseline for the sustainability performance of 80% of suppliers by spend and demonstrate 15% improvement</li> </ul>                                                                           |    | 5, 6, 8, 10, 12, 13, 15      |
| ENVIRONMENTAL LEADERSHIP             | <b>Climate</b> <ul style="list-style-type: none"> <li>Reduce absolute GHG emissions from operations by 60%</li> <li>Journey to net-zero operations by 2050</li> </ul>                                                                                                            |    | 7, 8, 12, 13                 |
|                                      | <b>Water</b> <ul style="list-style-type: none"> <li>Reduce air and water process emissions of FOCs by 99% or more</li> </ul>                                                                                                                                                     |    | 6, 8, 12, 14                 |
|                                      | <b>Waste</b> <ul style="list-style-type: none"> <li>Reduce our landfill volume intensity by 70%</li> </ul>                                                                                                                                                                       |    | 8, 12, 15                    |
| COMMUNITY IMPACT                     | <b>Vibrant Communities</b> <ul style="list-style-type: none"> <li>Invest \$50 million in our communities to improve lives by increasing access to STEM skills, safety initiatives, and sustainable environment programs</li> </ul>                                               |    | 4, 6, 8, 11, 15              |
| GREATEST PLACE TO WORK FOR ALL       | <b>Empowered Employees</b> <ul style="list-style-type: none"> <li>Fill 50% of director level positions and above with women globally</li> <li>Fill 35% of all positions globally with women</li> <li>Fill 30% of all U.S. positions with ethnically diverse employees</li> </ul> |  | 3, 4, 5, 8, 10, 18           |
|                                      | <b>Safety Excellence</b> <ul style="list-style-type: none"> <li>Improve employee, contractor, process, and distribution safety performance by at least 75%</li> </ul>                                                                                                            |  | 8                            |



 BEHIND SCHEDULE  ON TRACK  ACHIEVED



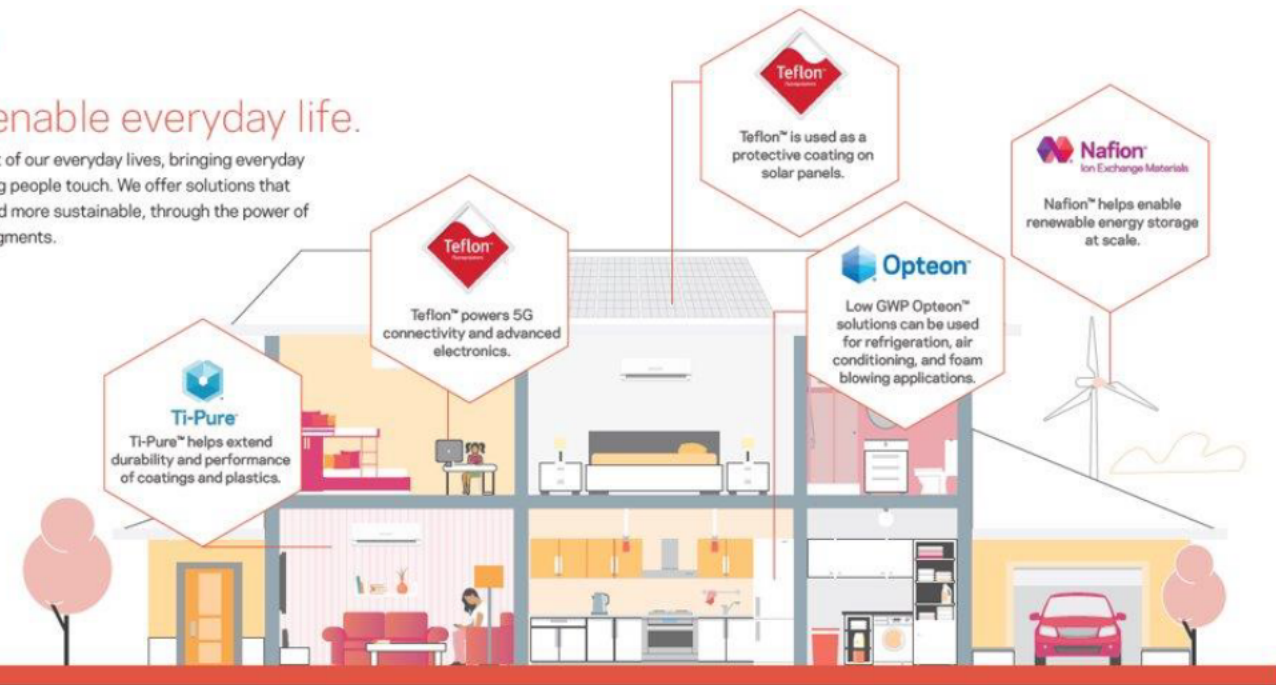
# Enabling innovations

From advanced electronics and renewable energy to sustainable coatings and laminates, Chemours' chemistry enables innovation and technologies and shapes a better future for us all.

*About Chemours continued*

## How we help enable everyday life.

Chemours chemistry is a vital part of our everyday lives, bringing everyday convenience to virtually everything people touch. We offer solutions that are better, safer, more reliable, and more sustainable, through the power of chemistry across our business segments.



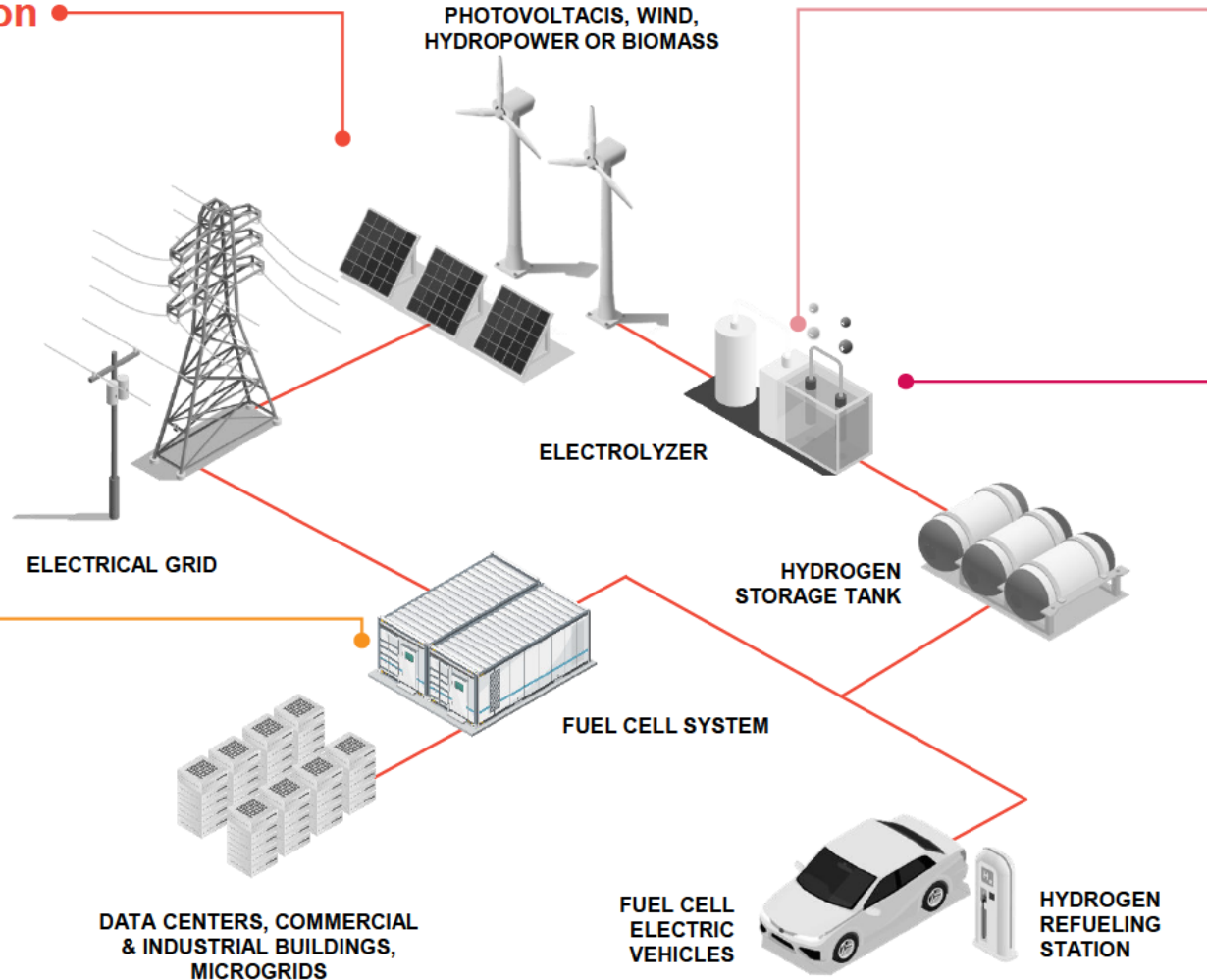
# Applications in Clean Energy

## Renewable Energy Production

PTFE, FEP, ETFE, PFSA, FKM, PFPE

- Photovoltaic front sheets protection
- Photovoltaic back sheets insulation
- Junction boxes in photovoltaic vents
- Control centers for offshore wind parks
- Wind turbine paints and coatings
- Release film: support production of composite turbine blades esp. for offshore turbine PTFE bearings

PHOTOVOLTACIS, WIND,  
HYDROPOWER OR BIOMASS



## Stationary & Mobility Fuel Cells

PFSA, FKM, PTFE

- Ionomer exchange membranes for PEM fuel cells
- Gaskets and seals to prevent leaks and environmental releases to reduce carbon dioxide emissions into the atmosphere
- Binder materials in the electrodes
- Component of the gas diffusion layers (GDLs)

## Energy Storage

PFSA, FKM, PTFE

- Ionomer exchange membranes for flow batteries
- Gaskets and seals to prevent leaks and environmental releases to reduce carbon dioxide emissions into the atmosphere
- Binder materials in the electrodes

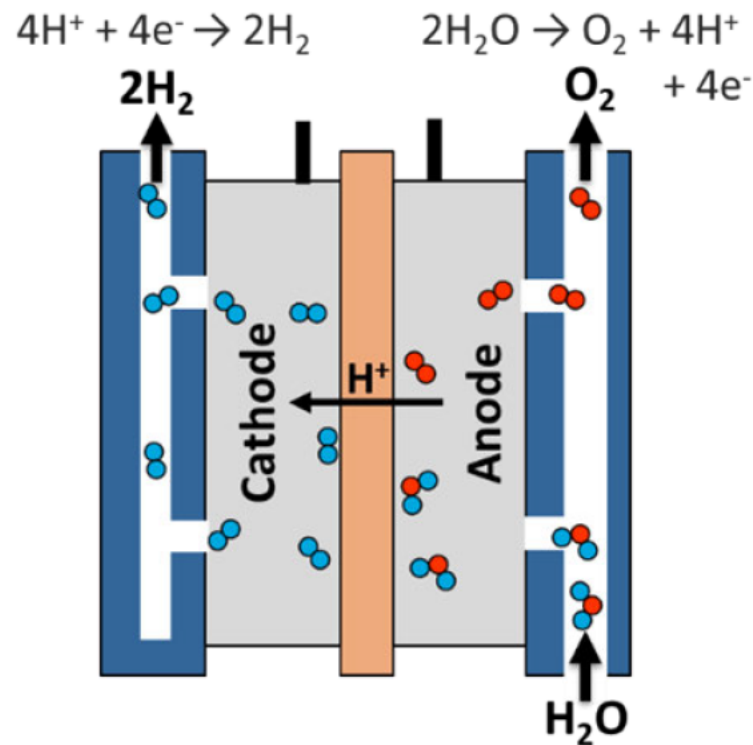
## Hydrogen Production

PFSA, FKM, PTFE

- Ionomer exchange membranes for PEM water electrolyzers
- Tubing fluid transfer in alkaline water electrolysis hydrogen production systems
- Binder materials in the electrodes
- Gaskets and seals to prevent leaks and environmental releases to reduce carbon dioxide emissions into the atmosphere

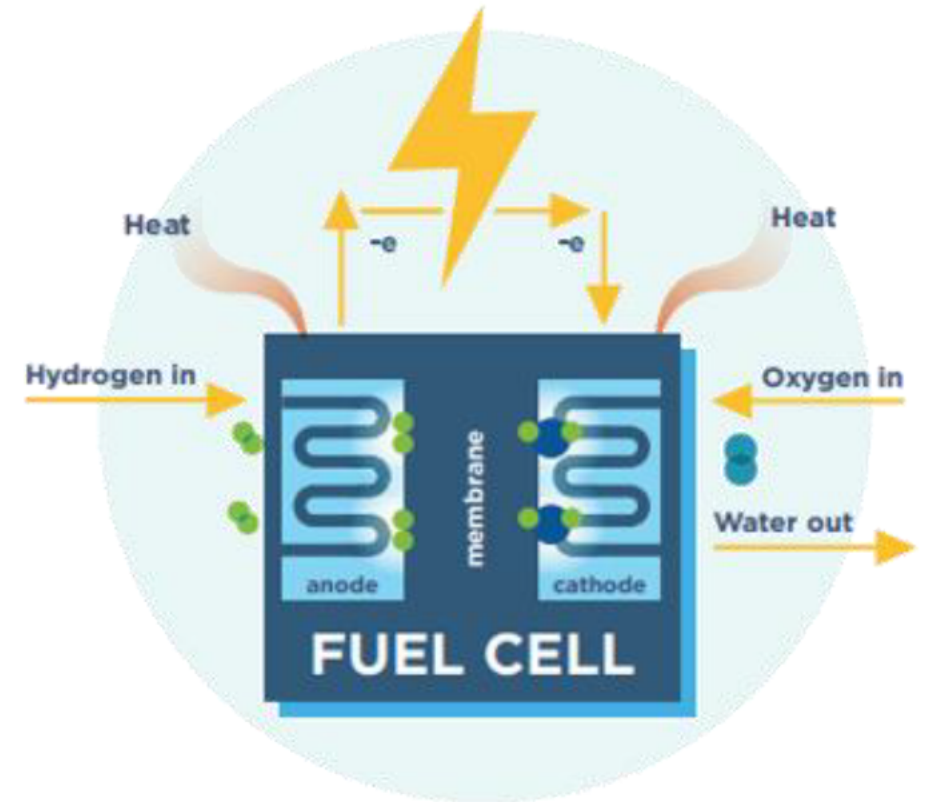
# Nafion™ is at the Heart of the Hydrogen Economy

Electrolyzers make hydrogen using Nafion™ membranes and dispersions



<https://www.energy.gov/eere/fuelcells/hydrogen-production-electrolysis>

Fuel Cells use hydrogen to make electricity using Nafion™ membranes and dispersions



<https://www.fchea.org/fuelcells>

# Applications in Electrified Vehicles

PFA, PTFE, FKM

## LITHIUM-ION BATTERY

- Electrode binders
- Separators
- Cell gasket
- Coating for active material manufacturing equipment

PTFE, FEP, PFPE, FKM

## ELECTRICAL SYSTEMS, WIRES, CABLES, AND INVERTERS

- High voltage power cable
- Busbar insulation
- Oil sensor seal
- Electric pump O-ring
- Coolant valve lubrication
- Ethernet cable

PFPE, FKM

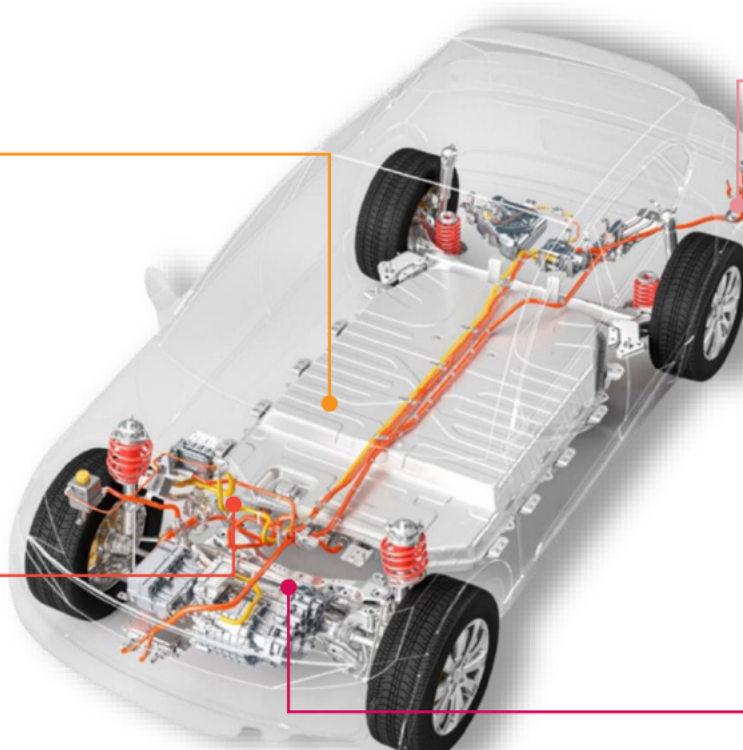
## BATTERY CHARGING

- High voltage power cable
- Grease for charging port latches
- Grease for charging cable connector O-ring

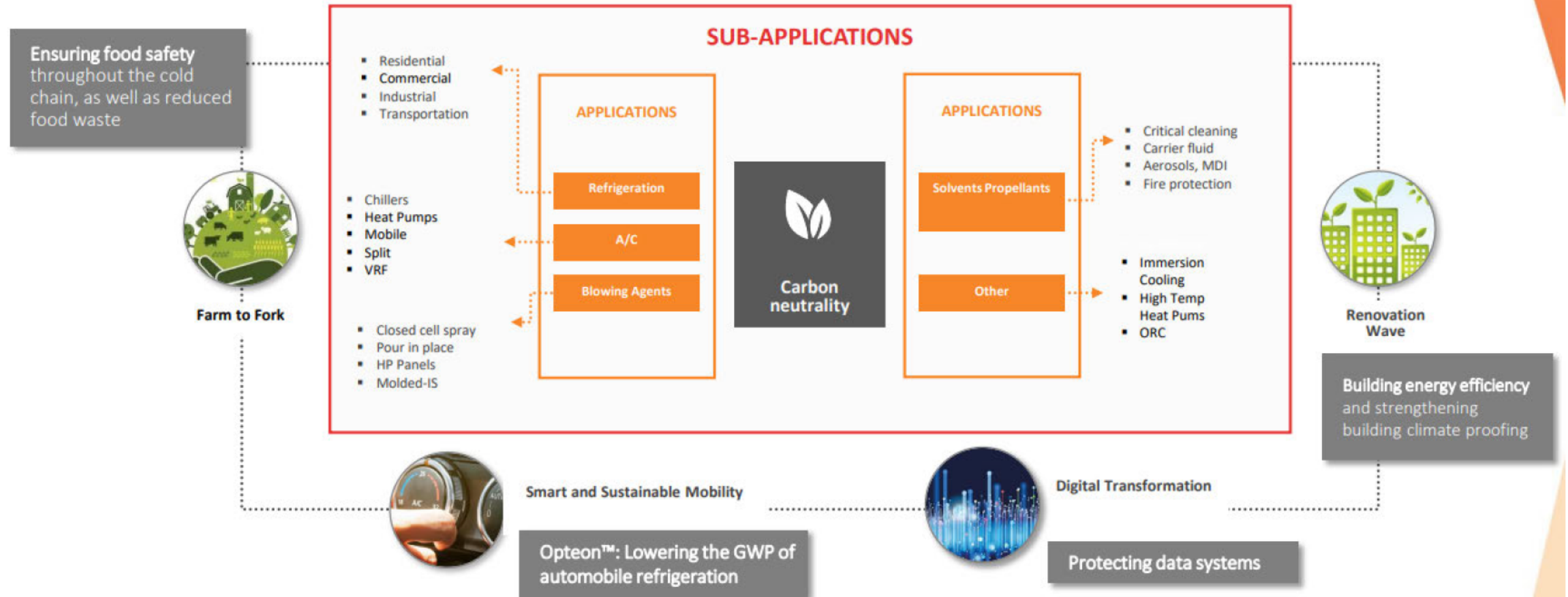
PTFE, FEP, FKM

## ELECTRIC MOTOR & E-AXLE

- Bearing seal and O-ring
- Rotor shaft seal
- Temperature sensor cable
- Resolver cable
- Water jacket seal



# F-gas applications



# Applications in semiconductor manufacturing

PFA, PTFE, FKM, FFKM, AF, PFPE, HFCs, HFOs

## SEMICON TOOLS

- Valves, Fittings, Tubings
- Pumps, Filters
- Lubricants
- Valve seats
- Valve sealing
- Vacuum pump oil
- Etchant gas
- Pellicle mask
- Flow measurement
- Thermal management
- Heat transfer fluids

PFA, PTFE, FEP, PVDF, FKM, FFKM, HFOs

## CHEMICAL DISTRIBUTION SYSTEM

- Valves
- Fittings
- Heat exchanger/insulation
- Flow measurement
- Tubing chemicals primary
- Tubing chemicals secondary containment
- Water system tubing
- Pumps
- Filters
- Seals
- Electronic cleaners



FEP, ETFE, HFCs, HFOs

## INFRASTRUCTURE

- Duct coating
- Air conditioning
- Humidity control
- Fire protection

PFA, FKM

## WAFER TRANSPORT

- Wafer carrier
- FOUP sealing

PTFE, PFA

## CHEMICAL PACKAGING

- Container lining
- Drums
- Tanks lining

# Applications in Chemical Production

1/2

## Manufacturing and processing

- Valves
  - Vessels
  - Reactor vessel and agitator lining
  - Lined pipes and fittings
  - Heat tracing
  - Seals
  - Gaskets
  - Pumps
- Ion Exchange membranes
  - Instrumentation lining
  - Filters
  - Refrigeration machines coolant
  - Bolts/washers
  - Data Wiring
  - Distillation column packaging
  - Lubricants

PTFE, FEP, PFA, ETFE, FKM, PFPE, PFSA, FFKM

HFCs, HFOs

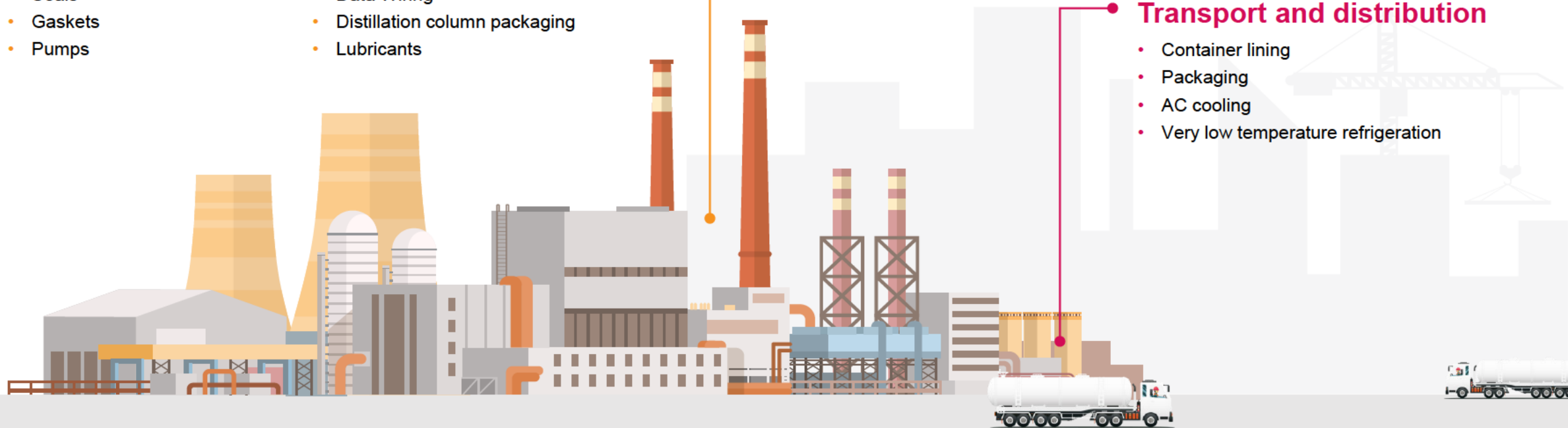
## Technical equipment

- Propellants in degreasers, leak detectors, sealants, paints, drain openers

HFCs, HFOs, PTFE, FEP, PFA

## Transport and distribution

- Container lining
- Packaging
- AC cooling
- Very low temperature refrigeration



# PFAS restriction proposal

## “Universal Ban”

- Annex XVII restriction to apply to all PFAS (fulfilling OECD definition),
- 18 months of ‘transition period’ after Entry into Force

## Derogations

- pesticidal active substances
- biocidal active substance
- human and veterinary medicinal products

## Time-limited derogations = “delayed ban”

- applied either 6.5 or 13.5 years later from EiF
- tentative derogations proposed in square brackets [...] where data is not enough

Dominating “anti-PFAS” narrative is **based on old technologies based PFOS, PFOA** – banned since more than 10 years in Europe!



**Ban on manufacture, use and placing on the market**

- As substances on their own
- As a constituent
- A mixture
- An article

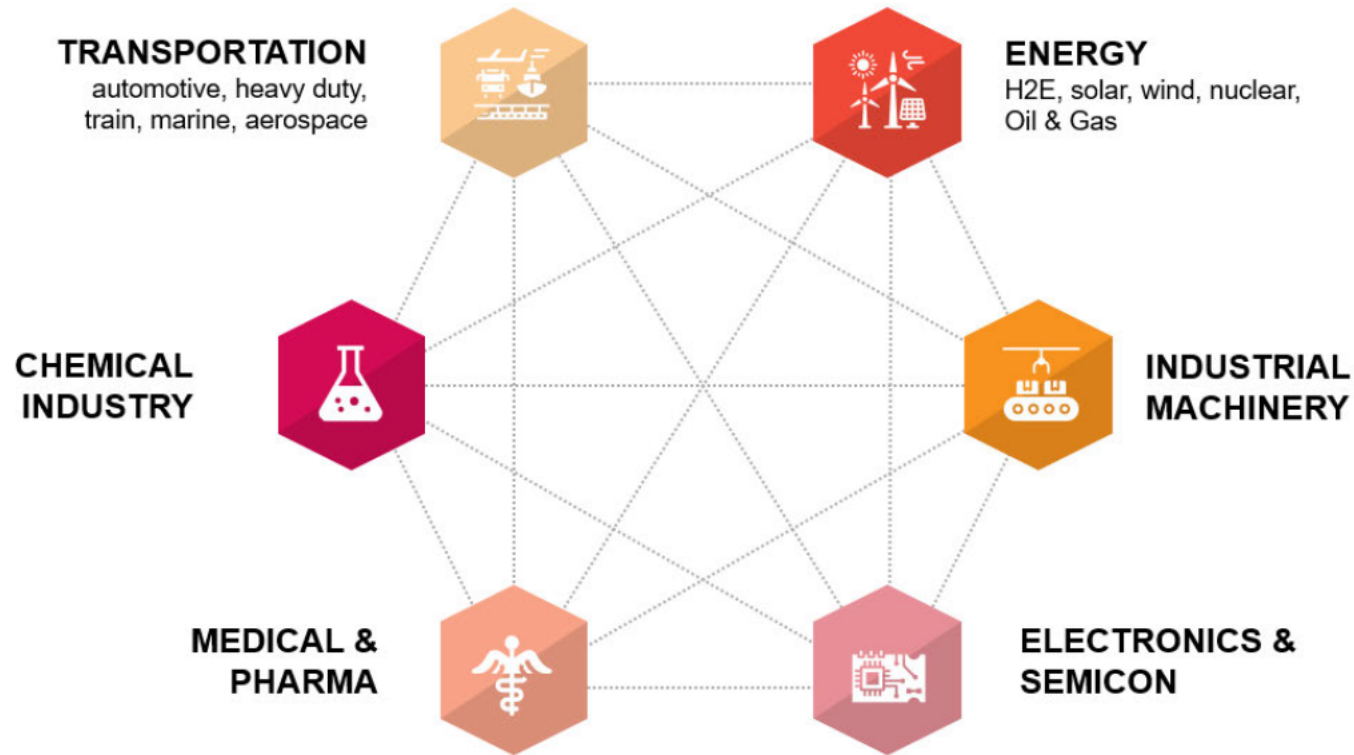
≥ 25 ppb for any PFASs  
≥ 250 ppb for sum of PFASs  
≥ 50 ppm \* for PFASs

\* If total fluorine exceeds 50 mg F/kg the manufacturer, importer or downstream user shall upon request provide to the enforcement authorities a proof for the fluorine measured as content of either PFASs or non-PFASs.

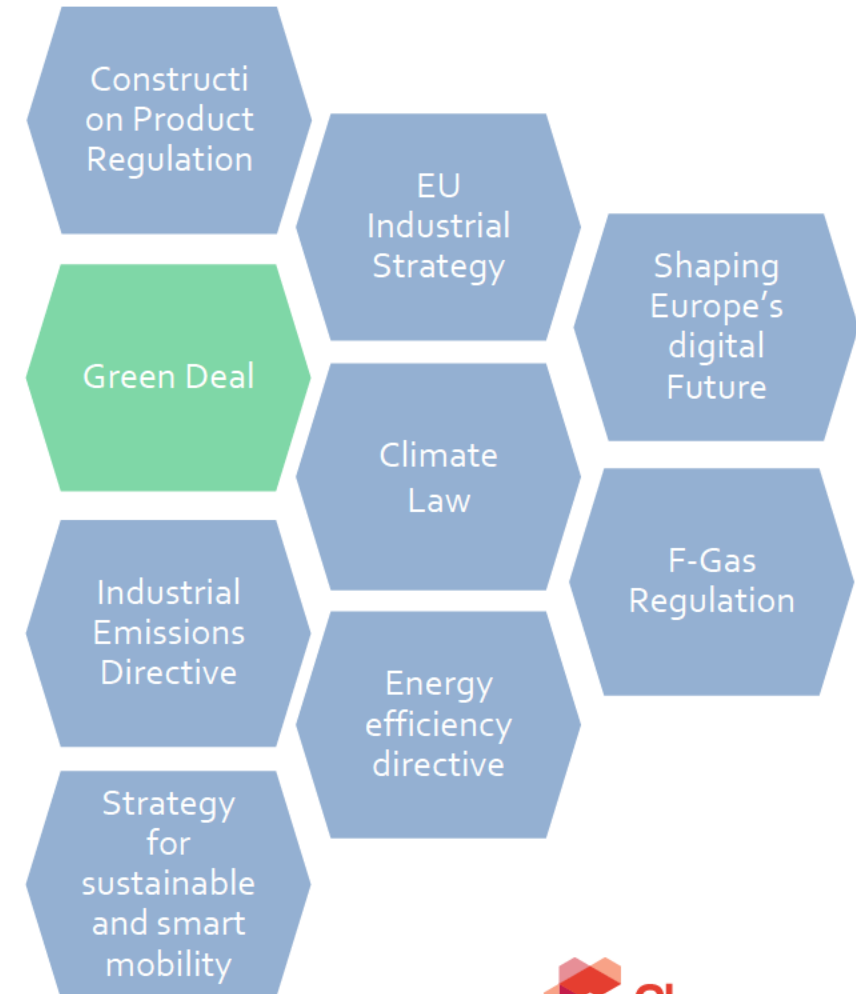
# Some Substances in scope of PFAS Proposal

| Fluoropolymers (PTFE, PFA, etc)                                                                                                                                                                                                                                                                                                                                                                                                                                 | F-Gases (e.g 1234yf and 1336mzz isomers)                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>✓ Fluoropolymers are a specialty plastic</li><li>✓ Durable by design</li><li>✓ Fluoropolymers have thermal, chemical, photochemical, hydrolytic, oxidative, and biological stability and they have negligible residual monomer and oligomer content and low to no leachables.</li><li>✓ Fluoropolymers do not pose a significant risk to human health or the environment when used for their intended purposes.</li></ul> | <ul style="list-style-type: none"><li>✓ F-Gases are specialty performance refrigerants and fluids.</li><li>✓ F-Gases (1234yf) are circular by design</li><li>✓ Three main properties: cooling, heating and insulation (blowing agents).</li><li>✓ Ultra-low global warming potential (GWP) and no Ozone depleting potential (ODP)</li></ul> |

# Fluoropolymers and F-Gases are used across sectors and are key to EU Initiatives and Policies



- ✓ All sectors are connected, one sector cannot exist without the other
- ✓ Both FPs & F-Gases are key driver of the “Green Deal” (Upstream and Downstream)
- ✓ Both FPs & F-Gases are substances of necessity rather than choice



# Way forward - fluoropolymers

**Fluoropolymers should get “no time-limited derogation”** for manufacturing and use in applications in transportation, medical, electronics, semicon, hydrogen, communication, chemical and other industrial applications

•**Condition:** responsible manufacturing through abatement & mandatory end-of-life management (ALL manufacturers & downstream users)



**Fluoropolymers and polymeric PFPEs: meet OECD criteria of low concern (PLCs)**, do not degrade and do not bio-accumulate (high molecular weight)



**The largest share of fluoropolymers waste** shall be thermally treated and mineralised – standards for waste management facilities shall be harmonised



**State-of-the-art abatement technologies** can reduce emissions of fluorinated organic compounds to a couple of kgs per year.

# Way forward – F gasses

**Low Global Warming Potential F-Gasses (HFOs) should be derogated for key sectors applications (Heatpumps, Automotive, Blowing agents for insulation)**

•**Condition:** Mandatory recovery of F-gasses during life, periodic leak-checks, mandatory recovery end of life.



**Enable recovery of F-gasses** in the End of Life Vehicle Directive (mandatory recycling) and Harmonise **leak checks** for new vehicles during yearly maintenance control



**Impose and enforce regular leak checks for heat pumps maintenance**