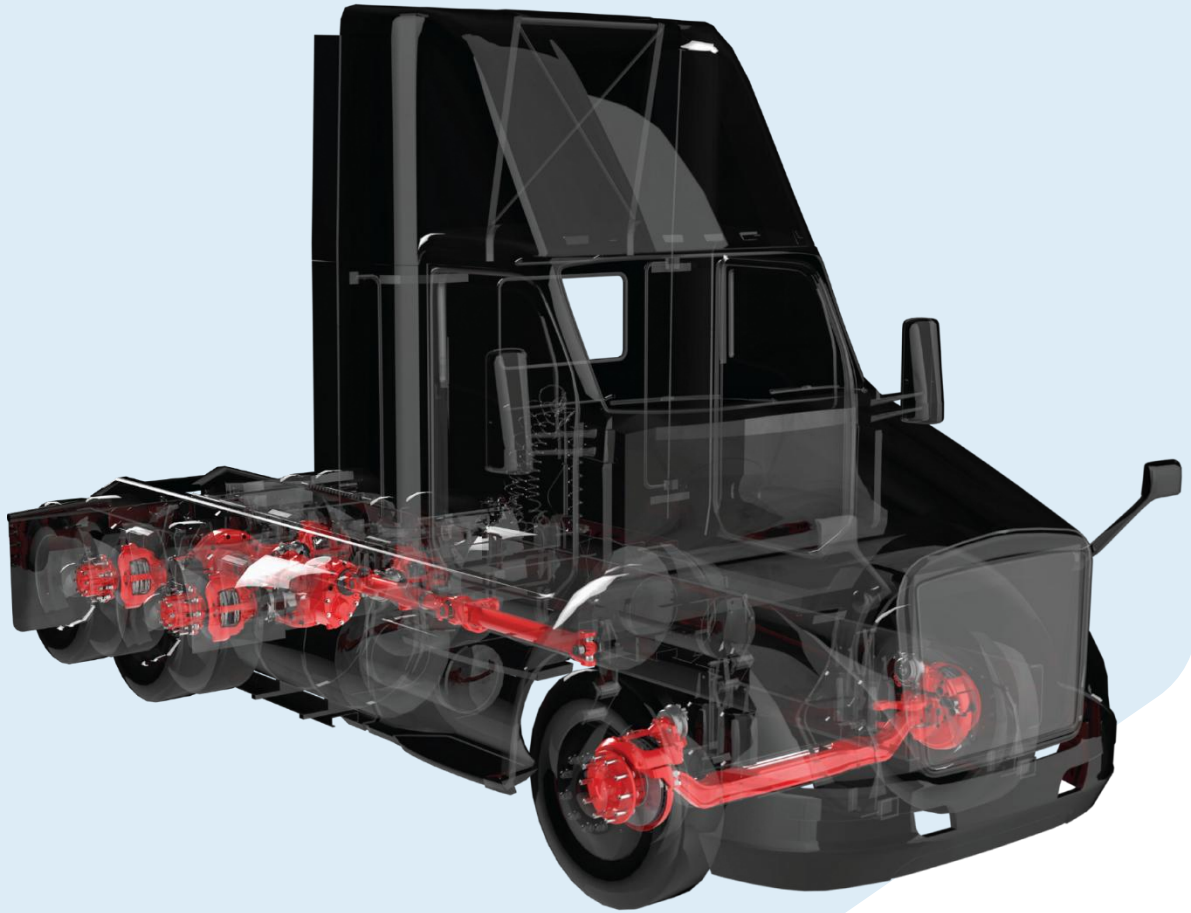
From Carbon Burden to Competitive Advantage: Rethinking Process Heat

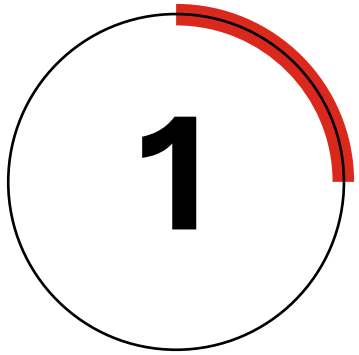


Balaji Sampathnarayanan

Global Sustainability Strategy Leader, Cummins

Monday, February 9, 2026

Agenda



Cummins Destination Zero Strategy

Process Heating – Opportunity to decarbonize

Painting Process Transformation Journey

Lessons Learned

Destination Zero™

Destination Zero is our commitment to sustainability and helping ou customers navigate the energy transition while growing our business.

1

Decarbonization

2030 GOALS

FACILITIES ENERGY
GHG emissions ↓ 50%
(Scope 1 & 2)

PRODUCTS
GHG emissions ↓ 25%
(Scope 3, Category 11)

SUPPLIERS
Key supplier engagement
(Scope 3, Category 1)

2050 TARGETS

- Achieving net-zero emissions across Cummins' facilities and operations
- Delivering low-carbon and zero-emissions technologies across all markets we serve to power customer success while aligning with market needs

Materials

2030 GOALS

FACILITIES WASTE
Zero waste growth and minimize single-use plastics

CIRCULARITY
90% material circularity plans for new products

2050 TARGETS

- Design out waste in products and processes
- Use materials again for next life

Communities

2030 GOALS

FACILITIES VOC
Volatile organic compounds (VOCs) ↓ 50%

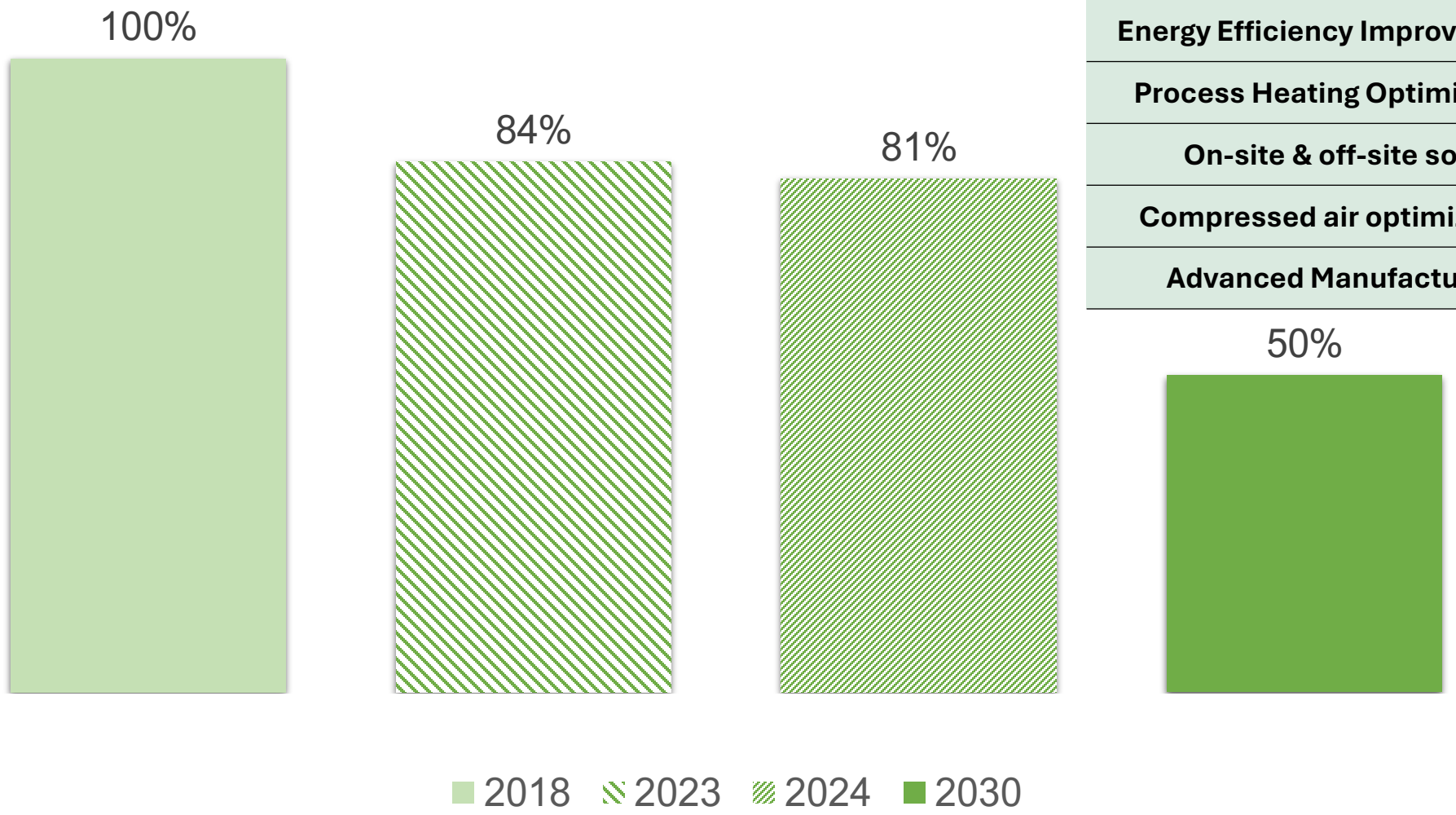
FACILITIES WATER
Water consumption ↓ 30%

COMMUNITY WATER
Net water positive across Cummins regions

2050 TARGETS

- Net positive impact in locations that account for 80% of total water consumption
- Near-zero pollution across Cummins' facilities and operations
- Reuse water and return clean to the community

Cummins Drivetrain and Braking Systems 2030 Scope1/2 GHG Targets

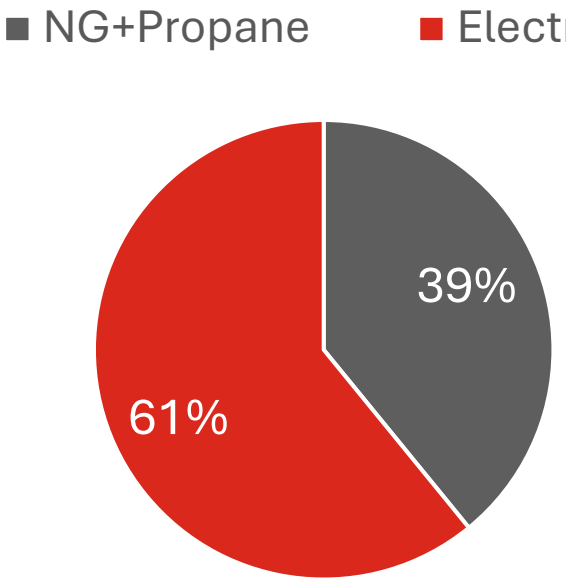


FOCUS AREAS

- Energy Efficiency Improvements
- Process Heating Optimization
- On-site & off-site solar
- Compressed air optimization
- Advanced Manufacturing

Process Heating is hard-to-abate!

2



Decarbonizing Process Heating

2

- Identifying low carbon alternatives for process heating has several benefits
  - Decoupling price volatility
  - Reducing supply disruptions
  - Implementing thermal efficiency improvements

- Low carbon alternatives
  - Electricity
  - Renewable natural gas
  - Hot water
    - Our site is located near one of Sweden's largest paper mills – existing of hot water source
    - New pellet booster boiler increased the available capacity of hot water for the site

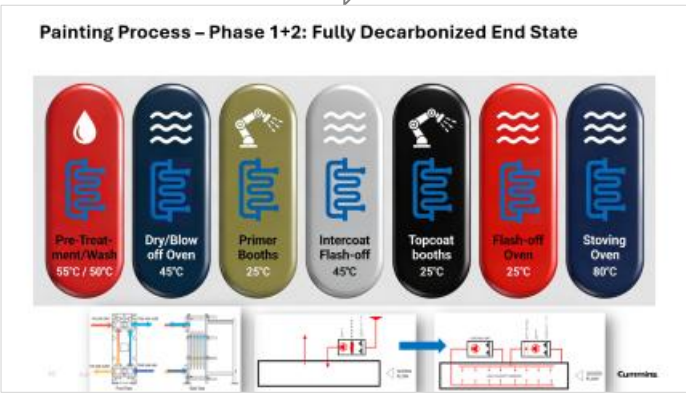
Painting Process Decarbonization Journey

3

Before

Phase 1

Phase 2



Decarbonization delivered both emissions reduction *and* operational excellence — with a ~3-year payback.

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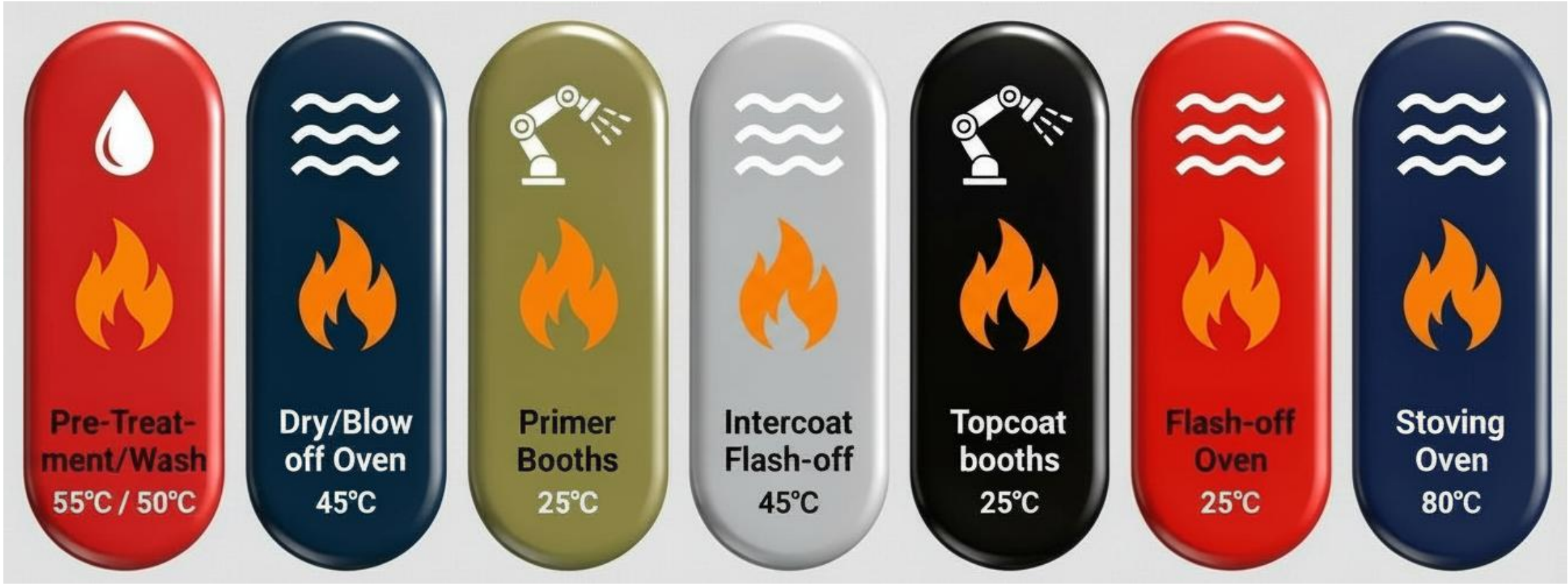
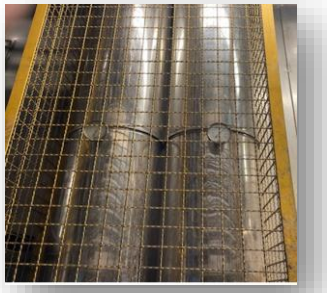
Painting Process-Before: Fossil Intensive Baseline





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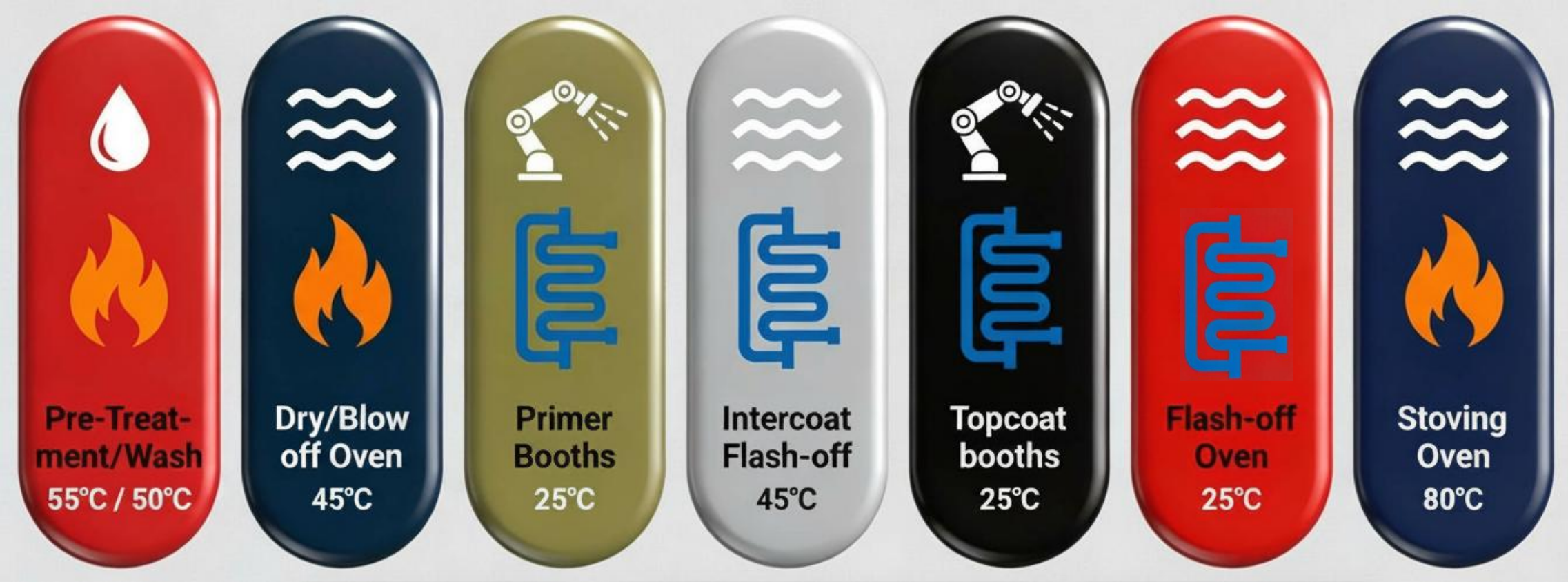
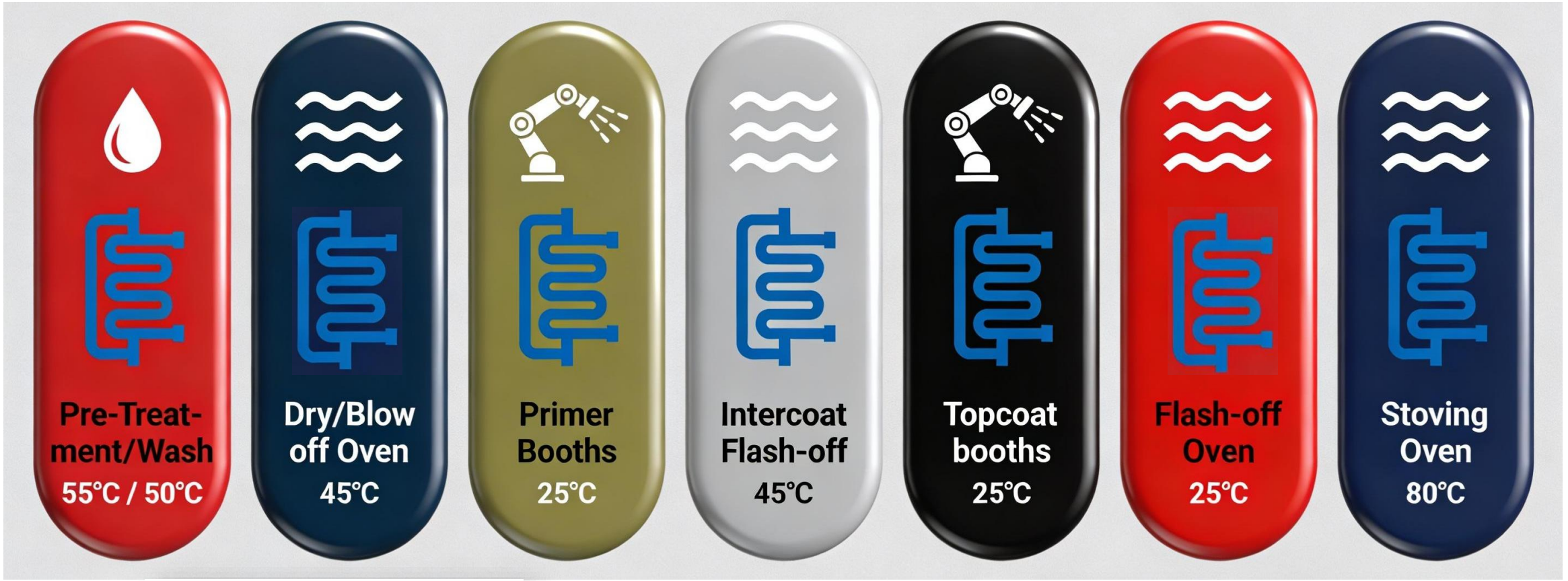
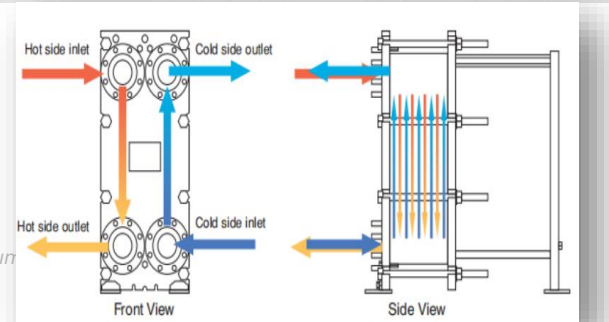
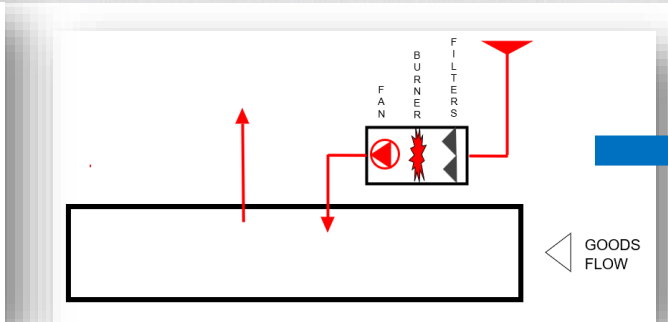
Painting Process – Phase 1: Efficiency & Heat Recovery

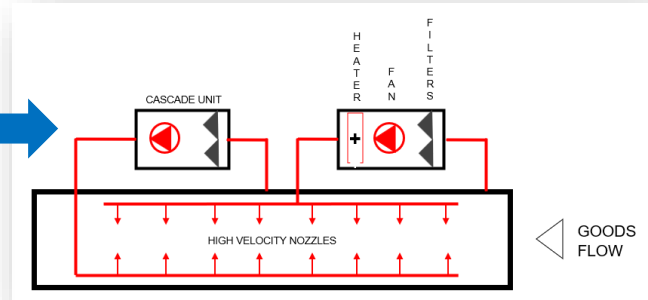


Painting Process – Phase 1+2: Fully Decarbonized End State



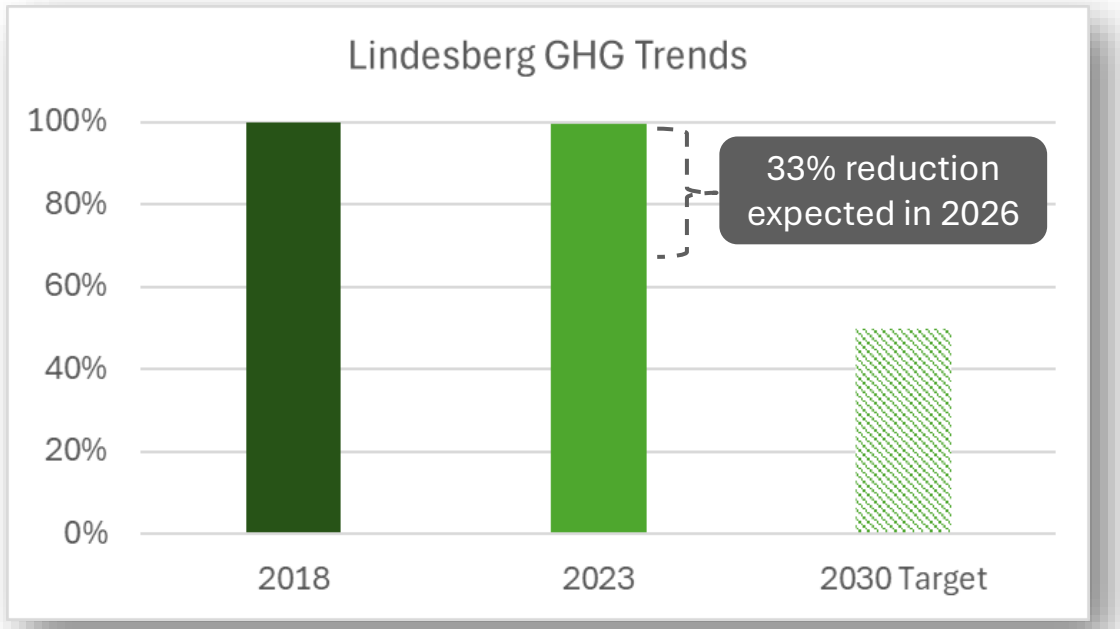


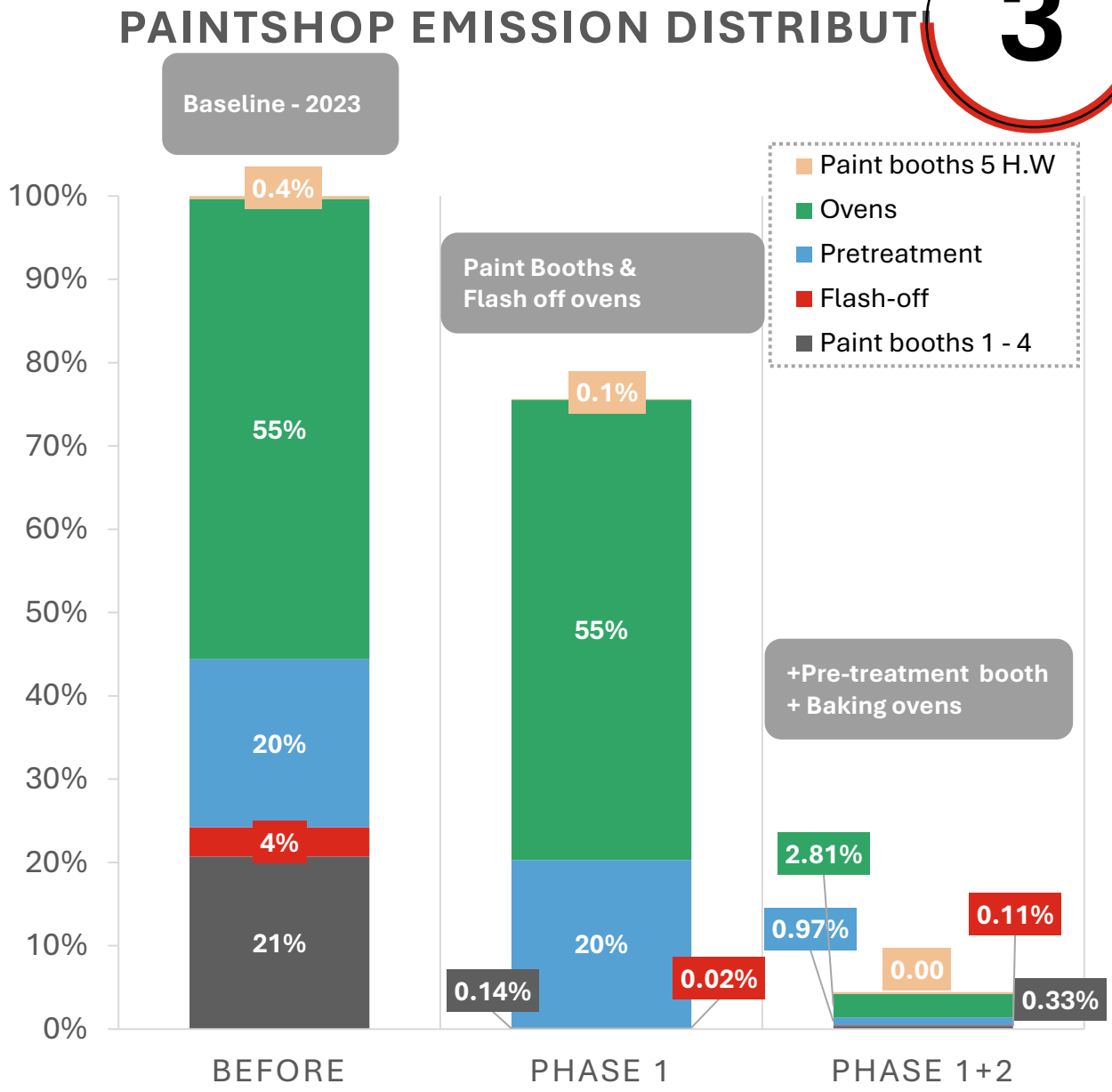




Emissions Reduction

- GHG emissions reduction from project will help reduce 33% of site's annual GHG
- CO2e/axle reduced from 25 Kg/axle → 17 Kg/axle





Cost Savings

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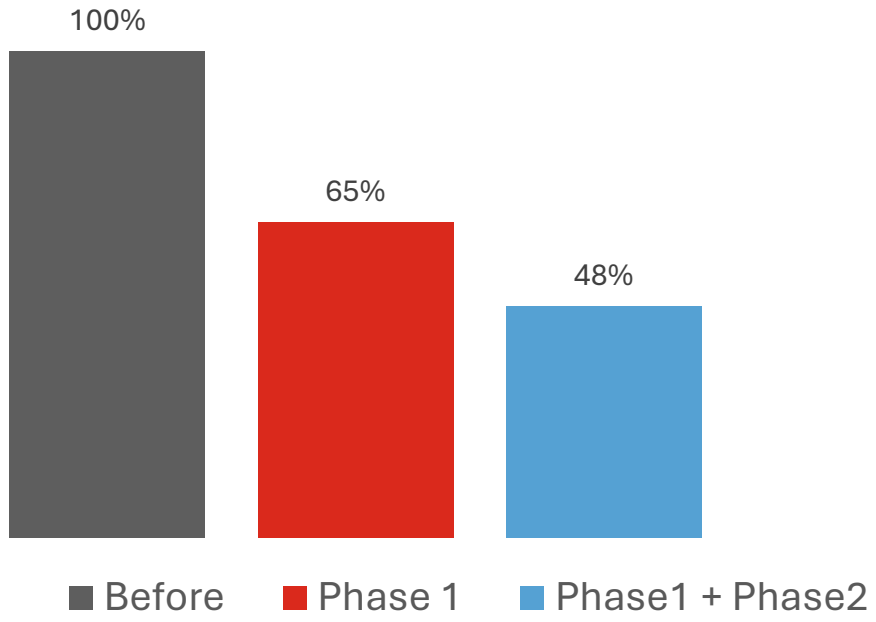
- Exhaust gas re-circulation improves thermal efficiency which leads to operational savings
- District heating hot water costs 30% less than propane
- Operational efficiency responsible for rest of the savings



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Key Lessons Learned

4

Heat integration unlocked big savings

Exhaust heat is an asset

Process re-design beats new hardware

People made it work

Matthew Potts (Team Leader)

Mikael Jansson; Marten Thastrom; Raj Kamal; Veronica Osterberg, Markus Andreasson

Where this approach works well

- Energy intensive painting/coating lines
- High ventilation airflow (big make-up air loads)
- Access to competitively prices low-carbon heat

Where this approach may nor work

- Very high-temperature, direct-flame processes
- Sites with severe space constraints
- Limited access to low-carbon heat sources

Process heating has always been fossil-based — but does it have to be?

Q+A


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