3M | Cooling Film

Keeping operators cooler, mile after mile

Case study:

Electric last-mile delivery vehicles in Phoenix, Arizona

Lowers cargo temps by 5.5 °C

Preserves 40+ miles of EV range

Challenge

In Arizona, summer temperatures inside electric delivery van cargo areas can exceed 54 °C — creating a persistent operational and performance challenge for last-mile fleets.

Last-mile delivery vehicles complete the critical final step from the distribution centre to the customer. In hot climates, however, they operate under demanding thermal conditions that affect both vehicle performance and day-to-day operations.

For a global logistics company operating in Phoenix, the cargo areas of its electric delivery vans were often much hotter than the air-conditioned cabin. Operators moving frequently between the two experienced significant temperature changes throughout the day.

Contributing factors:

- Routes typically run during the hottest part of the day (11am – 4pm)
- Vans spend most of their time moving slowly or stopped, limiting airflow
- Cargo areas are not air-conditioned, so heat builds quickly and dissipates slowly

This persistent heat exposure impacts cargo conditions, increases cooling demand and introduces variability in battery performance.

Solution

As the company's electric fleet continued to expand in hot climates, the fleet manager needed a practical way to reduce vehicle heat load with minimal disruption to operations. The solution: 3M™ Cooling Film.

A year-long field trial was conducted across 10 electric delivery vans operating on standard routes. The study tracked cargo-area temperatures and vehicle energy performance.

3M™ Cooling Film

3M™ Cooling Film is a highly reflective performance film engineered to help keep vehicles cooler without using additional energy.

- Reflects over 85% of solar radiation to help keep vehicles up to 5.5 °C cooler.
- Improves driver comfort during frequent stops and starts.
- Helps reduce cooling demand and fuel consumption on day-to-day routes.
- Quick installation minimises downtime across large fleets.
- Durable hard-coat surface resists dirt and chemicals in high-use urban driving.

Key results

Better cooling performance under peak heat

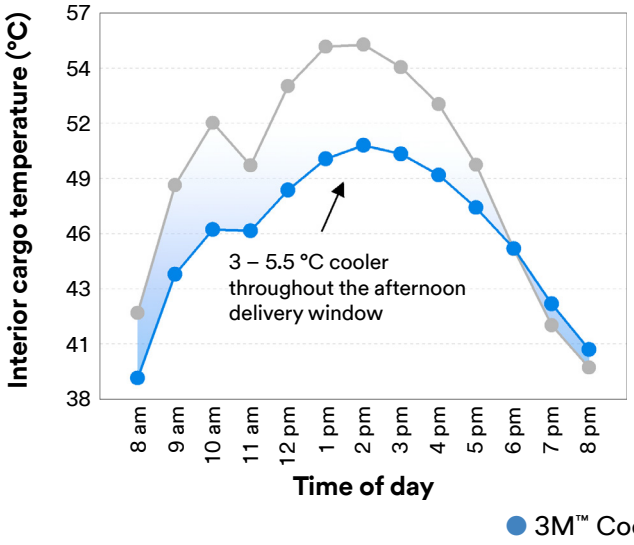
3M™ Cooling Film delivered consistent cooling throughout the year. During active delivery hours (11am – 4pm), 3M™ Cooling Film reduced cargo area temperatures by an average of 2.9 °C.

The greatest cooling was observed in August, the hottest month of the year, when temperatures were reduced by up to 5.7 °C.

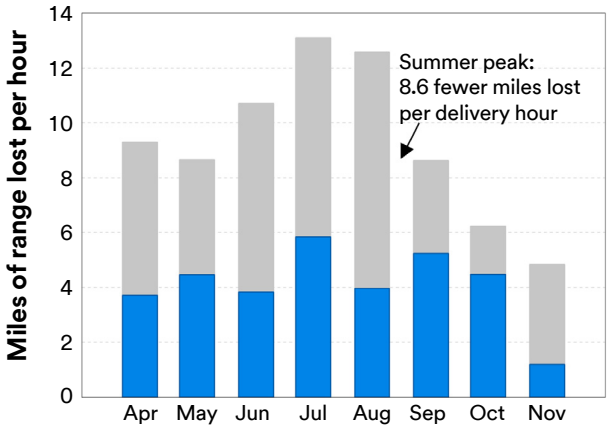
Improved usable EV range and operational flexibility

Even without air-conditioning in the cargo area, telematics data showed that 3M™ Cooling Film increased usable driving range by 4.6 – 8.6 miles (7.4 – 13.8 km) per operating hour, adding 23 – 43 miles (37 – 69 km) of usable range over a typical five-hour delivery period.

3M™ Cooling Film kept cargo areas cooler during peak August summer heat



Reduced EV range loss during delivery hours



3M™ Cooling Film No film

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