

Cooler trains¹

thanks to a new 3M coating

It's a hot summer day, and you have to get to work. You squeeze onto the crowded train. It isn't air-conditioned. Outside, the temperature approaches 90°F (32°C). Inside the train, it's about five to seven degrees hotter.

In India and other countries in Southeast Asia, this is reality. The outdoor temperatures are summer-like year-round, and the train cars can get very hot; in fact, North India reported four casualties² due to the stifling heat on trains without air-conditioning during a two-week heat wave in 2019.



By reducing the heat that penetrates the cabin, it reduces the power consumption needed for air conditioning the trains by more than 20%.²



A 3M product is helping to reduce the temperature in these trains by as much as 15%.

3M™ Scotchkote™ RG 700 Solar Heat Reflective Coating is a coating that reflects heat from the sun without absorbing it, effectively reducing the temperature inside trains and other enclosed structures like luxury buses, industrial sheds, and outdoor enclosures with electronic components.

The Indian government's railway department partnered with 3M to add the coating to the roofs of passenger trains in order to reduce the temperature inside and increase passenger comfort. By the end of 2019, Scotchkote RG 700 had been applied to more than 100 non-air-conditioned train cars, or coaches, with 150 more planned. The priority has been to apply the coating to non-air-conditioned trains, but even trains with air conditioning get hot — and can benefit from Scotchkote RG 700. By reducing the heat that penetrates the cabin, it reduces the power consumption needed for air-conditioning the trains by more than 20%.²

How does it work?

A special pigmented formulation reflects solar radiation and reduces the temperature of the metal on which it's coated. The chemistry of this durable water-based paint formulation allows for outdoor application, with an expected life of 10 years.³

3M India scientists began developing Scotchkote RG 700 in 2016. By 2018, small batches were being produced and tested. In January 2019, they started producing it for widespread commercial use.

The water-based product is low-VOC, making it the first of its kind in India.

Next up are similar projects in Singapore and Germany. That's a lot of cool customers.

¹The Independent. <https://www.independent.co.uk/news/world/asia/india-heatwave-train-deaths-weather-temperature-hindu-pilgrimage-jhansi-a8954736.html>

²Based on a joint exercise conducted and data collected by 3M and Indian railways inside air-conditioned (AC) coaches.

³This is the expected life based on artificial accelerated weathering results, which corresponds to 10+ years of expected life.

