



# AUTOMATION AND OPTIMIZATION IN OVERNIGHT MAINTENANCE HEATING IN BUS FLEETS

## Are you wasting energy?

Maintenance heating for buses is a costly affair. Also, it's energy consuming, and no-one wants to use up more energy than necessary, especially these days. But still there are many many buses around being heated for much longer than should be needed, every night. Every morning, buses are dispatched at different times depending on what loop or schedule they're on, and weather forecasts aren't always dependable. So you try and optimize what you have as far as you can, maybe using a timer for a cluster of buses, and you add a large margin to the anticipated weather forecast error to be prepared for disaster. This ends up more costly than you think, both financially and environmentally.

Using an optimizing system that controls the heating for each bus individually based on continuous weather data and real-time information updates from the bus itself is a much more sophisticated way of minimizing cost. The buses are heated to the exact regulation temperature at the appropriate time, and the optimal cost-efficient heating is achieved.

VIVA Fleet is a highly automated heating system that after installation will practically run itself. Especially if you integrate it with your traffic-planning system, so that VIVA Fleet may extract dispatch-times for every bus continuously. VIVA Fleet utilizes artificial intelligence in the form of neural networks and deep learning models to create the optimal heating curve for each bus, every single night.

VIVA Fleet can be used with up to three individual heaters in a single vehicle, for example a diesel/ gas heater, an electric heater, and a compartment heater/fan.

The system is modular, and each bus is equipped only with the necessary modules, according to what heaters are onboard.