



Energy Optimization on Highways Using the e-CON Controller and SmartSensor HD Radar

Project Background

Far Data, an innovator in intelligent traffic management solutions, implemented a system for optimizing highway lighting in Poland. The project, carried out in cooperation with **Apanet**, utilized the **e-CON controller** and **SmartSensor HD radars** from Wavetronix to dynamically adjust lighting levels based on real-time road and weather conditions.

Challenge

The **A1 motorway**, also known as the Amber Highway, is one of Poland's key transportation corridors, connecting the north and south of the country. On high-traffic sections – particularly near the Sośnica-Maciejów and Gliwice-East interchanges – it was crucial to deploy a lighting system that ensured **driver safety** while **minimizing energy consumption**.



Solution

Far Data supplied **e-CON multicontrollers**, which – in combination with 10 SmartSensor HD radars – enabled precise, real-time control of highway lighting. The radars monitor traffic volume and transmit data to the server via the e-CON controllers, which automatically adjust light intensity according to current conditions.

The **e-CON controller** is an advanced device for remote monitoring and infrastructure control. It features integrated interfaces for **remote configuration**, device monitoring, and data access. The system uses open communication protocols like **MODBUS** and **GSM modems** for transmitting traffic data, allowing responsive and energy-efficient lighting control based on actual road activity.

Results

The implementation of this intelligent lighting system led to a **significant reduction in energy use** along the A1 motorway. The system automatically increases light intensity during periods of **high traffic** or **poor weather**, improving safety, and reduces it when **traffic is low**, thus saving energy.

As a result, the smart lighting system provides **optimal driving conditions** while minimizing **operating costs** and **environmental impact**.

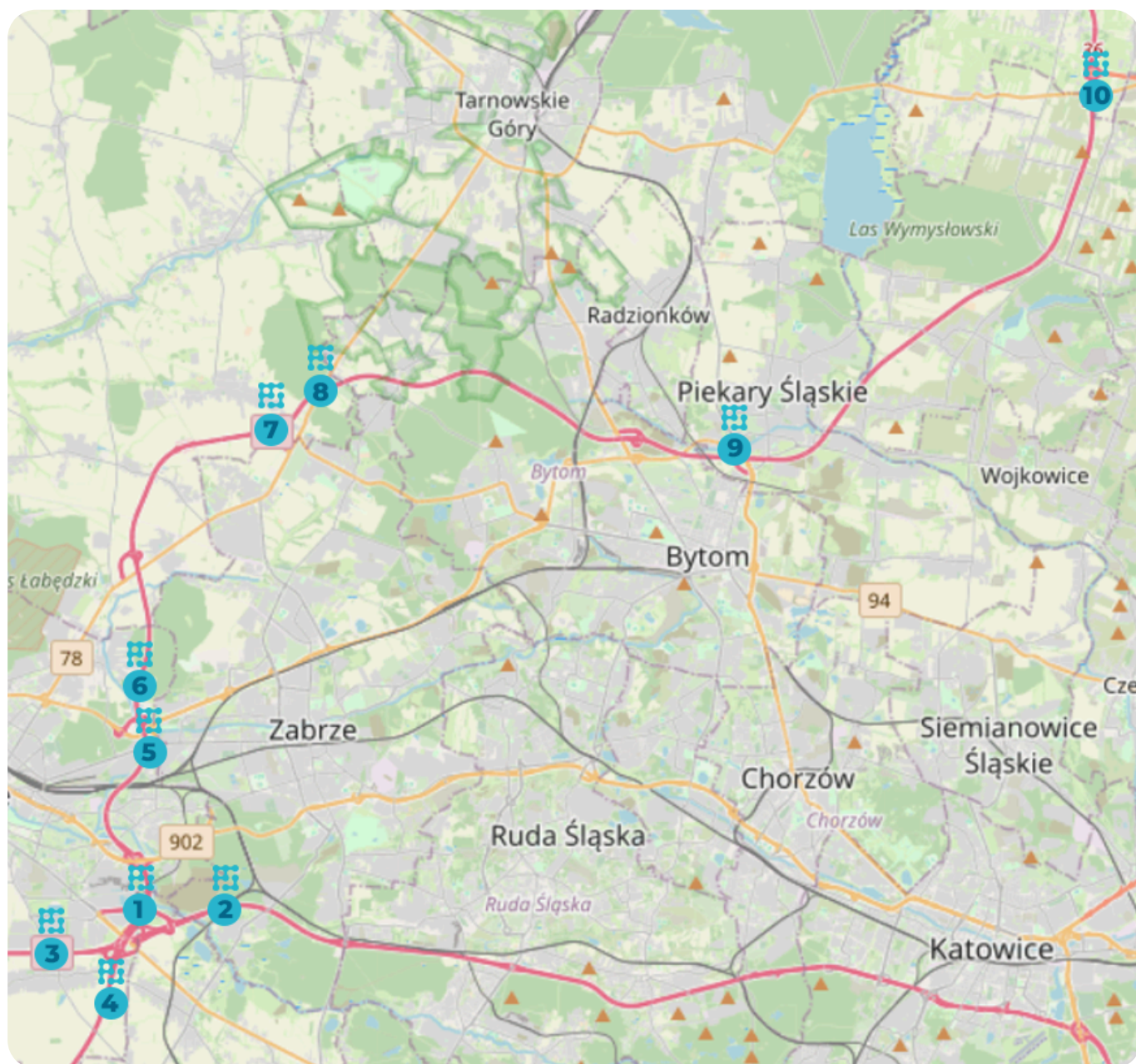


Conclusion

The use of **e-CON controllers** combined with **SmartSensor HD** radars represents a breakthrough in road lighting management. The innovative system implemented by Far Data enables dynamic adaptation to changing conditions, delivering both **measurable energy savings** and **enhanced road safety**.

This case study showcases how **ITS technologies** can support the development of more **sustainable and intelligent transport infrastructure** in Poland.





 Far Data Sp. z o.o. 

 Chief Inspectorate for
Environmental Protection

