

# Gothenburg

## Congestion Charging System

In 2022, Kapsch signed a contract with Trafikverket in Sweden for the replacement of the current Gothenburg Congestion Charging system and a technical operation of the installed system. The project consists of 4 Main Parts including development, installation and technical operation.

### **Innovative solutions contribute to a healthy world without congestion.**

Gothenburg Congestion Charging ranks among the biggest urban congestion charging schemes in the world. The system has been operative since 2013. Gothenburg Congestion Charging consists of 85 Charging Points covering 138 lanes.

The Business Model is to charge taxes on vehicles driving in and out from the city Mon-Fri 06:00-18:30. Weekends, public holidays and the month of July are free of charge. Purpose to reduce congestion and finance parts of the infrastructure in Gothenburg.

The traffic volume is 150 million taxed vehicle passages per year and the revenue about 100 million EUR per year.



## Project Scope:

It is a true MLFF system (Charging Points and a Data Service Center), for the complex traffic environment in a city. The system shall correctly detect each vehicle passage in bi-directional traffic, capturing front- and rear LPN. DSRC is a future option. The gantry structures will be kept but replace all existing equipment provided by two different technology providers. The Installation & Commissioning refers to two phases separated in calendar time; One for replacing 35 Tolling Stations by the first provider and 7 Tolling Stations by the second provider. Each such phase takes between 3-6 months. Before the replacements, there will be extensive validation split into the FAT, SAT and OAT phases, which will last 6-9 calendar months. Technical Operations will last for 10 years with optional 1+1 years.

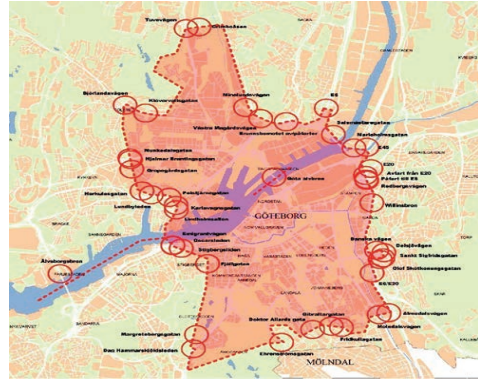


Image 1: Distribution of Tolling Stations in Gothenburg

## The solution:

Kapsch solution is based on the VDX2i-symmetric all-in-one sensor. A stereoscopic camera for vehicle detection and classification and front and rear license plate cameras.



Image 3: Example of the redundant VDX sensor positioning at the portals



Image 2: Kapsch VDX2i sensor

The system has got full active-active redundancy. If one VDX2i-sensor fails, the system still provides full vehicle detection and image capture functionality with full performance. Both roadside controllers are active and are collecting data in parallel from all VDX2i-sensors.

## The challenges:

- Extensive testing will be conducted during various project phases, with a particular focus on Main Part 1. Kapsch will utilize its own test site in Jönköping, Sweden, as well as the first Tolling Point installation at Älvsborgsbron in Gothenburg.
- System replacement will be carried out during non-taxable hours and will necessitate thorough inspections, preparation, and meticulous planning."
- The installation and commissioning process involves multiple entities from both Kapsch's and Trafikverket's sides, requiring effective coordination

## Project and implementation phases:

### Main Part 1:

- Installation of one Tolling Station at Älvsborgsbron.
- Extensive validations. FAT, SAT, OAT.

### Main Part 2:

- Replacement of the first provider's Tolling Stations.
- Continuous validations. SAT and OAT.
- The works are planned to start during spring 2024.

### Main Part 3:

- Technical Operations and Maintenance of Main Part 1, 2 and 4.
- Will last at least 10 years, with optional 1+1 years.

### Main Part 4:

- Replacement of the second provider's Tolling Stations.
- Continuous validations. SAT and OAT.