ELTE GPS SYSTEMS FOR WASTE MANAGEMENT
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ELTE GPS has a vast experience in developing and implementing ICT systems for companies from various industries and local government units.
We offer complex systems which combine state-of-the-art technology and computer science, support and monitor the processes of service provision, optimize the use of resources, and enhance the logistics of transport and communication. All this leads to lower costs, higher quality and increase in satisfaction of your customers.

As the manufacturer of both software and hardware system components, we can guarantee flexible and customized solutions that meet your individual needs, and allow for further expansion and continuous upgrade.

The top level of our services, high quality components and professional warranty and post-warranty service have been appreciated by our numerous customers.

Please take a closer look at what we can offer.
OVER 10 YEARS OF EXPERIENCE

OVER 100,000 DEVICES ALREADY INSTALLED

MORE THAN 50,000 VEHICLES MONITORED IN POLAND AND OTHER EUROPEAN COUNTRIES

SUPPORT FOR COMPANIES OPERATING IN 10 INDUSTRY SECTORS

(municipal engineering, commercial fleet, railway industry, public transport, construction machinery, property protection services, water and wastewater utilities, courier delivery services, emergency services)

ELTE GPS
INTEGRATED TECHNOLOGY
CAPABILITIES OF OUR SYSTEMS

Our ICT systems for municipal waste collection services provide solutions that meet all expectations of our customers: from the simplest ones, related to monitoring the location of waste collection vehicles to technologically advanced systems which meet high expectations of the client.
**CAPABILITIES OF OUR SYSTEMS**

- Internal camera
- Photo recorder
- On-board computer
- Manual RFID reader with docking station
- RFID card reader
- GPS antenna
- GSM antenna
- Loadcell of the hydraulic crane system weighing instrument
- Waste container fill-level sensor
- RFID reader
- Computer of the truck body weighing instrument
- CAN interface
- Waste container lifter activation sensor
- Fuel probe
- Fuel filler cap sensor
- Loadcell of the truck body weighing instrument
- GPS controller
The ET GPS system is designed to monitor the position of moving objects. The key element of the system is a GPS tracker, which saves the object location, speed, direction of movement, and information from sensors and interfaces. The data saved in the internal memory of the GPS tracker are transferred to the monitoring system. This information allows for making reports on routes, stops, and reports based on additional sensors and interfaces, e.g. sensors of waste loading and unloading.

Various types tracking units used to monitor vehicles, machines and people are shown below.

Basic GPS tracker  Advanced GPS tracker  Mobile GPS tracker

Animation and visualization feature of route tracking on a digital map
In ET GPS system, vehicles may be monitored via SEPAN application which runs in any web browser.

**SMOK MOBILE**

Monitoring of vehicles is also possible via SMOK Mobile application which may be installed on mobile devices, such as a smartphone or tablet running with the following operating systems: iOS, Android.
ET Auto RFID, an automatic identification system with RFID technology, has been developed in close cooperation with our customers from waste management industry so as to meet their needs, expectations and requirements of the market. The automatic RFID module offered by ELTE GPS may be installed in any waste collection vehicle. Wastebins are identified thanks to RFID antennas and RFID readers mounted on vehicles, and RFID tags mounted in the bins.

**AUTOMATIC RFID LF IDENTIFICATION**

Equipping garbage trucks with the wastebin identification system enhances the waste collection process by eliminating potential errors.

**KEY SYSTEM FEATURES:**

- Can be used in various types of waste collection vehicles
- Complete with a set of professional solutions - wastebins are identified thanks to a set RFID readers and antennas mounted on vehicles, and RFID transponders mounted in bins.
- Automatic reading of the transponder when the wastebin is being collected
- Supports various transponder types
- Operates at various frequencies
- Detects and signals irregularities during implementation of the planned route
- Can be combined with the route planning and scheduling system (ET Plan)
- Can be combined with the system for implementation and control of routes and schedules (ET Control)
- Works with the on-board computer (ET Connect)

It facilitates wastebin/container database management and enhances the efficiency of operations. In this way it improves management and reduces the company operating costs. It also helps to increase the quality of the services provided.
Example of RFID antenna mounting on a vehicle with rear loading

The wastebin identification system may operate at 125 kHz, 134.2 kHz or in dual mode (125 kHz and 134.2 kHz).
Round ID transponders are fixed in wastebins equipped with a mounting socket. If no sockets are available in wastebins (e.g. metal containers), the ID transponders are fixed on the front or side of the bin so as to ensure they may be read.

Any detected irregularities are signalled to the vehicle crew with visual and acoustic indicators installed on the vehicle. If the vehicle is equipped with a on-board computer, they are also displayed on the screen of the on-board computer.

The automated RFID system in the vehicle may be configured to signal irregularities on the planned route, e.g. the emptying of wastebin which was not included in the waste collection schedule.

It is possible for the RFID system to be configured so as to block the waste container lifter in the case of any attempt to empty a wastebin without an RFID tag or one with a damaged tag, or to empty a wastebin which has not been planned in the route.
Indication of blocking the waste container lifter due to an attempt to empty wrong wastebin.

The on-board computer is an important part of RFID system. It enables the driver to communicate with the operator, to check if all the system components operate correctly, to monitor the status of the planned route, to report any irregularities by using predefined notes or own notes with attached photos.

This device may be paired with RFID reader and barcode reader to support the route service with a feature of adding notes about any irregularities and attaching photos.
AUTOMATIC UHF RFID IDENTIFICATION

Combination of vehicle positioning system (ET GPS) with RFID transponders operating in UHF standard has resulted in a simple and reliable tool for management and monitoring of waste containers.

KEY SYSTEM FEATURES:

- USED IN VARIOUS TYPES OF WASTE COLLECTION VEHICLES
- COMPLETE WITH A SET OF PROFESSIONAL SOLUTIONS - The main components are the RFID/UHF reader and antenna, and a container sensor which allows you to detect a container without an RFID/UHF tag.
- READING CAN BE MADE FROM A LONG DISTANCE
- AUTOMATIC READING OF THE TRANSPONDER WHEN THE CONTAINER IS BEING COLLECTED
- CAN BE COMBINED WITH THE ROUTE PLANNING AND SCHEDULING SYSTEM (ET Plan)
- CAN BE COMBINED WITH THE ROUTE AND SCHEDULE CONTROL SYSTEM (ET Control)
- WORKS WITH THE ON-BOARD COMPUTER (ET Connect).

The main components of the automatic identification system for waste containers or bell-type receptacles are the antenna and RFID/UHF reader. The container sensor allows you to detect a container without an RFID/UHF transponder. The advantage of RFID/UHF technology is the ability to read out RFID/UHF transponders from containers located even a dozen meters away.
Regardless of the identification method, gathered data allows for preparing the clearing documentation with a list of emptied wastebins and collected containers.

Report on a wastebin loading location and its visualization on a map
Identification of wastebins and/or containers can be carried out manually with a wireless RFID reader, which reads information from an RFID transponder mounted on any type of wastebin/container. Such a manual identification is supported by the ET Manual RFID system.

**KEY SYSTEM FEATURES:**

- **CAN BE USED IN VARIOUS TYPES OF WASTEBINS AND CONTAINERS**
- **EQUIPPED WITH A SET OF PROFESSIONAL DEVICES** - wastebin identification is carried out with a manual RFID reader, which comes with a docking station mounted in the vehicle, and with RFID transponders affixed to wastebins.
- **MANUAL READING OF THE TRANSPONDER WHEN THE WASTEBIN IS BEING COLLECTED**
- **SUPPORTS VARIOUS TRANSPONDER TYPES**
- **OPERATES AT VARIOUS FREQUENCIES**
- **DETECTS AND SIGNALS IRREGULARITIES DURING IMPLEMENTATION OF THE PLANNED ROUTE**
- **CAN BE COMBINED WITH THE ROUTE PLANNING AND SCHEDULING SYSTEM (ET Plan)**
- **CAN BE COMBINED WITH THE ROUTE AND SCHEDULE CONTROL SYSTEM (ET Control)**
- **WORKS WITH THE ON-BOARD COMPUTER (ET Connect).**
Data registered by the readers are transmitted to the system software, which allows for preparing the clearing documentation with a list of emptied wastebins and collected containers.

Report on the locations where containers were loaded with a view of these locations on a map.
BARCODE IDENTIFICATION SYSTEM

Identification of waste collection, its quantity and type is possible thanks to the barcode technology. The ET Barcode system is a solution for monitoring the selective collection of municipal waste using the barcode technology.

KEY SYSTEM FEATURES:

- CAN BE USED IN VARIOUS TYPES OF WASTEBINS, CONTAINERS AND BAGS
- EQUIPPED WITH A SET OF PROFESSIONAL DEVICES – identification is made with a manual barcode reader, which comes with a docking station mounted in the vehicle, and with barcode tags affixed to the various types of wastebins, containers and bags.
- IT IS POSSIBLE TO MANUALLY READ BARCODE TAGS
- TAGS MAY BE PRINTED OUT VIA A DEDICATED APPLICATION
- USE OF VARIOUS TYPES OF BARCODE TAGS
- DETECTS AND SIGNALS IRREGULARITIES DURING IMPLEMENTATION OF THE PLANNED ROUTE
- CAN BE COMBINED WITH THE ROUTE PLANNING AND SCHEDULING SYSTEM (ET Plan)
- CAN BE COMBINED WITH THE ROUTE AND SCHEDULE CONTROL SYSTEM (ET Control)
- WORKS WITH THE ON-BOARD COMPUTER (ET Connect).

The system includes software for label printing (SMOK Label application). The application works with printers which make barcode labels resistant to adverse weather conditions and minor mechanical damage.
All sorts of wastebins, containers and bags marked with barcodes may be identified with a manual barcode reader. The reader was designed for outdoor operation in difficult weather conditions and in a wide range of temperatures. It is shock-proof and allows for reading partially damaged and soiled labels.

The barcode data read by the manual reader are sent on-line to the SEPAN application via the GPS controller using GSM/GPRS technology. The data recorded by ET Barcode system may be used to make various summaries and reports and to view waste collection points on a digital map.
WASTEBIN STOCKTAKing SYSTEM

The ET Mark system supports the wastebin stocktaking process by assigning a unique RFID transponder or a barcode label to a wastebin and specifying the wastebin location, type and intended use.

RFID TRANSPONDER

Wastebins are most often equipped with RFID transponders. Different kinds of transponders are used depending on the applicable RFID technology and type of wastebins.

**KEY FEATURES OF RFID TRANSPONDERS:**

- simple installation;
- supporting ET Auto RFID - Automatic RFID identification system;
- supporting ET Manual RFID - Manual RFID identification system;
- resistance to weather conditions;
- reliability;
- long service life;
- possible multiple use.

BARCODE LABELS

Barcode labels can be used to identify wastebins as an alternative to RFID transponders. The most commonly used solution are plastic labels with thermal transfer printing.

**FEATURES OF BARCODE LABELS:**

- simple installation;
- customizable label pattern;
- supporting the manual RFID identification system - ET Manual RFID.
SMOK IPGO APPLICATION

The SMOK iPGO mobile application supports the wastebin stocktaking process. It can assign a unique RFID transponder or a barcode label to a wastebin or a container, specifying the wastebin location, type and intended use. The app may run on an RFID data collector or a mobile device.

RFID DATA COLLECTOR

The RFID data collector is a specialized device that works with our SMOK iPGO app. It has built-in GPS and GSM modules, an RFID reader and barcode reader.

RFID READERS FOR MOBILE DEVICES

Our RFID readers known as Check USB and Check MiniUSB work with mobile devices such as tablets via the USB port. They support the mobile app SMOK iPGO.
LOCATION MATTERS

WASTE CONTAINER POSITIONING SYSTEM

The key component of ET Container system is the waste container tracker, a modern device with built-in batteries designed to monitor the container location. In addition to the power supply module and GSM and GPS modules, the tracker is equipped with a sensor which detects the container loading and unloading operations. It is also possible to configure the data transmission frequency individually.

BASIC FEATURES OF THE TRACKER:

► TRANSMISSION OF THE CONTAINER LOCATION DATA - once a day and following every loading and unloading operation (standard configuration);

► INNOVATIVE POWER SUPPLY - allows the tracker to run for at least 3 years (with standard configuration);

► HOUSING DESIGN - allows you to fix the tracker on the container and to replace the battery without damaging the tracker.

Example of installation of the waste container tracker

Report on the locations where containers were loaded with a view of the container location on a map
ET Bins system is our solution for monitoring the current status of waste bin fill-level. The dedicated sensor placed inside the bin measures the level of its filling with waste. These data, combined with information about the bin location, are sent to the system. The waste bin fill-level and bin location are shown on the digital map, so you know immediately which waste bins need to be emptied. The system automatically warns the user of problems such as waste bin overflow, tipping, fire inside the bin, or its unauthorized emptying (waste theft).
ET Dynamic is a fully automated dynamic waste weighing system. The weight is determined without stopping the waste container lifter - the waste is weighed when wastebins are being emptied.

**KEY SYSTEM FEATURES:**

- MAY WORK IN VARIOUS TYPES OF WASTE COLLECTION VEHICLES
- EQUIPPED WITH A SET OF PROFESSIONAL EQUIPMENT, including a weighing computer, accelerometer and a set of loadcells
- AUTOMATICALLY WEIGHS WASTE WHEN THE WASTEBIN IS BEING EMPTIED, WITHOUT THE NEED TO INTERRUPT THE EMPTYING PROCESS
- WORKS WITH LOADCELLS OF VARIOUS SIZES
- MAY BE OFFICIALLY APPROVED BY COMPETENT AUTHORITY
- CAN BE COMBINED WITH THE ROUTE PLANNING AND SCHEDULING SYSTEM (ET Plan)
- CAN BE COMBINED WITH THE ROUTE AND SCHEDULE CONTROL SYSTEM (ET Control)
- WORKS WITH THE ON-BOARD COMPUTER (ET Connect).
Installation of dynamic weighing system on a double waste container lifter

The on-board computer installed in the vehicle shows the mass of individual weighing operation. This enables the staff to monitor if the task is carried out correctly.
The information saved during the process of dynamic weighing is sent to a database. This allows for remote reading of the data and for generating reports, e.g. on the amount of waste collected from individual residents (waste collection points).

- precise settlement of the weight of waste collected from residents;
- monitoring the extent to which waste is sorted by residents and businesses;
- comparing the weight of waste collected by the vehicle with the weight of waste dumped in a landfill.
The ET Static has been designed as a solution for static weighing of municipal waste. Static weighing can be automated, but it is necessary to temporarily stop the emptying of wastebins and/or waste containers.

**KEY SYSTEM FEATURES:**

- CAN BE USED IN VARIOUS TYPES OF WASTE COLLECTION VEHICLES
- EQUIPPED WITH A SET OF PROFESSIONAL DEVICES, including a weighing computer and a set of loadcells
- ALLOWS A WIDE RANGE OF MEASUREMENTS
- MAY BE OFFICIALLY APPROVED BY COMPETENT AUTHORITY
- CAN BE COMBINED WITH THE ROUTE PLANNING AND SCHEDULING SYSTEM (ET Plan)
- CAN BE COMBINED WITH THE ROUTE AND SCHEDULE CONTROL SYSTEM (ET Control)
- WORKS WITH THE ON-BOARD COMPUTER (ET Connect).

Installation of loadcells in the weighing system for a truck designed to empty KP7 type waste containers.
Installation of loadcells in the weighing system for a truck with a hydraulic crane system

Example of loadcell

Location of loadcells in the weighing system for a garbage truck
The on-board computer installed in the vehicle shows the mass of individual weighing operation. This enables the staff to monitor if the task is carried out correctly.

The information saved during the process of static waste weighing is sent to a database. This allows for remote reading of the data and for generating reports, e.g. on the amount of waste collected from individual residents (waste collection points).
GOOD COMMUNICATION IS KEY TO EFFECTIVE WORK

DRIVER COMMUNICATION SYSTEM

The ET Connect system supports and facilitates the execution of tasks. Among other things, it offers communication with the driver, GPS navigation, and diagnostics of GPS/RFID system components installed in the vehicle.

You can also view a route plan as a list of task points. Any irregularities can be reported by the vehicle crew with predefined notes or personal notes, to which photos may be attached.

The Diagnostics feature in the on-board computer allows you to check the operation of each device of ELTE GPS systems installed in the vehicle.

The on-board computer also permits viewing the planned route as a list of task points.
The Navigate function allows for automatic guidance to the selected waste collection point without the need to enter its address in the application installed in the on-board computer.

The on-board computer can also show a list of wastebins (with details of their type, volume and purpose) which are to be emptied on the planned route.

Any irregularities may be reported by the vehicle crew by their own notes or predefined notes. A note can be linked with a waste collection point or to a specific wastebin or bag.
On-board computer software signals irregularities during the route, e.g. collection of container that was not included in the route plan.

You can use a mobile device with a built-in camera to upload photos to the on-board computer using WIFI network. The sent photo is attached to a note of any irregularity found at a waste collection point.

On-board computer software signals irregularities during the route, e.g. collection of container that was not included in the route plan.

The on-board computer permits two-way communication with the operator.
The *ET Pics* system allows for using photos or videos to document any irregularities or the completion of tasks.

The advantage of the system is the capability of geotagging photos and videos. This function adds the geographical location to a registered image, which allows you to search quickly for images captured while providing the service at the location shown on the map, e.g. a street or a specific address. This system proves useful in verifying the completion of tasks and investigating any complaints.

*ET Pics* offers various solutions depending on whether you want to record the image as photos or videos.

**VIDEO RECORDER:**
- captures the image in the form of videos;
- allows you to record the image from multiple cameras;
- offers customizable image recording, e.g. activation by the ignition key, starting the PTO, etc.;
- is customizable in terms of the quality of the recorded image;
- allows you to send recorded images on-line and/or to save them on an SD card or HDD disk drive.

**PHOTO RECORDER - PHOTOBBOX:**
- captures the image in the form of photos;
- allows you to record the image from multiple cameras;
- is configurable in terms of the frequency of taking photos;
- is customizable in terms of the quality of the recorded image;
- allows you to send recorded images on-line and/or to save them on an SD card.
The image recording system enables you to view an object on a digital map synchronized with the photos or videos captured at a given location.
You can use a mobile device with a built-in camera to upload photos to the on-board computer using WiFi network. The sent photo is attached to a note of any irregularity found at a waste collection point.

On-board computer - a photo may be attached to a note
The main challenge for the staff in charge of route planning is the optimal use of the fleet, and planning the routes so that vehicles travel the shortest distance, completing all tasks as quickly as possible.

Our ET Optimal system resolves these issues and ensures efficient use of your fleet. The system takes into account a number of variables and parameters required for the effective planning of routes. It takes into account the capacity of vehicles and wastebins, the frequency of their emptying and their locations. The route is planned so as to maximally reduce the time between waste collection and waste unloading while keeping the mileage as low as possible.

Once the right parameters and variables are entered, the system will plan the routes according to the set criteria.

**SYSTEM FOR DEMANDING TASKS**

**ROUTE OPTIMIZATION SYSTEM**

**BENEFITS OF ET OPTIMAL SYSTEM:**

- boosting the efficiency of planners and staff carrying out tasks;
- reduction of mileage and time of order completion;
- optimal allocation of tasks and use of vehicles;
- reduced costs of transport;
- efficient implementation of tasks and improvement of service quality;
- enhanced competitiveness of your company;
- monitoring the correctness of task completion.
The system permits planning of waste collection based on the declared frequency, type of waste and number of wastebins. In this way schedules can be created for a number of days without having to plan each day individually.
View of municipal waste collection schedule on a web page

View of municipal waste collection schedule in a PDF file

View of the task window with its completion status
This system is the perfect tool to assess the quality of waste collection services. Not only does it enable you to check the work of vehicle crews, but it also offers the feature of reporting and searching for information about completed and unfinished tasks for any address (point), area, vehicle or date.
ET CONTROL - SYSTEM FOR IMPLEMENTATION AND CONTROL OF ROUTES AND SCHEDULES

Searching objects in a designated area

Report on logged wastebins with information about completed and unfinished tasks with a note attached
ET Register is a vehicle and employee register system, which stores the databases of vehicles used in the company and the data of employees.

**ALL INFORMATION IN ONE PLACE**

**VEHICLE AND EMPLOYEE REGISTER SYSTEM**

**THIS SOLUTION OFFERS A QUICK ACCESS TO:**

- vehicle data (such as the registration number, VIN, year of manufacture, color, etc.);
- operating costs, including the history of repairs, refuelling, insurance policies and accidents;
- information about the cost of maintaining the fleet;
- an active schedule which reminds of upcoming events such as vehicle checkups, technical inspections, official inspections, tachograph authentication etc.

The active schedule may be set up in the time interval mode (e.g. every year) or the distance interval mode (e.g. every 20,000 km). The schedule takes into account dynamically changing data about vehicles, e.g. mileage.
The ET Integrator system enables the integration of our ICT solutions with other systems, including the systems for clearing the provided services, monitoring of working time, invoicing, scheduling, etc. The data can be exchanged via files or Webservice.

Diagram of ET Integrator system for waste management companies and municipal authorities.
ET Roads is a system that monitors municipal specialized vehicles such as salt spreaders with snow plows or sweepers. The system supports and controls processes related to summer and winter road maintenance.

Salt spreaders with snow plows are equipped with sensors of plow position and sensors of salt spreading, which allows for monitoring their operation. Information about the operation of these sensors is transmitted to the SEPAN system software with other basic data such as simultaneously registered location and time. In the case of sweepers, the activation signal for brushes and the sprinkler may be monitored. Modern sweepers and salt spreaders also make it possible to read these and other data (such as the amount and width of salt spreading) via the CAN-BUS.

A map view with the location of vehicle and its parameters

The data recorded by the devices mounted on vehicles for snow removal and road cleaning are displayed in the SEPAN application.
The SMOK system allows you to generate a variety of reports on summer and winter road maintenance services.

THE ET ROADS SYSTEM ALLOWS THE USER:

- to obtain current information about the location of tasks;
- to create reports on completed tasks;
- to check if the tasks were completed correctly.
The ET Fuel system has been designed to facilitate fuel management. It enables fast and efficient compilation of data about fuel tanking and fuel consumption with regard to a particular vehicle or a group of vehicles.

Fuel consumption may be monitored thanks to a range of gauges and signalling devices such as the CAN interface, digital microprocessor fuel probe and fuel filler cap sensor with an anti-theft strainer.

**DESIGNED TO SAVE YOUR MONEY**

**FUEL MANAGEMENT SYSTEM**

The fuel tank cross section showing the installation of a digital microprocessor fuel probe and a fuel filler cap sensor with an anti-theft strainer.

Installation of digital microprocessor fuel probe with an RFID fuel filler cap sensor and an anti-theft strainer.
A system window with the report on refueling/fuel losses, graph of fuel consumption over time and a map of refueling locations.

An example of fuel management reports - Fuel loss and refueling report.
An example of fuel management reports – General vehicle logbook

Graph view of the amount of fuel relative to time and an additional parameter - vehicle speed
These days, the vast majority of newly produced vehicles, machines and superstructures are fitted with the CAN Bus, which provides access to various operational data that may be read out and recorded in the ET CAN system.

The ET CAN system allows for monitoring and saving various parameters associated with the current operation of the vehicle without the need to install many additional sensors.

THE LIST OF PARAMETERS THAT MAY BE READ USING THE ET CAN SYSTEM INCLUDES:

- fuel level,
- odometer,
- pressure in the brake circuit,
- fuel consumption,
- current engine speed (rpm),
- coolant temperature,
- parameters of superstructure installation.
The **ET ID** system is a solution for employee identification which allows for keeping track of each employee’s working time on individual vehicles and/or machines. It offers information about mileage and speed, fuel consumption, activation of pumps, power take-off, etc. in company vehicles.

Depending on the applied solutions, the employee/driver can be identified with a personal RFID card and reader, RFID keychain or Dallas chip.
ET Fuel Tank is a system developed to monitor and register the consumption of fuel taken from mobile filling stations (fuel tanks).

The system consists of tank terminal, RFID reader to identify workers and vehicles, and fuel flow meter. It allows to check the amount of tanked and distributed fuel by the vehicle or by the person who received the fuel.

SYSTEM FEATURES:

- remote reading of current information about the amount of fuel in the tank;
- recording and archiving all fuel fillings and fuel releases;
- drafting reports on tank fillings and on releases of fuel for individual vehicles;
- adding extra tabs for vehicles and employees, service cards, and management of their permissions;
- the amount of fuel in the tank can be adjusted only by an authorized employee;
- fuel pump control;
- viewing the location of mobile filling stations on a digital map;
- detection of leaks, theft and other causes for depletion of fuel in the tank with optional fuel probes.
The combination of ET Fuel Tank system with ET Fuel system provides full supervision over the fuel management in the enterprise: from the moment of filling the fuel station to the consumption of fuel by vehicles or machines.
ET Alco is a system designed for sobriety screening of employees. We have combined the functions of driver/employee identification with an additional measuring device - the ET Alco breathalyzer, so the sobriety test result can be automatically registered in the system.

**BENEFITS OF TESTING SOBRIETY WITH THE ET ALCO SYSTEM:**

- fast and accurate measurement;
- short time intervals between individual measurements;
- ease of use - employees can do the sobriety tests on their own;
- all sobriety test results are automatically registered in the system;
- generation of sobriety test reports;
- launching the established procedures in the case of a positive result of the employee sobriety test, e.g. blocking the access card, blocking the vehicle, received orders, etc.

**BENEFITS OF THE SOLUTION:**

- increased occupational safety by ensuring that employees under the influence of alcohol are prevented from working;
- action aimed at limiting material damage.
SMOK Mobile is a mobile device application which displays the location of vehicles, their parameters and statuses of sensors installed on objects equipped with Elite GPS devices. SMOK Mobile runs on the following operating systems: iOS, Android.
Mobile devices with installed **SMOK Komunal** application can be used to support the process of order implementation. The application allows for reporting any irregularities with predefined or own notes, to which photos from a digital camera may be attached.

**MONITORING IN YOUR MOBILE PHONE**

**MOBILE APPLICATION - SMOK KOMUNAL**

List of various waste collection points

Planned route may be displayed as a list of waste collection points.

Details of task implementation

The application can also show a list of wastebins (with details of their type, volume and purpose) which are to be emptied on the planned route.

**SMOK Komunal** application can also be used to report irregularities, using predefined messages or your own notes. A note may be associated with a waste collection point or with a specific wastebin or bag.

Adding a geotagged photograph

Adding a note about a loading operation

**Vehicle breakdown**
- Lack of/broken transponder
- Lack of declaration
- No access to wastebin
- Wastebin not present
- Waste collection not in accordance with regulations
- Other
- Invalid container
- Invalid waste type
The mobile device app **SMOK iPGO** is a tool which supports stocktaking of containers. It also enables audit checks to find out if waste is collected properly and whether residents sort and discard waste in accordance with their declarations.

### THE MOBILE DEVICE APP SMOK iPGO FEATURES:

- quick and easy validation of container stocktaking;
- independent control tools, e.g. in the event of lack of similar solutions in the company that collects waste;
- quick and easy reporting of irregularities in the form of notes and photos;
- verification of declarations made for a given waste collection point; it also provides an additional source of documentation in the case of complaints or disputes;
- checking inspectors’ work - after opening the app the inspector’s location is visible in the system.

---

**Loading the waste coll. Pts**

Group:

KRAKOW

Address:

Detailed address related options:

- in distance from
- only wastebins without code
- stock-taking before
- stock-taking after
- Only unapproved

Search by code Clear filters

Download waste collection points Cancel

**List of waste collection**

<table>
<thead>
<tr>
<th>No.</th>
<th>Address</th>
<th>dist.</th>
<th>stock-taking</th>
<th>load.</th>
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</thead>
<tbody>
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<td>30-688 KRAKOW, MEDYCZNA 13</td>
<td>No distance</td>
<td>78</td>
<td>1 (0)</td>
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<td>2</td>
<td>30-688 KRAKOW, MEDYCZNA 11</td>
<td>No distance</td>
<td>78</td>
<td>1 (0)</td>
</tr>
<tr>
<td>3</td>
<td>30-688 KRAKOW, MEDYCZNA 13</td>
<td>No distance</td>
<td>78</td>
<td>1 (0)</td>
</tr>
<tr>
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<td>78</td>
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</tr>
<tr>
<td>5</td>
<td>30-688 KRAKOW, MEDYCZNA 15</td>
<td>No distance</td>
<td>78</td>
<td>1 (0)</td>
</tr>
<tr>
<td>6</td>
<td>30-688 KRAKOW, MEDYCZNA 17</td>
<td>No distance</td>
<td>78</td>
<td>1 (0)</td>
</tr>
</tbody>
</table>

**Load waste coll. points**

Add waste coll. points Map

Search results

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Searching for waste collection point where irregularity was found
Selection of waste collection point where irregularity was found

Adding a note

Attaching a photo
**TACHOGRAPH MODULE**

*Tacho Box* is a perfect solution dedicated for vehicles equipped with digital tachograph. It enables remote download and import of DDD files from tachograph.

**MODULE CHARACTERISTICS:**

- Mutual cooperation with different types of digital tachographs;
- Easy mounting on the vehicle due to small size of the device;
- Remote download and import of DDD files.