

KARTRA

KARTRAK

**TROLLEYS
LOCATION,
POSITIONING,
INVENTORY AND
THEFT PREVENTION
SYSTEM**



BACKGROUND

The airport, railway and bus station and supermarket trolley services traditionally involve significant investments, maintenance and management costs. Besides that, there is another serious problem: a large number of trolleys are lost every day due to unavailability of anti-theft system that could help to reduce heavy losses incurred by airports, railway and bus stations and supermarkets by preventing trolleys theft. The main reasons for stealing the trolleys are as follows:

- Such carts are strongly demanded for household and commercial applications;
- No anti-theft system is currently available;
- A trolley can always be easily moved outside the airport premises; the trolleys are usually moved to a parking lot where they are placed in medium- and mini-vans, closed-top pick-up vans or small trucks, which then freely leave the airport, railway and bus station or supermarket premises;
- Stolen carts are typically sold as scrap metal or are used at factories, warehouses, stores, workshops, etc. as the high quality carts at no cost for thieves.



In large airports, railway and bus stations, supermarkets theft of the trolleys inflict heavy financial losses on an airport and/or a company providing such service. According to the worldwide airport practice from one to three trolleys are stolen every day. With consideration for the compensatory cost of the carts, one can assume that their theft results in multi-million losses.

KARTRAK SOLUTION

To prevent theft of the trolleys and to provide a powerful real-time control tool, UNIVERSAL CODIC has developed and patented the state-of-the-art KARTRAK System.

Using the advanced TAG active module (RFID-based), KARTRAK System is capable of detecting a luggage cart theft attempt well in advance and can also determine if a vehicle with a stolen cart tries to leave the airport, railway and bus station or supermarket premises. KARTRAK can also activate (the preset) blocking and alarm systems and various data acquisition sensors.

KARTRAK System functions include:

CARTS COUNTING IN STORING ZONES

KARTRAK counts number of trolleys in each Storing Zone using the preset carts counting parameters and transmits, in real-time, reports of movements in each one of the areas of the airport. KARTRAK also provides statistics data in according with the user's preset parameters.

INDIVIDUAL CART IDENTIFICATION AND INFORMATION DATA

KARTRAK provides for inputting information and special data into each TAG module. Using the zone controller-TAG two-way communication KARTRAK is capable of receiving and transmitting information from/to each cart.

TROLLEY LOCATION

Using the aerial antenna triangulation technology, KARTRAK is able to get location and position of each cart.

THEFT ATTEMPT DETECTION

Using the strategically located special antennas, KARTRAK is able to detect well in advance any vehicle trying to leave the premises or the airport territory with a stolen cart. Therefore, it allows blocking the exit barriers, to activate alert signals and to activate the alarms and preset video-recorders. KARTRAK is still highly effective in case of fully closed vehicles and even in case of TAG module sabotage.

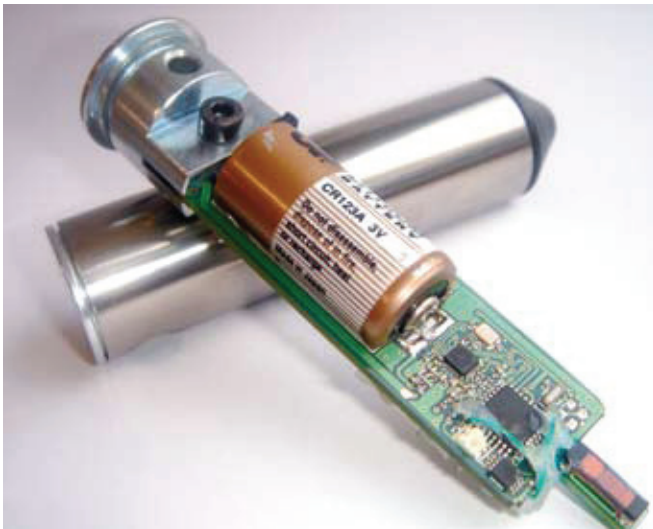
OPTIMIZATION

KARTRAK allows optimizing the human resources and trolleys management.

TAG MODULE SPECIFICATIONS

The RFID-based active device into the anti-vandal enclosure is fixed to a cart base body for communication and identification purposes. This unique identification function provides for counting and storing such parameters as serial and identification numbers, model type, programmed data, time & type of next maintenance, operating hours, charge battery status, etc.

Protection Class	<i>IP 65</i>
Operating Temperature	<i>from -30°C to 70°C</i>
Activation Frequency	<i>125 KHz</i>
Message Frequency	<i>868 MHz</i>
Battery Life	<i>about 4 years</i>



STORING ZONE MONITORING

The device controls two-way communications with the TAG module using 868 MHz radio signals. If necessary, control can be performed via the floor-mounted 125 KHz loop antennas.

Operating Temperature	<i>from -30°C to 70°C</i>
Identification Radius	<i>Between 10 and 50 cm</i>
Activation Frequency	<i>Up to 100 m (adjustable)</i>
Message Frequency	<i>RS232; RS485/422; Ethernet, GSM, telephone line</i>
Power Supply	<i>110/240 VAC; 12/24 VDC</i>

ANTENNAS

- 868 MHz receiver, preset to meet the system functional requirements.
- 125 KHz transmitter, for user needs.

CONTROL CENTER AND LOCAL AREA NETWORK (LAN)

All information collected by the STORING ZONE controller is transmitted via LAN to the Control Center (Station). It is the state-of-the-art software program incorporating the TRACKSOFT package.

The basic version of this system provides for:

- Recognizing # of carts accumulated in various zones of the airport;
- Recognizing # of carts available in the airport "PREMISES AREAS"; Being one area a group of zones (i.e. EXITS);
- Identifying and positioning each cart in the airport (inside and/or outside the counting zones);
- Detecting carts in NON PERMITTED ZONES;
- Detecting cart theft;
- Maintaining statistics of movements and distribution of needs of carts per zones, areas, days, etc;
- Generating preventive alerts and alarms for preventing such situations as lack of carts in various zones/areas, providing security in no-access zones, theft attempts, etc.



SYSTEM ARCHITECTURE

SERVER

TRACKSOFT application Server provides:

- Processing information received from all zones;
- Identifying status of all zones of the airport with using the visual graphic tools;
- Activating alarms in certain situations that require special attention of the operator;
- Recording and archiving movements and alarms for further processing, response and analysis;
- Adding, deleting and setting the different elements incorporated in the system;
- Managing the zones.

Usually is located in the Airport's Control Center



EVENT VIEWER TRACK-AWAY

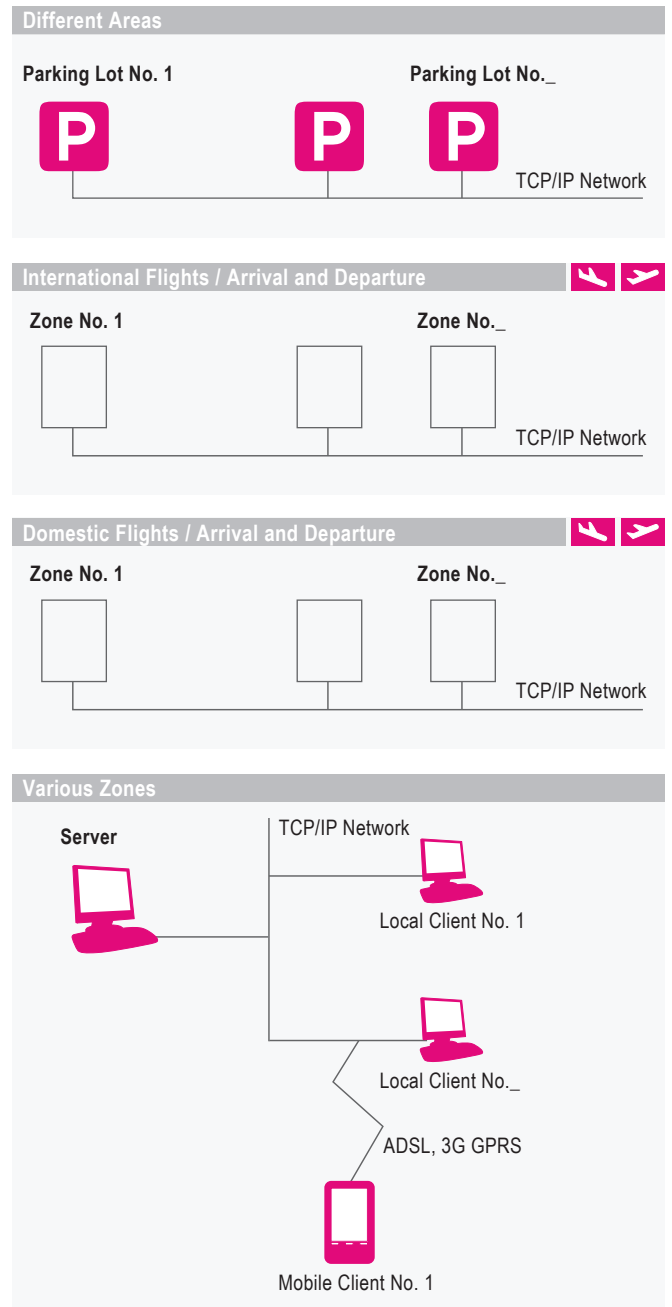
This is a User Software displaying the System and Alarms status. The TRACK-AWAY software in PC or PDA platform is linked with TRACKSOFT in the Server through out the LAN. So, it can be placed in a local or in a remote position. It is an extremely useful tool for those who are in charge of consulting, operating or controlling the System. (i.e. Different airport's area responsible, supervisors, trolleys service manage company, monitoring systems, etc.).

COMMUNICATION

All the elements of the System are communicated by TCP/IP. So, for the elements/ components located inside an airport it is possible to use the existing communication network (being ideally, to create a Virtual LAN for the System only); while one ADSL and 3G modem and GPRS are enough for the external components/ elements.

Where it is impossible to connect to Ethernet, WI-FI should be used.

COMMUNICATION DIAGRAM



KARTRAK

PAT. PEND.

by



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