NaftaCards

Fuel card system for petrol stations

USER MANUAL

Review date: 21 June, 2015

TECHNOTRADE LTD

CONTENT

Revision history

REV	DATE	BY	SECTION	DESCRIPTION
R03	2015.06.21	EV	CardManager utility released	NaftaCards version 2.0
R02	2014.08.11	EV	NaftaCards plugin issued instead of DiscountProfiOnline plugin	Semi-online version of NaftaCards system
R01	2013.11.11	EV	All	First release of documentation

Purpose of the document

This User Manual is intended for studying of NaftaCards payment and discount loyalty card system operation. It contains information regarding system structure, used hardware and software, types of cards and policies, customer loyalty programs and application of the system.

Information regarding special customized modules for the NaftaCards system can be found in documentation supplied together with such modules. Additional information regarding special questions on deployment and usage of the NaftaCards system can be received upon request to TECHNOTRADE LTD company.

Due to a reason that NaftaCards system is constantly being developed in direction of improvement of its possibilities, changes are possible in final version, which are not described in given User Manual.

During the system development process given User Manual is also expanded and updated and new chapters are added. Latest version of this User Manual can be downloaded from the NaftaCards fuel card system web-page: *http://www.technotrade.ua/fuel-card-system.html*.

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In case if you find any mistakes, omissions in this document or have any suggestions on improvements to this document, please feel free to e-mail them to our support mailbox: *support_1a@technotrade.ua*. We will be grateful to you for this valuable information.

All technical questions regarding the NaftaCards fuel card system are welcome to be asked on support mailbox: *support_1a@technotrade.ua*. Our support team will be glad to help you.

Also you can call to us or visit us on:

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List of terms and abbreviations used in text

CPU – central processing unit

FD – fuel dispenser or also called pump (under a fuel dispenser it is understood a whole dispenser if it has only 1 side or a fueling place of a dispenser if the dispenser has 2 sides)

FM – fiscal module

HDD – hard disk drive

MySQL – management system over databases

OEM – original equipment manufacturer (manufactures products or components that are purchased by a company and retailed under that purchasing company's brand name)

OPT – outdoor payment terminal

OC – operation center

OS – operation system

PC – personal computer

Pump – fuel dispenser side in case if a fuel dispenser has 2 sides or a fuel dispenser in whole if a fuel dispenser has 1 side (same as fueling place)

POS system - point of sale system, refers to a POS terminal or more generally to the hardware and software used for checkouts, the equivalent of an electronic cash register. NaftaPOS system relates to software of a POS system

RAM – random access memory

RDMS – relational database management system

RFID – radio frequency identification

Purpose, functions and possibilities of the fuel card system NaftaCards

NaftaCards fuel cards system for petrol stations – hardware and software complex, appointed for provision and account of fuel sales at petrol station networks using fuel cards with fuel volume, money and discount wallets or their mixtures.

The system allows to replace usage of cash and coupons to more reliable and convenient settlements using fuel and money cards. Card of the NaftaCards system can be used for filling with petrol at petrol station and reception of a discount.

The system allows to issue fuel and discount cards for customers and also to lead management over cards and account of all sales using these cards with management over accounts of customers and possibility to set flexible system of discounts.

Main functions of the NaftaCards system:
- Creation and management over fuel cards
- Leading of database of fuel cards and cardholders
- Formation of discount policies, money and fuel wallets
- Refilling of fuel volume and money cards
- Blocking/restoring of cards at their lost
- Provision of reports on application of fuel cards

Main advantages of NaftaCards system application:
- Attracting new customers to petrol station network and keeping existing customers with it
- Flexible loyalty system for customers (possibility to create discount and bonus policies and attractive programs)
- Absence of necessity to provide cash collection and hence the reduction in overhead costs
- Reception of preliminary payment from customers (cardholders) and hence quicker money turnover
- Control over purchases of customers in central office
- Possibility to lead analytics of sales and monitor trends in sales
- Various identifiers can be used in the system for identification of the system user: RFID-cards, cards with magnetic strip, chip cards or barcodes cards, various dongles
- Possibility to track actions of fuel attendants and generate reports on daily revenue and hence minimize stealing of fuel by personnel of petrol station
- Cards can be secured with a PIN-code

Main characteristics of NaftaCards fuel card system:
- Rich set of operations with cards: emission, personalization, issuing, return, refilling, blocking, unblocking, restoring, removal
- Flexible formation of discount policies
- Operation in half-online mode, which allows fuel cards system operation even with interruptions in Internet connection
- Account of sales on cards with maximal level of detalization
- Sales on cards of all assortment of products of petrol station
- Possibility to block cards of debtors
- Leading of history of all actions with cards
- Set of basic reports for reporting and analysis

Discount system:
- Flexible mechanism of discount policies creation from a set of schemes and parameters
- Usage of the same card as for cashless payment, so as a discount card
- Mechanism of remote changing of discount policies parameters
- Support of several types of wallets on cards: money and discount

NaftaCards card system – is an individual approach to requirements of every customer. Flexible mechanism of discount policies creation is a powerful tool for marketing. NaftaCards allows to control settlements on cards, individually work with each customer, precisely control money funds spend by each customer, delimit powers between the staff in the operating center.

NaftaCards fuel card system is integrated into NaftaPOS front-office software for petrol stations (more information about NaftaPOS system please find on its web-page *http://technotrade.ua/petrol-station-software.html*), using *NaftaCards* plug-in.

API for integration of the NaftaCards system into third-party software products is provided. NaftaCards system can be developed under specific requirements of the customers.

System structure
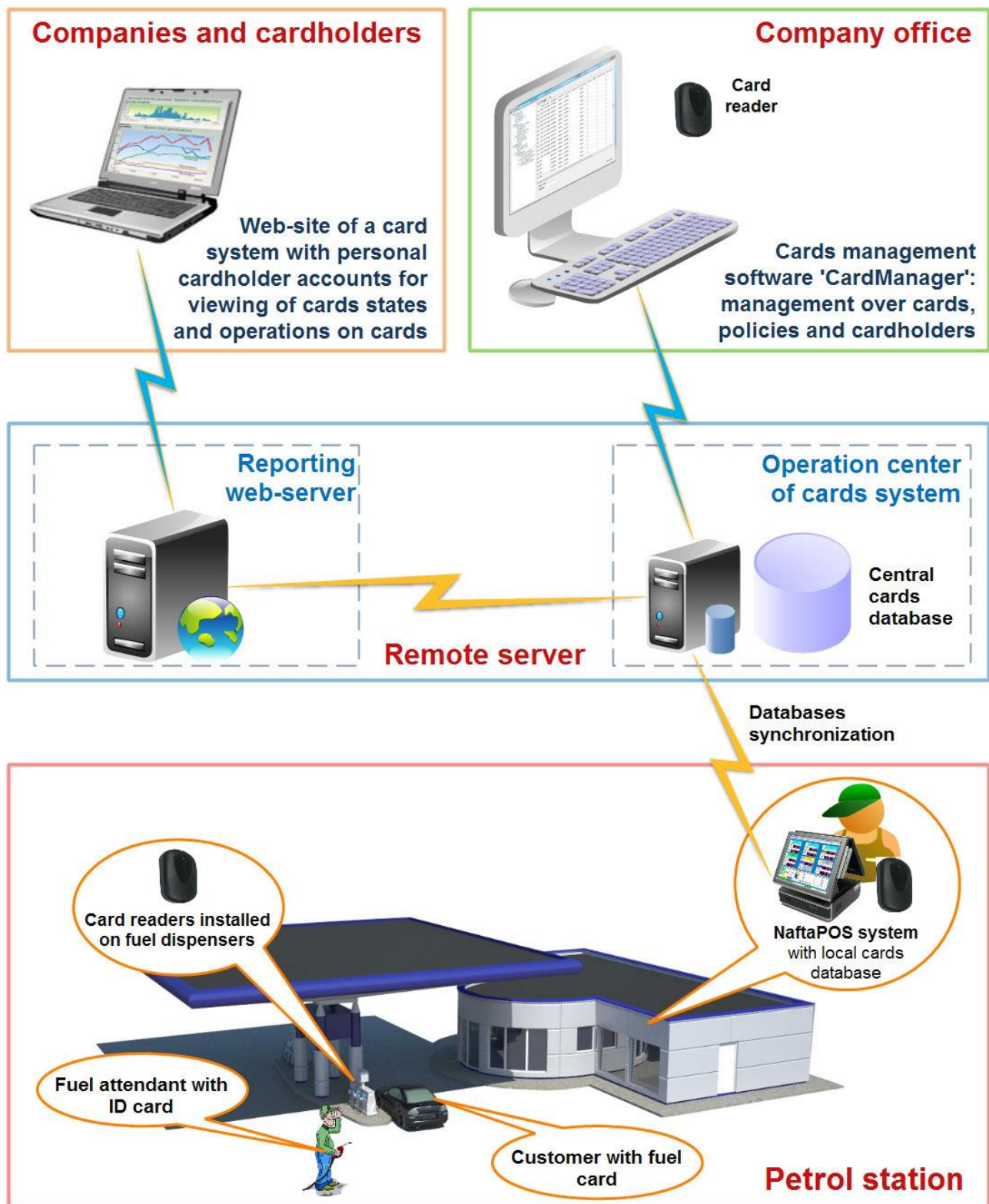
NaftaCards system structure (hardware and software)

Structure of NaftaCards system includes following components:

1. **Cards (dongles, keys or other identifiers)** – identifiers of customers and fuel attendants (servicing personnel of petrol station)

2. **Readers of cards (or other identifiers)** for installation near fuel dispensers and also for connection to PC with NaftaPOS software

3. *NaftaPOS software for petrol stations with installed **NaftaCards** plug-in and local fuel cards*

database (more detailed information regarding the NaftaPOS software please find on NaftaPOS software web-page: *http://www.technotrade.ua/petrol_station_software.html*)

4. **Operation center software with central cards database** – software for operation of the NaftaCards fuel card system (is installed on server)

5. **CardManager software** – software for management over NaftaCards fuel card system operation: management over cards, cardholders and administration of the system (is installed on any PC, which is connected to Internet)

6. **Software for the web-site of the card system** with personal cardholders accounts for viewing of cards states and operations with cards (is installed on server)

Principles of operation

NaftaCards system works the following way:

1. Central cards database, which is working in operation center, contains all data of the system, this cards database is managed using CardManager software. On petrol stations each NaftaPOS software leads copy of this database in regards of current cards account balances, this local database is periodically synchronized with central cards database of operational center (period of synchronization is configurable and by defaults is set to 10 minutes).

2. When a sale using a fuel card is performed on petrol station – NaftaPOS uses its local database to verify the card and card account limit remains. As a result of a performed sale a card account balance is decreased on dispensed fuel volume or cost (depending on the wallet type used) or a customer is given a discount for sale.

3. At the closest time of synchronization NaftaPOS sends information to server about the cards balances changes and sales performed from the moment of previous database synchronization, thus central cards database is updated.

Ability to use local cards database in NaftaPOS gives a possibility to use fuel cards even in conditions when there is no stable Internet connection on petrol stations (interruptions in Internet connection). If there is no Internet connection at a moment of synchronization – then attempt to make synchronization is performed the closest time when Internet connection is again established.

In order to prevent application of fuel cards in case if there is no Internet connection during a long time (and thus prevent application of the fuel cards on several petrol stations when the Internet is down) – there are 2 levels of fuel cards limitations foreseen in the system (time periods can be configured):
- if Internet connection is not present for more then 60 minutes then application of cards with money and fuel volume wallets is blocked, only discount cards can be used
- if Internet connection is not present for more then 180 minutes then application of discount cards is also blocked

Fuel cards operation will be continued after synchronization procedure is successfully performed after Internet connection is established.
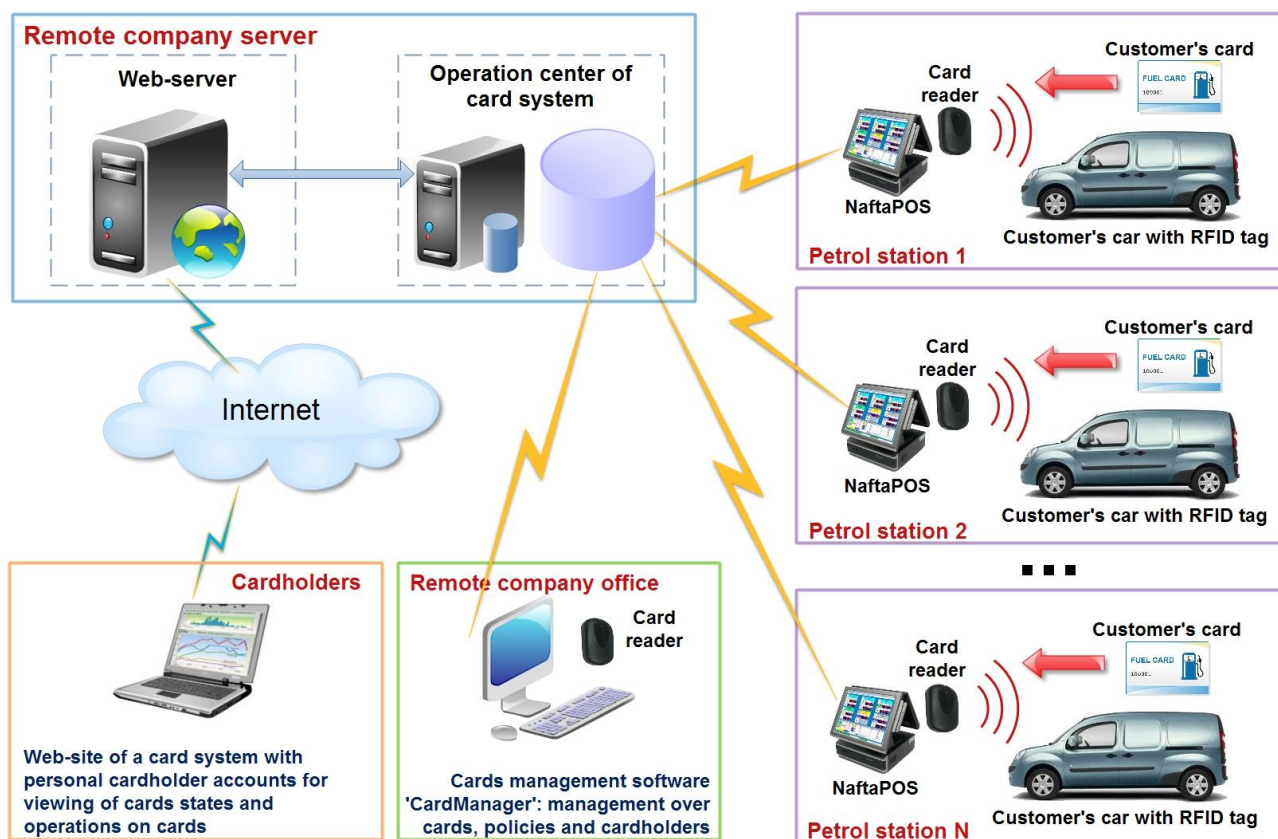
Application

NaftaCards system can have several applications at petrol stations and for each application structure of system hardware can differ:

1. **Application of fuel cards by clients of the petrol station (private customers or corporate users).**

    In this case cardholders are clients of the petrol station. Card readers can be installed near each fuel dispenser or near the NaftaPOS system inside the cashier premise of petrol station.

    If NaftaPOS systems works in the <u>Preset mode</u> of control over fuel dispensers – then after giving a command for dispensing in NaftaPOS system it will request a card to be brought to the reader for identification. The authorization command will be sent to forecourt controller in case if there is enough balance on the card to make ordered sales.

    In case if NaftaPOS works in <u>Manual mode</u> of control over fuel dispensers – then first it is necessary to select fuel grade for dispensing (by taking up required nozzle on fuel dispenser) and after that to bring a card to the reader (reader will be beeping and waiting for the card). Dispensing will be authorized with maximal limit of the card.

Scheme for application of fuel cards by clients of the petrol station

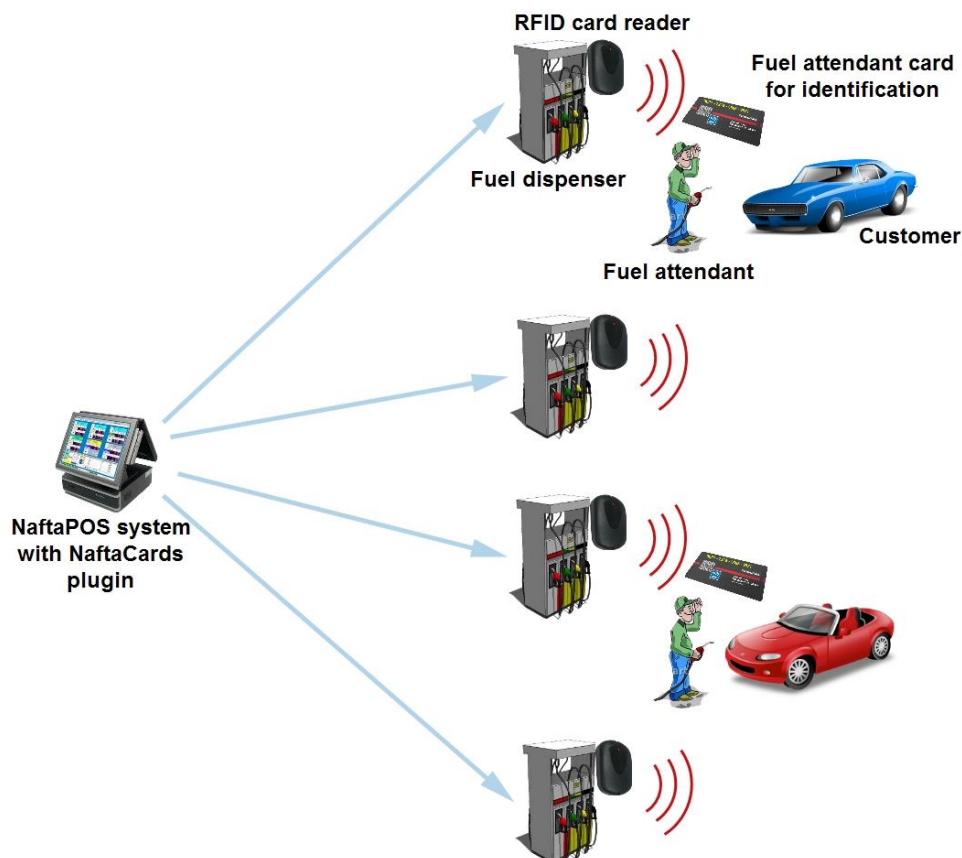Whole process of operation can be described as follows:

1. NaftaPOS software leads internal database of fuel cards accounts balances, which is periodically synchronized with the central server cards database.
2. Customer or fuel attendant inputs the order for fuel volume (or cost) on dispenser or in NaftaPOS system and brings a fuel card to the reader.
3. Information about the card serial number is read by the card reader and verified in the NaftaPOS local cards database.
4. From local cards database NaftaPOS "finds out" what wallet and policy are linked with given card account and also what is remained allowed daily limit for fuel dispensing by given card. Also from

database NaftaPOS gets information whether it is necessary to request PIN-code to use the card (in case if it is necessary to request PIN-code NaftaPOS allows dispensing only after correct PIN-code entering).

5. NaftaPOS system provides authorization of the dispenser with fuel volume dose, equal to remained daily limit for the given card account balance (in case if order on dispensing entered in NaftaPOS is less than remained daily limit for the given card account – then NaftaPOS system provides authorization of the dispenser with fuel volume, equal to this order). Dispensing starts.

6. During the period of dispensing on given card account daily limit is blocked by the system (no ability to use it for any other dispensing until given dispensing is finished).

7. In the end of dispensing NaftaPOS system optionally prints a receipt in accordance with selected payment form.

8. NaftaPOS decreases given card account daily limit on volume (amount) of dispensed fuel and unblocks it.

9. At closest local cards database synchronization with server central cards database information about performed sale and changes in remains on given card account are sent to central server cards database.

2. **Application of cards by fuel attendants of petrol station and building reports on activity of each fuel attendant.**

In this case fuel card is used for identification of fuel attendants, who are servicing at petrol station. The dispensing can only start in case if fuel attendant brings his fuel card to the card reader, which is installed on the fuel dispenser. The card reader reads the fuel attendant ID card and NaftaPOS system verifies it in the local cards database. NaftaPOS system will authorize the dispenser only in case if the card of fuel attendant is valid and allowed in the system, so without a valid fuel attendant card it is not possible to start dispensing (no one can steal petrol by start dispensing himself). Fuel attendant receives payment from clients. When sale is done NaftaPOS saves in local database information about performed sale: dispensed fuel volume, received payment amount and ID of fuel attendant, who serviced the dispensing. NaftaPOS system any time is able to generate a report on activity of every fuel attendant and total cash money amount, which the fuel attendant received from customers and should return to petrol station owner.


Scheme for application of identification cards by fuel attendants of petrol station

Whole process of operation can be described as follows:

1. Fuel attendant inputs the order for fuel volume (or cost) on dispenser or in NaftaPOS system.
2. After taking up a nozzle on fuel dispenser the fuel attendant brings his fuel card to reader located near the fuel dispenser.
3. Information about the card serial number is read by the card reader and is verified in the NaftaPOS local cards database.
4. In case if the fuel attendant has permissions to make the dispensing – NaftaPOS system authorizes a dispenser.
5. Fuel dispenser starts dispensing fuel with maximal allowed dose.
6. In the end of dispensing NaftaPOS system optionally prints a receipt in accordance with selected payment form.
7. Customer provides payment to the fuel attendant.
8. NaftaPOS system saves information about performed dispensing to local cards database (dispensed fuel volume, received payment amount and ID of fuel attendant, who serviced the dispensing).
9. Owner of petrol station can review NaftaPOS reports in order to get information about all sales serviced by each fuel attendant and total money amount each fuel attendant should return to him.

Cards used in system

FUEL CARD 100001
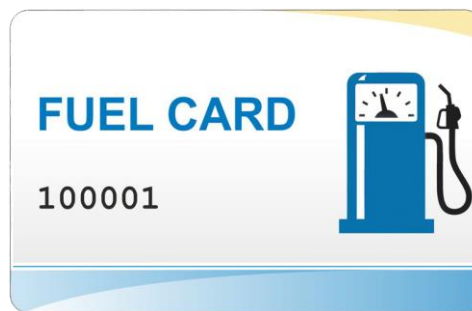
Various types of identifiers can be applied in the system: RFID-cards, cards with magnetic strip, chip cards, barcode cards, various dongles, others. Current version of the system is supplied together with RFID-cards of EM-Marine or Mifare standards (cards of Mifare standard are considered to be more secure compared to cards of EM-Marine standard).

For protection of card from unauthorized usage any card in system can be protected with a PIN-code, which cardholder should input every time he uses his card.

Card in the system serves only as identifier of a cardholder and does not store any other information. All data from card (personal information of cardholder, PIN-code, his account, policies linked to the card, other information) is stored in operation center central cards database, information about remains on cards account and remained daily limits are also stored in NaftaPOS local cards database. Due to such approach it is not possible to hack a card to get this data and at lost of the card the account of cardholder will not be lost or damaged anyhow, it is easy to block the lost card and issue another card to customer, by linking the existing customer's account to a new card.

Each card can contain one or several wallets. Fuel wallets are linked to specific products (fuel grades). Money wallets are linked to currency types. Depending on combination of wallets possibilities of the card can be significantly extended. For example it is possible to add money and discount wallets on the same card. Such a combination allows to provide cashless settlement at payment for product (money wallet) and at once get a discount on existing policy (discount wallet).

Life cycle of the car can be shown as follows:
1. Manufacture of card
2. Reception of card on the stock
3. Personalization of the card (linking card to cardholder's account)
4. Active operation with card
5. Blocking of card (when the card is out of life cycle or is lost)

Every cardholder can have any quantity of any cards, on which in system a balance is fixed. Given balance is separated into money balance (total money sum, on which purchases in system were made) and volume balance (in liters, in case of fuel) for each type of fuel. Data on client and his balance is managed by company-owner of the card system.

In case if on the same product the client has several discounts – then these discounts are not summarized, but the biggest one from the discounts is applied.

Wallets on the card

Discount wallets

Cards with discount wallets give a possibility for their owners to receive discount on products and services. One card can have as one discount wallet, so as several.

Algorithm of discount calculation is described by discount policy. Every wallet can contain one discount policy. Policy can be as personal for each card, so as one for group of cards.

Volume wallets

Fuel card can contain one or several volume wallets with prepaid volume of petroleum product. Principle of volume cards is similar to bank cards, but the only difference is that instead of money the card stores prepaid volume of petroleum product.

Volume fuel card can contain several wallets for various types of petroleum products. Volume cards can have limits for types of fuel per time period (daily limit and monthly limit). Such limits are foreseen for limitation of fuel expenditure by company employees and as a guarantee that in case if the card is lost – not all fuel could be physically sold from it by thief before the lost is noticed and cardholder blocks the volume fuel card.

Money wallets

Money wallets are used for payment for fuel using cashless settlements (principle of money card operation is same as of bank cards). At payment for fuel using a money fuel card its money account is withdrawn on the cost of the dispensed fuel. Each money wallet is linked to a specific money currency configured in system.

Corporate wallets

Group of cards with corporate wallets have a single common account, from which money (or fuel volume) is withdrawn at application of the cards linked to this account. Each of the cards has its own personal number, using which it relates to common account. Account can be as volume, so as money. For each of the corporate cards it is possible to set personal limits for expenditure (daily limit and monthly limit).

Formation of discount policies

General policy adjustments

Each policy in NaftaCards system has general adjustments, which relate to all discounts of the policy:
- List of products, which are subject to this policy. If the list is empty – then policy works with all products.
- Type of the discount. Discount can be given in:
  o Percent (for example, 5% from the cost)
  o Money (for example, 10 cents from cost of every liter of fuel)

Discount policies

Discount policies are appointed for calculation of a discount, which is applies as to a single card, so as to the group of cards. Discount wallet can have only one policy. If it is necessary to apply for a card several policies – several discount wallets are linked with the same card,

Each discount wallet contains two types of adjusted discounts:
- Threshold discount
- Birthday discount

In a policy it is possible to have as one from the listed discounts, so as any their combination. In case if on the same product the client has several discounts – then these discounts are not summarized, but the biggest one from the discounts is applied.

Threshold discount

Threshold discount calculates discount depending on amount of accumulated funds of cardholder. A certain discount takes place depending of sum of accumulated funds on account of cardholder. For example there are 3 thresholds: 20 USD, 50 USD, 100 USD. Before reaching a first threshold (less than 20 USD) a discount is 2%, at accumulation of funds value between first and second thresholds (between 20 USD and 50 USD) the discount becomes 3%. At reaching the highest threshold – the maximum discount is given (for example 5%).

Threshold discount has following adjustments:
- Period of funds accumulation. This is a period during which accumulated funds are summarized, which have influence on the value of discount:
  o Not used. Accumulated funds are not accounted. A first discount from the list is taken. This mode is used for formation of the fixed discount. Thus in given mode always only one discount is active.
  o Whole period. Accumulated funds are accounted during the whole period of card usage without any time limitations.
  o Single-time. Accumulated funds are calculated only in the current order. For example at order more than 10 liters of fuel discount is 2%, at order more than 20 liters – discount is 3%, if you order more than 30 liters – discount is 5%.
  o Current month. Discount is applied on size of accumulated funds, accumulated only during the given month, in the next month accumulated funds are zeroed.
  o Last month. Discount is applied on size of accumulated funds, accumulated during the previous month.
  o Current quarter: is applied on size of accumulated funds, accumulated during the current annual quarter.
  o Last quarter: is applied on size of accumulated funds, accumulated during the last annual quarter.
  o Current year: is applied on size of accumulated funds, accumulated during the current year.
  o Last year: is applied on size of accumulated funds, accumulated during the last year.

- List of products articles on which accumulated funds are calculated. If the list is empty – accumulated funds are accounted at purchase of any product.
- Type of accumulated funds. This parameter defines what is used as accumulated funds:
  o Money. Total cost of purchases made using a card is taken as accumulated funds.
  o Volume. Volume of purchased fuel (quantity of fuel liters) using a card is taken as accumulated funds.
- List of thresholds and appropriate discounts. Table, which sets value of discount depending on the threshold value of accumulated funds. Discounts, which will be activated at reaching of the certain threshold. If the list is empty – then constant discount is used.

Birthday discount

Birthday discount works only during the birthday day of the cardholder. Date of birthday is taken from the cardholder data. If the value of the discount is 0 – discount is not active. The discount subjects to general adjustments of the policy (list of products articles and discount type).

Accounts

Money and volume fuel cards store funds on the account. Depending on the type of account it can store money or volume funds: money cards store money funds and volume cards store fuel volume funds (liters).

Each card can have personal account. Also it is possible to connect several cards to a common corporate account. Quantity of funds used by every card can be limited by personal adjustments of daily and monthly limits. With exhaustion of these limits on the card account the card will be blocked.

Refilling and withdraw of funds from account can be made using CardManager software. All changes of account balance are fixed in Operation Center and can be viewed in reports.

Every card account contains following account adjustments:
- Account status. Defines possibility to operate with account.
    - o Not active. Card can not be applied.
    - o Active. Card can be applied.
    - o Blocked. Card is blocked and thus can not be applied.
- Account type. Defines a type of funds stored on account.
    - o Money (with indication of stored money currency).
    - o Volume (with indication of fuel product code).
- Overdraft type. Defines algorithm of operation, when funds of the account become exhausted (in account of daily or monthly limits) - account limit on card gets equal to zero.
    - o Single-time. It is allowed to make single-time sale on a card with exhausted funds, at this current order is made in credit. After this balance becomes negative and subsequent operation is blocked until refilling of cards account.
    - o Emergency store. Account stores emergency store of funds, which can be used only for payment of current order if account balance on card is not enough. At this no credit is done. Size of emergency store is defined in adjustments of the account.
    - o Credit. After ending of funds on card account a credit is provided in size, specified in account adjustments. After exhausting of the credit the account is blocked until credit repayment and refilling of the account are done.
    - o Unlimited credit. After exhausting of funds on card account an unlimited credit is provided, size of credit is not limited.

Card reader used in system

Currently there are 2 different types of readers used in NaftaCards system:
1. VRD-E card reader with Ethernet interface
2. Terminal "Signal-1"

VRD-E card reader with Ethernet interface

VRD-E card reader with Ethernet interface is intended for reading of EM-Marine contactless identifiers (125 kHz) and its transmission using Ethernet interface (optionally readers able to read Mifare identifiers (13.56 MHz) and EM-Marine identifiers (125 kHz) are present). Reader provides reading of code from distance from 50 to 100 mm (depending on the conditions of operation).

VRD-E card reader with Ethernet interface

Reader is provided as for internal installation and also for outdoor installation in waterproof case and electrical board covered with weatherproof paint. Reader allows to configure buzzer and 2-colors LED for indication (green and red LEDs).

Example of reader installation near fuel dispenser:
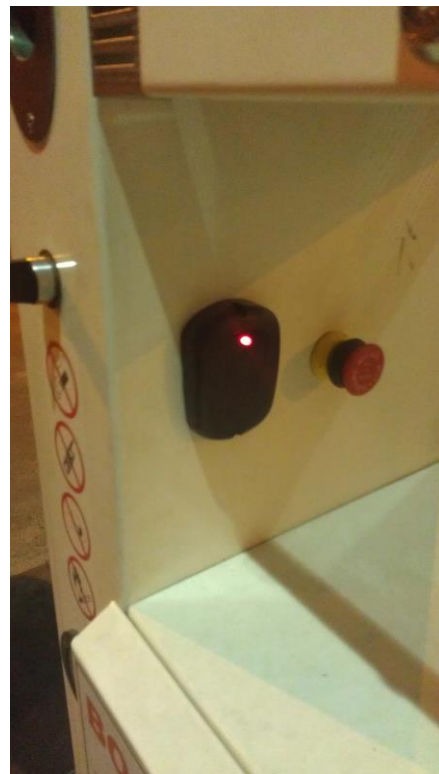
Example of VRD-E reader installation on fuel dispenser

More technical information regarding VRD-E card reader with Ethernet interface can be found in technical guide on: *http://www.technotrade.ua/vrd-e-card-reader.html*.

Terminal "Signal-1"

Terminal "Signal-1" - is payment terminal intended for provision of self-service at petrol stations. It has wireless communication and is equipped with a built-in display, keyboard, RFID-reader and iButton-tags reader, which allows it to be used for following purposes:
 − preset of order to be dispensed from fuel dispensers
 − application of fuel cards (identification of customers, displaying of current card's balance and limits, operations with cards and accounts)
 − identification of fuel attendants
 − self-service at petrol station

Example of reader installation near fuel dispenser:

Example of terminal "Signal-1" installation on fuel dispenser

Terminal "Signal-1" has explosion-proof case with 1ExibIIBT4 marking and can be mounted on fuel dispenser (pump). Terminal "Signal-1" works in a structure of NaftaPOS system for petrol stations and also can be integrated with NaftaCards fuel cards system. Terminal "Signal-1" communicates to NaftaPOS software through a radio-frequency hub "Signal-K".

The terminal gives the following advantages compared to "traditional" way of petrol station operation, equipped only with POS system:
 − decreasing of time on customer service due to remote identification and automated processing of requests on fuel dispensing
 − simplification of settlements between petrol station and corporate customers using fuel cards
 − reinforcement of fuel consumption control by corporate customers, exclusion of misuse possibilities

Besides petrol station the terminal "Signal-1" can be applied for provision of wireless identification of fuel attendants or corporate customers on other industrial, trade or transport sights.

More technical information regarding terminal "Signal-1" can be found in technical guide on: *http://www.technotrade.ua/signal-self-service-terminal.htm*.

Requirements to server of Operation Center software

For installation of Operation Center software on server it should have following minimal hardware and software resources:

- Operation system Linux or Windows
- MySQL database management system of version not lower than 5.0.95
- QT version not lower than 4.7 (or 4.8)
- Constant access via Internet
- Static IP-address
- Possibility to open additional socket ports

CardManager software

CardManager software is intended for management over the NaftaCards fuel cards system (cards registration, cards issue, refilling of cards accounts, blocking of cards, etc) and also has possibilities for configuration of the Operation Center software: management over users, registration of clients, control over list of companies-cardholders, lists of products, others. Also the CardManager software has a possibility of reports review, which are connected to movement of cards, states of wallets, information on products sales, others.

Installation

Installation of the CardManager software is done by running its installation file: CardManager.exe. By defaults the software is automatically installed in *C:\Program Files\CardManager* folder.

During installation it is necessary to follow all required steps of the installation wizard.

After installation it is necessary to find a configuration file *config.xml*, which sets configuration for the database connection and VRD-E reader connection. This file has the following content:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<config>
 <database>
  <ip>127.0.0.1</ip>
  <port>3306</port>
  <name>azs</name>
  <login>AZSUSER </login>
  <password> </password>
 </database>
 <manager>
  <login>admin</login>
  <password>admin</password>
 </manager>
 <rfid>
  <ip>192.168.1.191</ip>
 </rfid>
</config>
```

Fields of this configuration file marked with yellow background are to be replaced to required. Fields of the configuration XML file mean:
  - **config** node:
    o   ip – IP-address of the central database server
    o   port – port number on the central database server
    o   name – name of the central database
    o   login – login to the central database
    o   password – password to the central database
  - **manager** node:
    o   login – user login for entering CardManager utility
    o   password – user password for entering CardManager utility
  - **rfid** node:
    o   ip – IP-address of card reader

General possibilities

The CardManager software is used to display data in a table format with convenient editing.
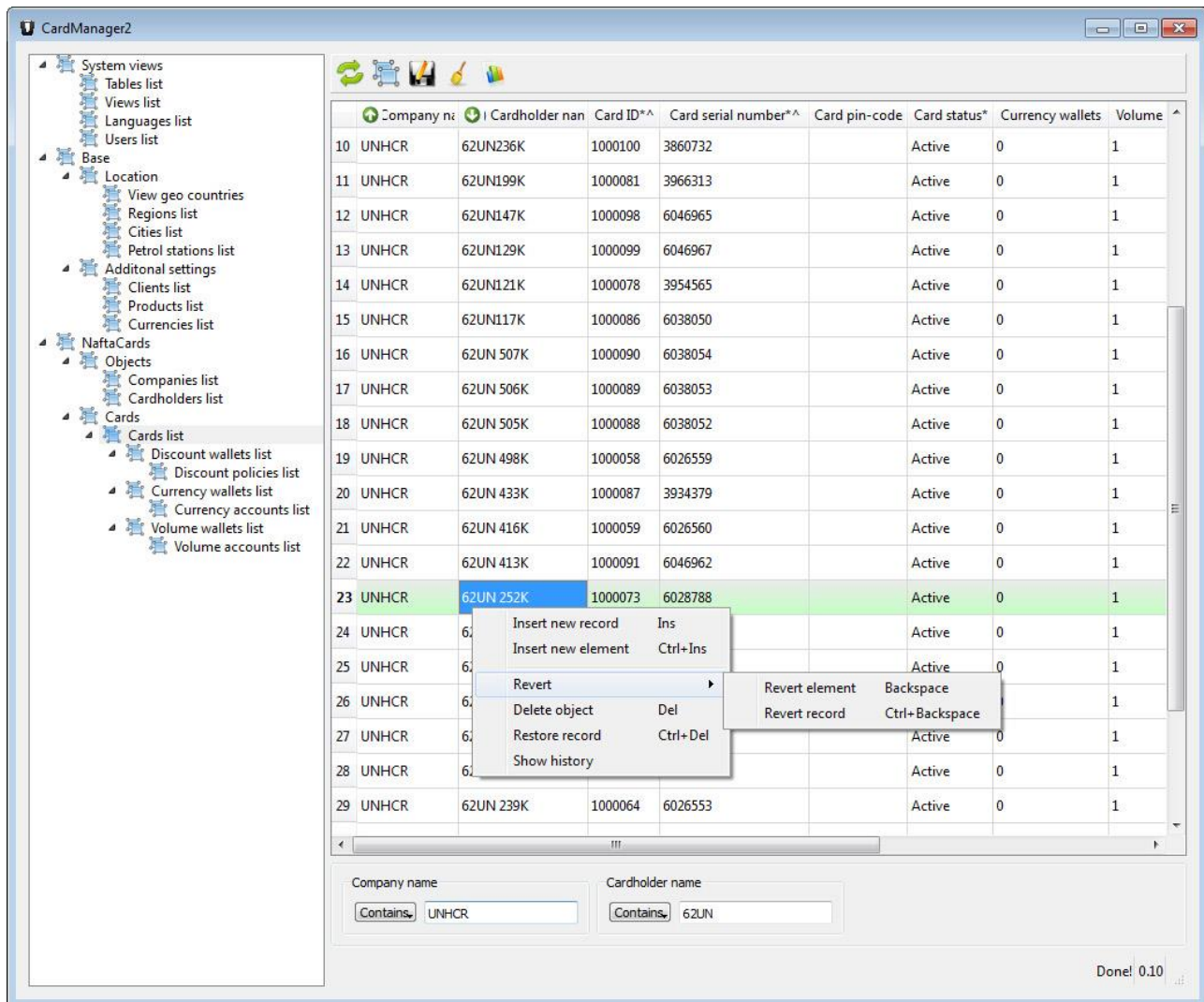
General view of CardManager software

Cells of the table can be editable fields, non-editable fields and also drop down lists.

Columns of the table may contain characters:
    * – mean that the field data is required
    ^ – means that the field requires unique data

As there can be displayed large amounts of data in the software – there are means for easing of data processing as data filtration, data sorting, columns indication, group data editing, others.

Colors of the line rows define state of this data:
    – green color – row was recently modified and saved to database
    – purple – row was modified, but changes were not yet saved to database
    – red – row was deleted

Actions with the table (inserting new rows, deleting rows, reverting the rows fields values, others) is done from the right-button mouse menu, when clicked on the row cell.

For saving of data to central database it is necessary to click on button "*Save*" in the top menu.

For inserting of new records it is necessary to select an option "*Insert new record*" (or click on INS key) in the right-button mouse menu. Sometimes if it is necessary to configure parent entities from the child edit entities it is possible to click "*CTRL + INS*" combination, which will open parent entity editing window.

Data filtration

In case it is necessary to make filtering of data by some criteria it is necessary to drag-and-drop required field (cell of the table) to filters area. It will add a filter with the cell value:
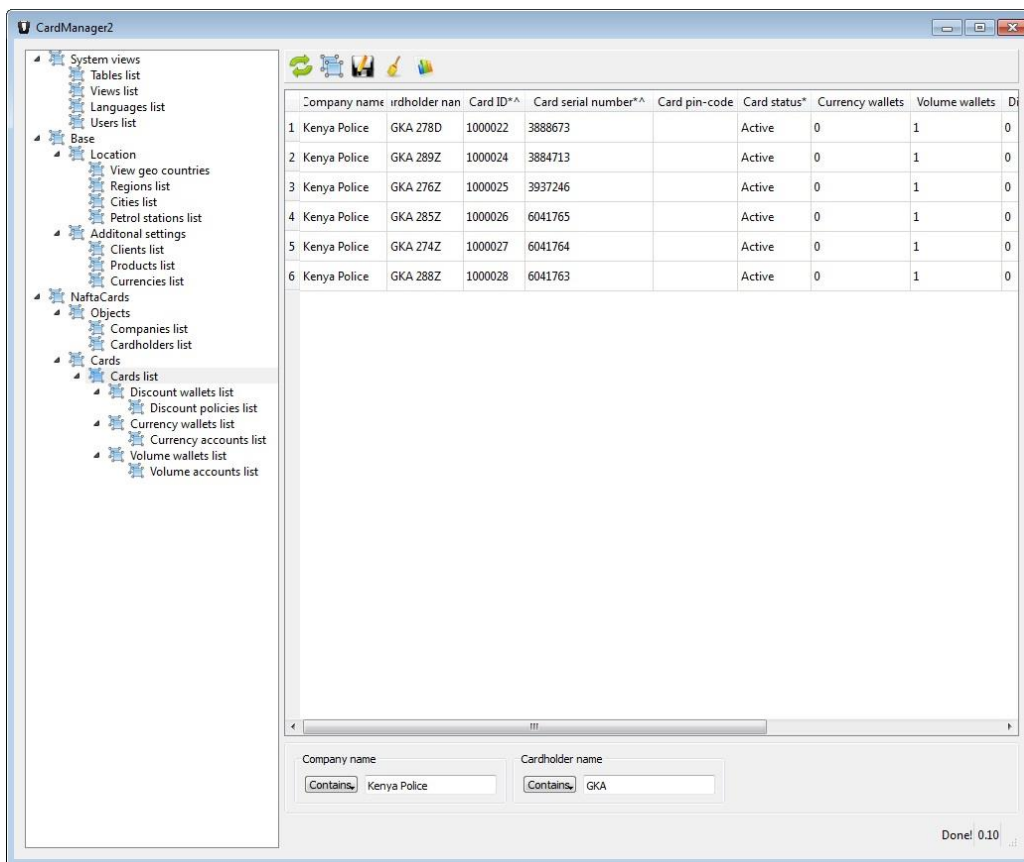
Same time you can add many different filters and assign exact condition to each of them:
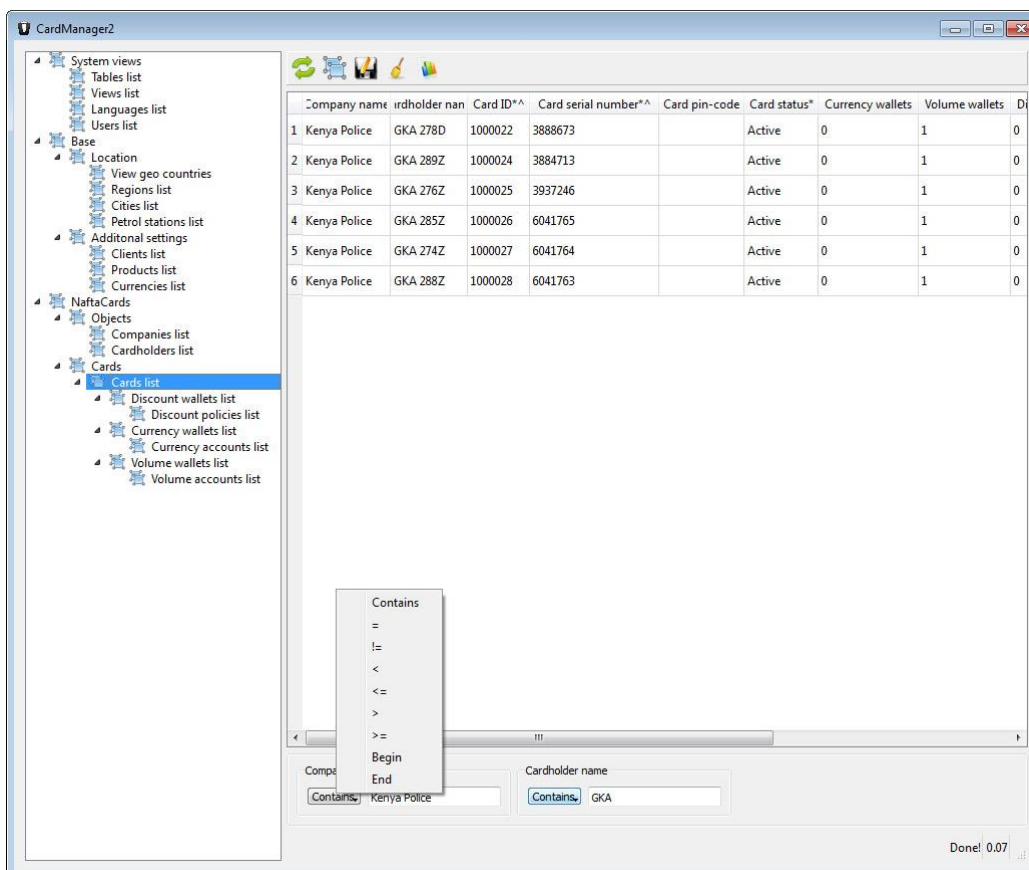
Data sorting

It is possible to make sorting of columns data by clicking on the column header. The column sorting direction is up or down. In case if CTRL button is pressed it is possible to make sorting of data using several columns content. The first selected columns will be sorted first, the last selected column – will have the last:

Columns indication

The software allows to select displayed columns, to make automatic sizing of columns and to hide the deleted records. All this is selected in the menu called when a right mouse button is clicked on any of the columns headers:
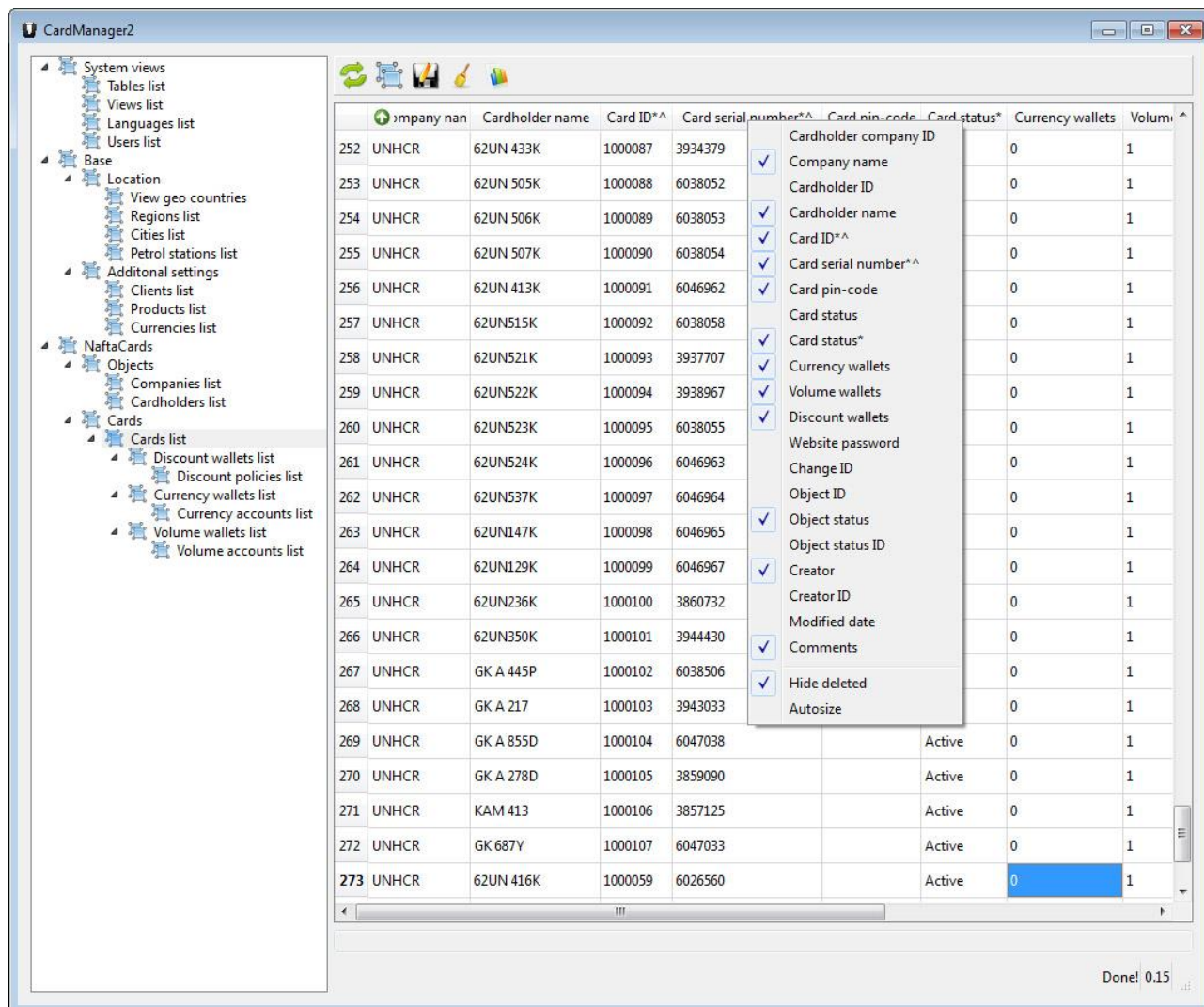
Group data editing

Group data editing allows to input same data in the selected fields. It is useful when a group of records needs to have the same modification. To use group selection it is necessary to enable group selection option in top menu:
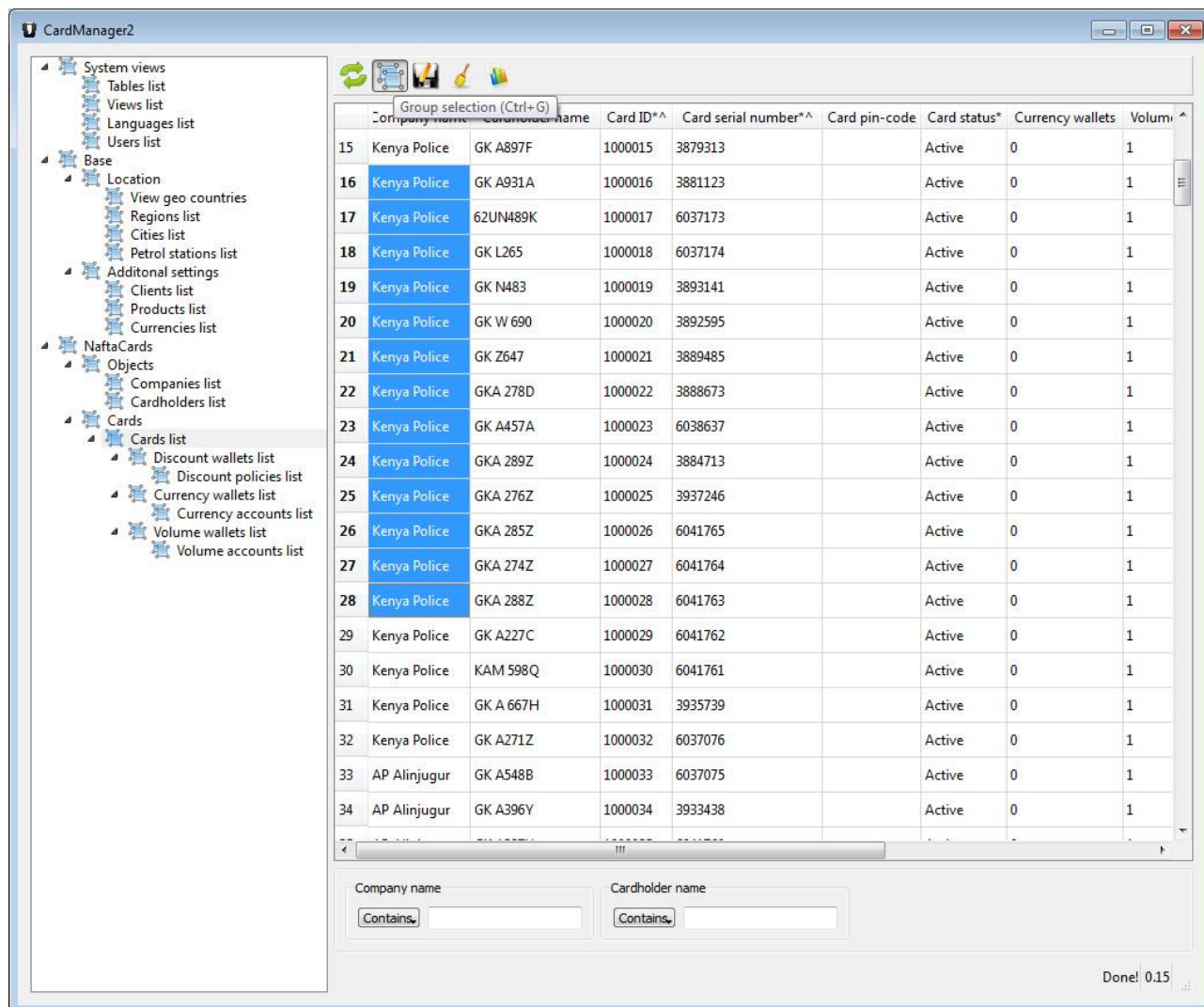
Color indication

After the row data was modified a row is displayed with purple background color. If modified data is saved – a background color s changed to green:
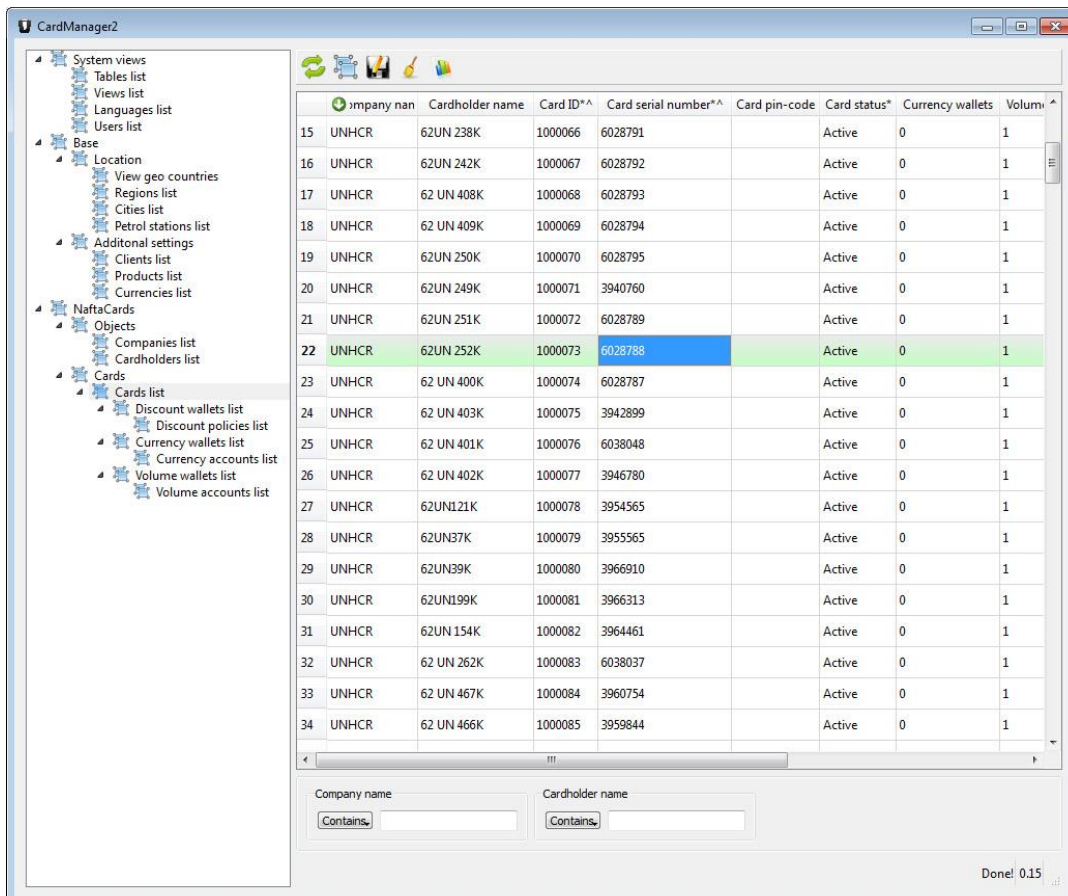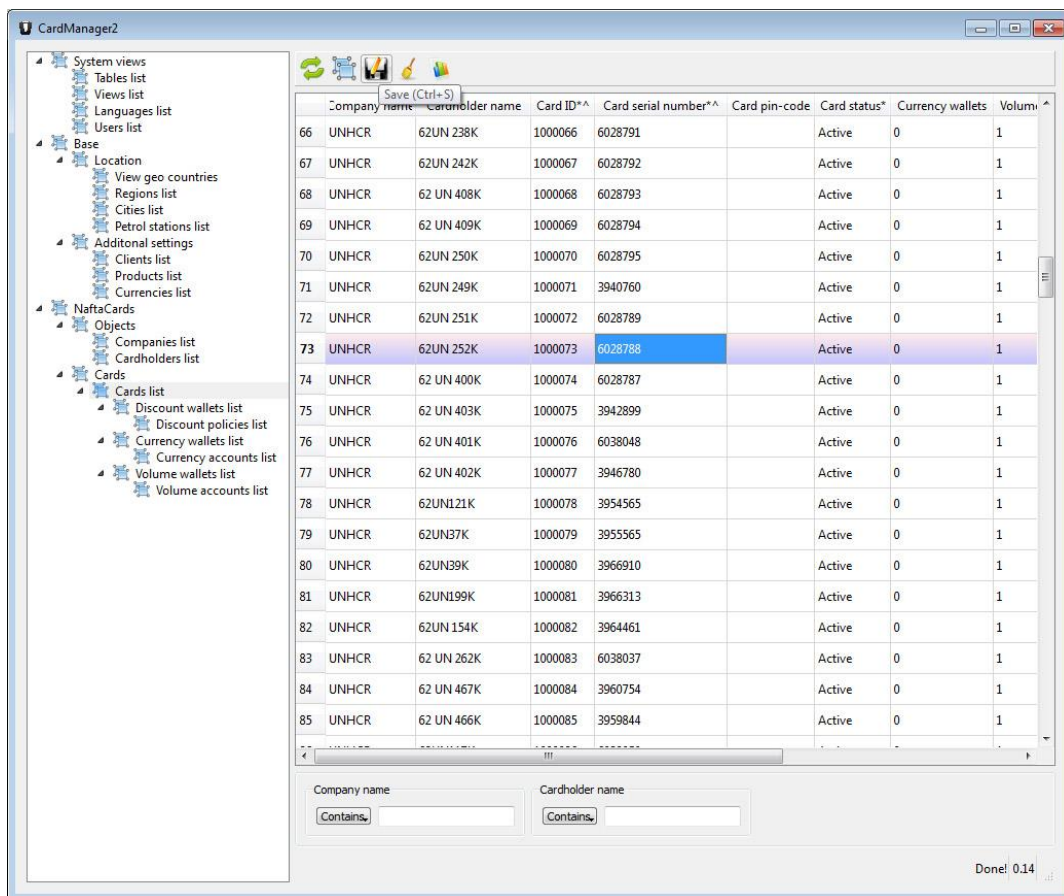
Using a right-button mouse menu it is possible to revert a value of the modified field to the initial:
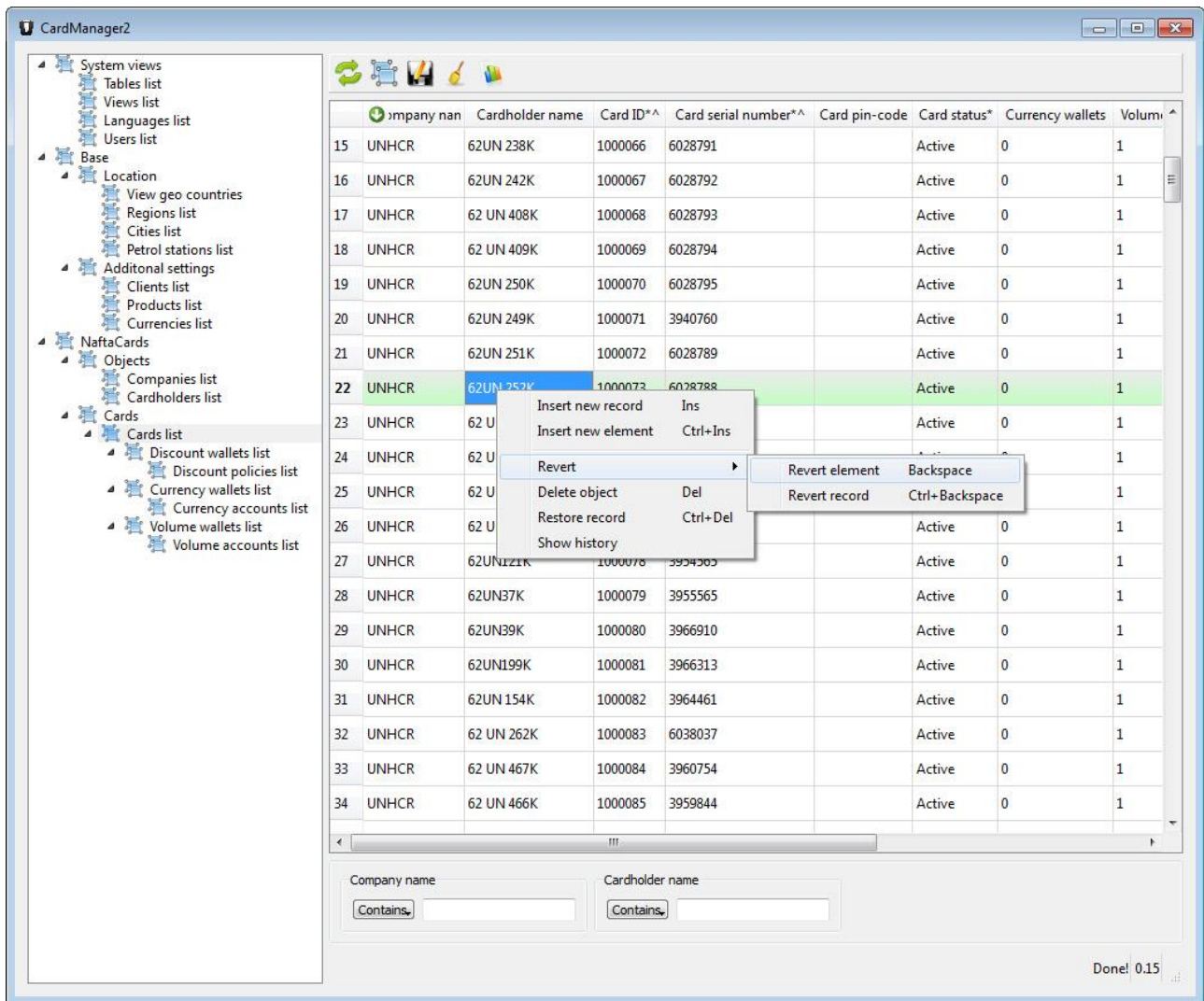
Inserting of a new record to the table is done also the right-button mouse menu item.

Operation

Operation in the CardManager software includes:
- filling and updating during the lifecycle the database with data on
  o petrol stations list (country, region, city)
  o products list
  o currencies list
  o companies list
  o cardholders list
  o cards list
- periodical refilling of cards account balances
- generation and review of operational reports

While adding new records to database columns may contain special symbols:
  * – mean that the field data is required
  ^ – means that the field requires unique data

Petrol stations adding

In order to add new petrol stations to the system it is necessary to add to the system countries, regions, cities and finally petrol stations. This is done from the left menu node *Location.* Adding of each of these instances is done in similar way. As an example let's see how new city is inserted:
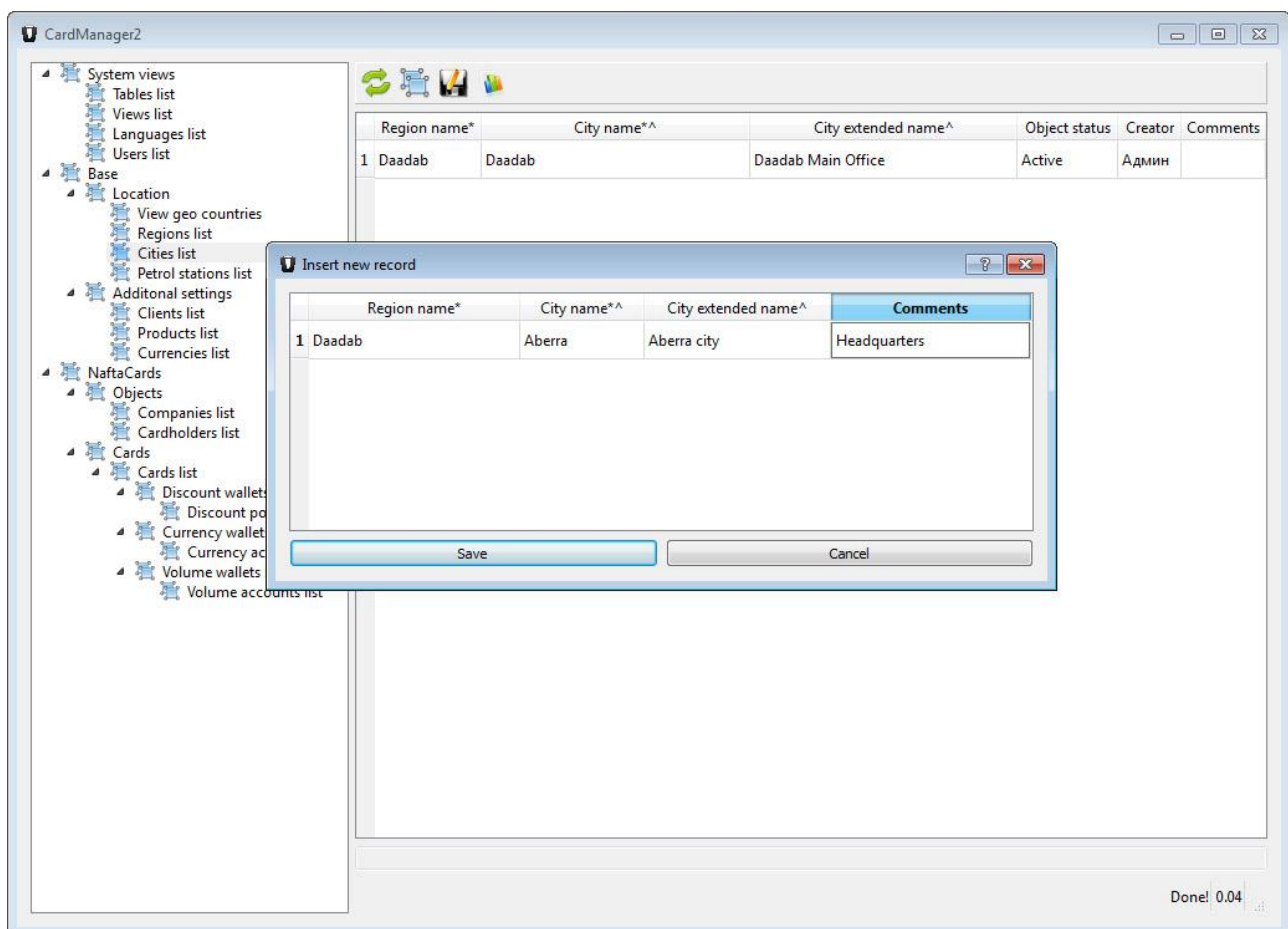
While filling the table first you need to add a countries list. This list is used during adding of the regions (region is assigned to specific country). City in its turn is assigned to the selected region. And while creating a petrol station it is necessary to specify a city of its location. Additional fields for each of these instances allow to specify more details.

Clients adding

Clients mean NaftaPOS systems (or other POS systems, which have integrated NaftaCards fuel cards system), which are working with NaftaCards system. It is registration of the NaftaPOS system in NaftaCards central server.

At adding clients it is worth to remember the ID number of the added client will be needed to set in NaftaCards plugin of NaftaPOS to enable NaftaPOS system get access to NaftaCards database during operation. ID number is assigned by the software automatically after adding a new client.

Products adding

There is an impotant condition for adding products: product codes for fuels in NaftaPOS software and in NaftaCards database should be the same.

Companies and cardholders adding

Companies mean the customers of the fuel cards system, whose employees are going to use fuel cards. Cardholders mean owners of cards, each cardholder should be assigned to a company.

Cards adding

Cards table is the main table used during system operation. It allows to add cards to the system and modify existing cards and also it allows to refill any of the cards used in system.
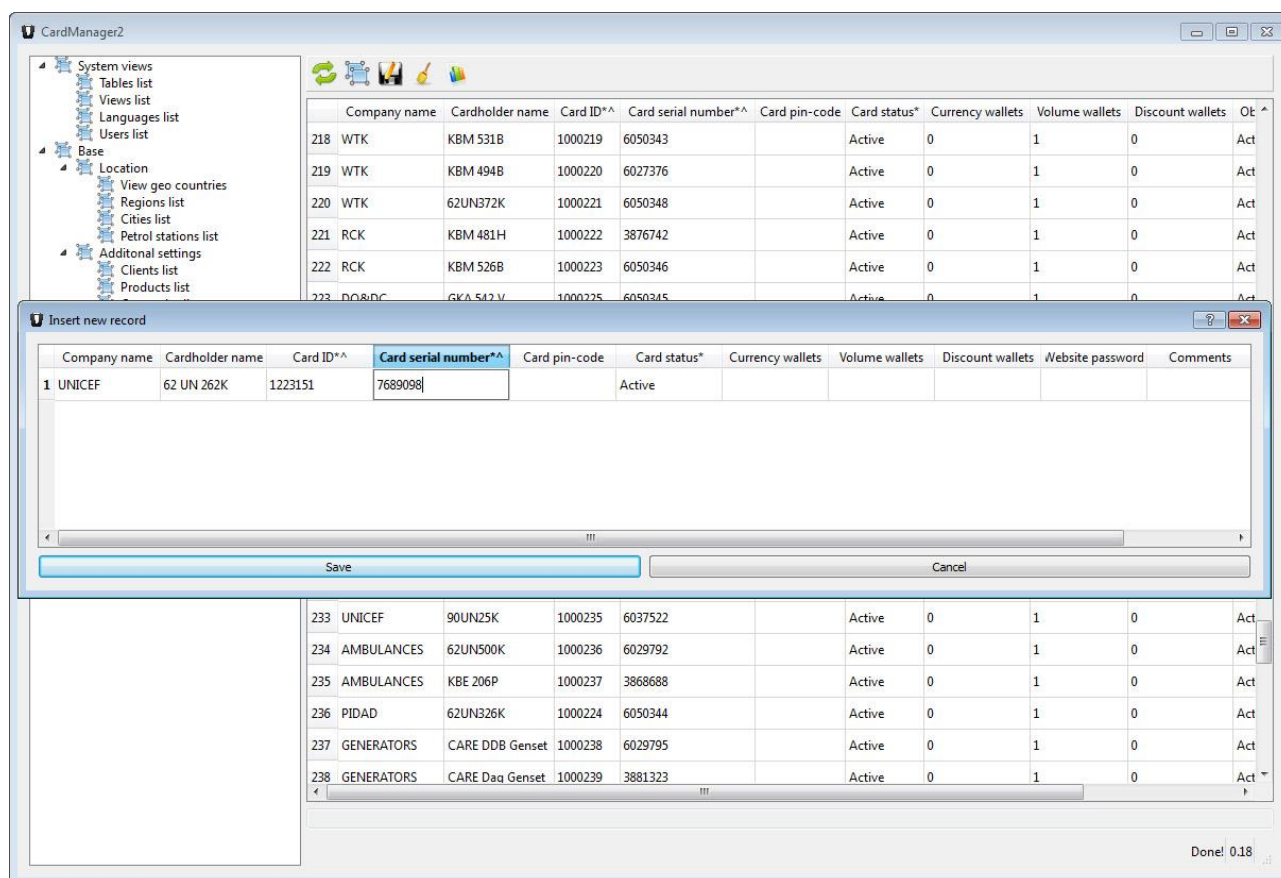
Card is assigned to the existing company and to existing cardholder. Card serial number is inputted automatically when this cell is focused and card is brought close to card reader (card reader should be connected to the PC and its IP-address should be correctly set in *config.xml* configuration file of the CardManager software).

While adding new cards it is necessary to leave fields "*Currency wallets*", "*Volume wallets*", "*Discount wallets*" blank. It will be possible to fill them after the new card is added to the system.

Wallets adding

In order to add new wallets to a card it is necessary to use a dialog "*Cards creator*" main menu when side page "*Cards list*" is opened, which is located in main menu. Select a cell on the row of a card and type of the wallet you want to add ("*Currency wallets*", "*Volume wallets*" or "*Discount wallets*") and press on "*Cards creator*" button:
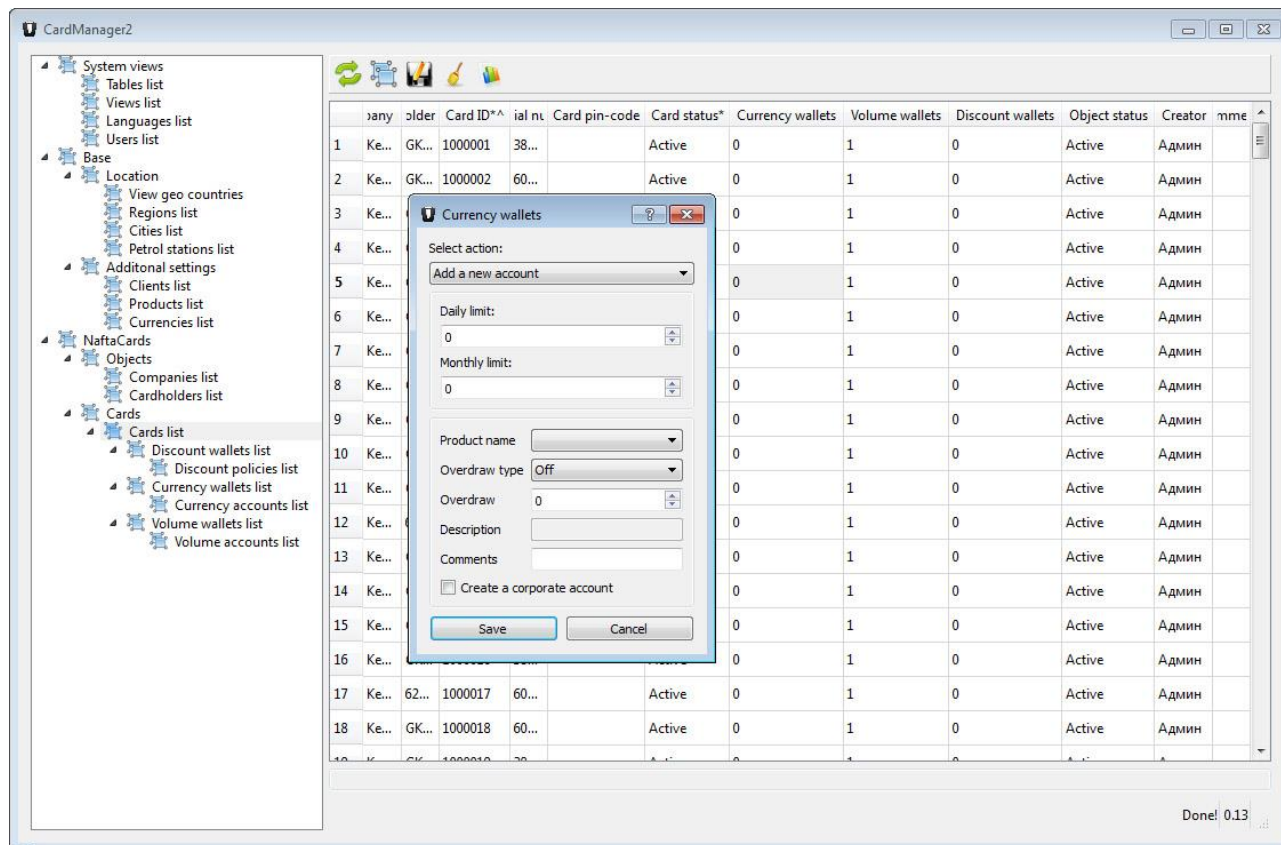
Depending on the wallet type you need to create – a corresponding dialog will be shown (currency, volume, discount or corporate). It allows to create a new wallet and also a new policy and account automatically. All configurations for the wallet will be included in the window.

Wallets refilling

For refilling of a wallet from the "*Cards list*" side page it is necessary to double click on the table cell, responsible for the wallet. It will open a dialog indicating the current balance of the wallet. Double click on the balance field in this window opens a new window with a possibility to add (decrease) balance in the wallet account.
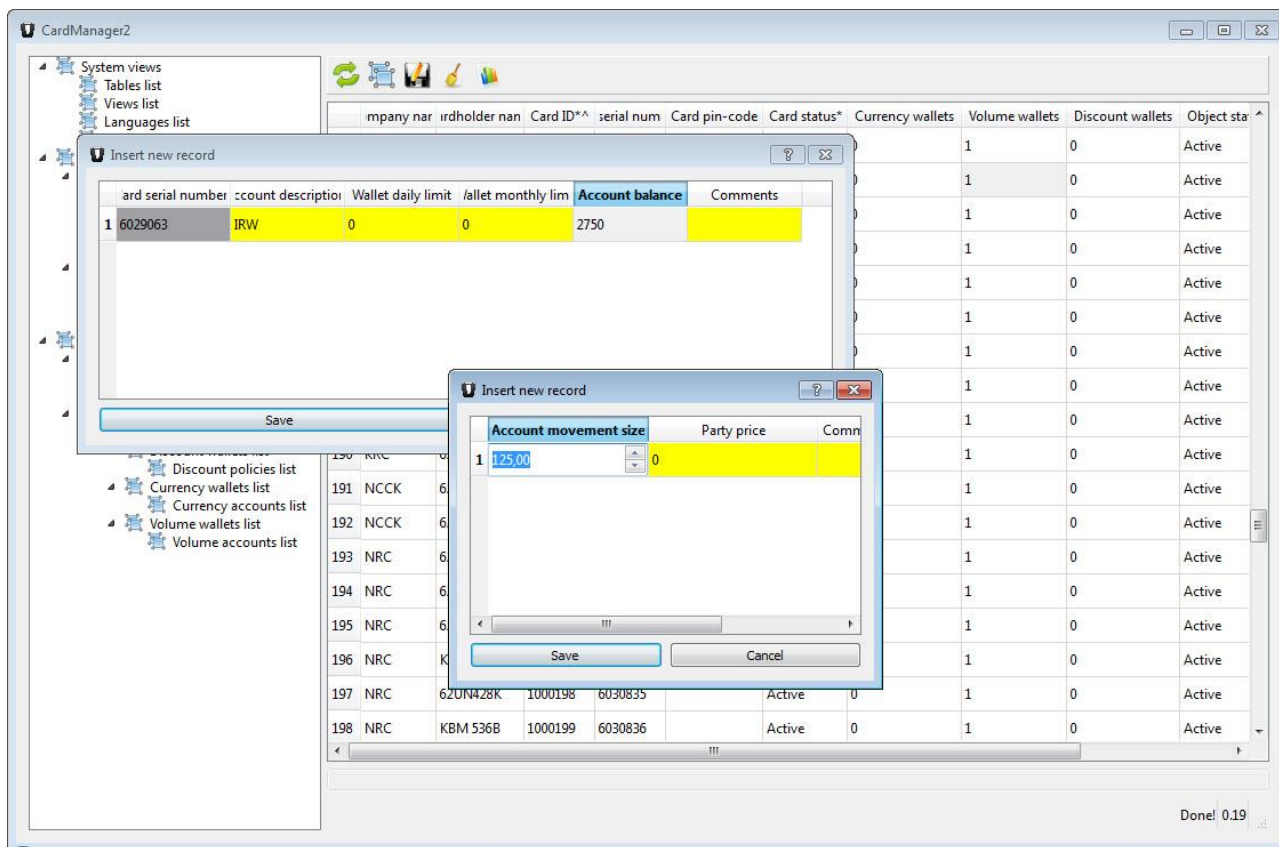
It is possible to add in this dialog the positive numbers for refilling of the account balance, so as negative numbers for decreasing of the account balance.

NOTE!
After refilling (or decreasing) card's account in CardManager the card's account in NaftaPOS software will not be immediately updated, but it will be updated during the closest database synchronization process.

Reporting

Reports in CardManager application are generated using '*NaftaReport*' utility (location *CardManager\NaftaReport\NaftaReport.exe*), which is called from CardManager main menu item '*Run reports*' (CTRL + R).

NaftaReport utility contains a list of all available reports and charts and a list of output formats:
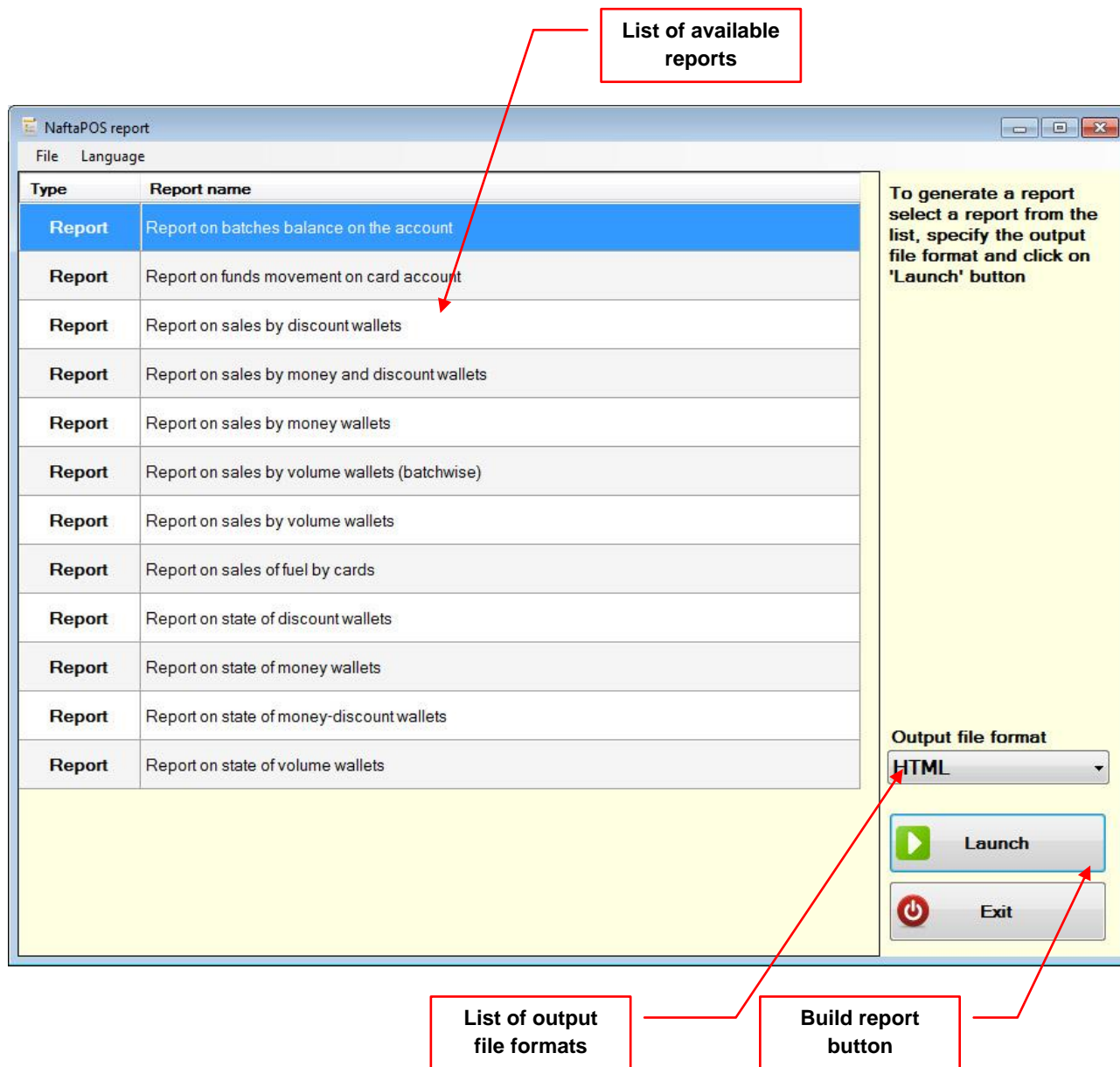
NaftaReport utility general view

For configuration of database connection go to menu item '*File*' → '*Settings*':
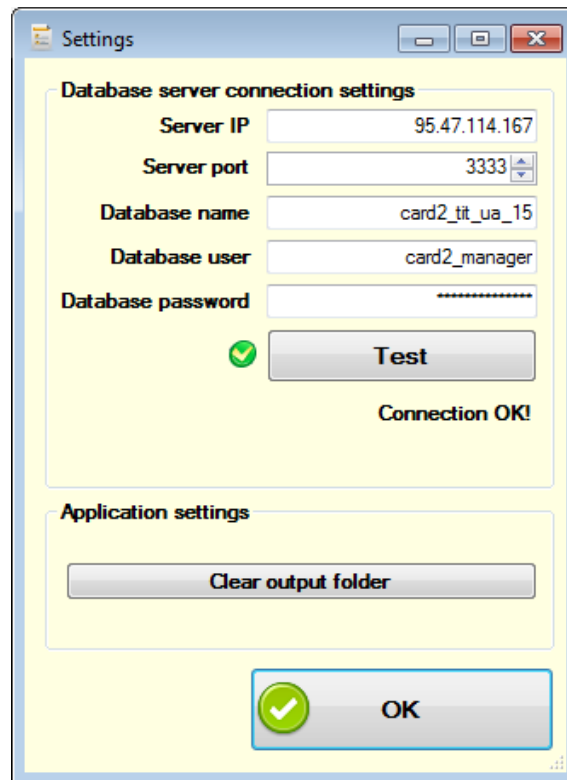
NaftaReport utility settings

Using a button "Test" you can check if connection to database can be established or not.

Output reports may be generated in one of the following report formats:

- HTML
- PDF
- XSL
- DOC
- CSV
- RTF
- TSV
- TXT
- XML

After selecting a required report or chart and selection of output report format a loading window is shown:
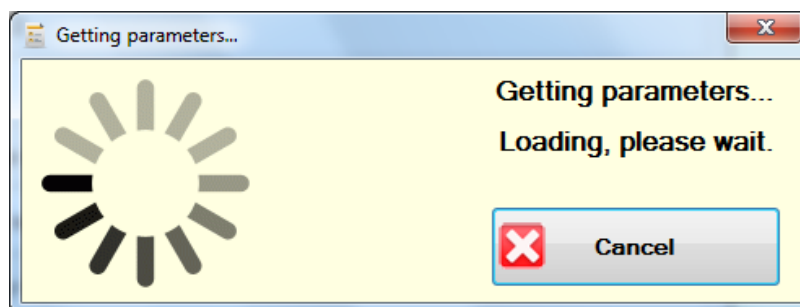
NaftaReport parameters loading window

A report may contain parameters for adjustments. If the report contains parameters – a parameters dialog is shown on the next step:
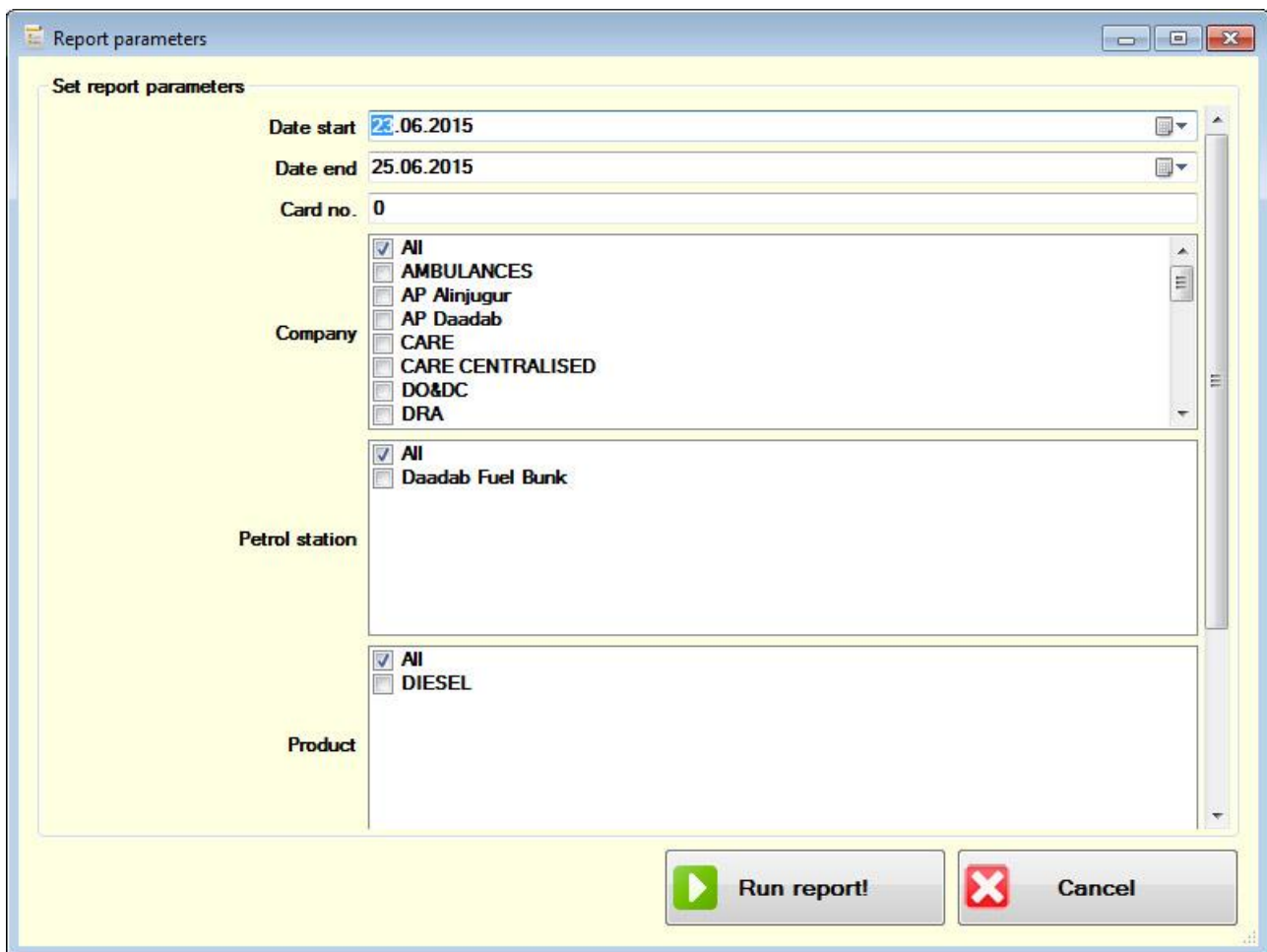
Example of NaftaReport parameters dialog

After that a report is starting to be generated in the selected report format:
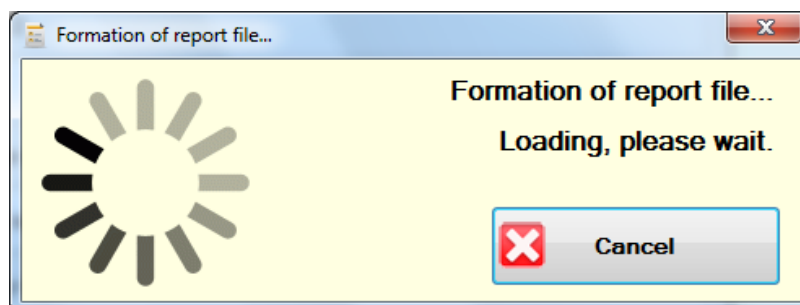
NaftaReport report formation window

Examples of formats of generated reports:

Example of generated report in PDF format

Report on sales by volume wallets

Report start date:	15-06-15
Report end date:	25-06-15
Report formation date:	25-06-15 01:03:52

№	Date	Petrol station	Cardholder	Card no.	Account description	Product	Volume, l	Overdraft type	Overdraft size, l	Credit remains, l	Daily balance, l	Balance, l
1	2	3	4	5	6	7	9	11	12	13	14	15

Company: *CARE*

№	Date	Petrol station	Cardholder	Card no.	Account description	Product	Volume, l	Overdraft type	Overdraft size, l	Credit remains, l	Daily balance, l	Balance, l
1	15.06.2015 14:25:58	Daadab Fuel Bunk	62UN 458K	3887084	CARE	DIESEL	74,09	Off	0,00	0,00	1 350,55	1 350,55
2	15.06.2015 14:42:37	Daadab Fuel Bunk	62UN 459K	6047029	CARE	DIESEL	70,72	Off	0,00	0,00	1 279,83	1 279,83
3	22.06.2015 16:07:08	Daadab Fuel Bunk	62UN418K	6037157	CARE	DIESEL	70,00	Off	0,00	0,00	1 209,83	1 209,83

Totally on *CARE* 214,81

Company: *CARE CENTRALISED*

№	Date	Petrol station	Cardholder	Card no.	Account description	Product	Volume, l	Overdraft type	Overdraft size, l	Credit remains, l	Daily balance, l	Balance, l
4	15.06.2015 08:38:06	Daadab Fuel Bunk	62UN396K	6038669	CARE CENTRALISED	DIESEL	89,72	Off	0,00	0,00	5 084,19	5 084,19
5	16.06.2015 16:08:12	Daadab Fuel Bunk	62UN474K	6047361	CARE CENTRALISED	DIESEL	120,00	Off	0,00	0,00	4 964,19	4 964,19
6	18.06.2015 08:25:40	Daadab Fuel Bunk	62 UN 258K	3877719	CARE CENTRALISED	DIESEL	175,67	Off	0,00	0,00	4 788,52	4 788,52
7	18.06.2015 08:38:48	Daadab Fuel Bunk	KX88A03	6047352	CARE CENTRALISED	DIESEL	128,00	Off	0,00	0,00	4 660,52	4 660,52
8	22.06.2015 09:25:42	Daadab Fuel Bunk	62UN 478K	6047360	CARE CENTRALISED	DIESEL	144,00	Off	0,00	0,00	4 516,52	4 516,52
9	24.06.2015 10:02:53	Daadab Fuel Bunk	62UN260K	6038675	CARE CENTRALISED	DIESEL	150,06	Off	0,00	0,00	4 366,46	4 366,46

Totally on *CARE CENTRALISED* 807,45

TOTALLY ON ALL COMPANIES: 1 022,26

Example of generated report in HTML format

NaftaCards plug-in for NaftaPOS system

NaftaCards plug-in is intended for NaftaPOS software to make it work with NaftaCards system.
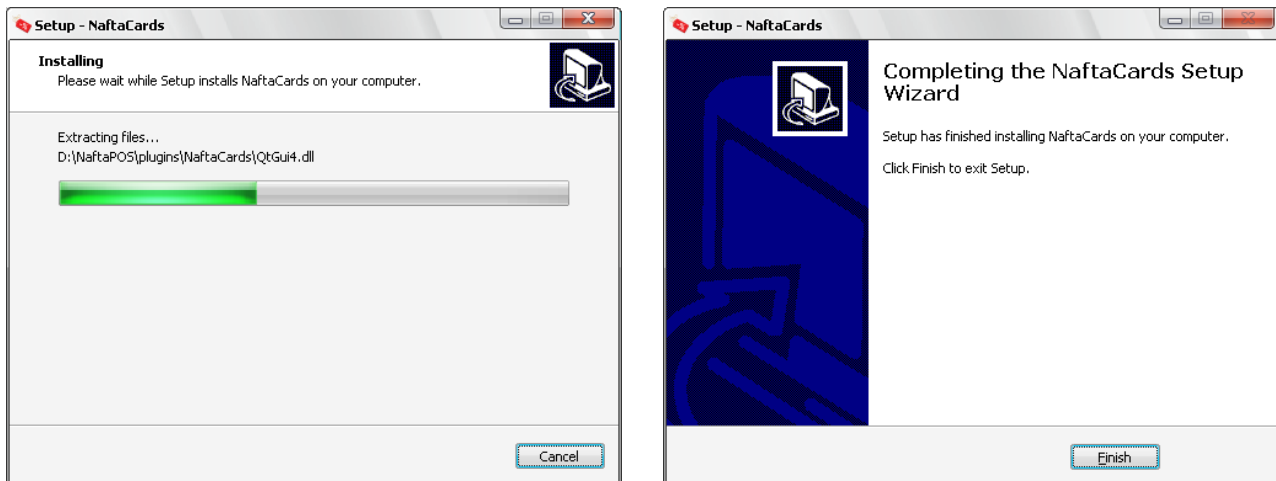
Installation

Installation of the plug-in is performed by launching installation file:

During installation it is necessary to input:
– IP address of Operation Center central server
– connection port at Operation Center central server
– name of database at Operation Center central server
– login and password of database at Operation Center central server
– client ID of current NaftaPOS software for connection to Operation Center central server (configured in side page Clients list of CardManager software)
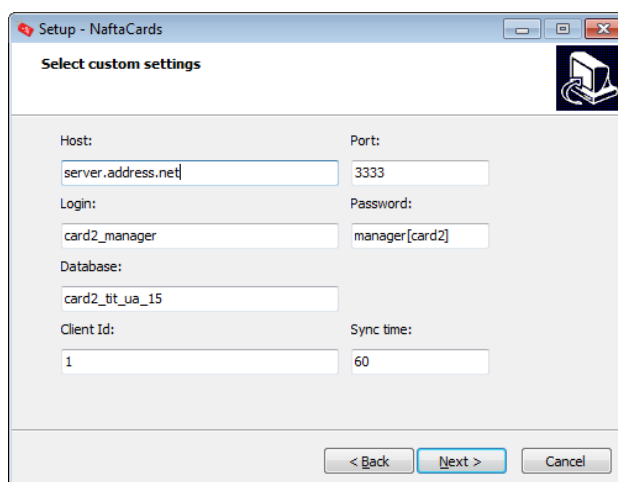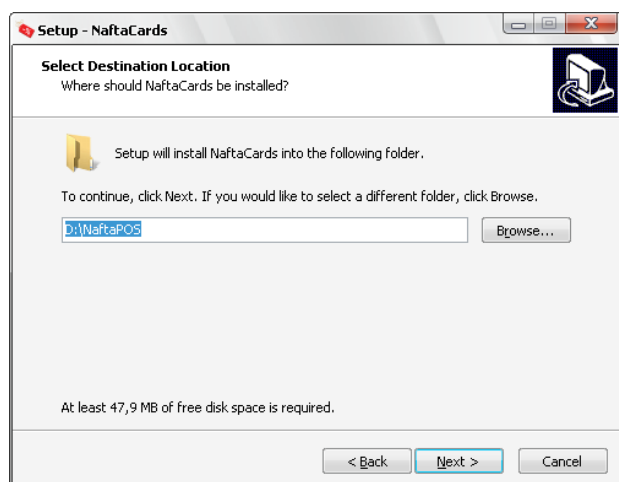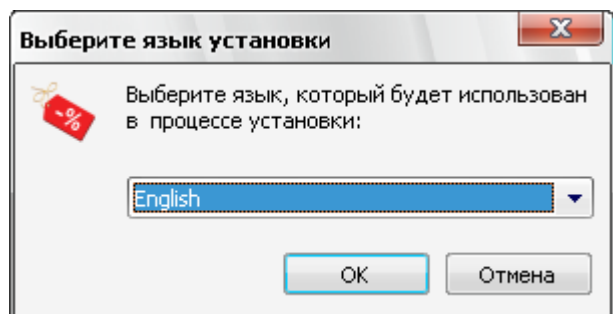
NaftaCards plugin installation

Installation is performed in directory of NaftaPOS software (to "*Plugins\NaftaCards*" directory) and writes plug-in file *plugin_nc_66.dll* for operation with a card system and also driver for operation with cards reader *Scan.dll*.

Configuration

For operation in NaftaPOS system with a cards reader it is necessary to install its driver correctly. For this it is necessary to set installed driver "*VKModule client driver*" as a driver for barcodes in configuration utility of NaftaPOS software on tab "*Drivers*", subtab "*Barcode scanner*".
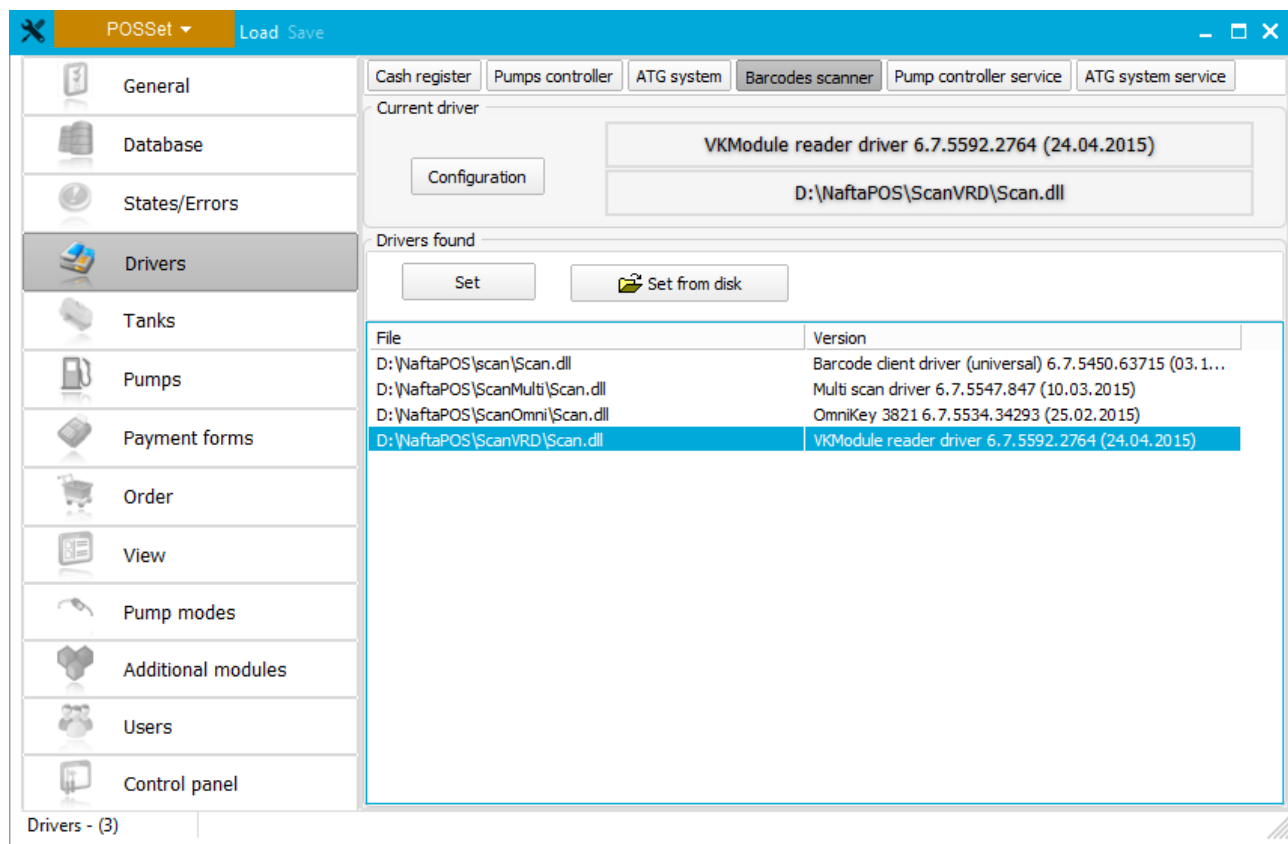
Selection of card reader driver

Configuration of the driver includes the following:
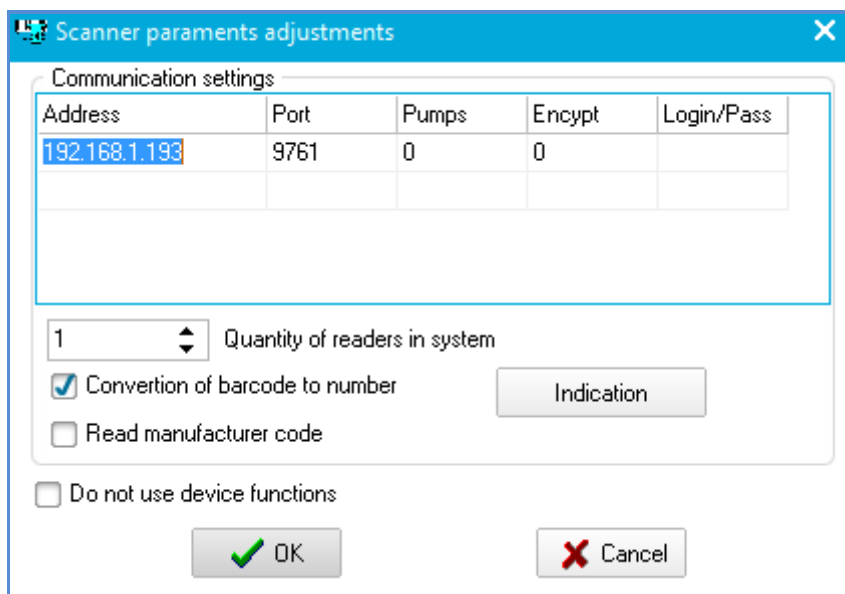
Configuration of VRD-E card reader driver

In communication parameters it is necessary to set IP-address of connected card reader and communication port. These adjustments are set in the reader through the web-browser (more information please find in section "*Card reader used in system*").

Also driver allows to configure indication of the reader (by LEDs and buzzer).

If reader is not used in the system then it is necessary to check the flag "*Do no use device functions*".

It is possible to configure the pump number in the system, to which the card-reader is linked. Set this adjustment in the cell "*Pumps*" in the configuration table. If this cell contains number, which is bigger than zero – then the reader will be linked to this pump number. If the cell contains value 0 – then reader is responsible for operation with all (any) pumps in NaftaPOS system.

For operation of NaftaPOS system with NaftaCards fuel card system it is necessary to set plug-in *NaftaCards* in section "*Additional modules*" of NaftaPOS configuration utility.
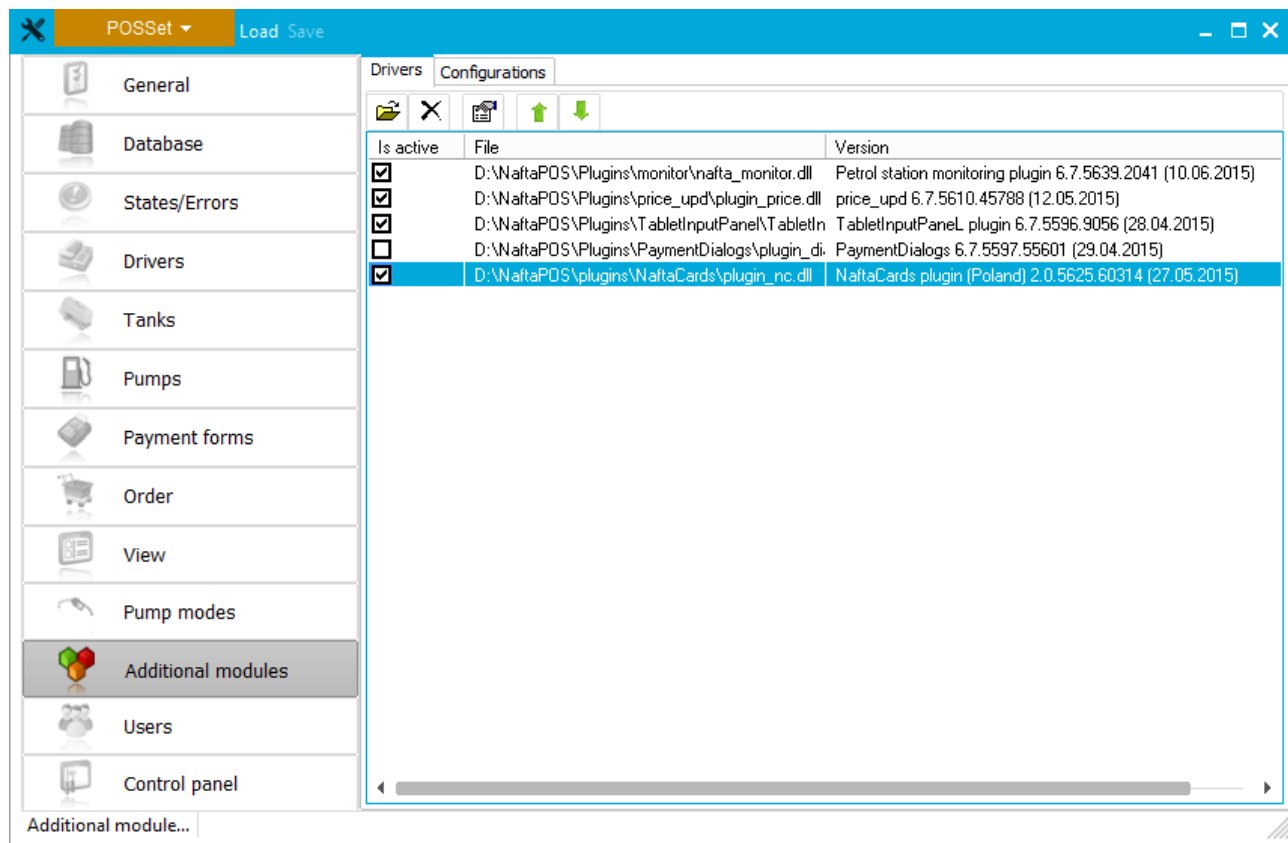
Selection of NaftaCards plugin

It is necessary to configure plug-in correctly. On tab "*General adjustments* ":
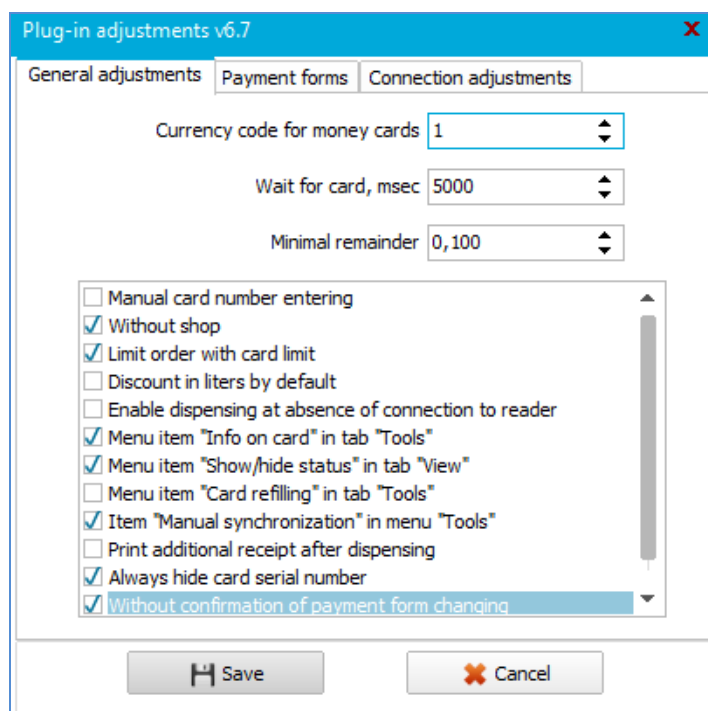
Configuration of NaftaCards plugin

In field "*Currency code for money cards*" it is necessary to configure the currency code configured in CardManager software for Operation center (see point "*Currencies list*" in adjustments of CardManager software).

Field "*Wait for card, msec*" – sets time duration on how long the reader should be waiting to read the card.

Field "*Minimal remainder*" sets at what remains on card account balance NaftaPOS should start throwing Stop command during dispensing in order to stop sale before the card account balance goes to negative in case if checkbox "*Limit order with card limit*" is not checked.

On tab "*Payment forms*" it is necessary to set on which payment form the card system will be used and which card types to process. For example, we it is possible to name a payment form in NaftaPOS as "*Discount card*" (it is done in tab "*Payment forms*" in NaftaPOS configuration) and link this payment form to discount card type of the NaftaCards system:
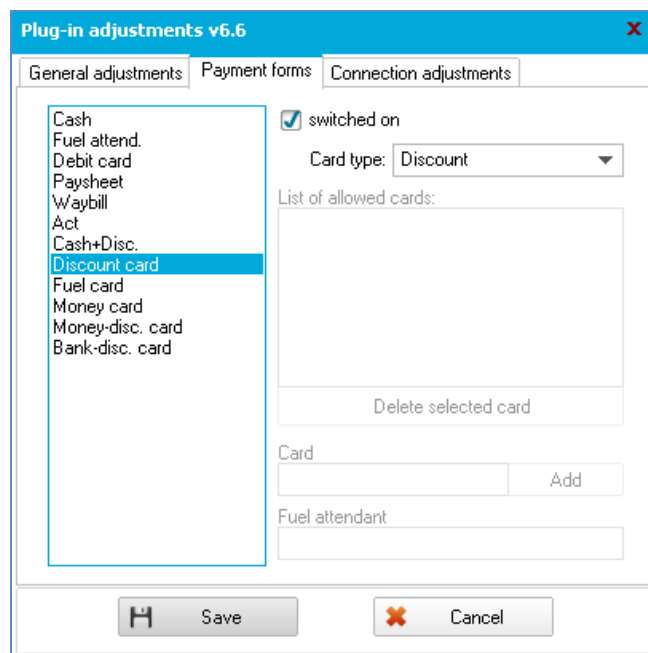
Configuration of NaftaCards plugin

In case if card type selected as "*Fuel attendant*" – then it is possible to indicate a list of allowed fuel attendant cards on the petrol station. At usage of these cards fuel will be allowed to dispenser even if there is not connection to the Operation Center.
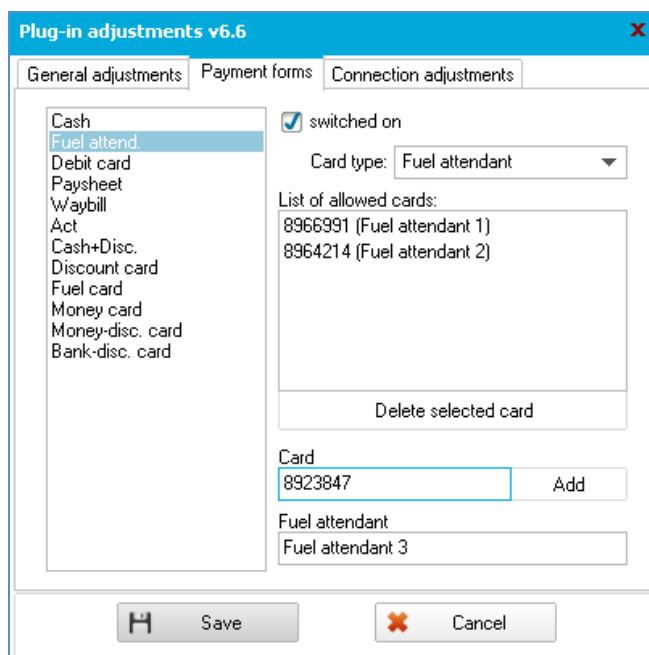
Configuration of NaftaCards plugin

On tab "*Connection adjustments*" there are connection adjustment s:

Configuration of NaftaCards plugin

Fields "*Maximal order in volume*" and "*Maximal order in money* " serve for setting maximal order in volume and money values for fuel dispensers authorization at using fuel cards.

Button *"Synchronize"* serves for forced synchronization of NaftaPOS local cards database with central server cards database.

Operation in NaftaPOS system

After starting NaftaPOS software on main panel of the system a status panel of connection to server of Operation center and cards readers is displayed:

1. Connection to central server is present, synchronization was done correctly (nothing to synchronize), connection to card reader is present:

NaftaCards	Internet	last	state	successful	mode	1	IP	192.168.1.191
	Online	6 (2014-08-11 13:00:08)	nothing to synchronize	6 (2014-08-11 13:00:08)	normal		Pumps	any

Status panel of NaftaCards plugin

2. Connection to central server is present, synchronization was done correctly (nothing to synchronize), connection to card reader is not present:

NaftaCards	Internet	last	state	successful	mode	1	IP	192.168.1.191
	Online	7 (2014-08-11 13:10:09)	nothing to synchronize	7 (2014-08-11 13:10:09)	normal		Pumps	any

Status panel of NaftaCards plugin

3. Connection to central server is not present, synchronization was done correctly (nothing to synchronize), connection to card reader is not present:

NaftaCards	Internet	last	state	successful	mode	1	IP	192.168.1.191
	Offline	7 (2014-08-11 13:10:09)	nothing to synchronize	7 (2014-08-11 13:10:09)	normal		Pumps	any

Status panel of NaftaCards plugin

4. Connection to central server is not present, synchronization was done correctly (nothing to synchronize), connection to card reader is not present:

NaftaCards	Internet	last	state	successful	mode	1	IP	192.168.1.191
	Offline	8 (2014-08-11 13:20:09)	no connection	7 (2014-08-11 13:10:09)	normal		Pumps	any

Status panel of NaftaCards plugin

The status panel contains information about:
-    presence of connection to internet
-    last time of synchronization with Operation Center central server cards database
-    state whether there is anything to synchronize
-    state of last synchronization
-    mode of operation (limitation or normal)
-    presence of connection to cards readers

NaftaPOS system provides synchronization of its local cards database with Operation Center central server cards database (period of synchronization is configurable). Depending on the synchronization result and time of previous synchronization there are 3 modes of cards operation (periods are configurable):
1. Normal (fuel money, volume and discount cards are allowed to be used) – is set when the previous synchronization was made correctly.
2. Limited (fuel money and volume cards are not allows to the used, discount cards are allowed to be used) – is set if there is no synchronization for more then 60 minutes.
3. Blocked (fuel money, volume and discount cards are not allowed to be used) – is set if there is no synchronization for more then 180 minutes.

Status panel can be located in different parts of screen, widened on all the screen and fixed in selected place (refer to right-button mouse context menu).

Using main menu item *Tools -> Information on card (NaftaCards)* it is possible to review current card information and account balance:
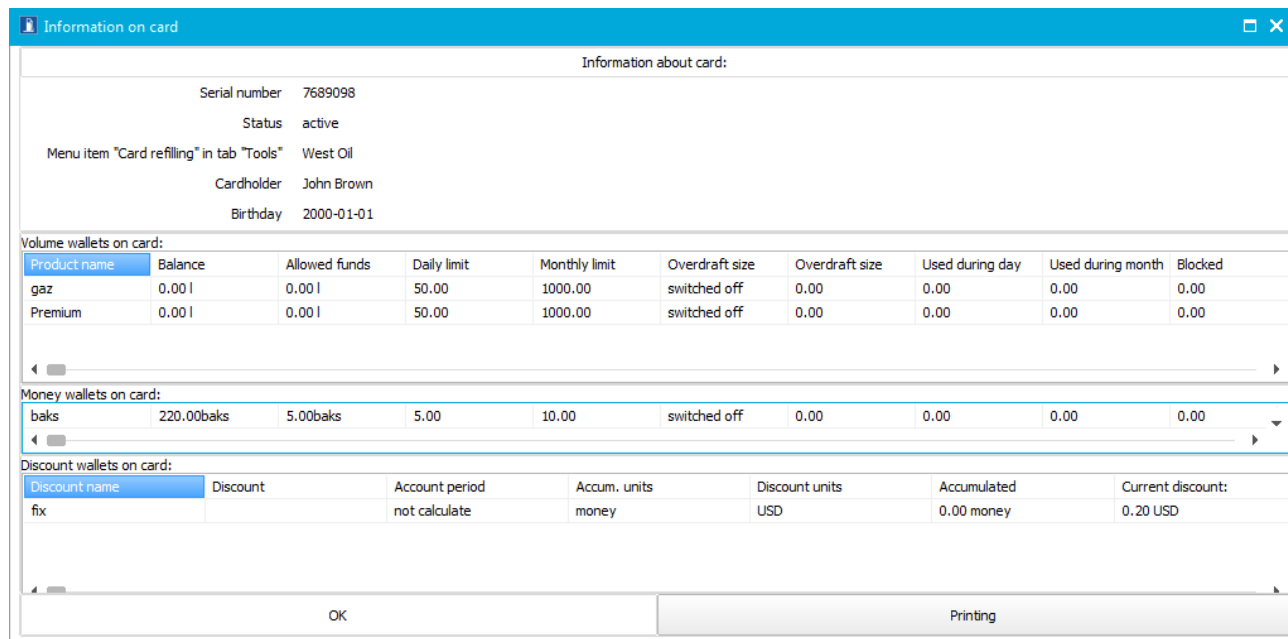

Information about discount fuel card

At application of cards it is necessary to select cards payment form.

When Preset mode of control is used in NaftaPOS and fuel card payment form is selected – NaftaPOS will show a message with a request to bring the card to a reader, information about available cards funds or discount will be displayed after this in the window:
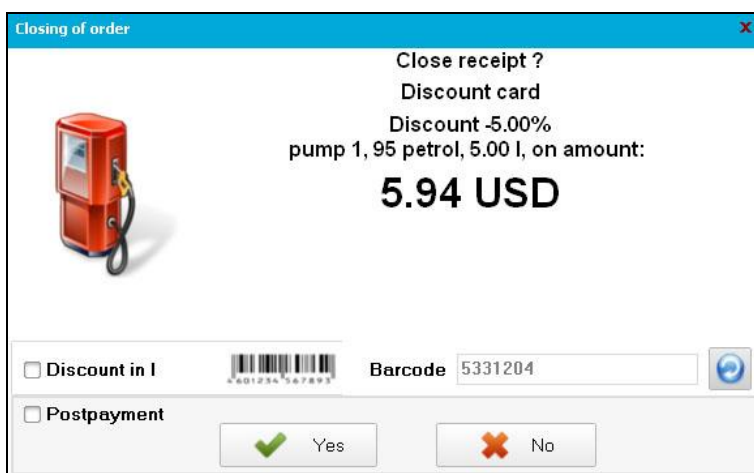
Application of discount card for payment
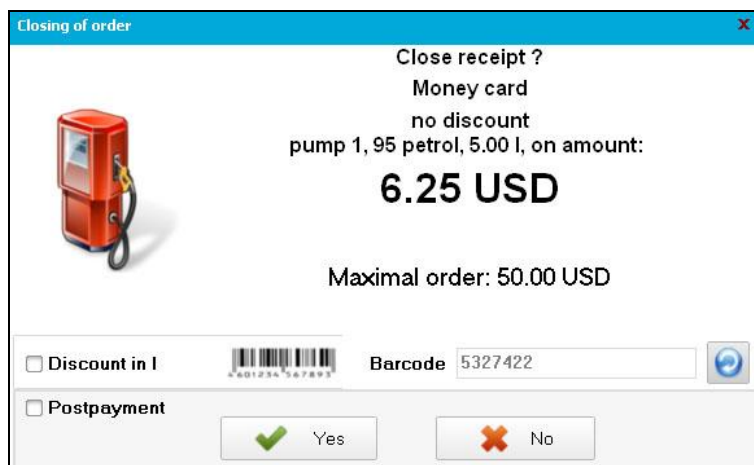
Application of money card for payment
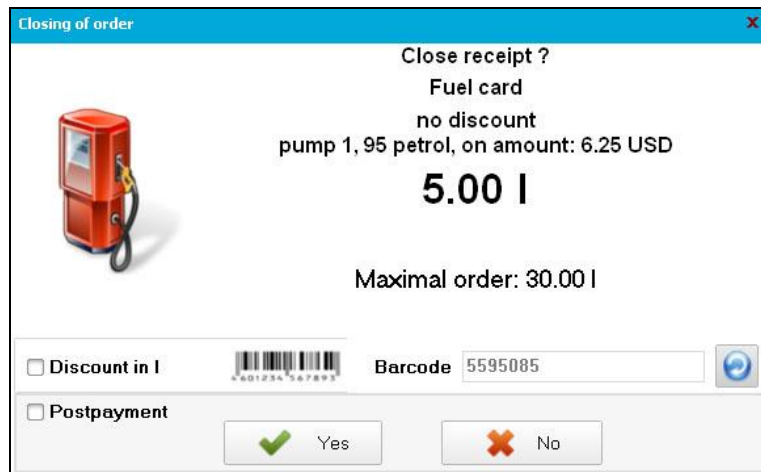
Application of fuel volume card for payment

At reading of a card with set PIN-code – the system will require to enter it:
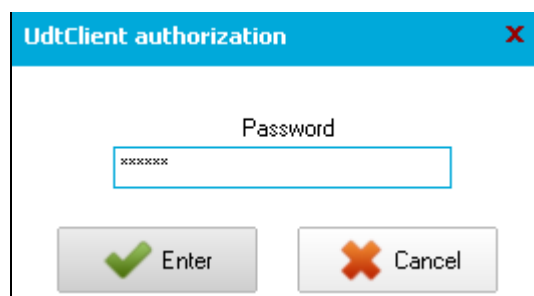
Request to enter PIN-code for fuel card

In Manual mode of operation reading of a card is made after the nozzle is taken up. There is no pop-up window shown in NaftaPOS. Card is read and command for authorization is given at once if the remains on card account daily balance is positive.

Application of fuel attendant's cards is possible only in Manual mode of NaftaPOS operation. Reading of a card is made after the nozzle is taken up. After sale is completed NaftaPOS saves in local database information about performed sale: dispensed fuel volume, received payment amount and ID of fuel attendant, who serviced the dispensing. NaftaPOS system in the end of the working day (working shift) builds a report on activity of every fuel attendant and total cash money amount, which every fuel attendant received from customers and should return to petrol station owner.

Web-site of fuel card system

Web-site of fuel card system is intended for owners of NaftaCards fuel cards system to generate reports on the system operation. Owner of the system can create its own private cabinet on the web-site and review reports on all operations performed in the systems.

NaftaCards can be used together with NextReports Server web-server application (please read more on http://www.next-reports.com/products/nextreports-server.html), which allows to have a web portal with following possibilities:
- review of NaftaCards operations online
- review of NaftaCards reports
- schedule reports to be automatically delivered via E-mail, FTP, SSH, Windows Share or WebDAV to your business contacts in most popular file formats like HTML, EXCEL, EXCELX, PDF, DOCX, RTF, CSV, TSV, TXT or XML
- supervision over users and their actions on the web-portal

Also at the same time same web-site can display operations performed on the petrol station from NaftaPOS database (review of NaftaPOS operation online, review of NaftaPOS reports, others)

Thus using a standard web-browser it is possible to receive reports on operation of NaftaCards systems at petrol stations and also to online monitor their activity:

NextReports system – login page

The NextReports web portal allows to import all reports and charts from NaftaCards and to run them through a web-site with specification of all parameters:
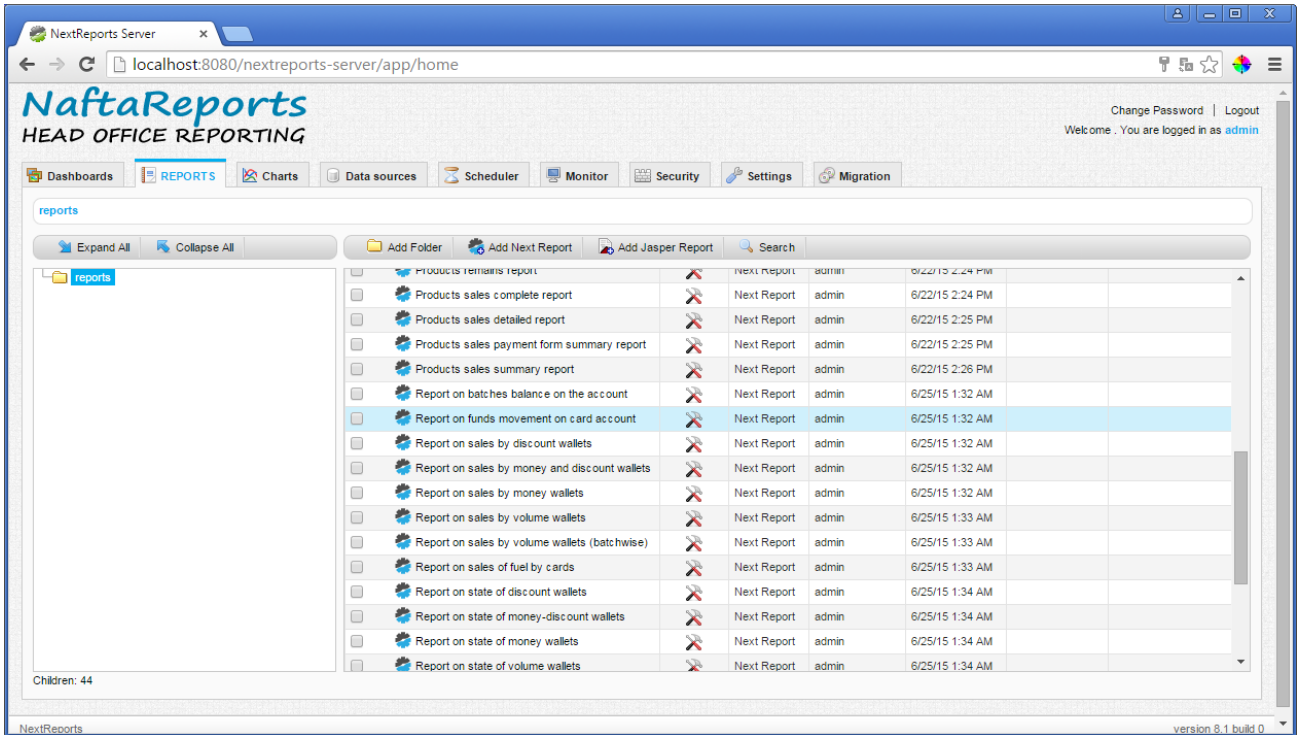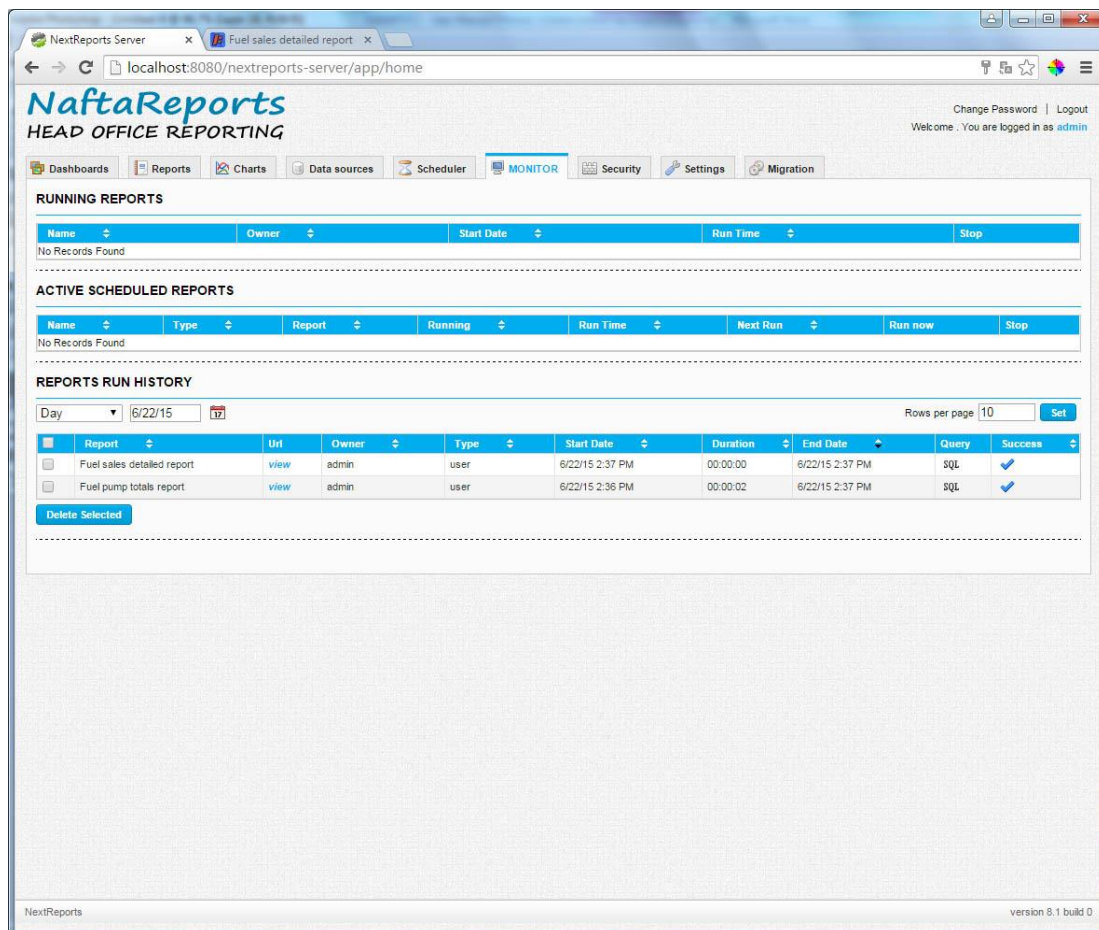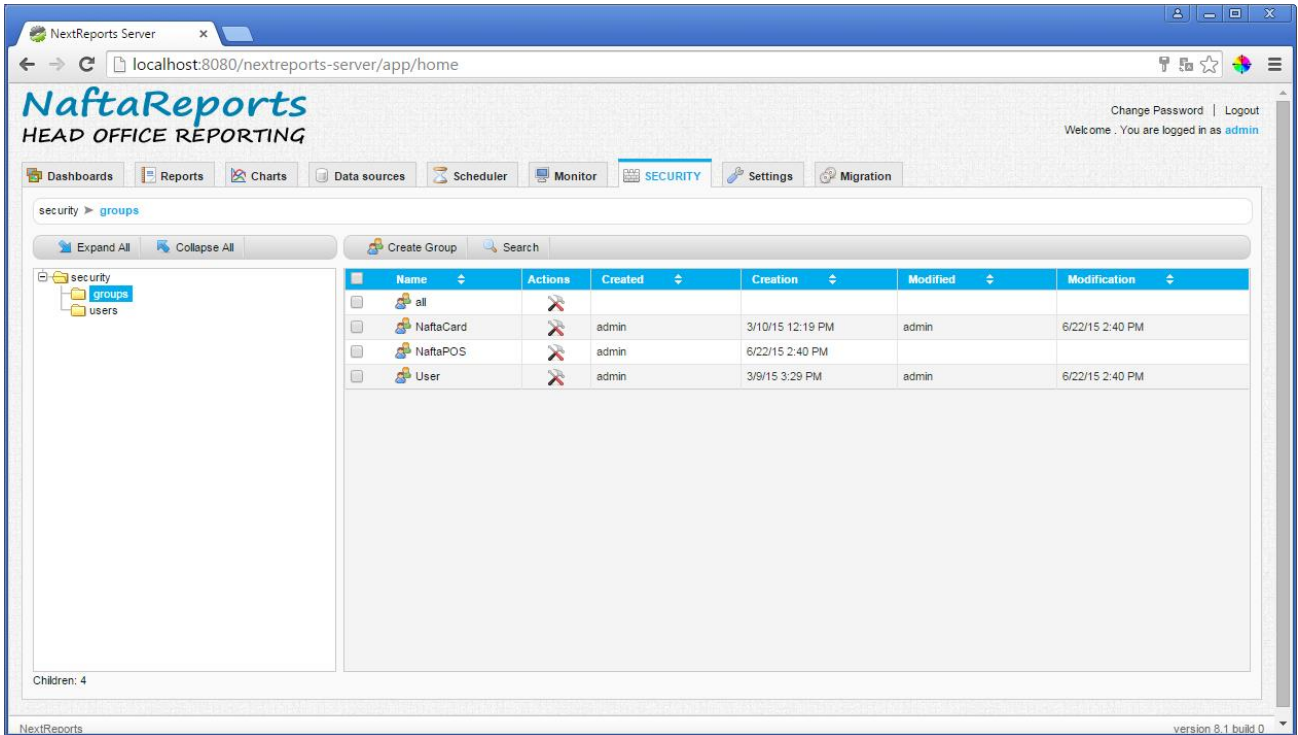

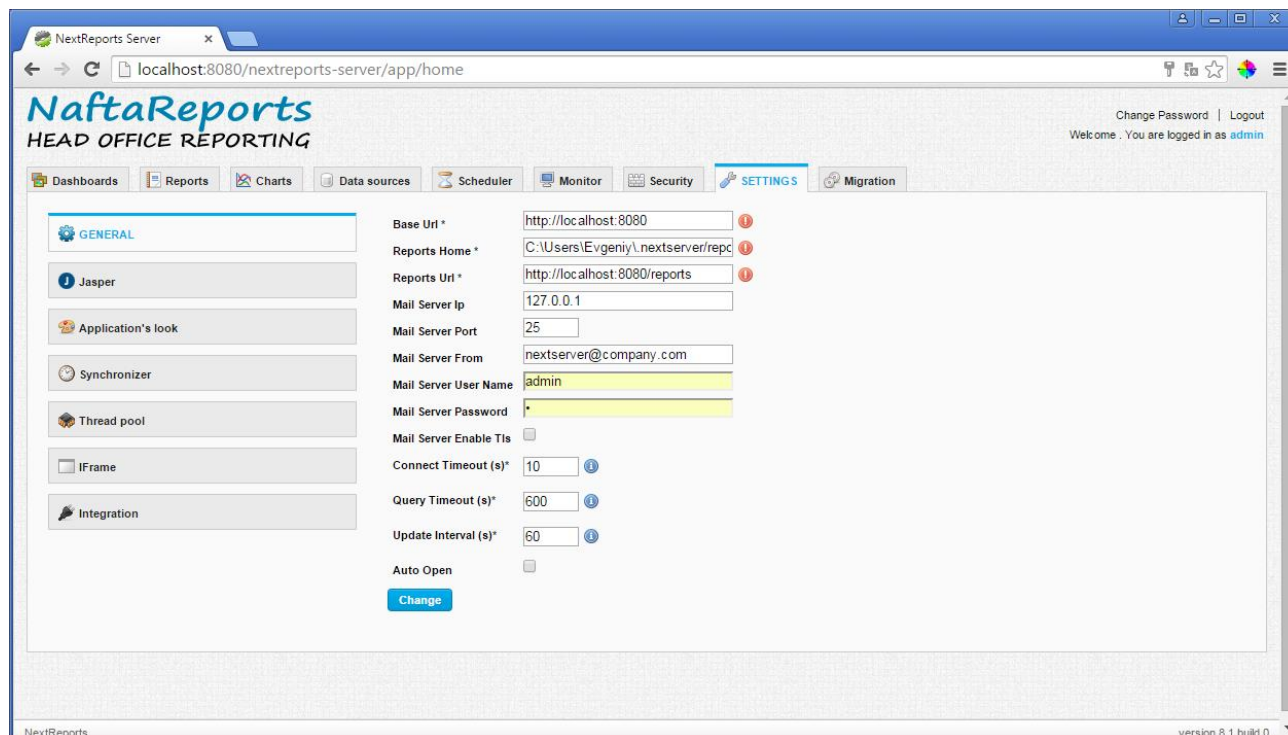*NextReports system – list of available reports*
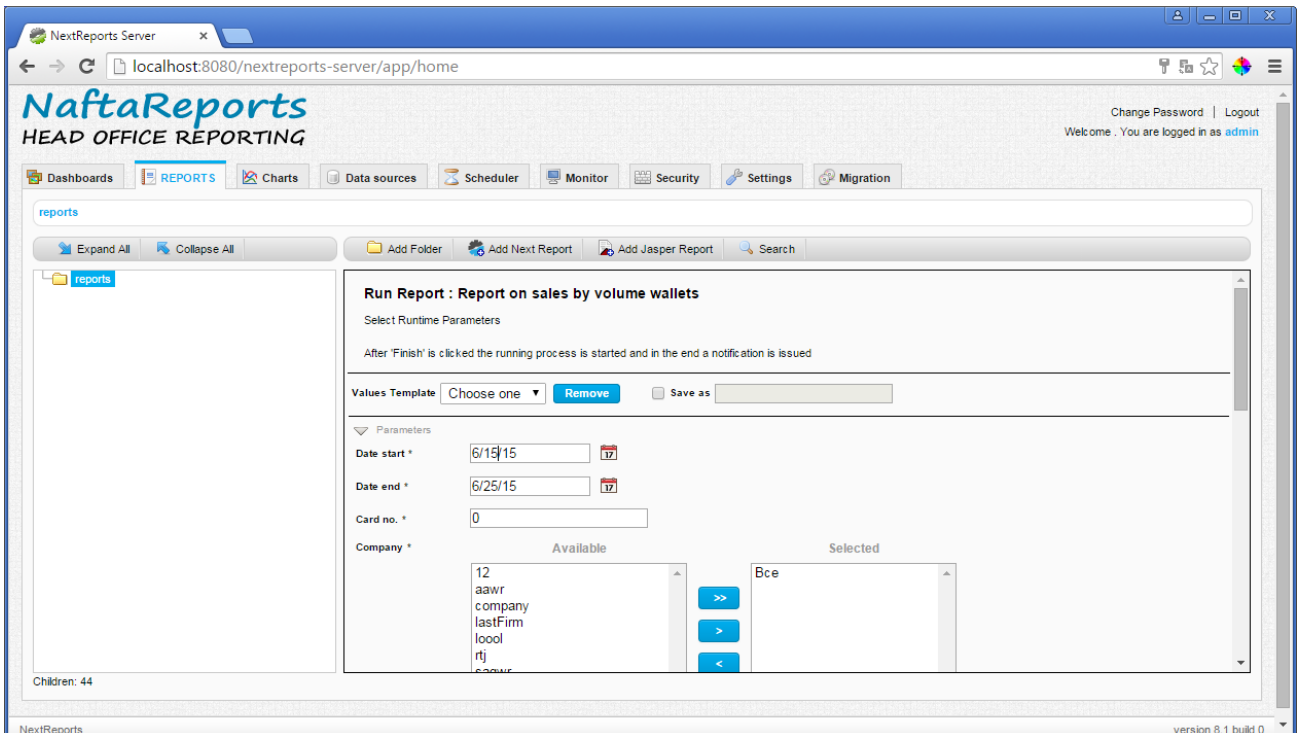
NextReports system – setting generated report parameters

Administrators of the system can create users and give them permissions (assign users to groups with specific rights) and also to monitor activity of each user:
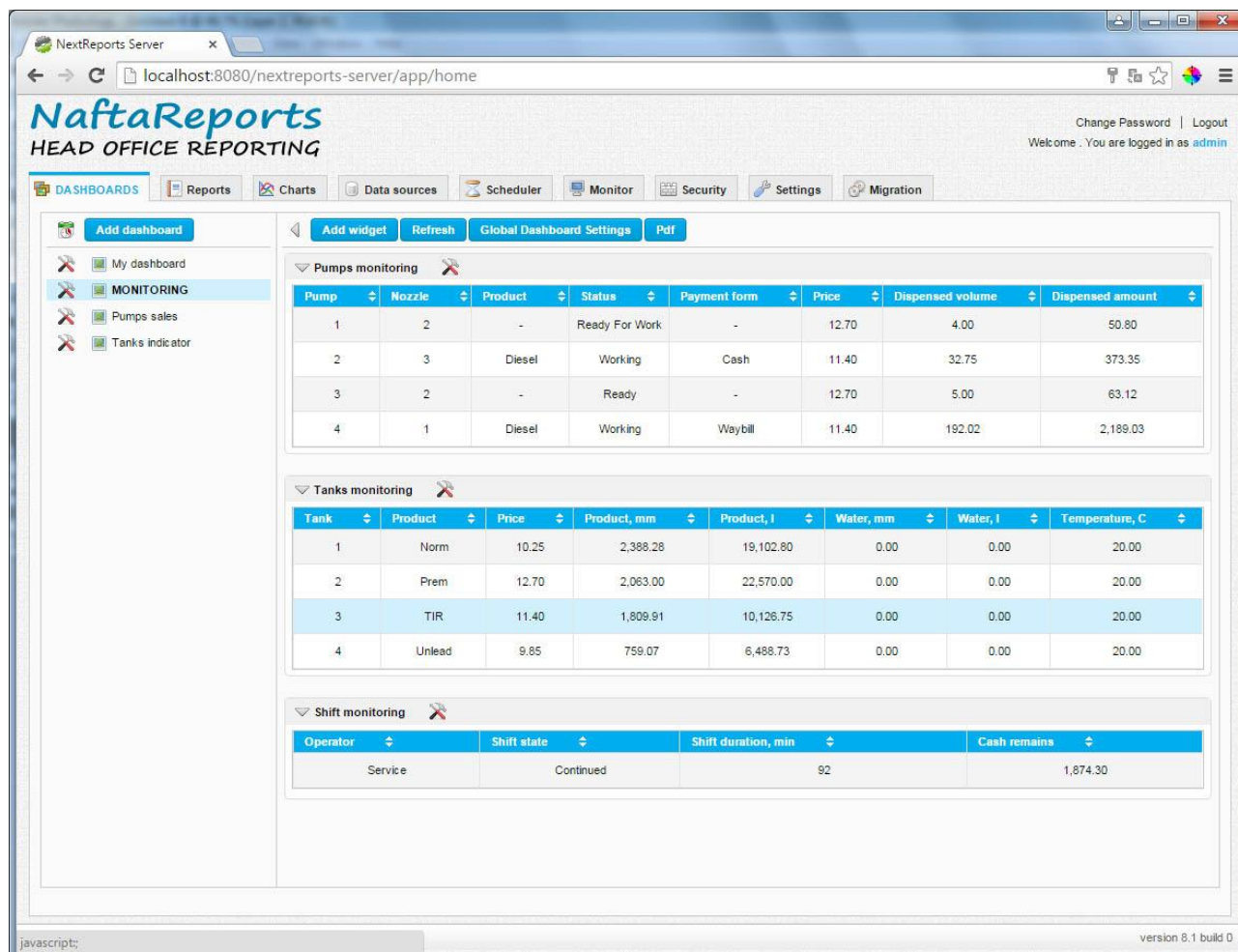
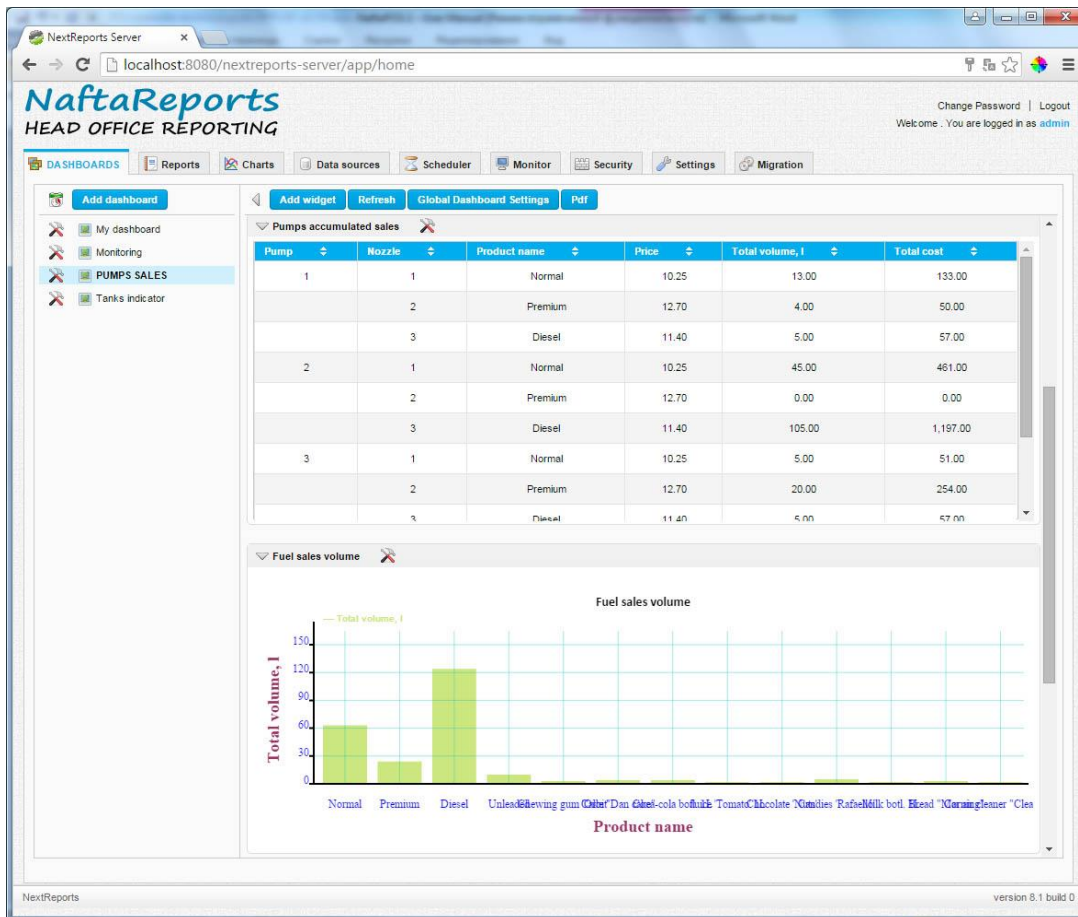NextReports system is easily configured:
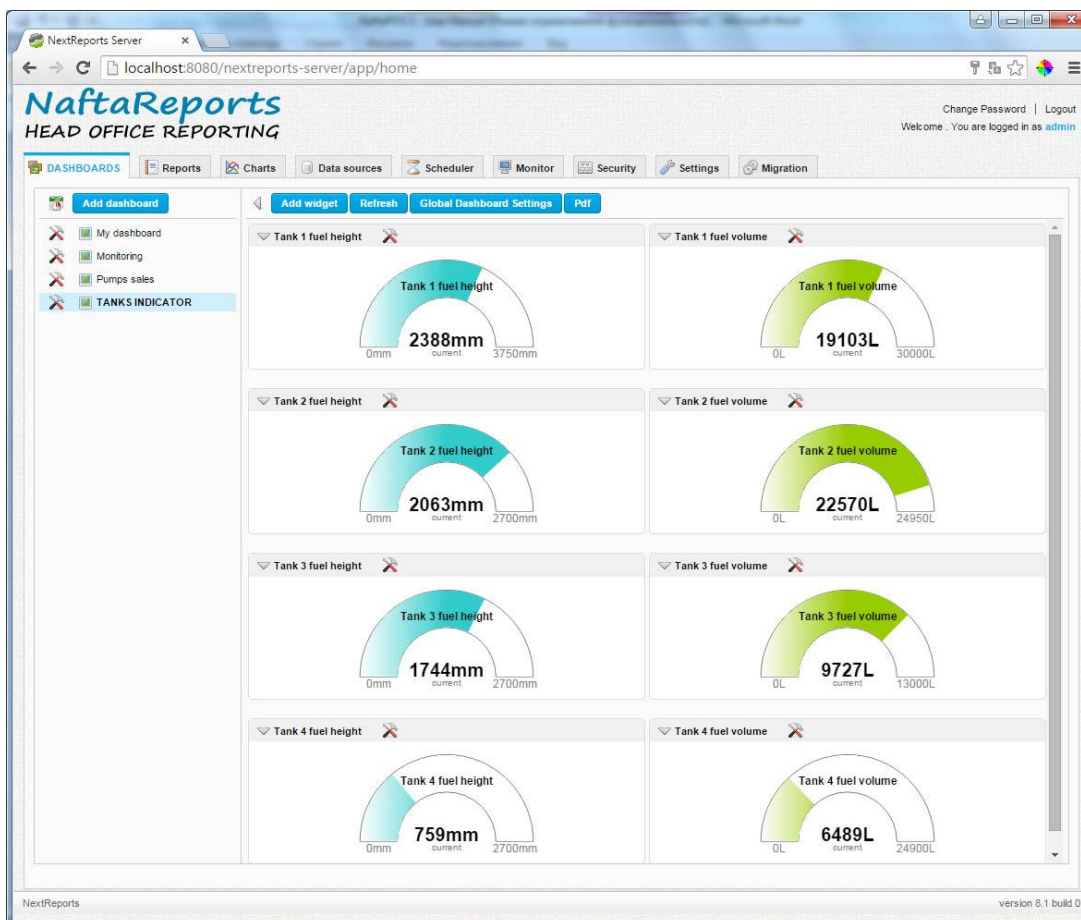

NextReports system – settings

Online monitoring over petrol station activity:

NextReports system – online monitoring over petrol station operation: pumps, probes and shift

NextReports system – online monitoring over petrol station operation: pumps sales

NextReports system – online monitoring over petrol station operation:
tanks fuel level and volume