

EKOMILK[®]

USER'S MANUAL



IKF SERVICE
LABORATORY EQUIPMENT

Program description

"EKOMILK - Milk Quality Laboratory" software was developed to automatize the laboratory work with Ekomilk milk analyzers (**Ekomilk Standart, Ekomilk M, Ekomilk BOND, Ekomilk Total, Ekomilk Spectra**).

Main functions:

- readout of the incoming data from the Ekomilk device, the possibility of entering of the other quality milk parameters (somatic cells, reductase, purity, milk grade, heat resistance), which are determined by the laboratory assistant, and entering them into the company's database;
- the possibility to keep records of the quantity and quality of milk at geographically remote (mobile) milk collection points;
- calculation of the milk cost (formulas for calculation are determined independently by the customer);
- flexible and convenient tool for viewing information about the results of laboratory work;
- output to the printer of the results of milk analysis and statistics of the measurements made during the period;
- export of data to other software packages (dbf, excel format or online connection to the MySQL database);
- safe storage of data, the mechanism for this is the automated process of backing up and restoring of the database.

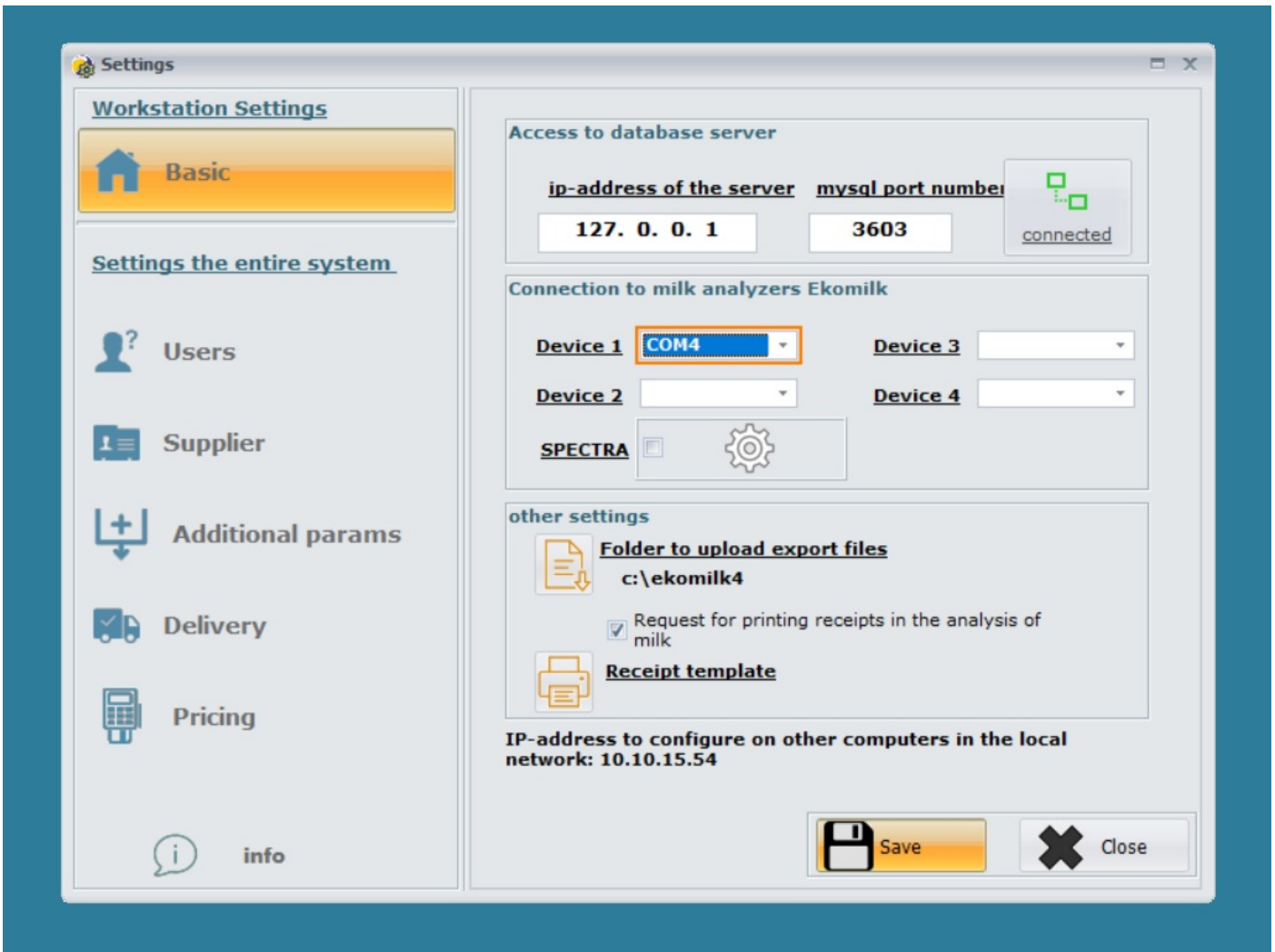
The program has a convenient, fast and intuitive user interface.

At the moment, the program supports work in Russian, Ukrainian and English languages.

SETTINGS

- After installation of the program at the workplace, it is necessary to make the settings:
- local settings for this workplace only
- global settings of the entire system

local settings



All settings performed at this stage are stored locally on the computer, therefore, they are made after each installation of a workplace on the enterprise network.

access to the database server.

If during the installation of the program the paragraph "Installation of a workplace with access to the server" was selected, then it is NECESSARY to fill in the TCP/IP-address of the server and the MySQL-port and check by clicking on the button on the right "connected / disconnected". Be sure to save the entered changes.

If the server is located outside the local network (and is available through the Internet), it is necessary to specify the real IP-address of the server (for example, 173.194.39.129), and to set up NAT-forwarding to the local server address at the enterprise router.

For example:

"Firewall" - "Inbound ACL":

Source IP	Destination IP	Protocol	NAT	Action
Any	eth0	TCP,Any,3603	192.168.1.100:3603	Allow

(by default MYSQL-port 3603).

P.S. (there is a hint on the server, see the picture above): "address for setting on other computers in the local network"

connection to Ekomilk milk analyzers.

If you plan to take measurements at the workplace using a milk analyzer, then you need to connect the Ekomilk device to the computer and select the COM-port.

The program can work both through standard RS232 and through a virtual interface (if the device is connected through a USB-interface).

When the device is connected through a USB-connection, the computer has to be connected to the Internet and it will install the necessary drivers for the virtual COM-port itself.



Use USB-connection only if Ekomilk itself has a USB-port. Third-party rs232 USB-adapters will cause incorrect readings.

other local settings.

- setting "Folder for uploading of export files" will help with automation of import into third-party software;
- option "Request of receipts' printing" enables (disables) the possibility to print the receipts after performance of milk analysis;
- the form of the receipt which is printed out (after the milk analysis has been carried out) is a template
- форма квитанции, выводимой на печать (после проведенного анализа молока) является шаблоном, which you can customize yourself by changing the corresponding file kvitanc.prn in the catalog c:\ekomilk4\
(a line starting with symbols // is a comment and non-printable.)

global settings for the entire system



Changes at this stage can be made only by the system administrator

users of the system

The software product is multi-user, which allows to control the work of the users in the system (entering of analyzes and making edits of data).

Authorization in the system is carried out by using of a unique password - this excludes the possibility of unauthorized entry into the program and performance of measurements under a false name.

counterparties

Aiming to create a universal program for all branches of the dairy industry (farm, factory, milk collection point, milk quality control laboratory), all counterparties are divided into 3 logical categories:

- intake of milk from farms
- intake of milk from people
- shipment of milk

In the case of milk intake from people, for quick search and filtering of data, all counterparties are divided by regions and settlements.

additional milk parameters

The Ekomilk device, depending on the configuration, provides a certain number of parameters. The program gives the possibility of entering of the other, previously known milk parameters, which are determined by the laboratory assistant.

At this stage of the setting, you can choose a control of the following parameters:

- somatic cells;
- reductase;
- purity;
- milk grade;
- heat resistance;

Besides, here you can set control of the milk delivery time (or intake time) and of the milk truck section.

delivery (delivery of milk to the enterprise)

If you need to control the delivery of milk, then you need to fill in the list of drivers who work at your enterprise, as well as the list of state numbers of the vehicles carrying out the delivery.

cost

The program has a powerful tool that allows you to estimate the cost of a batch of milk.

Thanks to the builder of the formulas it is possible to modify the existing one or to write your own formula for calculation of the cost of milk for 1 liter/kg.

The calculation formula may vary depending on the type of counterparty.

The algorithm for calculation of the cost is based on the dependence of the quality parameters of milk (fat content, protein, % of added water, conductivity) and the basic price on the current date.

The calculated coefficients (kM, kB, kV, kP) are the linear correlation coefficients. The essence of these coefficients consists in establishment of incentive allowances or discounts (decreasing coefficients are set) depending on the quality parameter. When determining these coefficients, it is necessary to indicate either the boundary values of the milk quality indicator or the function will choose the nearest specified value itself.

Settings

Workstation Settings

- Basic
- Users
- Supplier
- Additional params
- Delivery
- Pricing**
- info

Data to calculate the cost (based on milk quality)

Base cost per 1l. (bP): **11.00**

fat (kM) protein (kB)
added water (kV) conductivity (kP)

Cost calculation formula (for 1l):

- intake of milk from farms
- shipment of milk
- intake of milk from people

Formula: $((pB/3.0)*0.6+(pM/3.4)*0.4)*bP$ **OK**

In the formula operators "+" "-" "*" "/" brackets "(" ")" and variables are allowed:
calculation coeff.(see above): "kM"- for fat, "kB"- for protein, "kV"- for added water, "kP"- for conductivity
actual milk analysis: "pM" - fat, "pB" - protein, "pV" - extra water, "pP" - conductivity
"bP"- base cost per 1l.

test calculation (cost per 1l):

fat	<input type="text" value="3.2"/>	protein	<input type="text" value="3.0"/>
add.water	<input type="text" value="1.0"/>	conduct.	<input type="text" value="4.7"/>

calculate **Save** **Close**

backup (recovery) of the database

During the installation of the server part (Option - "Server or stand-alone computer"), a task is automatically scheduled in the Task Scheduler (Windows) for daily data backup, the start time is 23:55.

To change the start trigger do the following:

- open the dialog box EXECUTE (Win + R), execute the command taskschd.msc, the task Ekomilk DB-backup.

For a one-time backup or emergency recovery of the database, the utility DBAdmin.exe is located in the catalogue c:\Ekomilk4\.



It is recommended to keep some of the backups (folder "c:\Ekomilk4\ARH_DB", files like backup_YYMMDD.zip) at another location, for example, in a cloud storage.

Work with the system

When the program starts, a password request is displayed to authorize the user in the system.

At the first start, the database contains only one user "Administrator" - password "1".



It is recommended to change the administrator password and his full name in the future.

([system users setting](#))

After that, the main program window will appear.

The main window contains:

- brief information about the work of the laboratory (by default for the current date) for each laboratory assistant: the number of the performed tests and the amount of taken milk;
- customized templates for viewing of laboratory statistics.

templates of results viewing

This is a powerful tool for viewing of laboratory work information, editing of performed analyzes, printing and exporting of data.

Adding of the templates of information viewing.

In the left part of the main window of application, you have the possibility to set up no more than 7 templates for use of statistics viewing.

The template "For today" is created by default for each new user.

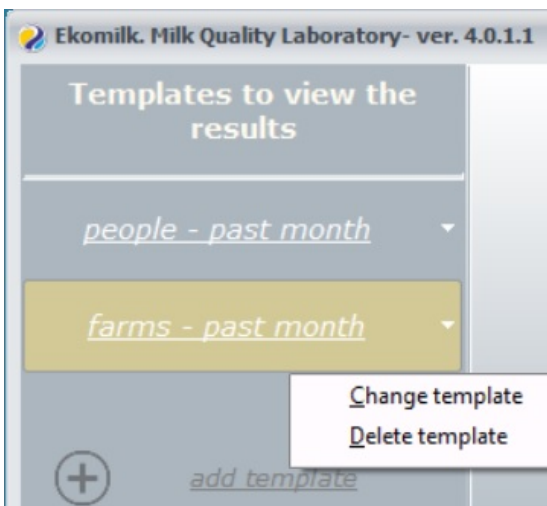
The data selection for the statistics window is customized very flexible.

To create a new viewing template, it is necessary click the button "add template".

Adding of a template takes place in 3 stages:

- selection of information fields for the table
- data filtering
- the viewing period task

These actions will allow you to receive only the information you need.



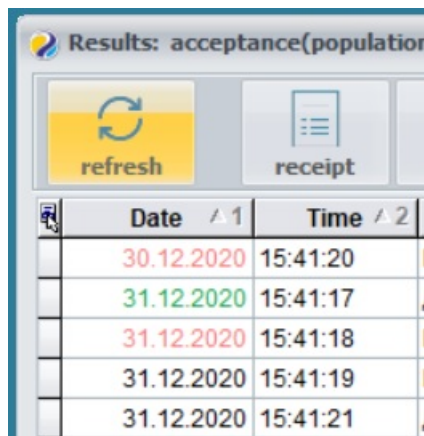
The created template can always be changed or deleted. For this you need to move the mouse cursor to the right edge of the button on the selected template and click on the arrow, and then perform the action of interest.

Description of the functions.

When you choose the necessary template (for example, "For today"), the window of viewing of the performed analyzes will appear on the screen. The window title contains overlaid information filter (for example, "Laboratory samples from .. to ..").

To sort the data in the table, it is necessary to click on the name of the required column. You can apply an additional sorting while holding down the button "Shift".

The system administrator or user with editing rights ("Settings", item "System users", option "Allow to edit of data") can edit the entered measurements, delete the wrong entered ones.



Date ^ 1	Time ^ 2
30.12.2020	15:41:20
31.12.2020	15:41:17
31.12.2020	15:41:18
31.12.2020	15:41:19
31.12.2020	15:41:21

If the data have been changed, the cell "Date" will be highlighted in red.

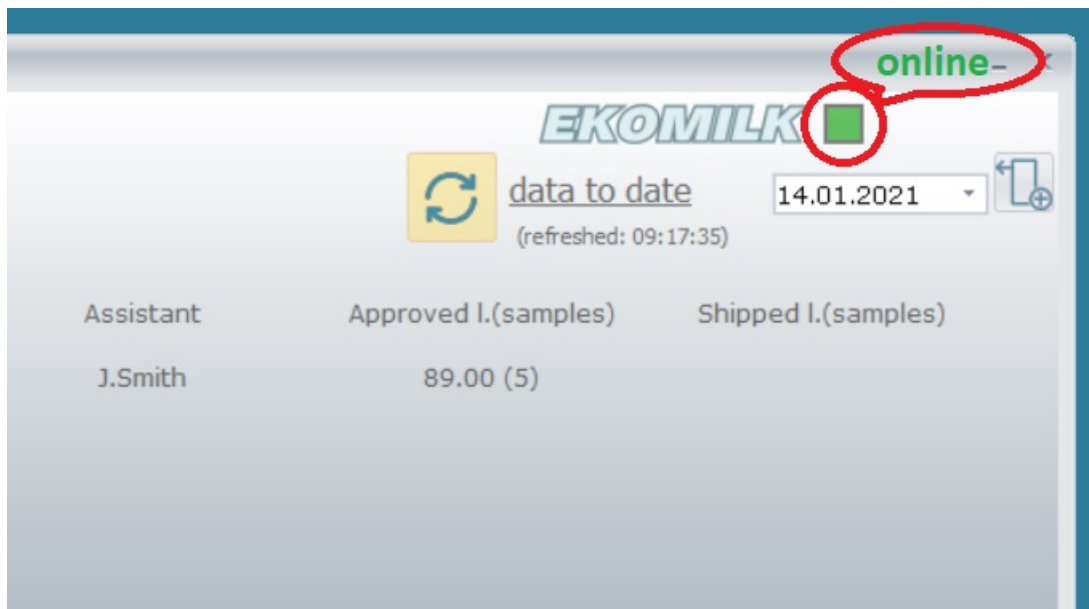
If the analysis is entered manually ("manual data entry"), the cell "Date" is highlighted in green.

When taking measurements, the laboratory assistant can refuse to print the receipt and print the necessary receipts from this window. It is also possible to print the entire table, with the first line showing the filter imposed on the information.

The visible table can be exported to dbf or excel formats.

[receiving of results from the Ekomilk analyzer](#)

- 1) Check if the device is connected to the computer (RS-232 or USB cable which connects the EKOMILK analyzer and the computer)
- 2) Turn on the device (switch "220V network" is on the back of the device)
- 3) Run the program (shortcut on the desktop "Ekomilk V4")



If the workplace is configured to work with the EKOMILK analyzer (where and how) and the program "sees" the connection (see the picture above), then after the analysis with the Ekomilk device, a window with the analysis result will automatically appear on the computer display.



based on the above, there is no need to perform additional manipulations (Send & Clear, print of the result) on the Ekomilk device!

Intake of milk from the people at remote dairy points (option)

The software allows to solve the following tasks in the process of automation of milk intake:

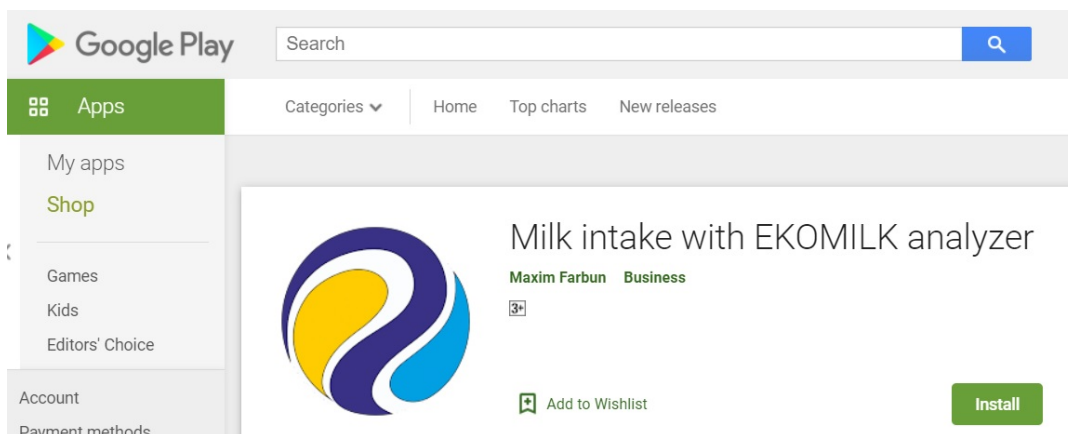
- to exclude the human factor, i.e. to reduce the probability of mistakes and inaccuracies when entering the readings into the database;
 - monitoring of information about the quality and quantity of milk at the intake points, which gives the possibility to predict in advance a more rational use of incoming raw materials for processing at a dairy plant.

To support both stationary and mobile milk collection points in remote areas, a mobile solution is preferred. Therefore, it is possible to automate milk intake using an Ekomilk analyzer (12V power supply) and a mobile device running Android (Ekomilk device transmits data using a USB connection, OTG cable).

The key criterion for choosing of the development of a mobile application was the fact that a mobile device (phone or tablet) has the necessary functionality:

- the possibility of connection USB-peripherals through OTG-adapters;
- mobile internet - for data synchronization;
- camera - for reading of BAR-code, client identification.

The Android-application is available in the public domain of the Play Market.



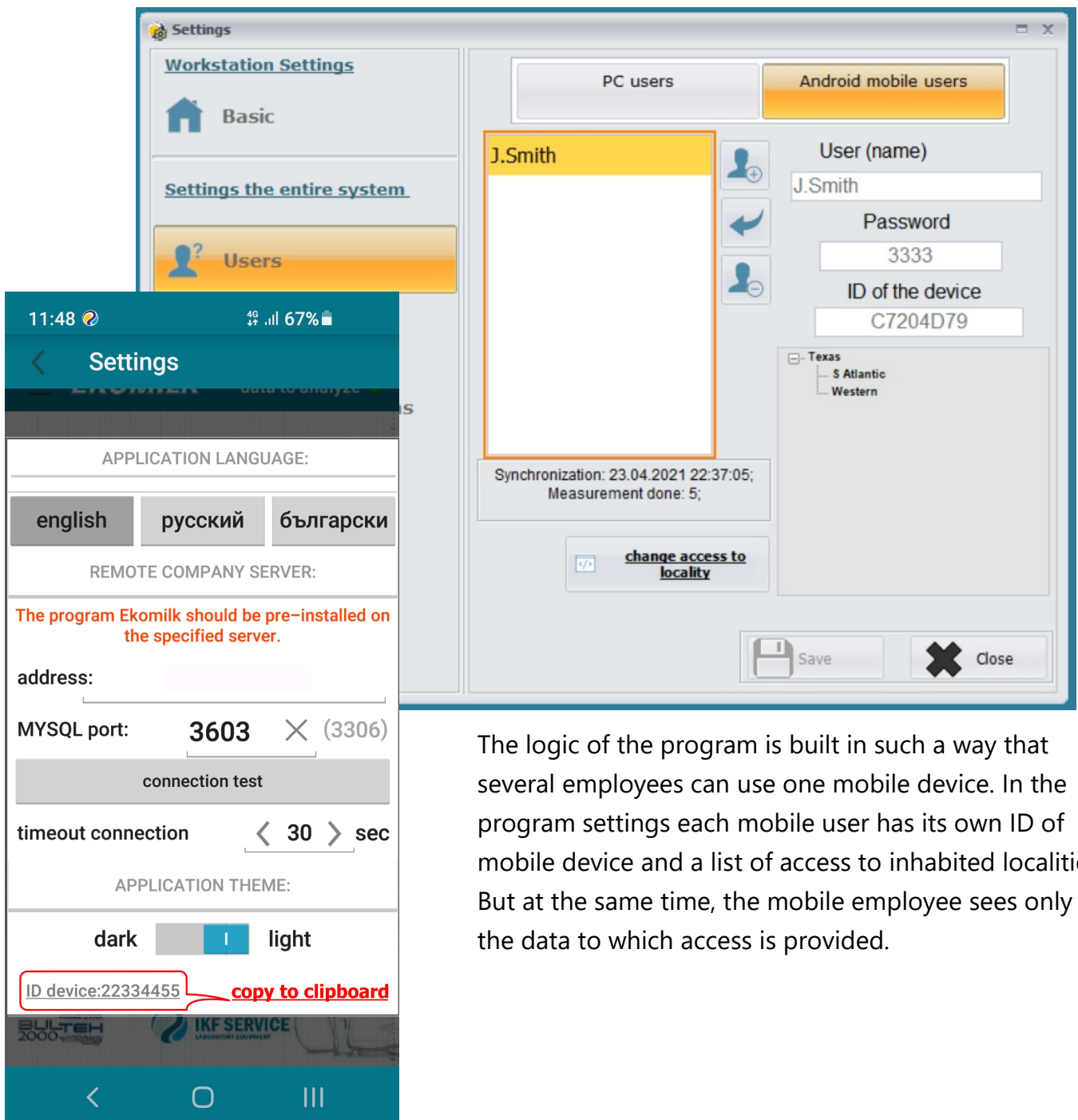
To synchronize data between the mobile application and the database server, it is necessary to set up NAT-forwarding at the enterprise router. For example:

"Firewall" - "Inbound ACL":

Source IP	Destination IP	Protocol	NAT	Action
Any	eth0	TCP,Any,3603	192.168.1.100:3603	Allow

(by default MYSQL-port 3603).

To ensure the security of the transmitted data, a secure connection is used.



The logic of the program is built in such a way that several employees can use one mobile device. In the program settings each mobile user has its own ID of mobile device and a list of access to inhabited localities. But at the same time, the mobile employee sees only the data to which access is provided.

Contact information

Please contact us for all the questions related to the work of the program: <http://ikf.com.ua>

Technical support can be obtained by email maxim@ekomilk.com.ua.

Please mention the following information in your email when requesting assistance:

- program version (see the window title "Ekomilk. Milk Quality Laboratory" then version);
- enterprise name;
- complete description of the problem - provide as much information as possible: the location of the error, the sequence of actions, screenshots, etc..