New technologies for consumer service

The 3-rd generation AMR system for gas

Kishinev - March 2009

The equipment in operation

18 objects (1483 points):

- «Leogrant»	**Street Bukuresht, 96, 96/1, 98**	**- 121 points;**
- «AGO DACIA»	**Street Sadovjanu 10/1, 10/2, 12**	**- 163 points;**
- «LOVELY HOUSE»	**Street to Peter Raresh, 36**	**- 142 points;**
- «Monolith»	**Street Kalja Orheilor103/1**	**- 137 points;**
- «FAURI»	**Avenue Stefan cel Mare 141/2**	**- 56 points;**
- «BASCONSLUX»	**Street P.Zadnipru 14/6**	**- 150 points;**
- «Mirinianu»	**Street Hirtoape 26**	**- 24 points;**
- «DAGNA»	**Street Metropolitan Dosoftej 126**	**- 61 points;**
- «ANDRONIX-DIN»	**Boulevard Dacia 49**	**- 83 points;**
- «AMIC»	**Street Drumul Viilor 38/8**	**- 154 points;**
- «ANIAJ»	**Street Burebista 7/1**	**- 39 points;**
- «Frezia-Com»	**Street Liviu Delianu 7/6**	**- 71 points;**
- « MAGIC V.S.»	**Street Ion Dumeniuk 18, 20, 26**	**- 282 points;**

From them are equipped by modems for data transmission on GPRS – 7 objects.

Scheduled installations 2009

(1902 points)

«R&R»	**Street A.Russo**	**- 101 points**
«AGO DACIA»	**Street Sadovjanu, 12/2**	**- 85 points**
«ГЛОРИНАЛ»	**Valea Trandafirilor**	**- 456 points**
«BASCONSLUX»	**Avenue Mircha cel Batrin**	**- 800 points**
«COMTEXGAZ DK»	**Settlement Cricovo**	**- 80 points**
«FAURI»	**Avenue Stefan cel Mare 141/3**	**- 45 points**
«Col. Mecanizata»	**Avenue Mircha cel Batrin 20/2**	**- 59 points**
«MAGIC V.S.»	**Street Moara Rochie**	**- 76 points**
«JSK 224»	**Street Deljanu 7/3**	**- 200 points**

Comparison of AMR systems

Systems of the first generation are presented by tens manufacturers, have rather low cost, high speed of expansion. Lacks - manual data gathering, the maximal approach to object for data collection. In high-rise buildings – access to a building is required for collect data on floors.

Systems of the second generation are presented by leading manufacturers of meters Actaris, Elster, Sensus … and provide automatic data gathering on a server of system. Lacks – necessity for the intermediate routers established on each ladder platform and demanding an external feed from a network of an alternating current. It raises cost of the equipment, complicates expansion of system (need connect to the network of an alternating current), demands security from vandalism. Such systems are inefficient for buildings with low density of points of measurement.

Systems of the third generation. Speed of expansion, low cost, absence of design jobs, absence of intermediate routers, installation on the measurement point in some minutes, suitability as for buildings with low density (countryside) –collect of data to the manual terminal, and for buildings with high density – multi-storey houses. Scalability – in process of increase in quantity of the established points they can be united in a network, and presence of clock - allows to have data on consumption with time intervals – hour and daily.

The equipment of AMR system

The radiomodule D100-F

- Remote collection of data from meters by radio
- Opportunity of connection to any meters with a pulse output
- Simplicity of installation
- Up to three pulse inputs and three inputs of temperature,
- Support of meters Elster, Actaris, Samgas…
- The control of presence of an external magnetic field
- The control of breakage of the gauge
- The control of short circuit of the gauge

Router J100-U

- Number of registration points – up to 250.
- Type of a feed – the concentrator/modem 6V/600mA, DC
- Power consumption no more 3W
- A reserve feed – lithium-ion accumulator
- Range of communication (50 – 400m - depends on conditions)
- Type of interface RF/USB
- Type of the supported modem - GSM/GPRS

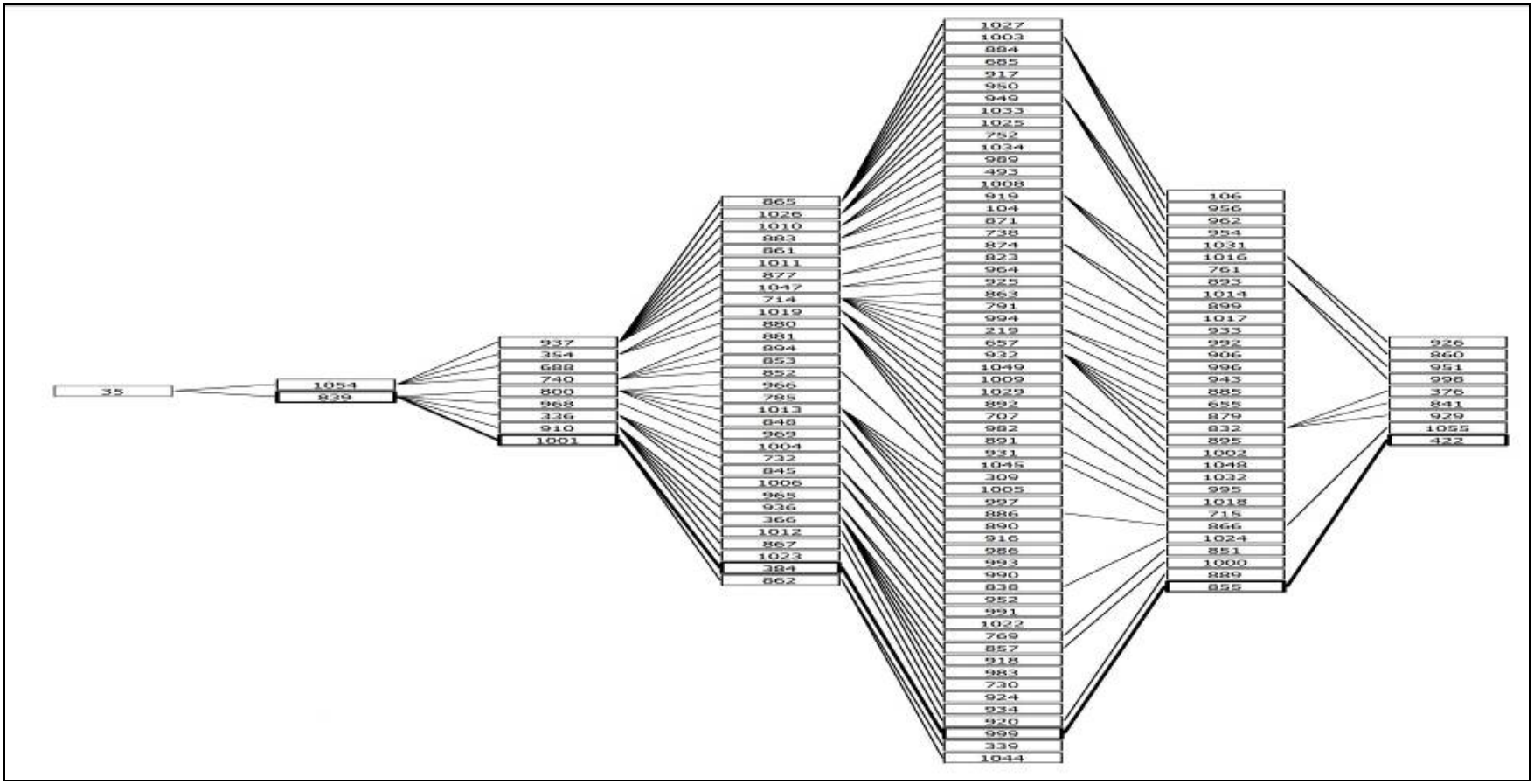
The manual terminal C100-U

- Collect data from radiomodules.
- Type of a feed – the lithium-ion accumulator
- External power unit – 6V/40mA, DC,
- Power consumption no more 0,25W
- Type of the interface RF/USB
- Collect data for separate consumers (cottages)

Account of consumption in an apartment house

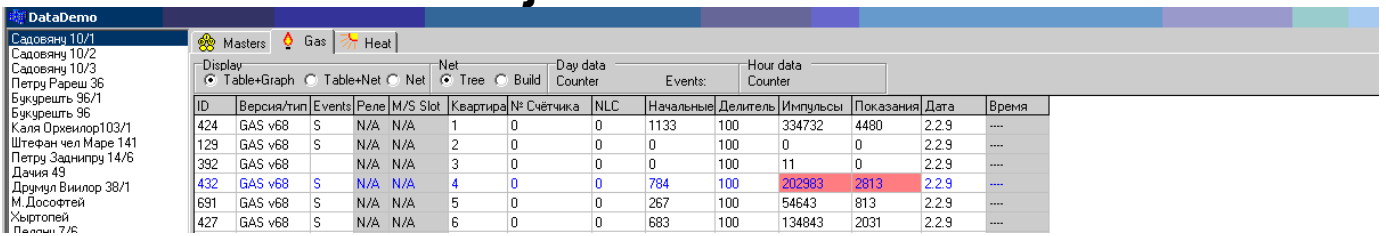
The account of consumption for the room meter is carried out by means of the radiomodule equipped by the pulse gauge.

For communication inside of the house the local radio network is used. Radiomodule can communicate directly with the concentrator, and also to pass data the friend through the friend. The Data network is construction automatically. As an example the network on street Peter Zadnipru 14/6 is resulted.



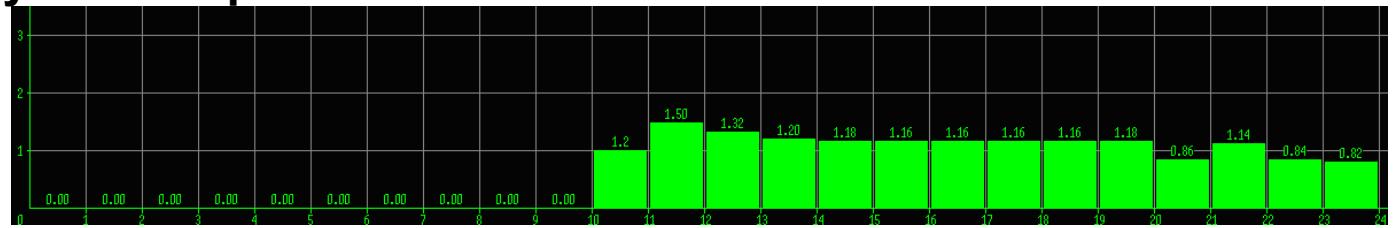
Opportunities of the software

Numerical data on the set object for the chosen date

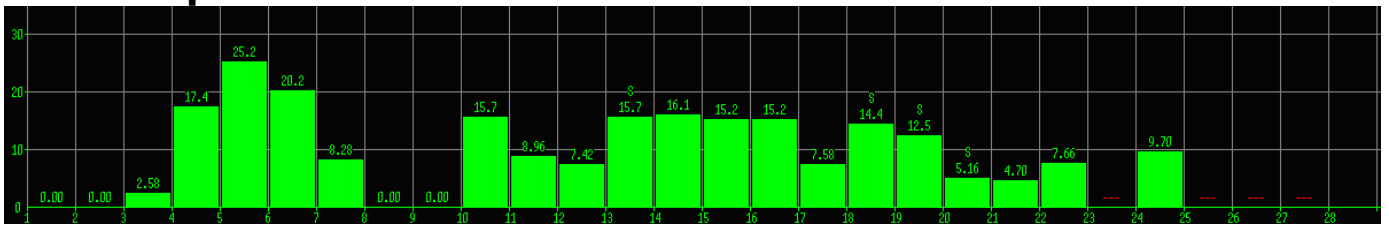


ID	Версия/тип	Events	Реле	M/S Slot	Квартира	№ Счётчика	NLC	Начальные	Делитель	Импульсы	Показания	Дата	Время
424	GAS v68	S	N/A	N/A	1	0	0	1133	100	334732	4480	2.2.9	----
129	GAS v68	S	N/A	N/A	2	0	0	0	100	0	0	2.2.9	----
392	GAS v68		N/A	N/A	3	0	0	0	100	11	0	2.2.9	----
432	GAS v68	S	N/A	N/A	4	0	0	784	100	202983	2813	2.2.9	----
691	GAS v68	S	N/A	N/A	5	0	0	267	100	54643	813	2.2.9	----
427	GAS v68	S	N/A	N/A	6	0	0	683	100	134843	2031	2.2.9	----

Hourly consumption of the chosen subscriber for the chosen date



Daily consumption of the chosen subscriber for the chosen month



Example of formation of the report on the set object for the chosen date

Apartment	ID	Meter	Coefficient	Start	Sum m3	Date
1	992	71150	/100	0	711	24.2.2009
2	863	47136	/100	0	471	24.2.2009
3	1030	13140	/100	0	131	24.2.2009
4	739	1	/100	0	0	24.2.2009

Results of operation of AMR system

Cost of the equipment, in comparison with 2008, is lowered twice.

The program of the top level allowing to organize any number of workplaces with access on the Internet to the information on consumption of water, heat and gas.

The program allows to look through structures of consumption as hour/day and day/month, and also to generate reports on the set object for the chosen date.

The analysis of hourly data of consumption allows to reveal 12 apartments with leakage gas from 2 up to 56 cubic meter a month.

The certificate is received, assembly of radiomodules and manufacture of magnetic gauges is carried out in firm LOCUS. There is no danger of the termination of support of system in case of leaving one of firms from the market.

Introduction of system reduces quantity of complaints of the consumers connected with an incorrect extract of bills. There are no the problems of data acquisition connected with necessity to find tenants at home.

For convenience of payment of bills there is an opportunity of an extract of bills for any date of month, and not just on the first day of month.

Directions of the further development of the project 1

Managements of the end user. The increase in cost household gas meter on the equipment the built in cutting valve makes 4-5 USD. Installation of the radiomodule on such meter allows not only to obtain data, but also to operate consumption. It is good alternative to meters with an advance payment.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Installation of radiomodules with the gauge of pressure in final points of a gas network of multi-storey houses – the control of working pressure over a network and the control of safe operation of gas networks.

The radiomodule supports installation of the external temperature gauge, and can carry out functions of the temperature gas corrector.

Directions of the further development of the project 2

Collection of data probably as on the concentrator – in case of dense building by cottages, or in case of selective installation – is an opportunity of collecting data on the manual terminal by radio channel. Such expansion of system probably in areas with problem data gathering, in places, where a greater difference between the released gas and acting payments, for localization of places of not authorized consumption.

Installation of the radiomodule in cottages. In this case the meter can be placed indoors – charges on a metal protective casing of the meter of gas accordingly will decrease, and there is no necessity to establish the meter with the gas corrector, that also is cheaper.

Revealing of meters working outside a working range (the control of the minimal and maximal consumption).

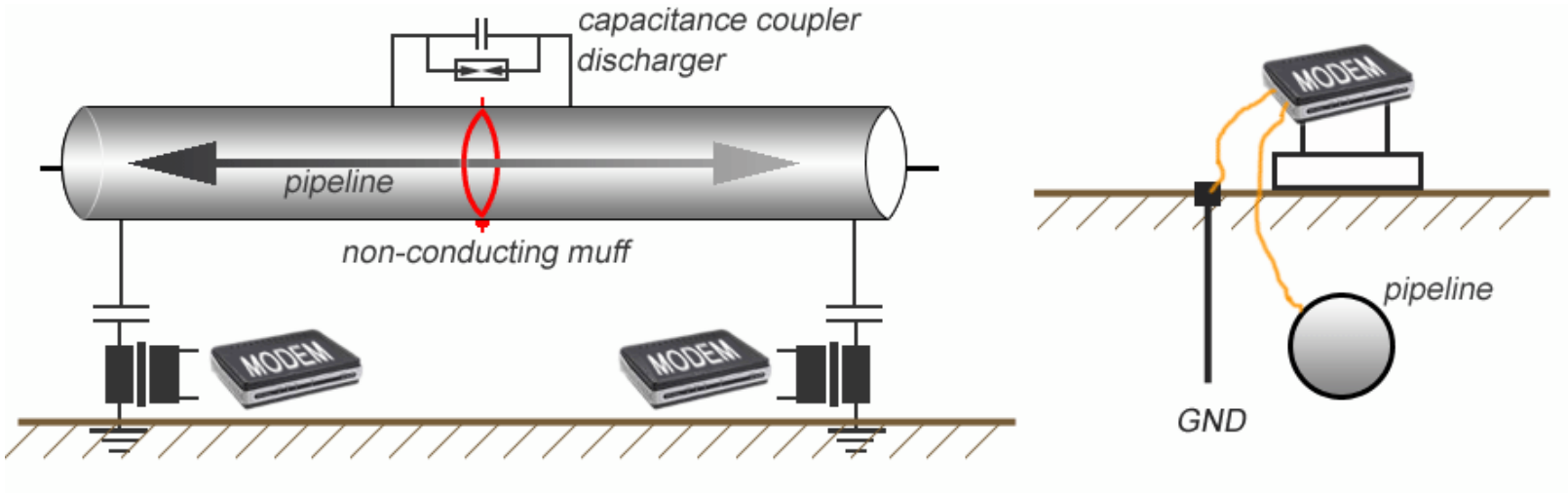
Revealing of meters of the gas working outside a working temperature range of a gas meter (radiomodules are equipped by the built in temperature gauge with accuracy of measurement 2'C).

Construction hour structures of consumption on the set object (site) of a network – an estimation of throughput of a gas pipe for connection of additional consumers.

Controller cathodic protection and data transmission network

Control cathodic protection station (CPS) equipment and transfer data to the information server system in real time:

- **Control voltage dropouts at the inlet and outlet CPS;**
- **Control of protective potential;**
- **Control of a protective current (leak detection);**
- **Fixing wandering currents and voltages;**
- **Send emergency signals in the absence of main power;**
- **The ability to install remote sensor of potentials with step 200m – 500m;**
- **The installation of remote sensors to detect flooding leaks;**
- **The control of a gassed condition of a site - % the maintenance of metane (the control of remote sites over integrity and safety, and also revealing of sites of losses of the gas caused by outflow);**
- **Transfer of data both on GPRS / Internet and through the pipeline.**



Data network for gas-distribution substation (GDS)

Installation of the equipment of data transmission from GDS - the control of pressure, temperatures, gassed conditions and potential of corrosion protection in the set points of networks.

Hydraulic calculation of a network (data are fixed for the set moment of time) in case of the equipment additional gauges of pressure/temperature.

Operative balance of gas in technological and commercial sites of the measurements.

Remote localization of sources of losses on segments of gas networks .

Revealing of not authorized connections to gas networks.

Remote control by active elements on engineering constructions *in real time* for a conclusion to the set operating conditions (latches on GDS, CPS, gauges of pressure, temperatures, technological points of the measure , etc.)

Formation of reports for the set date, fixing of failures, revealing of faulty gauges, the control of a working range of the equipment.

SISTEMUL NAŢIONAL DE ASIGURARE A CONFORMITĂŢII PRODUSELOR
AL REPUBLICII MOLDOVA

CERTIFICAT DE CONFORMITATE

Nr. de înregistrare **SNACP MD CP24 11 A2522-07**

Data emiterii: 15 octombrie 2007 Valabil pînă: 15 octombrie 2010

ORGANISMUL DE CERTIFICARE **SNACP MD 81 CP24**
Organismul de certificare a produselor din Telecomunicaţii, Informatică şi Poştă (OC TIP)
MD-2021, mun. Chişinau, str. Drumul Viilor, 28/2; tel. 373 22 735394, fax 373 22 73 39 41

PRIN PREZENTUL DOCUMENT SE CONFIRMĂ FAPTUL, CĂ PRODUSELE IDENTIFICATE ASTFEL:
DENUMIREA / DESCRIEREA

Module radio tip 100 modele D100-FC şi J100-UC cu adaptor de alimentare "JODEN" model JOD-4101-05

Codul NM MD
8525

SÎNT CONFORME CU CERINŢELE OBLIGATORII STABILITE ÎN :
SM GOST R 50842-2005, SM SR EN 60335-2-29:2006 (cap.: 6-8, 16; 20; 22-29), ERC/REC 70-03 (Anexa 1, banda "f")

PRODUCĂTOR
Firma "LOCUS" SRL,
MD-2071, mun. Chişinău, şos. Balcani 8, of. 60

Codul ţării
MD

SOLICITANT
Societatea Comercială "DJV-COM" SRL ,
MD-2068, mun. Chişinău, str. Costin Miron 7, ap. 604

Codul CUIO
1006600062650

CERTIFICATUL ESTE ELIBERAT ÎN BAZA
1. Actului nr. 95 EPA din 29.08.2007 privind evaluarea sistemului de producere a "Modulelor radio tip 100 modele D100-FC şi J100-UC" cu adaptor de alimentare "JODEN" model JOD-4101-05

2. Rapoartelor de Încercări nr. 913 din 28.09.2007, Laboratorul de încercări LÎ CEM,
Autorizaţie de desemnare nr. SNACP MD 82 0079 şi nr. 65/08 din 29.08.2007, Laboratorul de încercări a produselor industriale (LÎPI), certificat de acreditare nr. SA MD CAECP LĂ 01 002

INFORMAŢIE SUPLIMENTARĂ:
Echipamentul certificat poate fi:
-comercializat numai fiind marcat cu marca de conformitate a OC TIP şi însoţit de prezentul certificat sau copia lui autentificată de OC TIP.
- utilizat numai în banda de frecvenţe de emisie autorizate de Î.S. "Inspectoratul de Stat al Comunicaţiilor".
Evaluarea periodică a produselor certificate se va efectua de OC TIP o dată pe an.

Seria B Nr. 014905

Conducătorul organismului de certificare — Alic Gobjila

Experţi — Petru Chiriliuc

În atenţia antreprenorilor şi organelor de control!
Copiile certificatelor de conformitate se legalizează în modul stabilit de
Organismul Naţional de Asigurare a Conformităţii Produselor

Thank Your !

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