Changes and additions to the user manual of TE-GAS ver. 5 software.

TE-GAS ver 5.03

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Updates in TE-GAS ver 5.03 software.

1. Adjustment according to consumption of remained gas, after closure of solenoid valve.
2. Adjustment on stand, based on TE-PM gas controller
3. Manual mixture corrector TE-MC
4. Changed interface of the oscilloscope
5. Improved performance of software gas level sensor
6. Improved correction of gas supply by OBD signals

Gas injector test on the basis of TEGAS controllers.

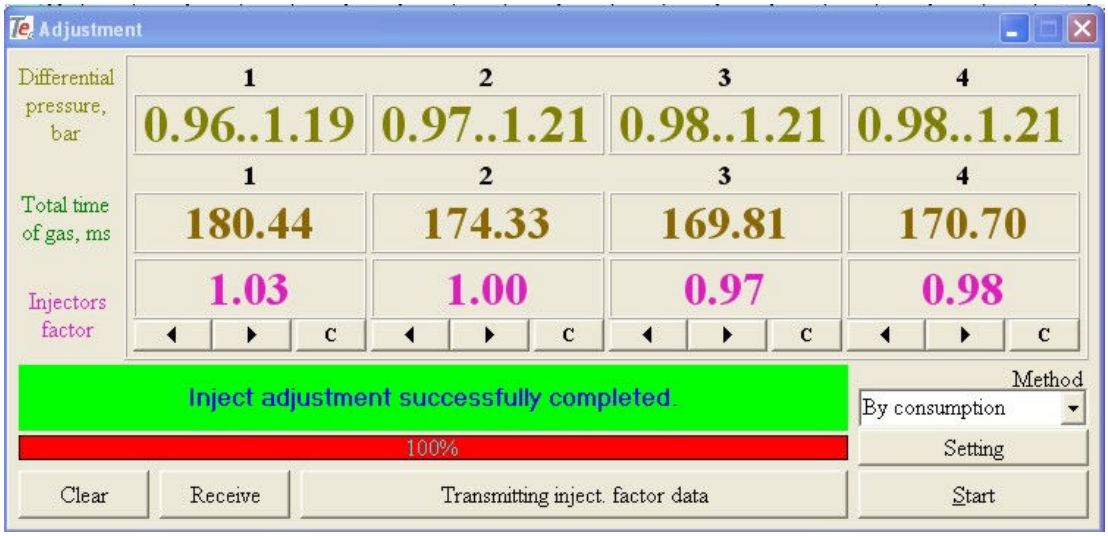
Gas injectors periodically require technical characteristics test. It related to the change of mechanical adjustments and deterioration. To determine the degree of deterioration without special equipment quite difficult. Typically, user appeals to the specialists about increased gas consumption. This may be due to imbalance of gas injectors. There are various specialized stands for testing and calibration of gas injectors. There are three functions of gas injectors adjustments in our gas controllers.

Adjusting according to signals of petrol ECU, that uses signals from lambda.

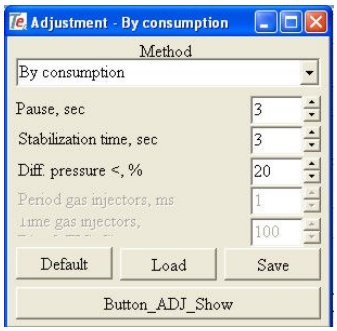
Adjustment performed on idle after Autocalibration is finished.

Calibration coefficients operate over the entire range.

1. Adjustment according to consumption of remained gas, after the closure of the electric valve.



Adjustment held on idle. Software performs measurement of time differential pressure is dropped, till the certain value. Calibration coefficients operate over the entire engine power ranges. For best results, it is desirable, to make all the adjustment coefficients 1, by adjusting the stroke inside gas injector. Before adjustment start, make sure that solenoid valve inside reducer hermetically closes feeding pipe. In settings, you can change time measurement modes and differential pressure drop.

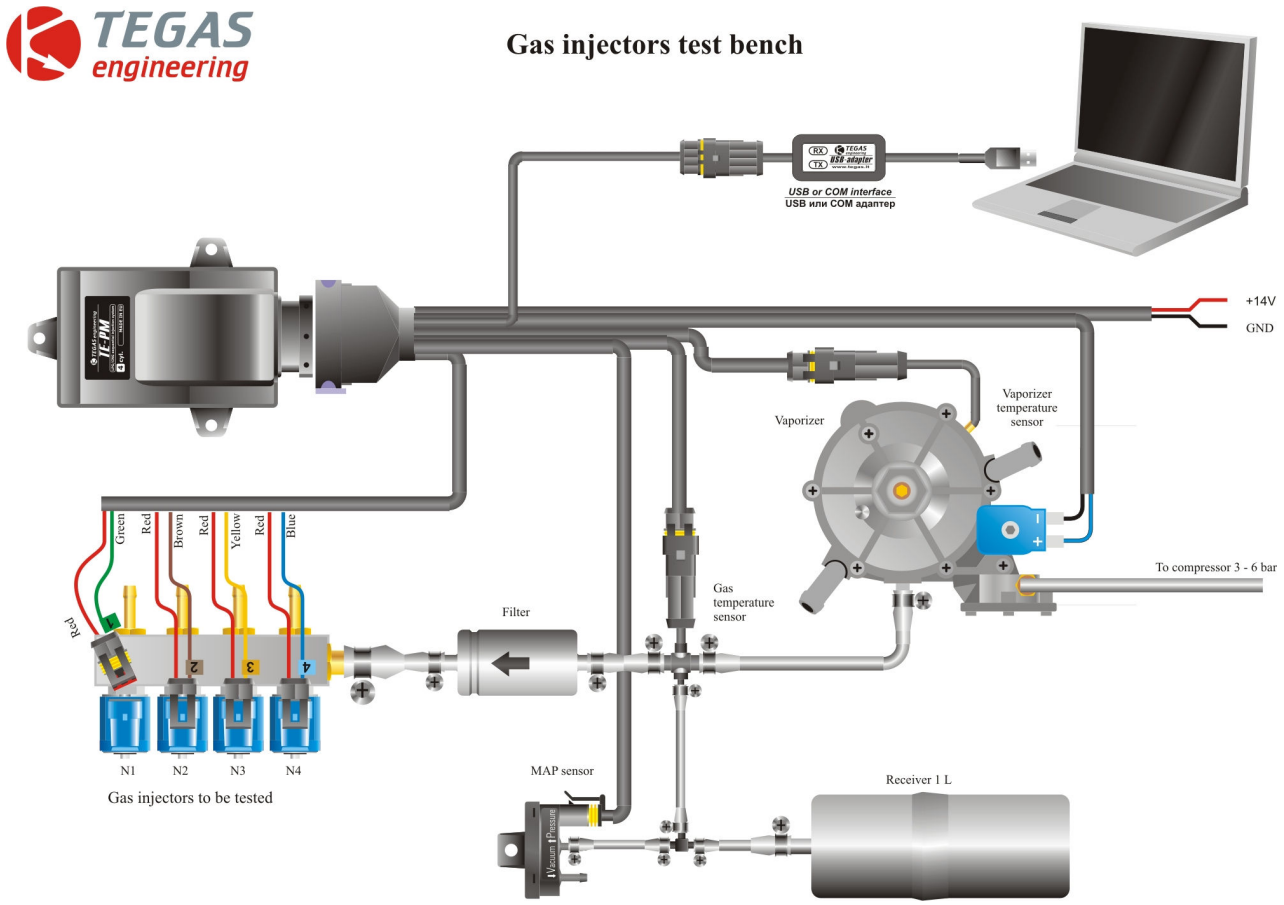


Settings:

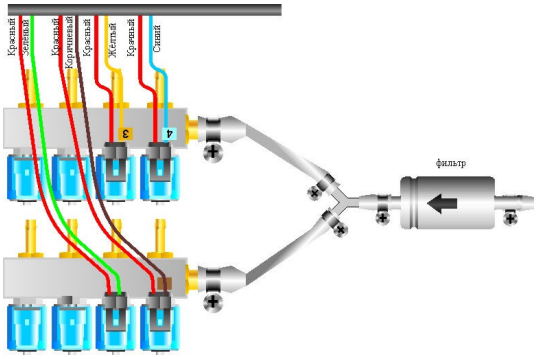
1. Pause between measurements. Required to restore pressure.
2. Stabilization time. Averaging of the measured values.
3. Percentage of differential pressure drop, until gas passes at the time of measurement.

2. Adjustment on stand, which based on TE-PM gas controller.

Almost all stand parts consist of TE-PM controller. Only one element is added - small cylinder capacity of about 1 liter. It serves as receiver for measuring air volume passing through injectors. Power supply have to be powerful enough, 14V with pulse current of 5 A.

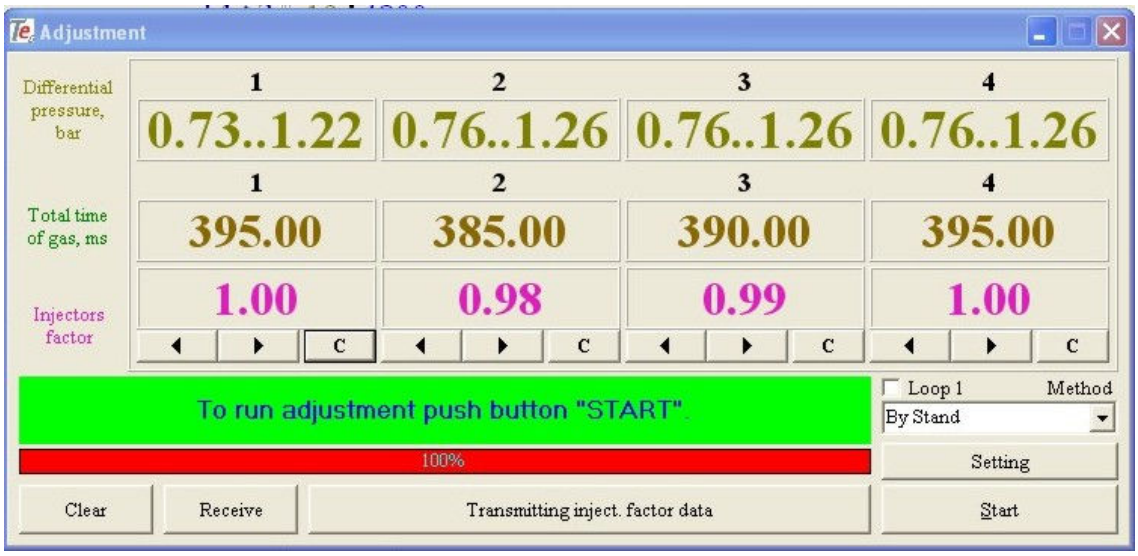


With this stand, you can calibrate not only one injector rail. If you connect two rails through the tee and connect a pair of nozzles on each rail, it is possible to reconcile couples of rails for the V type engines.



The stand also can be used for separate elements testing. You can check electronic unit, MAP sensor, switch, temperature sensors. Adjustment / calibration / gas injector test can be carried in one cycle and repeatedly. To do this you need to tick on the «loop».

Injector pulse duration is desirable to choose that is recommended for idle. Measurement accuracy can not be higher than one injection of injector. Therefore, for accuracy of one percent is necessary that the total time was 100 times longer than the time of one injection. For Valtek injection of 5 ms, total time for 1 liter receiver is 500 msec.



Settings:

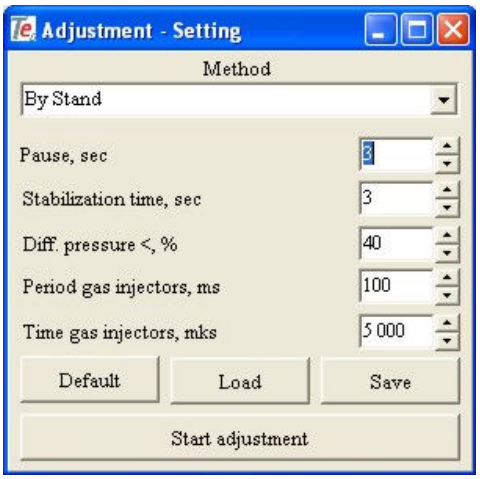
1. Pause between measurements. Required to restore pressure.

2. Stabilization time. Averaging of the measured values.

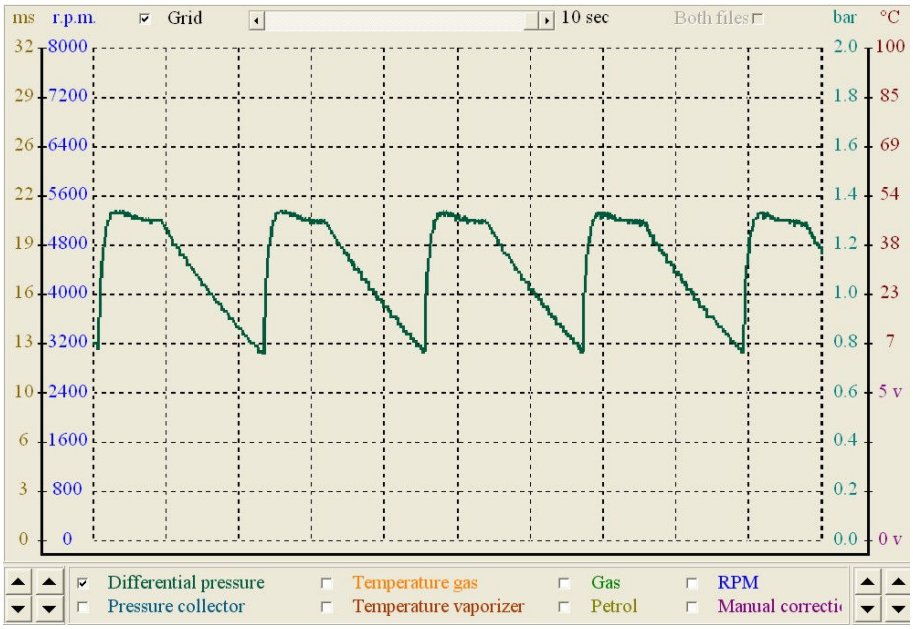
3. Percentage of differential pressure drop, until gas passes at the time of measurement.

4. The period of gas injectors operation

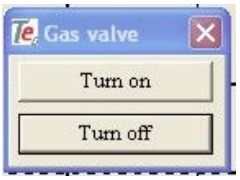
5. Pulse duration of opened injector.



The picture shows the cyclical variation of the differential pressure during adjustment.



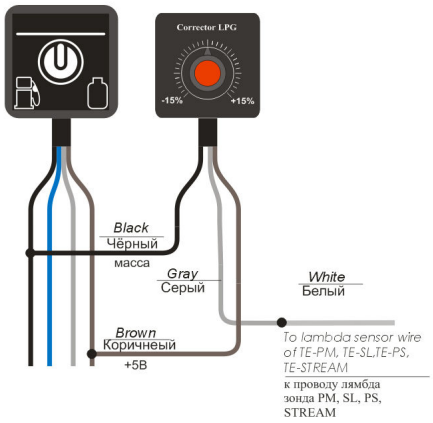
For operational opening and closing of gas valve is convenient to use a special management window. Its start is located in the tab «tools».



Attention: When you start adjustment function, in “stand” mode, impulses of gas injectors comes independently from engine performance. Therefore, in the case you use "stand" mode on engine, disconnect injector hoses from intake manifold.

3. Manual mixture corrector. TE-MC.

Frequently even in autogas 4 generation systems, there is necessity for manual operational correction of the mixture. Necessity arises when gas was filled with different characteristics (not like during calibration) and there is no PC. In this case, you can use manual mixture corrector. It is a small controller, that allows you to carry out a small (+/- 15% or more) adjustment of the gas supply form the drivers place.

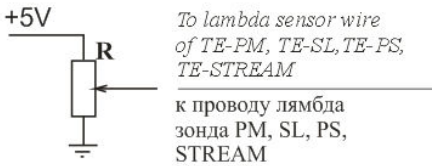


It is used lambda connection to enter correction data.

There are several variants :

3.1. With potentiometer.

Potentiometer nominal value 4,7kOm - 20kOm connected according to the scheme.

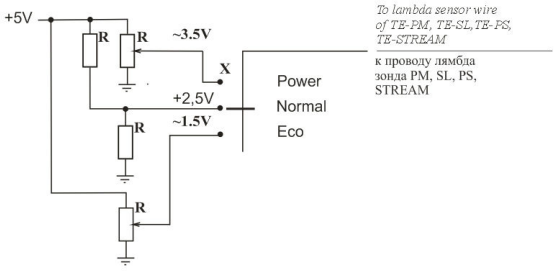


It is convenient to use power supply + 5V from the switch (for TE-Stream). In the calibration software will be seen appropriate changes. In PM, PS and SL correction changes will apply only if switch cable is connected.

3.2. Through a variety of switches.

All resistors and potentiometers same - par value 4,7kOm - 20kOm.

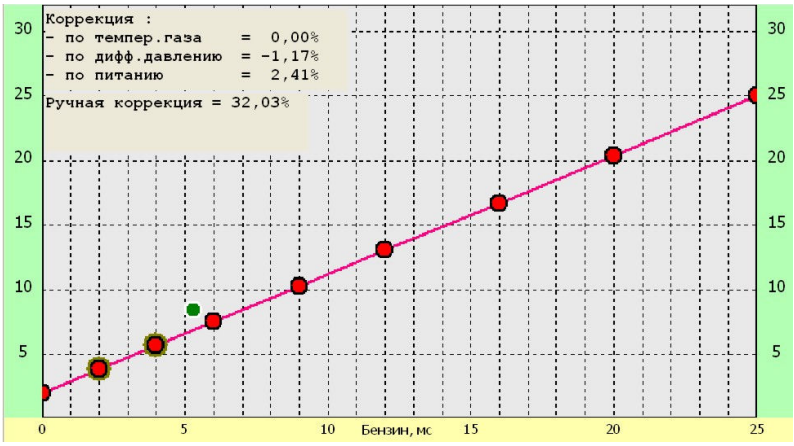
+ 5V can be taken from unused wire of gas level sensor, pre-setting the low-resistance sensor in calibration software.



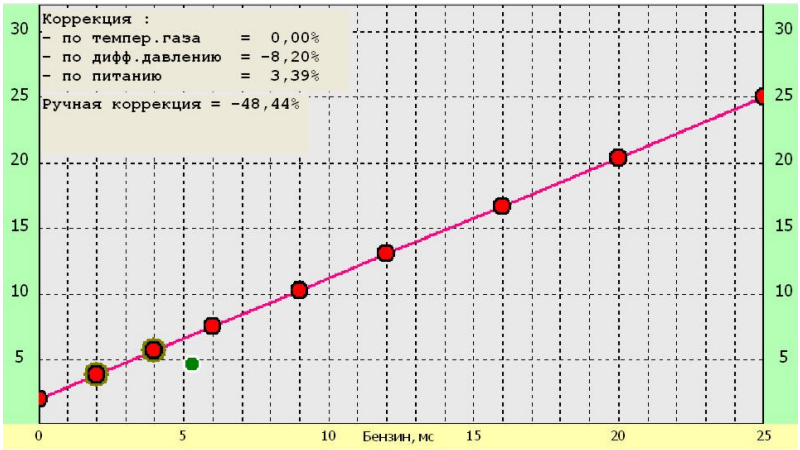
This ability for mixture calibration is available with firmware version x 73 and software TE-GAS v5.03. To activate this mode, you need to choose lambda TE-MC option.

In software, value of mixture correction will be displayed on the graph.

Enrichment of mixture



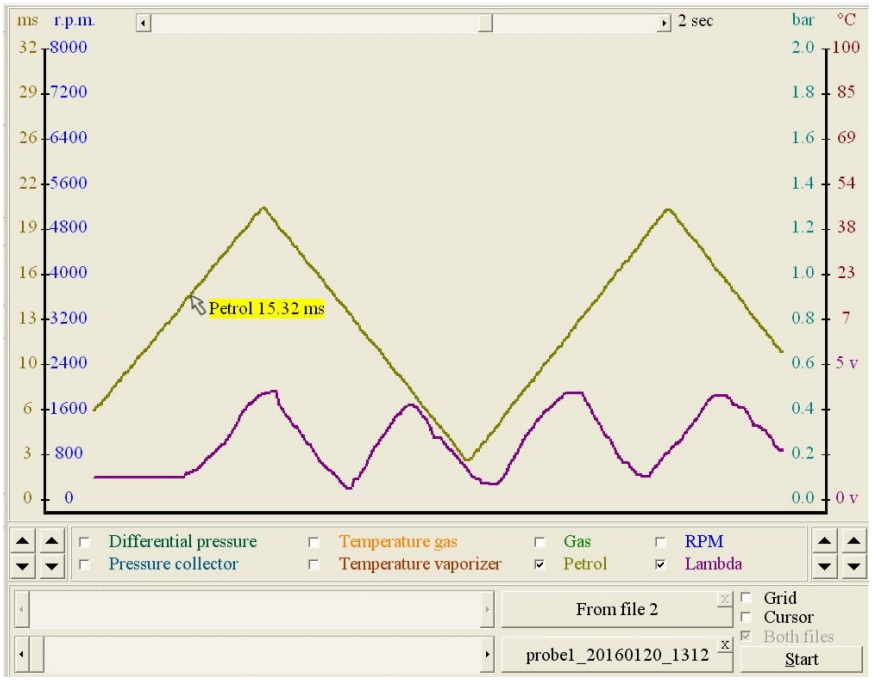
Lean mixture



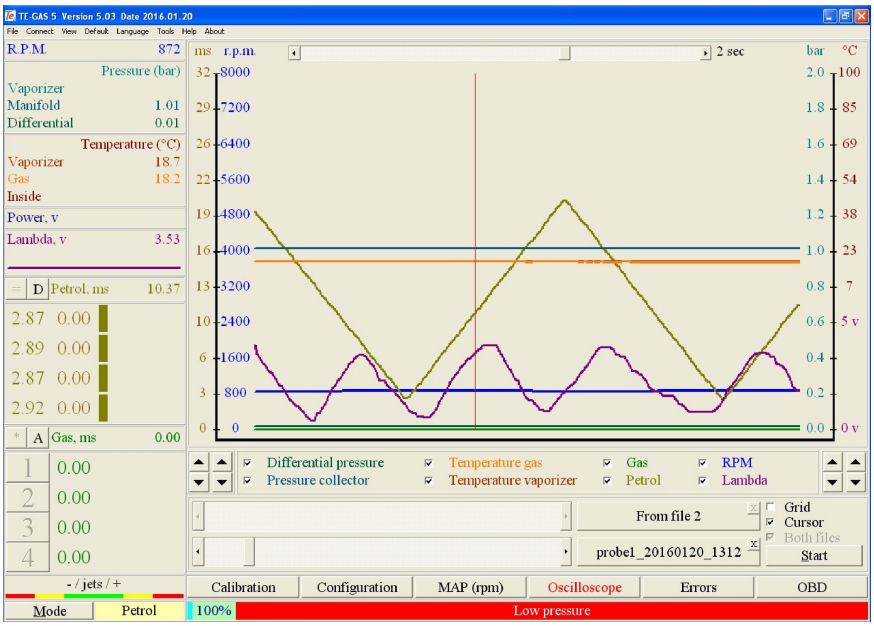
Note that, under normal operating Lambda and uniform motion, petrol ECU can calibrate itself manually entered corrections. Therefore, effect of the enrichment or lean mixture will occur only during sudden changes in engine modes. I.e. frequent accelerations and braking.

4. Changed interface of the oscilloscope.

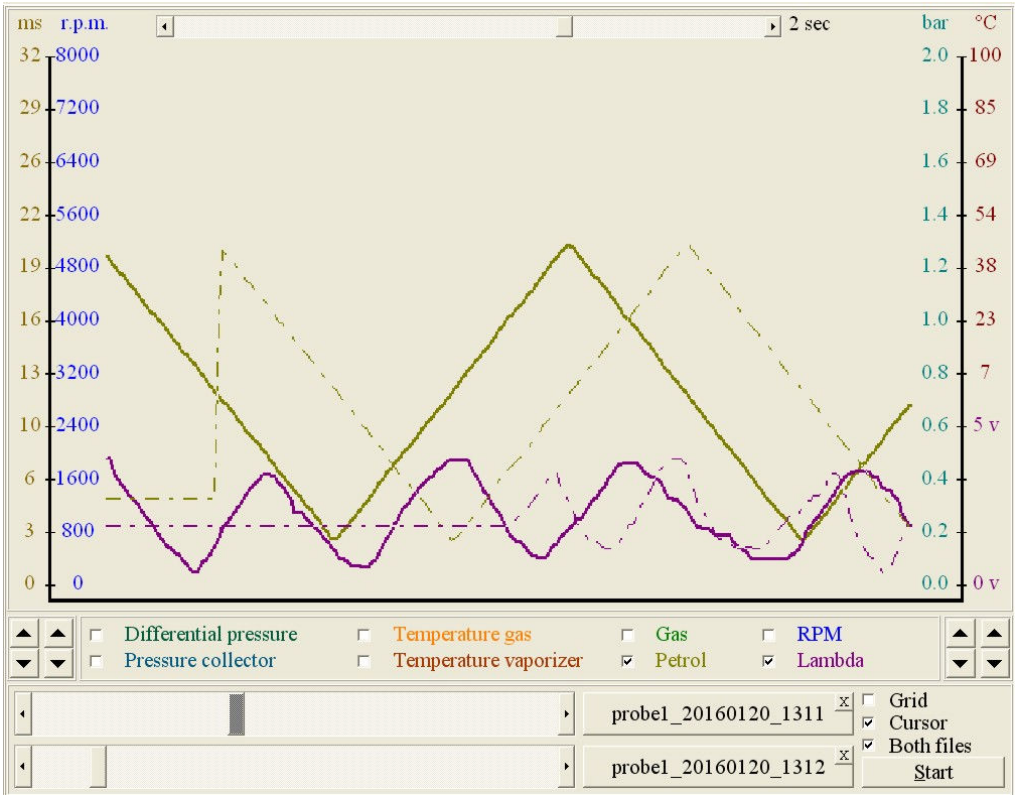
Simplified procedure of waveform record. By pressing "start" waveform will be displayed on the screen and recorded to the file. File will be named automatically, according to the configuration file name and date. After you stop record, file immediately will displayed on the screen. Pointing on the waveform shows a specific value.



Enabling cursor mode you can observe values of related parameters in the left part of the screen.



Simultaneous observation of two waveforms.



«Grid» turns on grid.

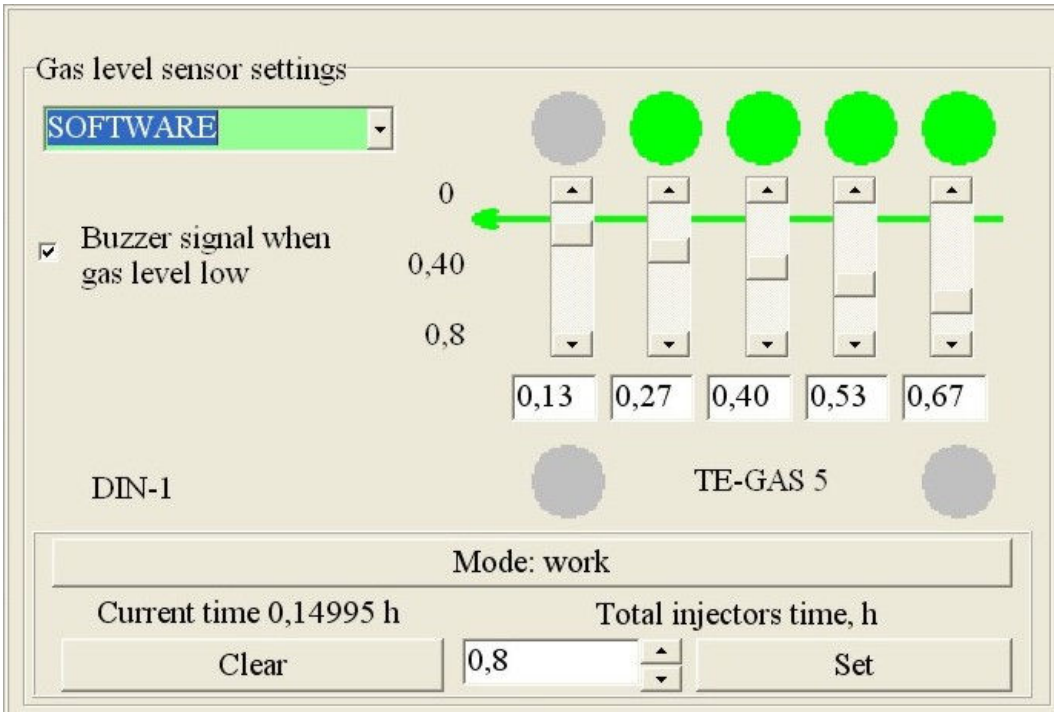
«Cursor» turns on cursor.

«Both files» allows displaying certain waveforms at the same time for two files.

5. Improved performance of software gas level sensor.

5.1. Added control of software sensor performance, option.

To do this, simply press "MODE" button. In previous versions, change of the mode could be executed only by long pressing switch button. What was not convenient for PM compatible controllers, because it was necessary to connect control cable on the switch and back.



5.2. Without change of data in current counter, total time of gas injectors can be adjusted.

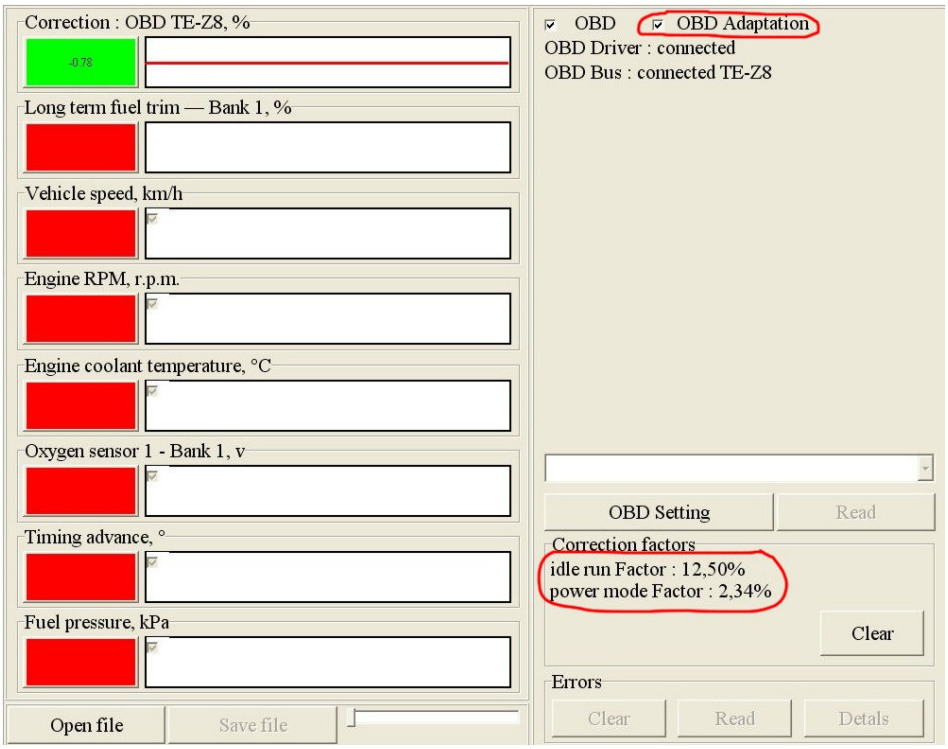
This can be achieved by calibrating values and pressing "SET". Reset current counter by pressing "CLEAR".

5.3. Current counter value and total time are automatically stored in TEMP file, during firmware change in the controller.

After loading TEMP file into controller, current and summary (benchmark) time values, software gas level sensor modes are transmitted, saved and runs automatically.

6. Improved correction of gas supply by OBD signals.

Implemented concept of adaptation by OBD. When "OBD Adaptation" is ticked, occurs calibration of coefficients "idle run Factor" and "power mode Factor". With tick off these values are stored in the memory, are always active and do not change during car exploitation, even if "OBD" option is off. In earlier versions, tick off action turns off correction. To disable correction coefficients you have to reset coefficients by pressing "Clear".



These changes operate in systems with OBD internal elements, such as TE 4.6.8 OBD-stream, and with external, based on TE-Z8,9