

Features:

- Full compatibility with IEC standards
- Great flexibility and easy operation
- Automatic stations service
- Manual stations service
- All types of meters service
- Wide range of tests
- Work in a computer network
- Various language versions
- Wide range of accessories



THE PURPOSE

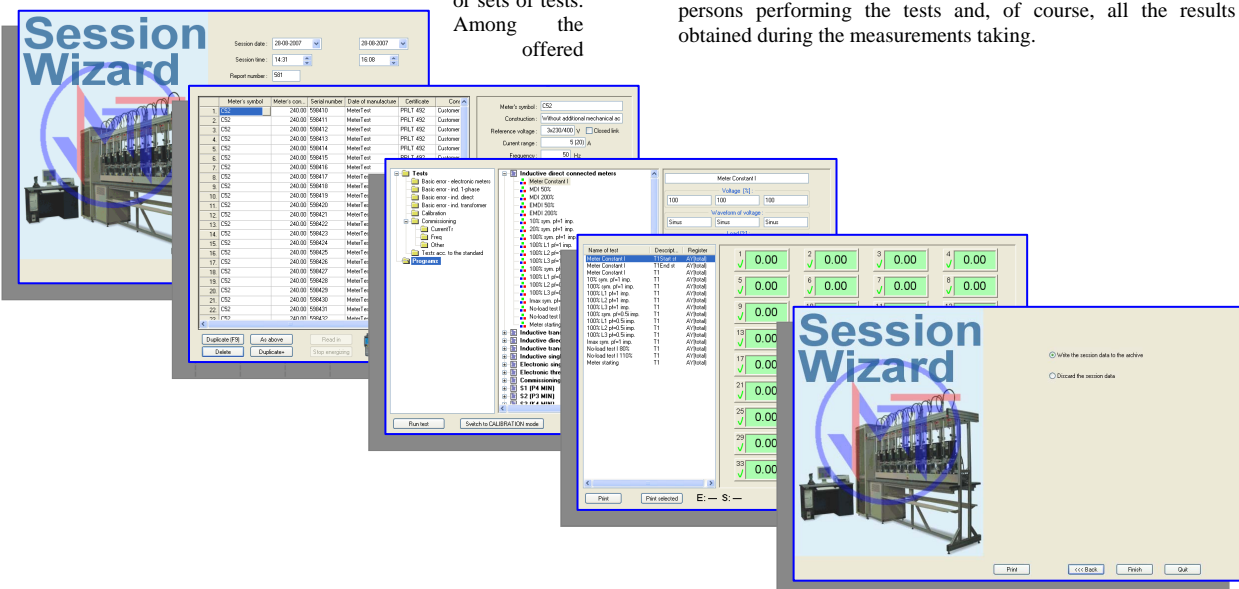
Program AsTest is designed for complex service of the electricity meters calibration and legalization processes. The built-in functions allow both for efficient service of various types of equipment and for advance data management. Parametrical libraries limit the need of new definitions creation to minimum, and various types of data visualisation notify about all events in the system on a current basis.

Esthetical graphic design and friendly visualisation of the testing processes make working with the program, and thus operating on the system, in spite of its complexity, comparatively easy. The whole measuring process is controlled by the Session Wizard, which, even for a beginner, enables efficient and quick pass through the whole process of calibration and legalization.

SESSION WIZARD

The session wizard is a very convenient tool for guiding the user through the whole process of calibration and legalization, i.e. session, from declaring the meters for tests up to the report printout and data archiving. It consists of five steps. *Step one* defines general data: the date, time, word description, reference conditions and others. In the *second step*, the user declares the type of meters for tests on the individual measuring positions. The meters may differ from each other as to the number of tariffs and the constants. The *third step* serves for performing the tests or sets of tests. Among the offered

operation modes, there is a single-test mode, semi-automatic and automatic set of tests. The sets of tests may be run from any position on the list. At any moment the user can switch from calibration to legalization mode, and, fulfilling certain conditions, from legalization to calibration mode. In *step four*, the user has the possibility of a cumulative viewing the results of all performed tests and printing one or a number of the available reports. The last, *fifth step*, is saving the whole session in the archive and finishing it. All used in the session meters definitions, their serial numbers and production years are saved, together with their outlay on each of the measurement positions, definitions of the tests applied and their sets, names of the users, persons performing the tests and, of course, all the results obtained during the measurements taking.



LIBRARIES

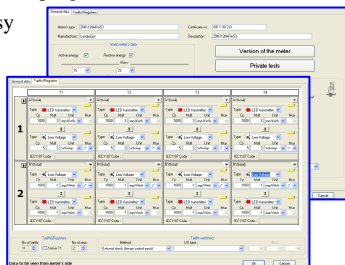
For a correct program operation, prior definition of the meters types, tests types and other parameters is necessary. These definitions are arranged in libraries, i.e. in suitably organised databases. Thank to an innovative approach to the databases structure, filling them is extremely easy and intuitive. A very useful feature of AsTest program is defining the parameters in parametrical way, i.e. so as the same test definition could be used for testing different types of meters. Thanks to this feature, a small number of tests and their sets enables testing a wide range of the available meters.

The following libraries are available in AsTest program:

- meters,
- tests,
- sets of tests (programs),
- waveforms of measuring signals,
- users,
- repairers,
- supervisors,
- customers.

The elements of the libraries may be additionally arranged and stored in folders, according to the user's preferences. The number of the libraries elements is practically unlimited. The program is supplied with definitions of some popular meters and the basic definitions of tests and programs.

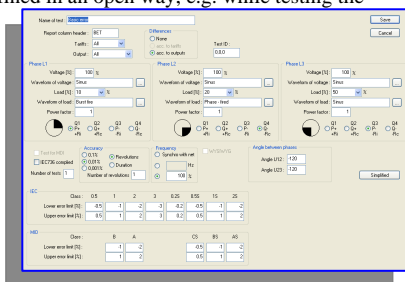
Meters Library enables easy defining of the meters, from the very simple induction ones to multitask electronic meters, including the prepaid, multi-system or multi-quadrant meters, also the ones with the maximum demand indicators, and others.



Tests library includes all types of tests:

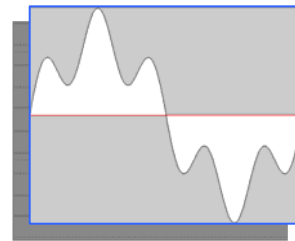
- *the basic error registration*, allowing for the type of output, the tariff, meter class, number of rotations/impulses, number of tests, the required accuracy and other parameters; automatic calculation of the differences according to the tariffs or outputs is possible,
- *the no-load run test*, allowing for the type of output, the tariff and other parameters,
- *the starting current test*, with allowing for the type of output, the tariff, meter class, number of rotations/impulses and other parameters,
- *the meter constant test*, possibility of placing on the printout the starting and final statuses of the tested meters counters; numerical result or in the form of + / -,
- *the maximum demand indicator check*, allowing for the type of output, the tariff, meter class, the required accuracy and other parameters; separate procedures for controlling the electromechanical and electronic indicators,
- *the impulse outputs test*,
- others.

During the tests performance, the program independently performs additional operations, facilitating the testing processes, which are not defined in an open way, e.g. while testing the starting current or the no-load run, the program automatically sets the meters on the "mark".



Library of programs allows for arranging the individual tests defined in the *tests library* in sets, i.e. tests programs. Such set may be next performed in automatic or semiautomatic mode.

Library of waveforms offers the possibility of defining various shapes of the measurement signals. Special *Waveform Editor* allows for creating the waveforms basing on the amplitudes and phases of individual harmonic and sub-harmonic. The work results are available in the form of a graph. The defined shapes may be used while defining the tests. The characteristic feature is the possibility of declaring different shapes for individual voltages and currents within one test. Flexibility of this function gives the possibility of defining all shapes required by international norms.



Library of the users serves for storing data of all users of the program and the system for calibration and legalization. The users may be assigned with suitable authorisations, i.e. access to different functions of the program. There is also the option of defining a collective user, which occurs when the system is operated by more than one person.

Library of repairers finds its application mainly in case of secondary circulation of meters. After dismounting from the grid, a meter requires technical check-up and perhaps tiny repairs. The data concerning the persons performing these operations may be stored just in the repairers library.

Library of supervisors finds its application in the case when the regulations require that the legalization process should be performed in the presence of a representative of the measures office (supervisor). This library allows for defining these representatives.

ARCHIVING THE DATA

Program AsTest provides the option of archiving the test results obtained during the preparation process before legalization and the legalization itself. Subject to archiving are all data related to the process of legalization and/or calibration: data on the meters, definitions of tests performed and detailed results of the tests. The archive may be searched according to different data: the date, type, serial number, producer, person performing legalization, repairer, etc. It is also possible to generate reports from the level of the archive.

REPORTS

Program AsTest has a built-in very flexible module for creating reports. A user has the possibility of using ready templates, delivered with the installation, but they can also create their own, multilevel arrays. Reports may be generated individually for singular meters or collectively for all meters. In a report, may be included detailed parameters of the tested meters, the session parameters, tests outcomes and other data.

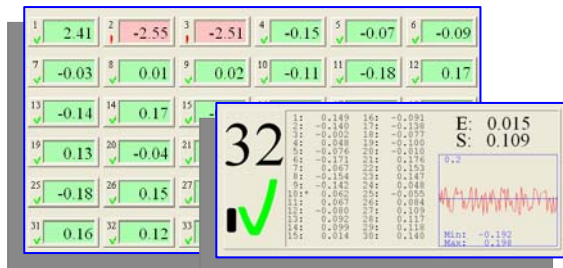
NETWORK OPERATION AND ASTEST-VIEW

With network installation, it is possible to declare a common place for storing all databases and managing them from any computer in the network through a separate program, *AsTest-View*. From this program level all the operations on databases are available: defining the meters, defining the tests or programs. It is also possible, among others, to review the tests results, search the archives and print the reports. A whole range of statistical functions are available, covering data from all programs AsTest installed in the common network.

VISUALIZATION

During the measurements, the user can, on current basis, watch the measurements results and the values of all measurement readings. These parameters may be displayed in different form defined by the user. Function **Positions** displays current results of the performed tests from all measurement positions at the same time.

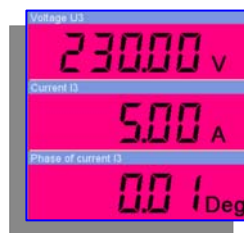
Configurable user interface allows for defining and assigning



colour schemes to different events, which may occur on the stand, e.g. a positive result, a negative result, blockage, hold up, stand failure and other. It is possible to enlarge any one chosen window with results. Then, additional information is available, related to the results on the given position: history of the 30 last measurements, the average, standard deviation and the trend graph.

Window **Tests to be carried out** includes the list of tests in the chosen set. The icons at individual positions inform the user about having performed or not having performed the given test and its result.

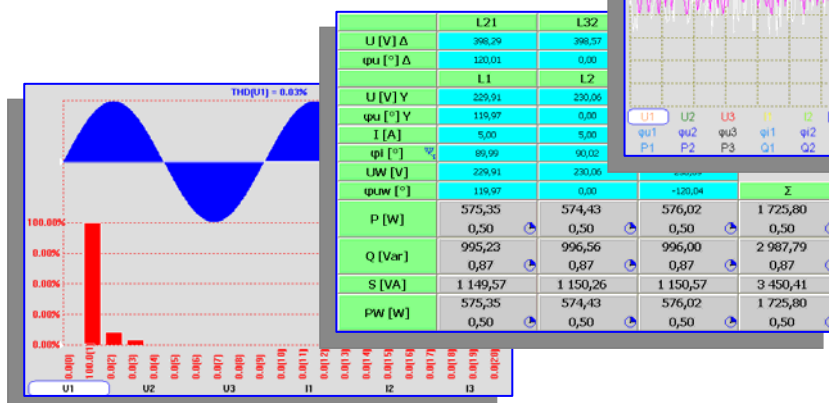
Meters are the set of definable by the user panel meters. Each may have up to five reading panels, and each panel may display the values chosen by the user. There are available: phase voltages, phase-to-phase voltages, currents, voltages phases, currents phases; active, reactive and apparent power; for each phase separately and in total, and many others.



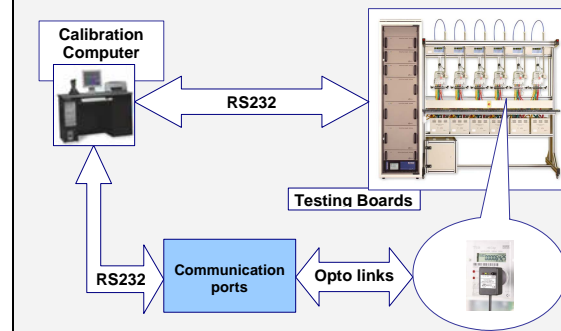
Timer is another window facilitating the device operation. Depending on the currently performed test, it displays the time elapsed since the test start or the time remaining to its end.

The user has also the possibility of watching the supply parameters, in the form of graphs. The window **Vectors** displays a configurable vector chart of voltages and currents. Additionally, it depicts the power calculation method in the currently chosen measurement arrangement. Window **Table** displays in the form of a table the current values of voltages, currents, phase angles, and the active, reactive and apparent power. Window **Trends** acts as an oscilloscope. On the basis of these data, the statistical parameters of the run are calculated: average value and standard deviation.

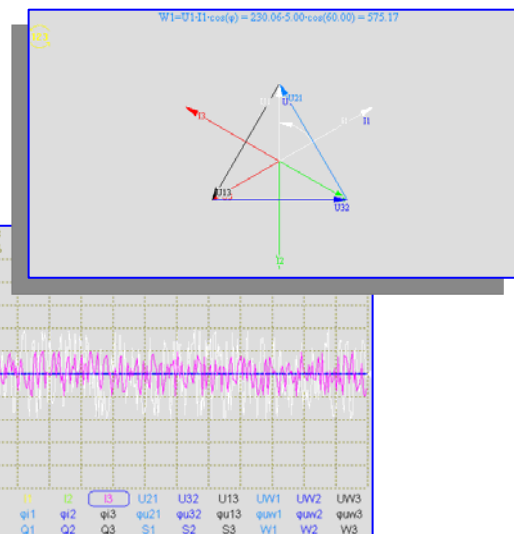
Window **Harmonic** calculates, on the basis of the recorded actual shape of the signal, the values of its individual harmonics and the total harmonic distortion (THD). A very remarkable feature of this function is the possibility of entering the recorded waveform into the library of shapes and the option of using it in the tests definitions.



AUTOMATIC CALIBRATION



ASTeL System may be used for automatic calibration for the electronic meters. In this application, the control function is taken over by an additional **calibration computer**. This computer, by remote operation, activates suitable trials on the test bench and then, after receiving the results, corrects the settings of the meters through direct links with them. Communication with the meters may occur through RS232, RS485 links, compatible with IEC1107 and other. An important feature of the of this solution is the fact that the reference station does not participate in the communication process between the calibration computer and the meters, and thus has no access to the transmission protocols, which generally are kept top secret by the producers. In such solution, possible is the application of various methods of data protection and safety measures, such as coding the transmission with meters. The system for automatic calibration may be also used to perform automatic attestation of the meters.



Cooperation with the equipment

AsTest provides the possibility of cooperation with a wide range of peripheral devices.

Reference standards are the basic measurement instruments of the systems for calibrating and attesting. Program AsTest may service, in automatic mode, most of the available on the market types.



Portable terminals are very helpful at loading the data of the tested meters, such as the serial number or the production year, as well as the data related to the test being performed, e.g. the initial and final state of the counters. Program AsTest, in the present version, operates the portable terminals MC3000, PERCON and FALCON, and also the version with a bar codes reader.



Automatic power supplies are used in the test benches of the newest generations. Program AsTest allows for automatic service of all supplies from MeterTest.

Manual power supplies were used in the test benches of previous generations. Program AsTest has a suitable operation mode for cooperation with these supplies. Except for automatic setting of the power supply, all remaining functions of the program are still active. The automatic setting has been replaced with a number of dialogs and messages prompting the operator what operations he has to perform.



Transformers, current and voltage ones, are more and more commonly used equipment of the test benches. In spite of the fact that in the system there can be installed different types of transformers, the models offered by MeterTest give, beside very high accuracy, additional benefit, which consists of total integrity of these devices with the system and the possibility of controlling them through program AsTest.



Stand controller is one of the most important elements of the system. Its primary tasks are: performing the tests, transferring data to the computer and displaying the results. Thank to equipping the controller with local keyboard, a remote operation of the power supply is possible and control of the auxiliary devices. Program AsTest operates all controllers produced by MeterTest, as well as the great majority of other types available on the market.



Serial ports in connection with *Special Trial* enable the program control from another PC. Using a special communication protocol, it is possible to start the tests remotely, read the results and others. This function finds application, among others, in the system for automatic meters calibration.

Network OPTO/RS232 enables communication with the tested meters through defined opto links, consistent with the requirements of norm IEC1107.



Internet is another modern tool operated by program AsTest. Thank to it, a remote control of the system for calibrating and remote diagnostics are possible.

Assistance with recalibration

Program AsTest enables automatic or semiautomatic metrological acceptance of the test bench. There is possibility of defining the external reference standard. During the tests, the program automatically calculates constants, which significantly makes the acceptance easier and quicker. As a rule, definitions of most of the reference standards used in Poland for acceptance are supplied.

Language versions

Having in mind each of our clients, program AsTest is continually improved with new functions, including operation in various languages. At present, the Polish and English versions are available, and the Spanish, German and Russian versions are in preparation.

Assistance and training

Program AsTest is delivered with a *Help* file, which contains detailed descriptions of all program functions, including detailed descriptions of tests, measurement methods and the ways of performing them. A great help, especially for beginners, provides the set of *Manuals* for the program learning.

Functional supplements

Program AsTest includes a whole range of functions, which significantly contribute to achieving more efficient and safer work. An example of such function is the possibility of quick change of load from the symmetrical to single-phase and back; quick switching the character of load from PF=1 to PF=0.5 and back. Other function is automatic checking whether in any of the meters there are no faults between the voltage and current circuits and whether an opening of the current circuits has not occurred. The program controls also the statuses of all other devices included in the test bench, such as voltage transformers, current transformers and other devices, and, in case of any problems, it reports them to the user.