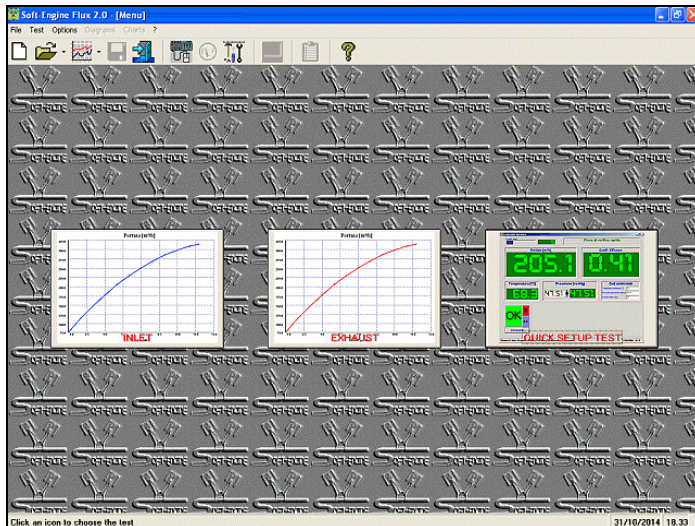


Soft-Engine - Data store software: Flux 2.0 4-Stroke engine

Description

"**FLUX**" is a software to **SOFT-ENGINE** flow bench data store and analysis. It allows the measure of flow and temperature, and the computing of the flow coefficient. The test is very quick and all the measured data can be analyzed using some graphic tools, like diagrams, charts, peak values and curve cursor.

The first thing to do is to select the main test, **INLET TEST**, **OUTLET TEST**, **QUICK TEST**, **CYLINDER HEAD TEST** and **REED VALVE TEST**.



Flux: The main window

The first thing to do is to select the main test. For the first two tests (suitable for **cylinder** intake, exhaust or transfer **ports**, or **carburettors**), the **DIRECT** or the **INVERSE FLOW** is possible; user can select also the method of **flow coefficient** computing (the choice is among "none", "**port area** computing", "**bore** computing", or "**all**"). Other data are: port description, **pressure** values (up to **six different constant pressure values**) and the **port opening** (max value and constant step or up to 100 different values is possible). About the quick test, only the pressure data must be input. There are some special test suitable to flow **cylinder heads** or **reed valves**. The **environment data** (temperature, pressure and humidity) are necessary for the flow factor computing, but they

are directly stored by the **automatic meteo device**, included in the basic bench.

During the test, the user must only regulate the valve lift with the suitable instrument, then it's necessary to give an "OK" to the software to communicate the valve lift value selection: the flow values are stored and displayed to the screen for that valve lift value, while the chosen computing method gives the corresponding flow coefficient. **The communication PC-bench'device is USB**, and an **inverter** stabilizes the pressure to the same constant value input in the software during test. Special pressure and flow sensors store the data. At the end, the **flow** and the **flow coefficient** quantities are displayed in the diagram window. The diagram values can be displayed versus the **valve lift**, the **H/D ratio** (H=valve lift and D=valve diameter or bore, according to the selected computing method) and **crank angle** (if these values are input).

Results analysis instruments

The software has got several **graphic tools to analyze the diagrams**: firstly, there is the possibility to obtain the precise diagram X-Y coord step by step using the curve "**cursor**". Then, the **peak value**, the minimum and the **mean values** of the displayed quantity can be shown for each quantity.

Moreover the diagram vertical and horizontal axis scale can be varied and the displayed curved can be **zoomed** to view the detail. It's possible also to open different test ("**compare**" option) to seek the differences among tests. The comparison has effect in all the tools, mainly in the "cursor" and in the "**charts**" (all the opened test can be compared directly in the chart, quantity for quantity). Finally, the diagram printing is completed also by some notices including the main input data and results; **possibility to customize the printing page** (for example, choice of which notice to print).

The software works in Windows 98, ME, 2000, NT, XP, Vista, Seven, Eight.

Soft-Engine flow benches – software “Flux 4-stroke engine”

The software allows the following tests:

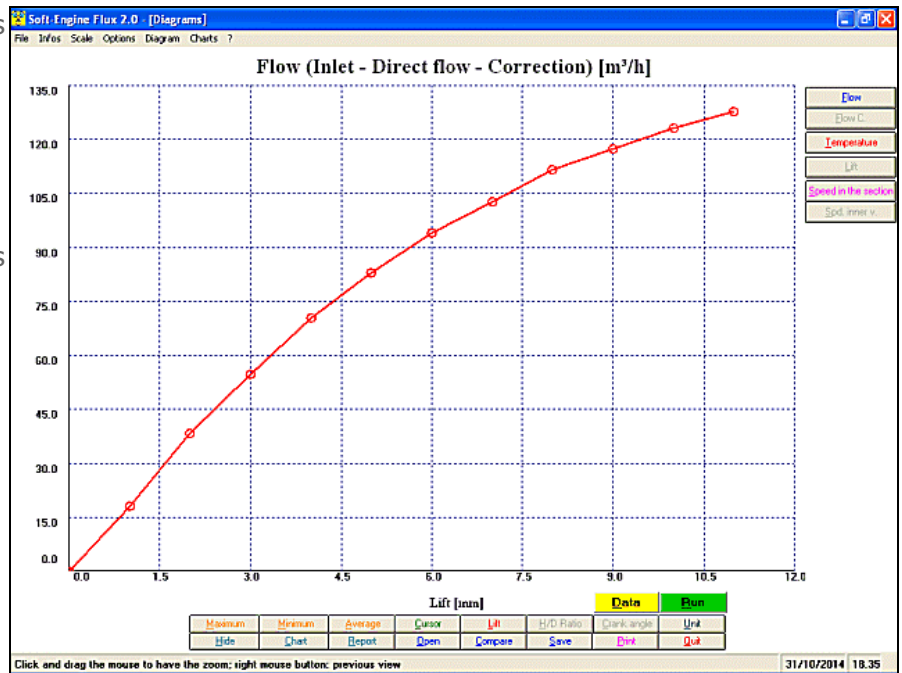
- Inlet;
- Exhaust;
- Quick verify.

For inlet and exhaust test it's possible to select:

- The **direct flow**;
- The **inverse flow**;
- Both.

The software measures:

- The **Flow**;
- The **Temperature**.



Flux software: the Flow diagram. All the graphic tools for the curve analysis are available by push-tools

and **computes**:

- The **Flow Coefficient**, according to these modalities:
 - no computations;
 - computing based on the **valve diameter**;
 - computing based on **bore**;
 - computing based on **area**;
 - all (in this case the three flow coefficient diagrams are compared and displayed together).

The **valve lift** can be input with a step:

- Fixed
- Variable (in this case, the valve lift values can be input directly in a chart)

It's possible to input from 1 to 6 different **pressure** values: these are the **pressure constant** values of the flow during test.

Moreover, it's possible to input also:

- The **crank angle** data for each valve lift value;
- The H/D ratio, in which H is the valve lift and D can be:
 - the valve diameter, or;
 - the bore, or;
 - Nothing (in this case the H/D ratio quantity is disabled)

according to the selected flow coefficient's computing method. These three quantities (the valve lift, the crank angle and the H/D ratio) are the ones used like horizontal referring quantity in diagrams and charts. The crank angle and H/D ratio input is optional.

During the **test** it is possible to:

- Vary the valve lift immediately before the data store process;
- To skip the acquisition for one or more valve lift value;
- To stop the test before the maximum valve lift value is reached.

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The **environment data (Pressure, Temperature, Humidity)** varies in real time, because they are directly measured by the automatic meteo device, included in the bench's basic models. They are necessary for flow coefficient computation.

After the test, the main measured/computed quantities appear to the screen like diagrams. The **diagrams window** has these features:

- ☞ The select "**settings**" during the visualization (that is the selected colours, scale values, which is the first quantity to display, the horizontal referring quantity etc...) are automatically saved without visualizing "set-up windows";
- ☞ All the **graphic tools** and commands to **analyze the diagrams** are available in suitable push tools.

Graphic tools to analyze the diagram. For each quantity the following commands are available:

- ☞ **Curve cursor**, to read all the diagram values, the accuracy is 0.01. ;
- ☞ **Zoom**;
- ☞ **Curve's peak values**;
- ☞ **Curve's average values**, this option is very used to well-compare diagrams if they are very similar among them;
- ☞ **The diagram are vs:**
 - **Valve lift**
 - **H/D ratio** (Valve lift/Diameter)
 - **Crank angle** (if it was input)
- ☞ **Complete report**, with all input data and the main results;
- ☞ **Chart, with real or constant step**, works also for different test opened;
- ☞ **Query chart, for all the quantities.**

Other software resources are:

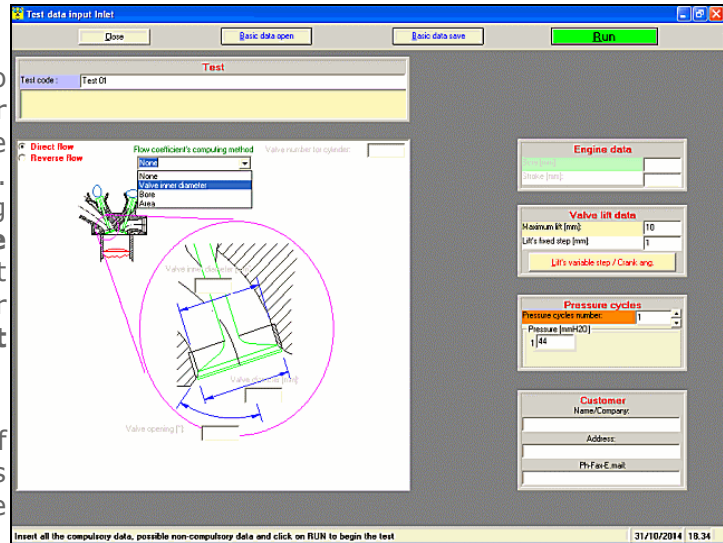
- ☞ The possibility to **compare up to 6 tests ("compare" function)**;
- ☞ During comparison, **all the graphic tools** (cursor, peak values, charts, reports and others) **are updated** with the new opened test;
- ☞ **Test in sequence**, the test can be repeated both changing data (option "**Data**") and not changing them (option "**Run**").
- ☞ **Units**: the choice is between **International System** and **British System**, but it's possible also to merge the two systems (for example it's possible to display the Flow in m³/h - International System VS Valve lift in inch - British System);
- ☞ Vertical and horizontal diagram scale management, the scales can be customized;
- ☞ Diagram window' **colours** management;
- ☞ **Printing page customizing**: it's possible to choose which notices and their location in the printing page;
- ☞ It's possible to link your **logo** to the printing page;
- ☞ **The Flow coefficient can be computed also in a second time after test** and this quantity can be added to the main done test;
- ☞ Data saving/opening. It's possible to save the entire test according to these modalities:
 - **Own** (a "Flux" test is created. The load is possible also using the "Flux" software)
 - **Text** (in this way all word processing or database software can open the test's chart)
 - **Excel** (an XLS file is generated, for Excel compatibility, including the test's chart)
 - **HTML** (a web page is generated, including the test's chart)
- ☞ **Moreover, it's possible to save also only the basic input data** in a special archive.

Soft-Engine flow benches – software “Flux 4-stroke engine”

Kind of tests

FLUX software allows the following tests:
INLET TEST: the flow is aspired to simulate the engine fuel inlet phase. For this kind of test is possible to select the **direct flow** or the **inverse flow** mode. The inlet test can be runned inputting from 1 to six different **pressure value (constant)**, and from 2 to 100 different **port opening values** (constant or variable step). **Flow, Flow coefficient** and **Temperature** diagrams are built.

EXHAUST TEST: the same properties of inlet test but the fan system introduces air into the cylinder's exhaust port, at the same value(s) imposed by the software.



Flux software: inlet test data input window

QUICK TEST: It is possible to input up to 100 different pressure values. No diagrams are created but the flow value is directly displayed, for the selected pressure value and for only one port opening value. This is a very fast test, suitable for the real time flow value measurement.

To select the test you simply have to click one of the icons appearing on the main software window. These icons corresponds to the tests explained before.

PC mininum configuration

Feature	Description
Processor:	Any personal computer IBM compatible.
System:	Windows ME, NT, Xp, Vista, Seven, Eight, Ten. 32 or 64 bit systems.
Memory RAM and Hard Disk:	At least 1 GB RAM and 2 GB free in the hard disk (for best Windows performances).
CDrom or Dvdrom device:	Speed at least 52X.
Graphic card:	VGA, SVGA and compatible cards, set at least 32 bit, Min. resolution: 1024x768.
Miscellaneous:	Keyboard, mouse, at least 3 USB ports free (to connect the data store electronic unit by the USB/RS232 converter, the USB hardware key and the printer).
Printer:	Any ink-jet printer. Total compatibility with laser printers.
We suggest:	1) To remove the internet connection and the antivirus systems; 2) To remove the Blue-tooth connection; 3) To add an UPS to PC and data store electronic unit; 4) To make periodically the saved tests backup; 5) To add the serial connection (RS232).
Total compatibility with notebooks and cases minitower PC.	