# Soft-Engine - Software 2TBase Seven

Main features

2TBASE is a **simulation software** by **Soft-Engine** for **2-stroke engines** with spark plug ignition up to 500 cc (30 in^3) and 20,000 r.p.m. Enter data relevant to engine, **cylinder** geometric layout, intake and exhaust layout, **combustion**, and, above all, the **ports configuration** (geometrical ports or any-shape ports). Moreover, **interest factors like the port parameters** are computed even if the simulation is not run.
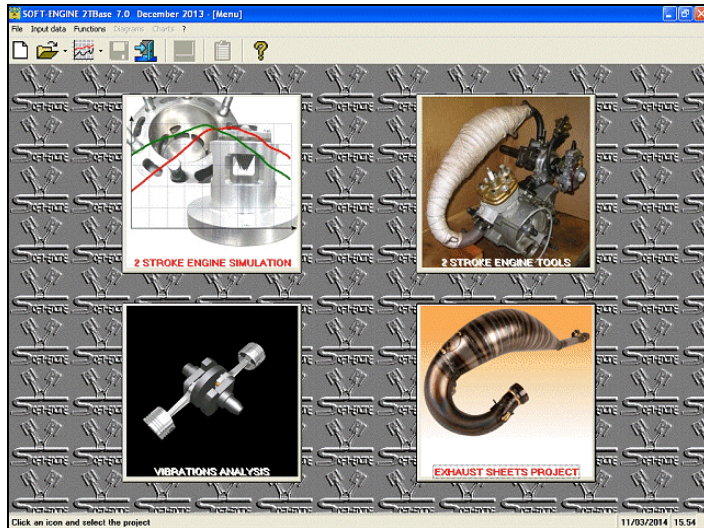
The main window

Data input is easy and intuitive. Results are in terms of **torque** and **horsepower** in the range of revolutions per minute previously set. The engine model can be customised and geometrical data, such as **intake** and **exhaust** pipes length can be modified. Moreover power and torque curves can be superposed and displayed, so that you can observe them as if you were in front of a power test bench. This software can compare up to 6 power and torque curves simultaneously. Intake by piston port and by rotary valve systems is also included in the program. Muffler cones to be entered are max. 8 (divergent) and max. 4 (convergent).

Cylinder and ports parameters (e.g.: time-area, specific time-area, angle area etc...) can be calculated too. Charts and graphics can be printed. The software computed also the **reed valve** intake system; during the simulation it's possible to observe the pressures or the reed valve movement at full screen.

The software is totally re-styled in the graphic aspect and several function are added. Software is compatible with Windows (Xp, Vista, Seven, Eight).

Data input

A main window is used to select the engine simulation, or to run other software about 2-stroke engine.

There are some dialog-windows to input the data, starting by the port areas configurations.

Port areas computing

The first thing to do is to input the port area data, because they are the most important for a good simulation. Firstly, it's possible to enable / disable the port by clicking the coresponding shape in the port areas condiguration window, adding secondary transfer port, boost, bridges etc... Later, it's possible to input the timing (the ports phases and durations), and finally each port can be directly planned giving its own shape. This shape can be a regular figure (rectangle, circle, ellipse, trapetium) or not. In this second case, it's possible to design any kind of shape by placing control point in a milimetric background, or by modifing an elliptical figure.
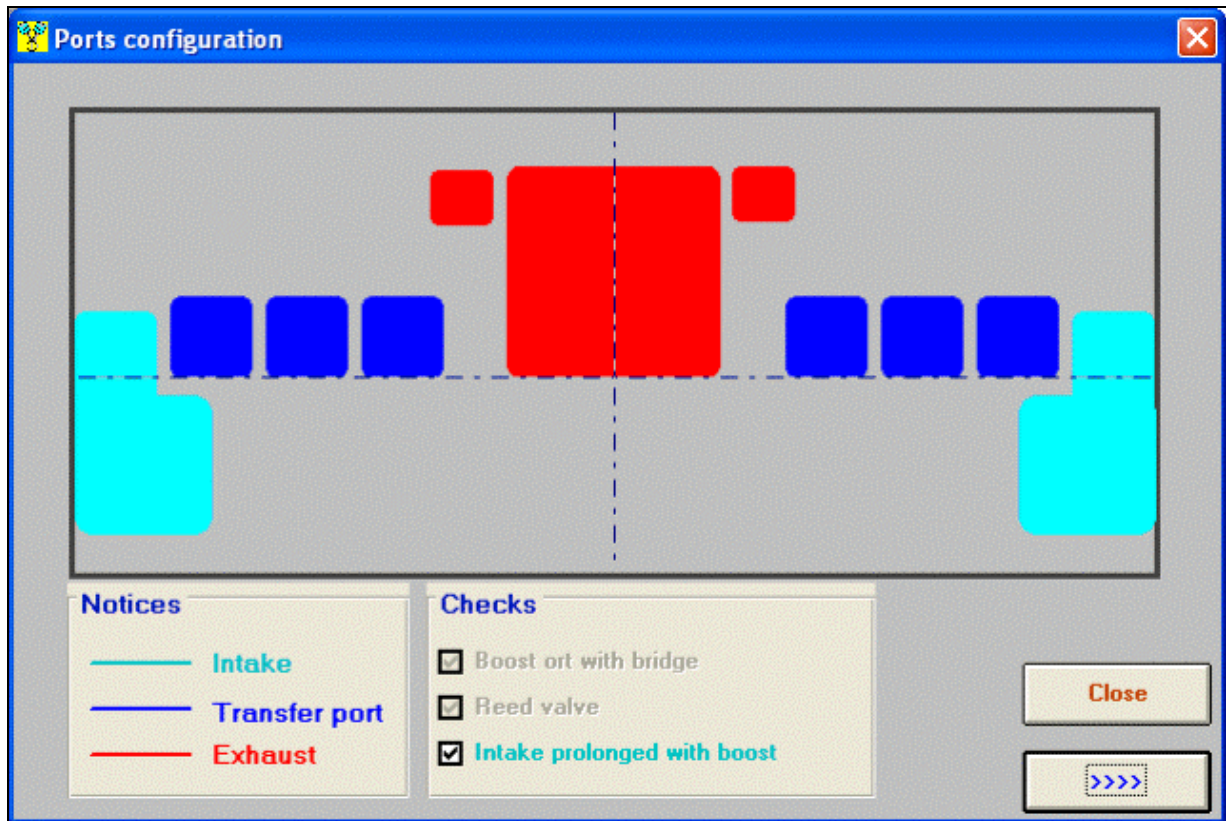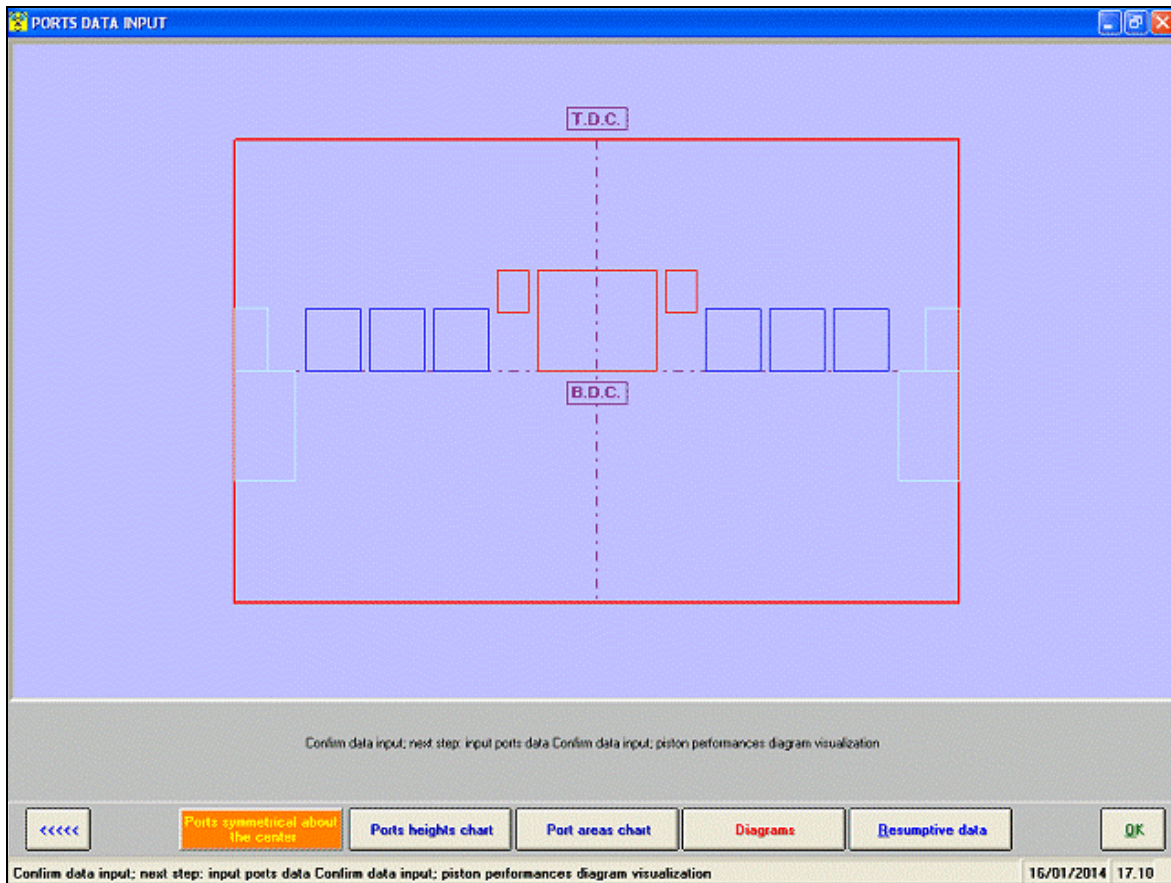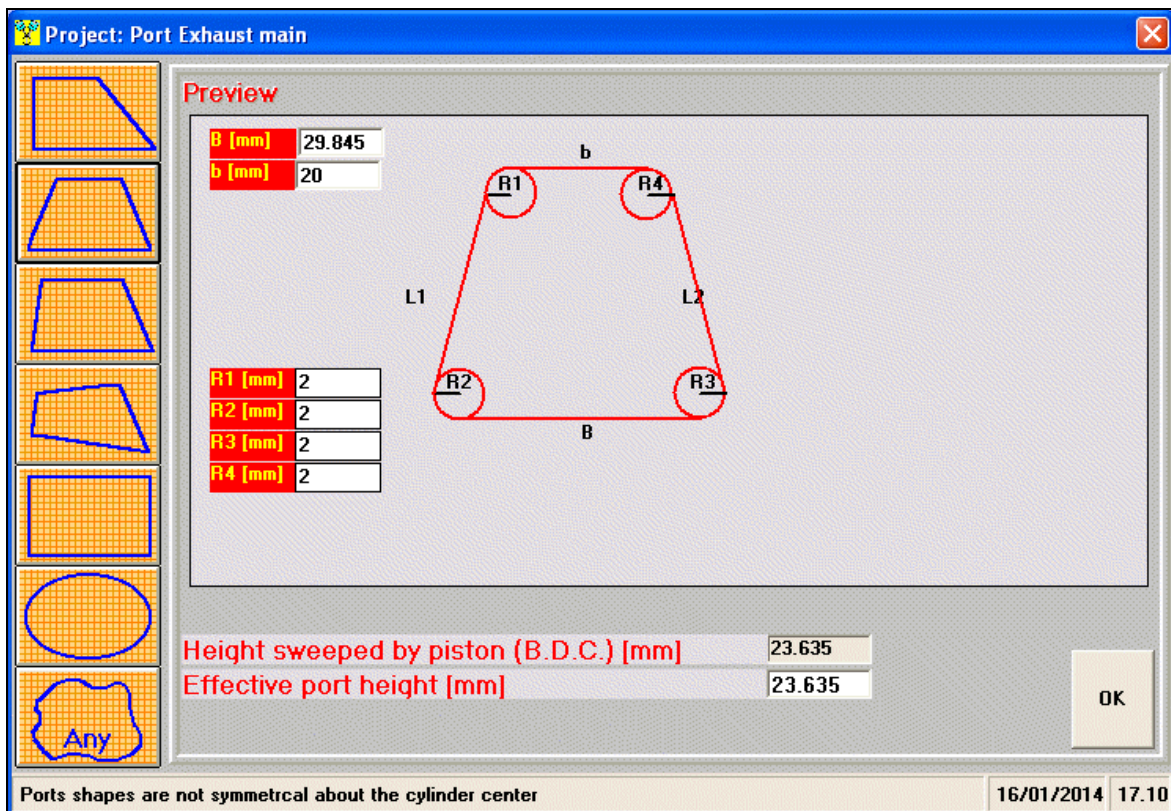
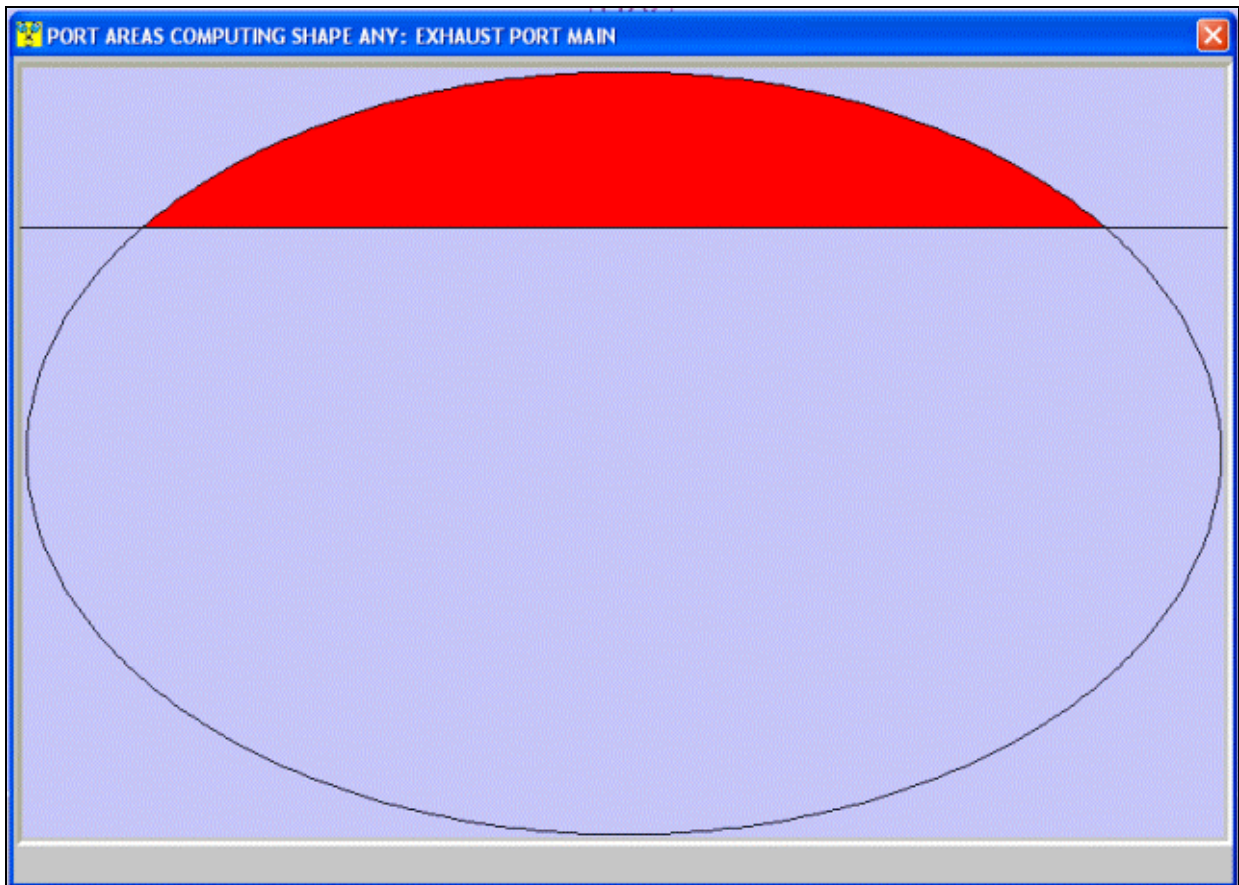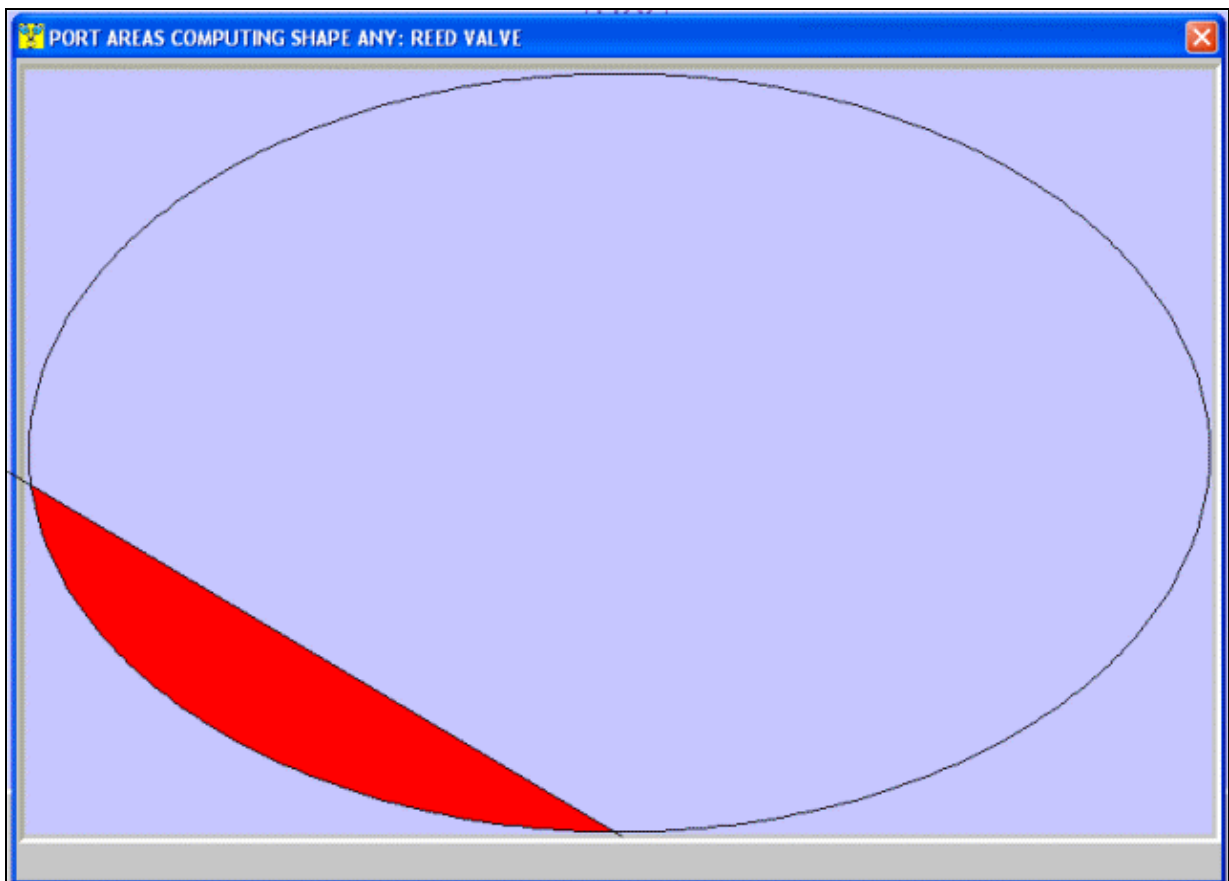*Port configuration selction*
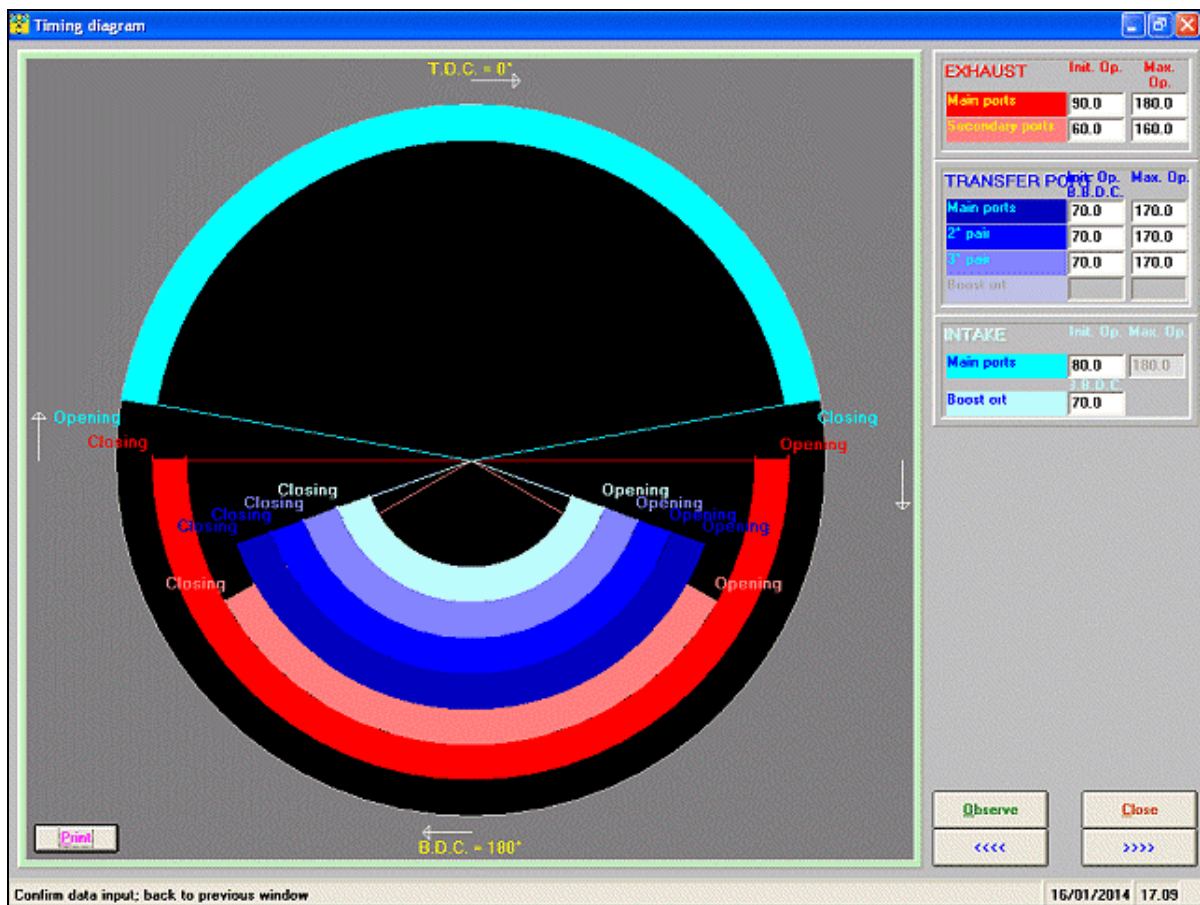
The timing

Port areas main configurations

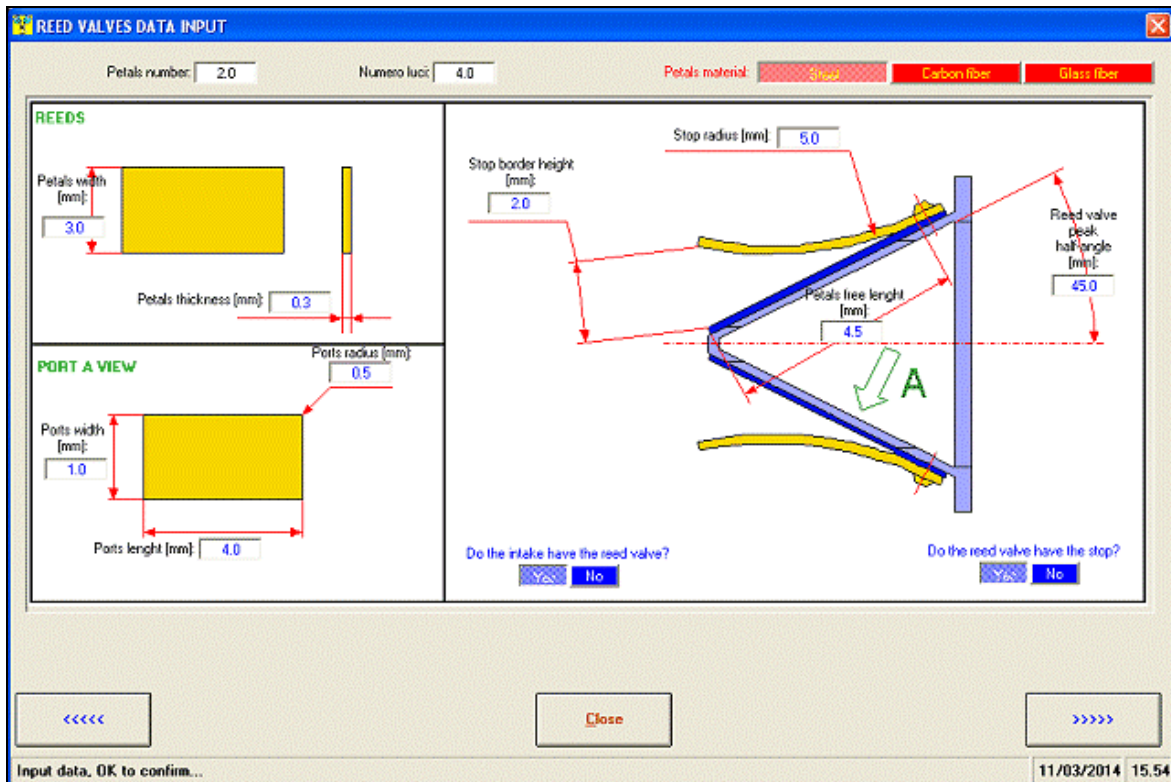

Geometric shape ports planning

Area computing for any shape port (in this example, the exhaust port)

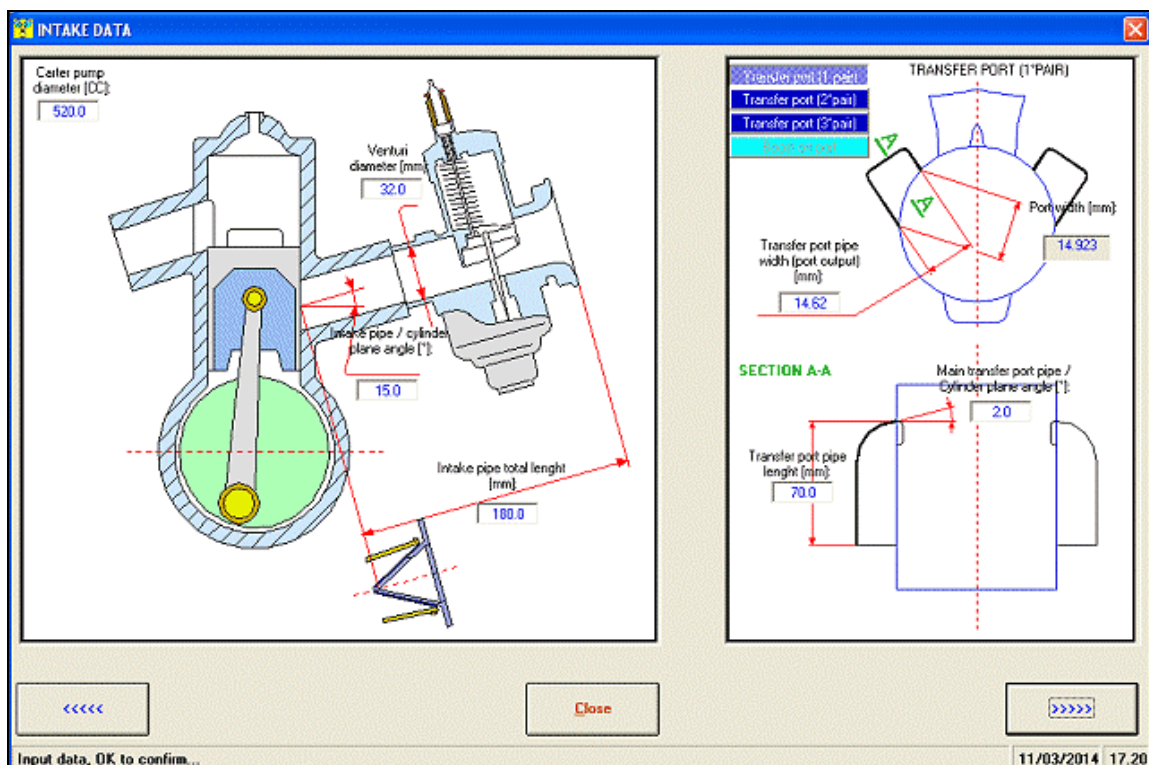*Area computing for the reed valve*

Reed valve computing

If there is the reed valve it's possible to input all data about reeds, petals and port stop, so the "reed valve" model can be imposed to simulation:

Reed valve data input

Intake and combustion computing

Input these data to simulate the combustion during the engine simulation:

Intake data input

Combustion data input

Exhaust system configuration

The exhaust system configurationn is most important to get a good result, so it's possible to input all muffler parts. It's possible to input up to 8 divergent and 4 convergent cones. For each part it's necessary to input diameters and lengths.
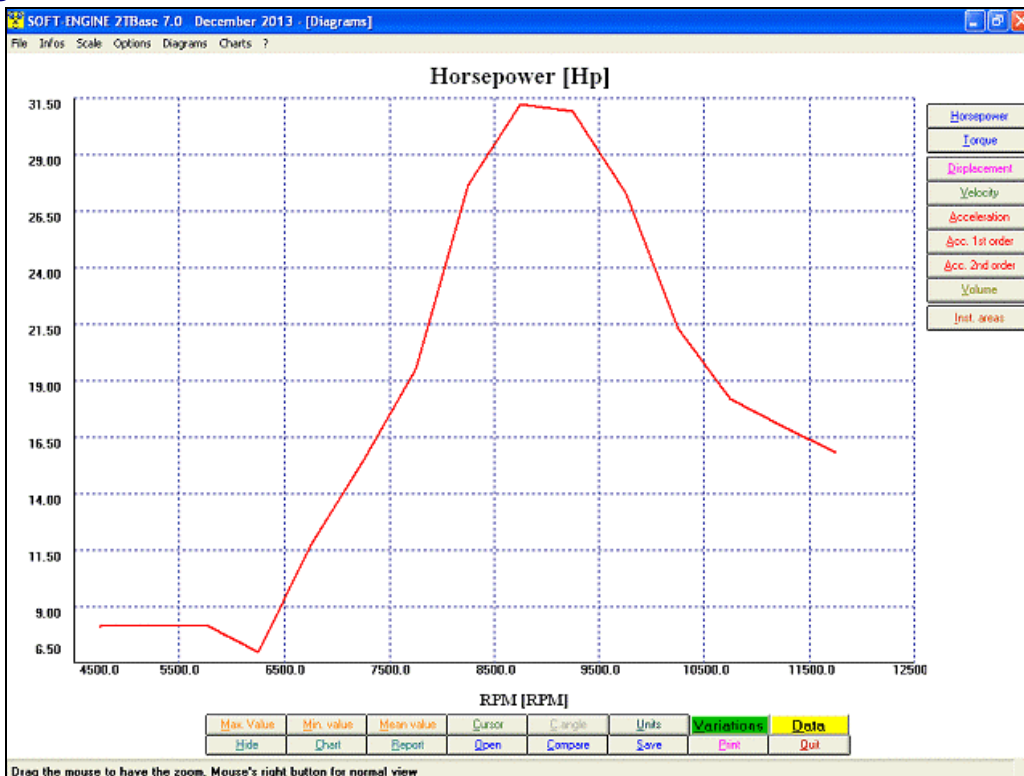

Exhaust data input

Simulation

After all data introduction, the software is ready to simulate the engine! During the simulation you can see the pressure curves in the cylinder.
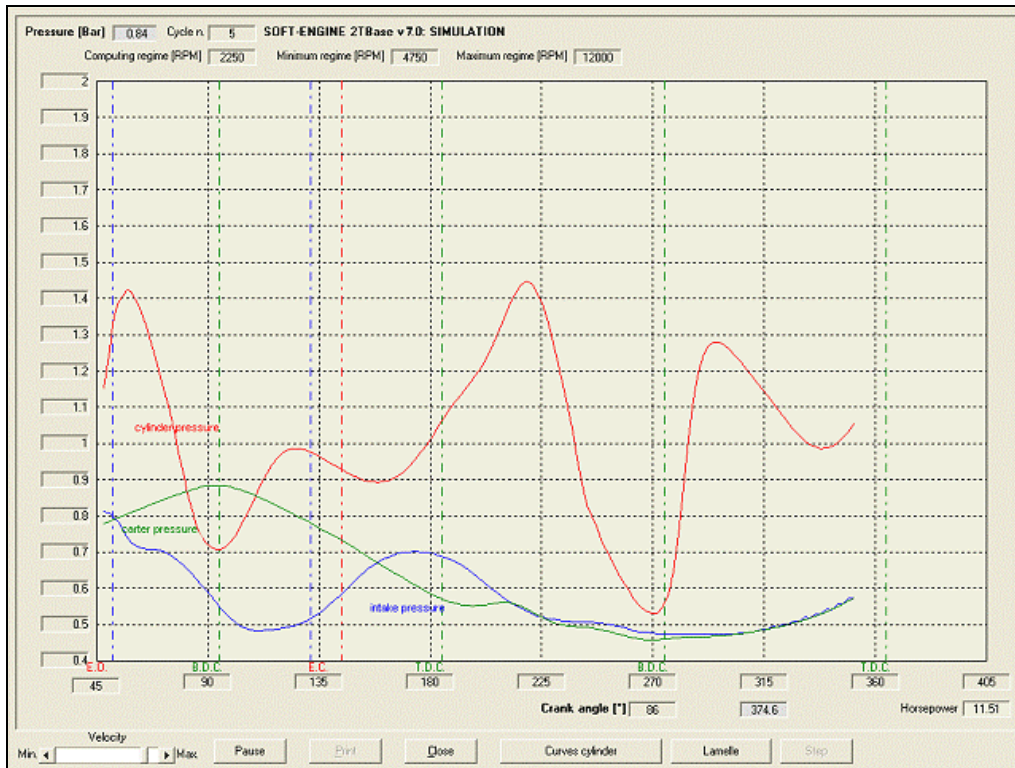
The simulation

Results

Horsepower diagram, the result of the simulation procedure

2TBASE gives several results, shown by printable diagrams and charts. There is also a special chart, "**Resumptive data**" showing the main parameters values.
The main quantities computed by the software are:

ENGINE DIAGRAMS:
- **Horsepower**;
- **Torque**;

CRANKSHAFT - KINEMATICS:
Diagrams and charts of:
- Piston **Displacement**, **Velocity**, **Acceleleration** (1st order and 2nd order components);
- **Volume** swept by piston (its peak value is the cyclider cubic capacity);

PORT AREAS:
- **Port areas** (diagrams and chart);
- **Port heights** (charts);
- **Max. Area**, **Average Area**, **Angle-Area**, **Specific Angle-area**, **Time-area**, **Specific Time-area** (numeric values in the "Resumptive charts");
- **Blowdown range** (numeric values in the "Resumptive charts").

Diagrams, charts and other features
For each ENGINE, CRANKSHAFT and AREAS FACTORS computed quantity (the most important) the following options are available:
- **Max.**, **min**. and **mean** value; **cursor** to read all curve points;
- **Zoom**, graph scale management;
- Sizeable graphics window with **complete colors management;**
- **Comparison** of different "2TBASE" projects (max 6 projects);
- File section: it is possible to create directories to classify projects in a single session;
- Long filename management;
- Different projects **compared charts;**
- **Printing page setup,** with remarks, logo and graphics management;
- Chart of all quantities.

Versions and costs

Version	Cost
2TBase Seven	€ 350.00

PC minumum 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 512 MB 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 1 USB port free (to connect the printer).
Printer:	Any ink-jet printer. Total compatibility with laser printers.
Total compatibility with notebooks and cases minitower PC.	