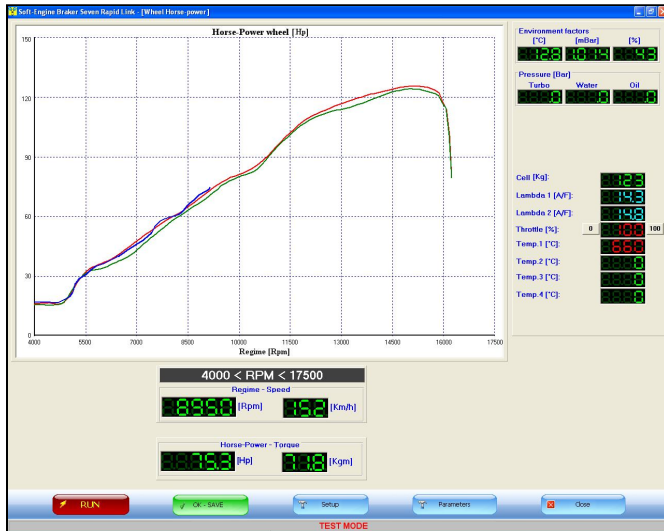


Soft-Engine - Data store software: Version 8

Software description

INERTIAL 8 – BRAKER 8 is a new generation software for **dynamometers**. This is very a very and very performant software, but easy to use.



*Braker 8: real time diagrams,
LONELY IN THE WORLD!*

In facts, **the main windows can be customizable, both the icons style and the background.** A photo can be connected to the software screen, and it can be show any moment in LCD screens. The software runs on WINDOWS environments.

The use is easier also caused by all the main analysis functions are in a single window (the diagram window). In this way, all the main functions are available with some "clicks".

The new software is very nice in all its parts. For example in data input window, some counterweights help the user to visualize the test "minimum RPM" and "maximum RPM" concept. Data input is more and more simple, because quite all the data are automatized (meteo data, transmission ratio, minimum and maximum RPM, etc...), the user must input only a test code and, even, the description notices. All others automatic data can be adjusted by user.

The stored quantities

The software has a lot of utilities, such as graphics, diagrams and charts. Here is a list of the most interesting operations. It measures of:

1) Horse-power and torque:

- ☞ to wheel;
 - ☞ to engine;
 - ☞ absorbed;
 - ☞ DIN / CE / SAE / DIESEL / TURBODIESEL correction;
 - ☞ HP - KW units (power) and british;
 - ☞ Kg*m - N*m (torque) and british.
-



The diagrams window

2) Horsepower and torque stored in **inertial or braked modality**.

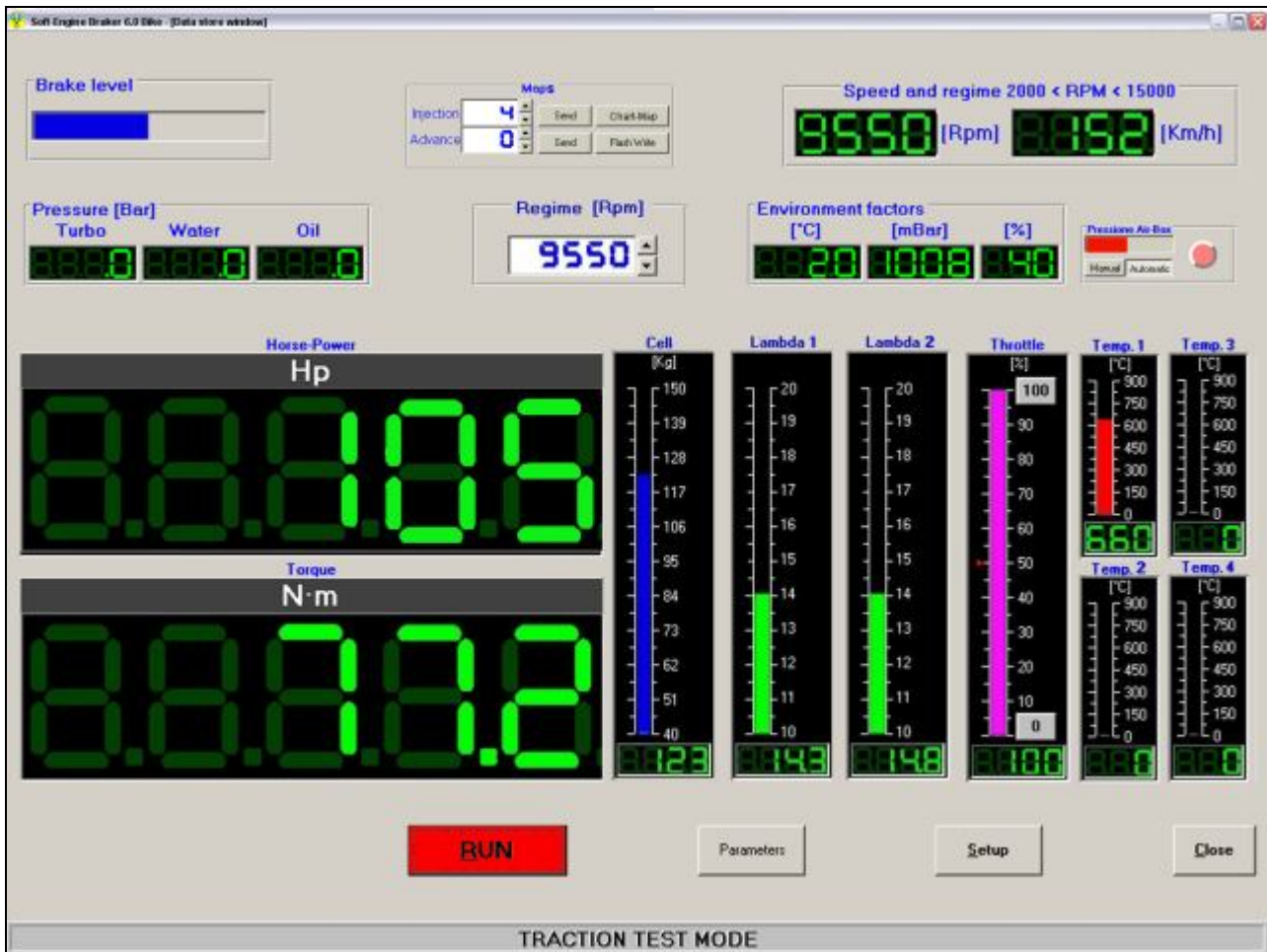
3) **Vehicle performances (space, speed and acceleration)**.

☞ during acceleration.

☞ during deceleration;

4) **Instantaneous gear** (for automatic gear test and scooter variable-speed drive-line analysis), vs RPM, speed and time.

5) Very sensible temperature (exhaust gas, under-spark-plug, engine water etc...) measurement with until four probes ("K" type).



The test window, all the engine parameters in a single screening during the (braked) test!

- 6) Very sensible pressure (turbo-oil or airbox air) measurement, with until three probes.
- 7) Carburation data acquisition system by **lambda sensor**: a diagram of air/fuel or stechyometric ratios, displayed versus regime displaies on the screen, with marks on the screen about rich / small carburation of engine.
- 8) Displayed power and torque together.
- 9) Displayed Rpm and Speed togheter..
- 10) All values compared and displayed.
- 11) Management of **USB data store electronic system**
- 12) **Airbox overpressure** management (optional).
- 13) **REAL TIME DIAGRAMS** during test.

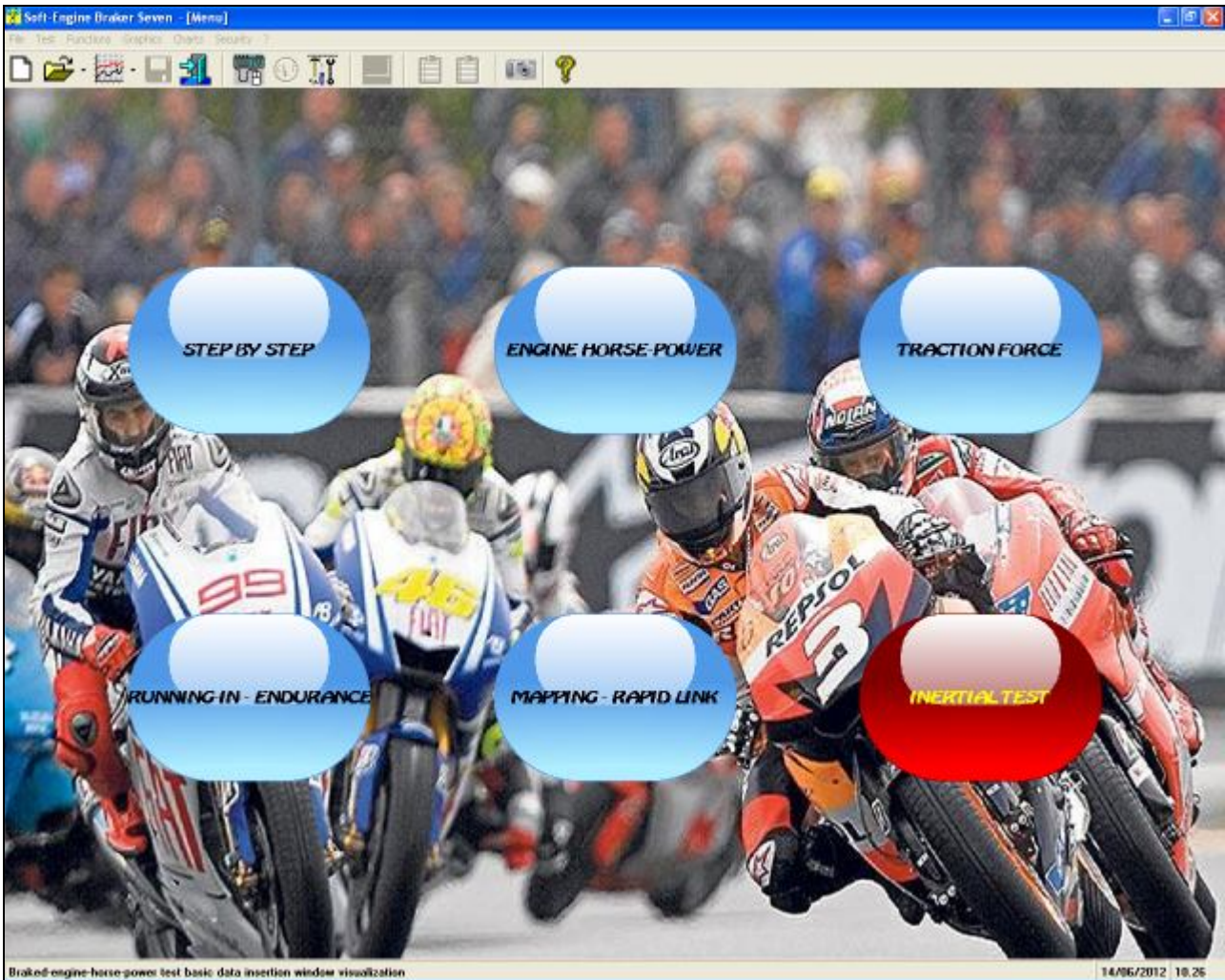
Kind of tests

1) **INERTIAL** tests:

- ☞ **Wheel horsepower** (Manual gear, constant ratio).
- ☞ **Engine horsepower** (**Deceleration test** with transmission friction measurement).
- ☞ **Sequential gear** (from initial to top speed rate).
- ☞ **Acceleration test** (the **acceleration is constant** during the test).

2) **BRAKED** tests

- ☞ **Constant speed braking:** control by RPM, the horsepower is stored step by step.
- ☞ **Constant load braking:** control by traction force. Constant traction force during all test.
- ☞ **Variable load braking:** control by traction force. Variable (linear-crescent) traction force during all test.
- ☞ **Road simulation test:** it is an "**Inertial and Braker**" test and brake simulates the road frictions.
- ☞ **Engine Running-in:** impose some RPM points, the brake stops the engine at these RPM points for a pre-imposed numbers of seconds. The cycle can be repeated.
- ☞ **Endurance:** like the running-in test, but it's possible to control also the TPS and a servo-mechanism for the automatic acceleration (optional). The cycle can be repeated (also infinite).



Braker 8: the test selection, with a customized background

The test analysis

When the test ends, the diagram window appears.

Values versus:

- ☞ Rpm
- ☞ Vehicle speed
- ☞ Test time

For each assessed value the following data are available:

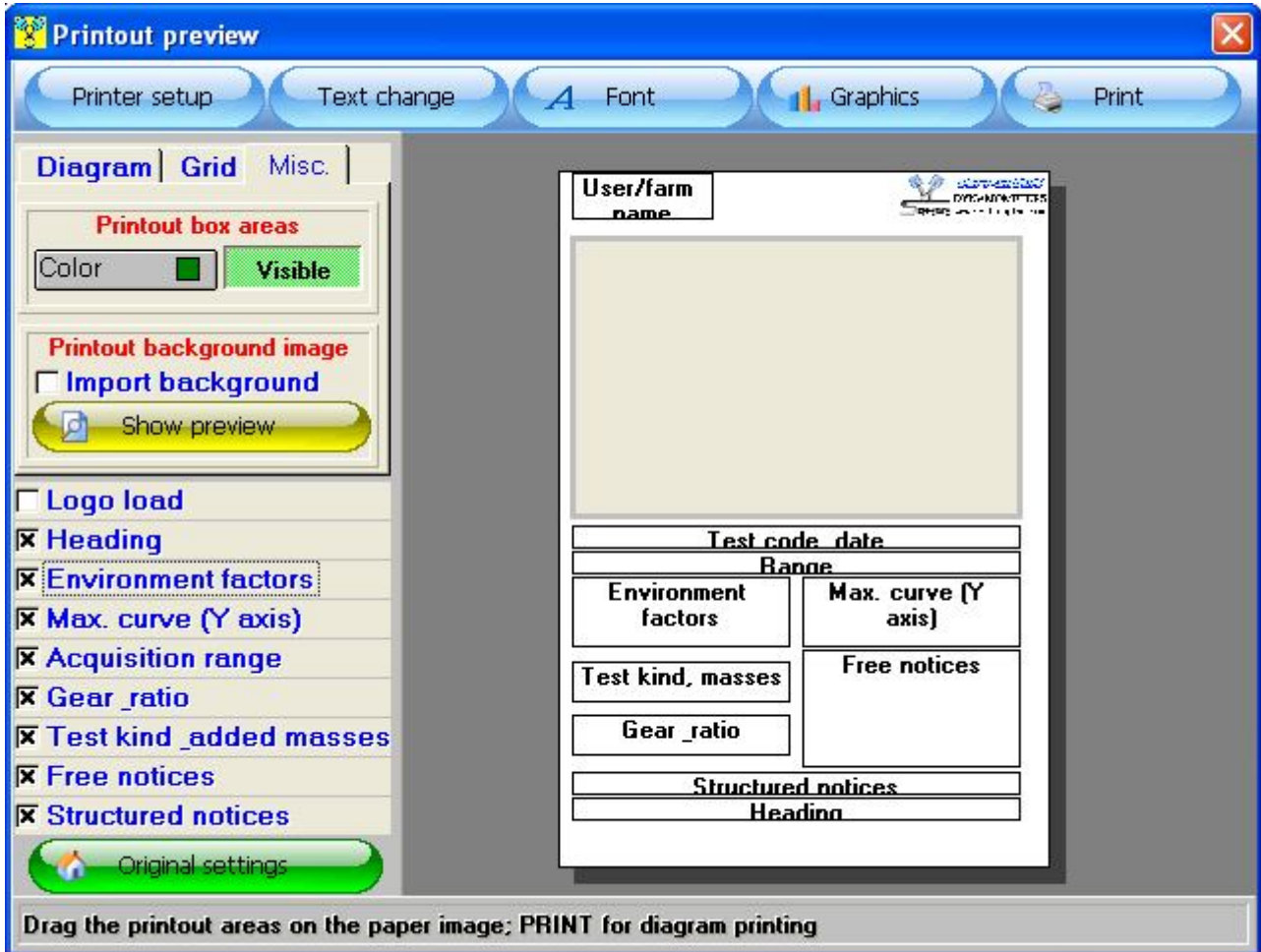
- ☞ Max., min. and mean value; **cursor** to read all curve points
- ☞ **Smooth** effect for the curves
- ☞ **Zoom**, graph scale management
- ☞ Test replay
- ☞ Sizeable graphics window with complete colour management
- ☞ **Comparison** of different test curves
- ☞ Different values of a test comparison
- ☞ File section: it is possible to create directories to classify tests in a single session
- ☞ Long filename management
- ☞ Different test compared charts
- ☞ Sensors and device management improvement
- ☞ Quick test mode choice
- ☞ Acquisition of max. 6 curves in sequence
- ☞ **Printing preview** with remarks, logo and graphics management
- ☞ Chart of all values
- ☞ Official data of the most important motorcycle manufacturers
- ☞ Other Soft-Engine software interfaces.

THE SOFTWARE IS SUITABLE FOR THE ADDED MODULE "RAPID-LINK" FOR "RAPID BIKE" CONTROL UNITS MAPPINGS

Diagram are upgraded with new buttons design and above-all with the possibility to watch immediately maximum value and the cursor (new function "References on the diagram). The new "**Video**" function is able to generate a video in avi format while the "**Test replay**" is running. From Diagram window all stored quantities (Horse-power, Torque, Performances, Carburation. Temperatures, Pressures etc...) and all analysis, tabulation, data store and comparison function are immediately available with the pushes.

Printouts

The printout page is extremely customizable, thanks to the "Printouts setup" function, by which is possible to import a logo and a printout background, to choose which notices have to be printed, to change writings fonts and colors and to set the printout boxes. During comparisons, the most important data are added to the diagram.



Printouts page setup

Optional devices management

IT IS VERY SIMPLE to enable or disable the electronic optional devices, with the dynamic test setup!



Test setup, electronic devices management

By the **setup window - "Devices" section**, it is possible to connect or not the optional devices without remove the cables. All devices are connected with the USB electronic unit.

Mappings: at real and design time

AND IT IS VERY SIMPLE the system to manipulate the mapping chart: "Real time" during a braked test, or at "design time", by correcting the lambda diagram quickly after a test!

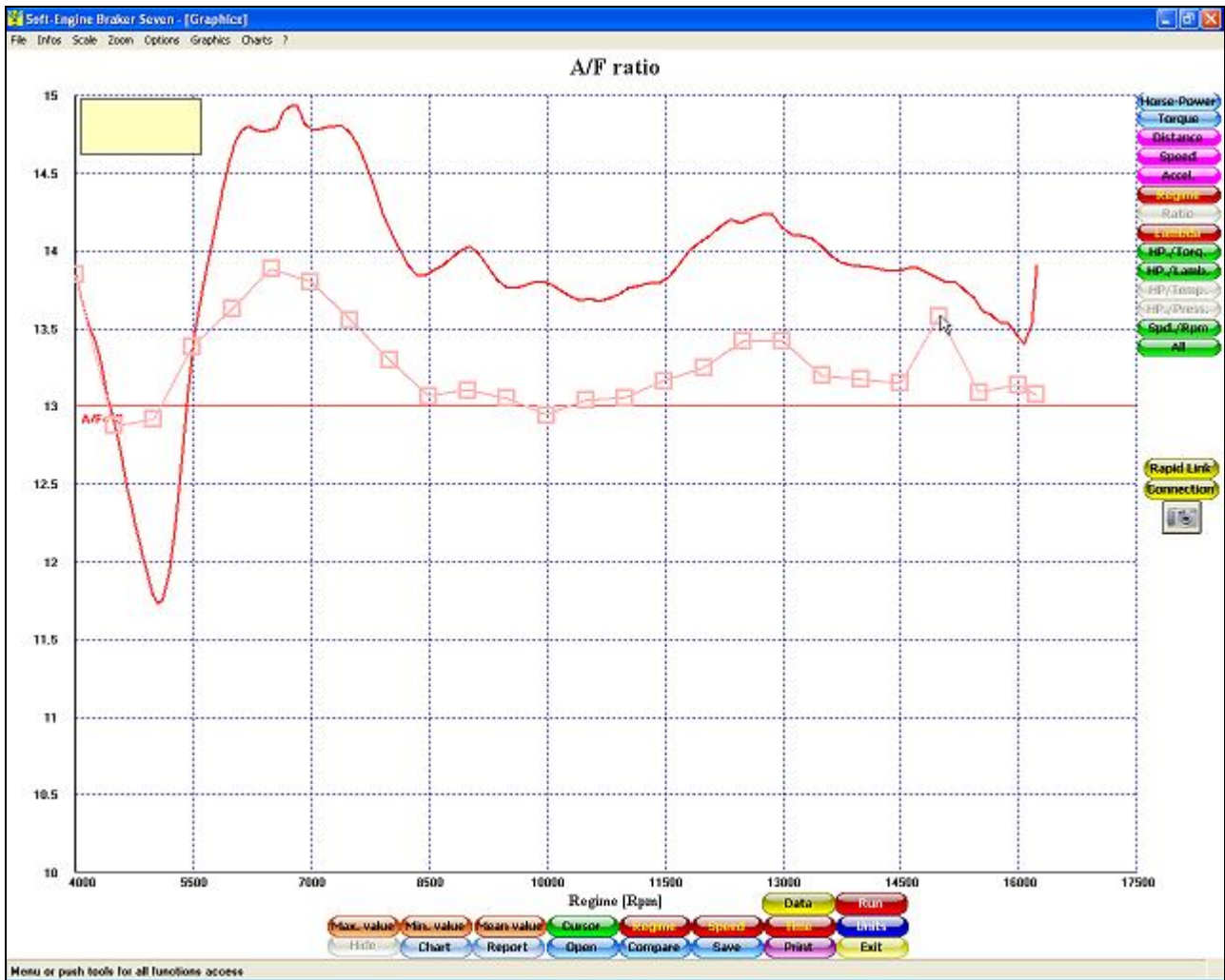
The optional device "**Mappings - Rapid Link**" it is possible to modify and correct the lambda carburation curve both at "real time" (during a braked test) and at a "design time", redrawing the lambda diagram as shown in the picture. In this case you can adjust the lambda diagram after a test (also inertial).

	Injection							
TPS	0	5	10	20	40	60	80	100
RPM	1	2	3	4	5	6	7	8
1302	-1	0	0	0	0	0	0	0
1634	-2	-2	-3	-3	0	0	0	0
1938	-2	-2	-3	-3	-2	0	0	0
2252	-2	-2	-3	-3	-2	-1	0	0
2525	-2	-2	-3	-3	-2	-1	-2	0
2874	-1	-2	-3	-3	-2	-1	-2	-4
3205	-1	-2	-3	-3	-2	-1	-2	-4
3472	0	-2	-3	-3	-2	-1	-2	-4
3788	0	-2	-3	-3	-2	-1	-2	-4
4167	0	-2	-3	-3	-2	-1	-2	-4
4386	0	-2	-3	-3	-2	-1	-2	-4
4630	0	-2	-3	-3	-2	-1	-2	-5
4902	0	-2	-3	-3	-2	-1	-2	-5
5208	0	-2	-3	-3	-2	-1	-2	-4
5510	0	-2	-3	-3	-2	-1	-2	-4
5772	0	-2	-3	-3	-2	-1	-1	-4
6144	0	-2	-3	-3	-2	-1	-1	-4
6410	0	-2	-3	-3	-2	-1	-1	-4
6768	0	-2	-3	-3	-2	-1	-1	-4
7055	0	-2	-3	-3	-2	-1	-1	-4
7286	0	-2	-3	-3	-2	-1	-1	-4
7619	0	-2	-3	-3	-2	-1	-1	-4
7890	0	-2	-3	-3	-2	-1	-1	-4
8282	0	-2	-3	-3	-2	-1	-1	-4
8547	0	0	-3	-3	-2	-1	-1	-4
8889	0	0	0	-3	-2	-1	-1	-4
9070	0	0	0	0	-2	-1	-1	-4
9390	0	0	0	0	0	-1	-1	-5
9804	0	0	0	0	0	0	-1	-5
9950	0	0	0	0	0	0	0	-4

Rpm: 00000 TPS [%]: 000 Injection [T]: 00000

The mapping chart...

Soft-Engine dynamometers – software version 8



...And graphical Lambda correction

Now, **in the last version (8)** the graphical lambda correction method generates an exportable mapping chart in Excel format, indicating the right correction to do in a mapping chart, for any electronic unit. This correction method is direct when the electronic unit is a "**Rapid Bike**".

Free calibration and personalization of devices

Now, **in the last version (8)** is possible to freely calibrate the optional acquisition device giving the values vs voltage or current. There are up to four calibrable channels. There are also two (optional: four) calibrable lambda devices (vs voltage only). All optional devices can have a customized name and it is possible to select its visibility in all the software (diagrams, chart and tools).

Optional devices management

SIGNAL TEMPERATURE

Device name: Temperature exhaust gas 1
 Temperature exhaust gas 2
 Temperature exhaust gas 3
 Temperature exhaust gas 4

Device name: Temperature Spark-Plug

Device name: Temperature Water

Device name: Temperature Oil

Diagram title: Horse-Power Temperatures

OPTIONAL DEVICES

Device name: Pressure Water Units: Bar
 Referring quantity: Units: Voltage mV

Device name: Pressure Oil Units: Bar
 Referring quantity: Units: Voltage mV

Device name: Pressure Turbo Units: Bar
 Referring quantity: Units: Voltage mV

Device name: Pressione Air-Box Units: mBar
 Referring quantity: Units: Voltage mV

Diagram title: Horse-Power Pressures

SIGNAL LAMBDA

Device name: Lambda 1
 Referring quantity: Units: Voltage mV

Device name: Lambda 2
 Referring quantity: Units: Voltage mV

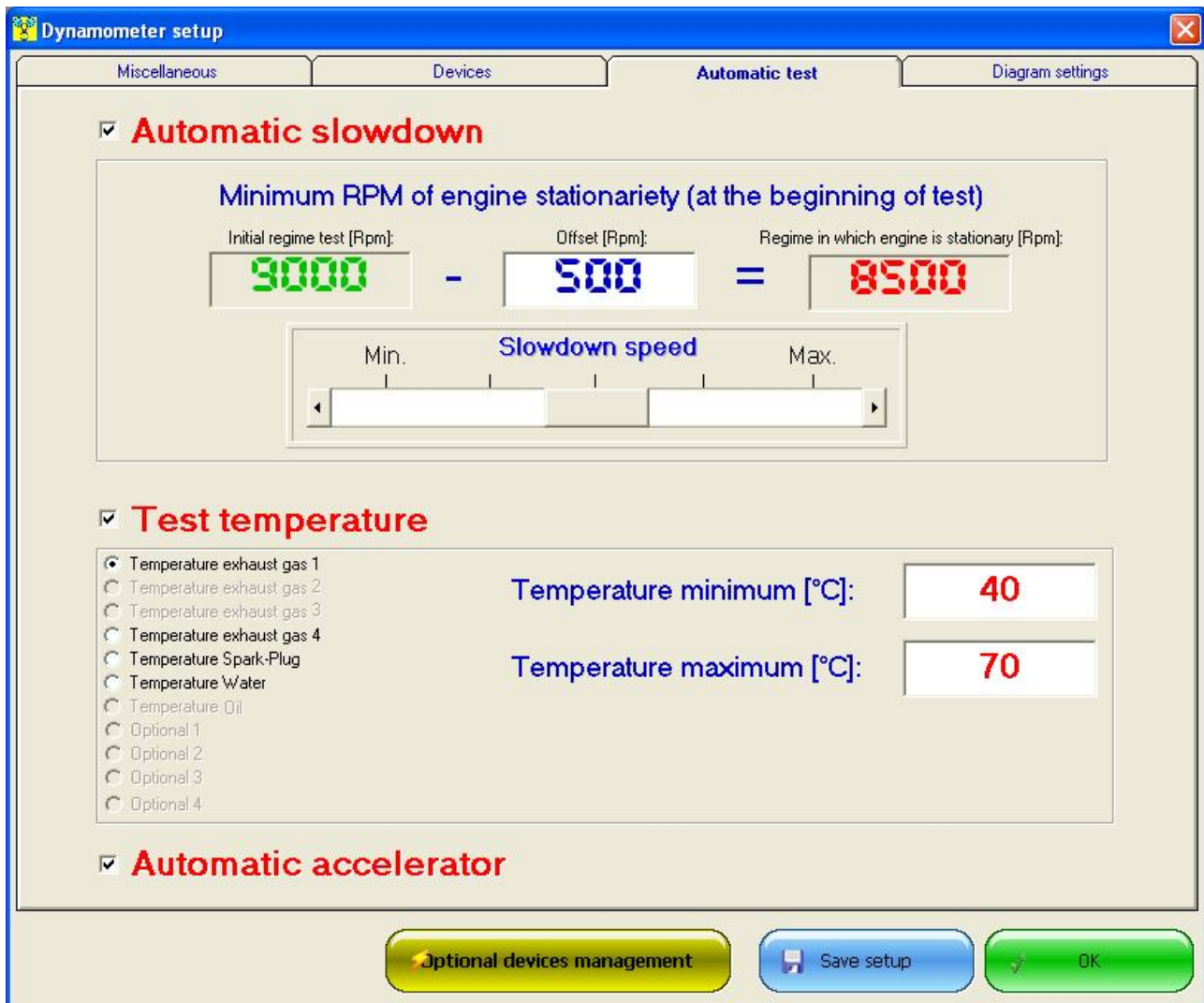
Diagram title: Horse-Power Lambda

Select one or more sensors among the activated ones for visualization. It is possible to change the names: 31/03/2016 10.50

Customize management of optional and free calibrables devices (temperatures, lambdas and free sensors)

Automatic slowdown test

This function is also a characteristic of **version 8** and is enabled for engine dynamometers. It is an optimization of tests in sequence, designed to make the most possible repetitive testing. After launch, the eddy current brake is applied to slow the engine until an initial regimen planned RPM. The slowdown can be controlled by temperature, that means if this control is active, the system allows the new launch only if the temperature (exhaust gas, engine cooling water, or even more) value is inside a planned range. This type of testing, combined with "**Rotogas**" system automates and streamlines the entire process of acceleration / deceleration of the motor during tests in sequence.



Automatic slowdown test management

Other features of version 8

Other features specific for version 8 are

- ☞ Lambda values scale choice (Fuel, Diesel, E85 blend, Methanol, LPG);
- ☞ Improved tools for diagrams (curve cursor, diagrams elements customization, diagram scale management ecc...);
- ☞ Self-translating, to generate reports in other languages.
- ☞ Maximizable displays and possibility to move them in the screen during real-time tests;
- ☞ Fast repetition of test: multiple runnings.

PC minimum 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, the USB hardware key and the printer).
Printer:	Any ink-jet printer. Total compatibility with laser printers.
We suggest:	<ol style="list-style-type: none"> 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.
Total compatibility with notebooks and cases minitower PC.	