



Ignition Control V6.4

Ignition Control Application

The electronic ignition consists of many functions and their set-up can be realized through a personal computer with *Ignition Control* application. The computer communicates work through the USB or RS232. That is why the computer must have at least one COM or USB port or it possible use USB/RS232 transducer. The application works under the Windows 95 or higher. It requires 4MB of empty space in hard disc. The minimum PC configuration is *Pentium 166MHz, 32MB RAM* is accurate.

Ignition Control application is divided into four individual parts:

- Online visualisation
- Ignition advance curve
- Extended functions
- Sensor calibration

All parameters given in bookmarks *Ignition advance curve, Extended functions and Sensors calibration* can be saved into a file by the item in the main menu *File -> Save or File -> Save as ...*, then a dialog box for setting the file saving path will display. Afterwards the saved data can be opened by *File -> Open...* All data about the ignition advance curve, engine parameters and its sensors are saved to this file.

When changing the curve and other data some unwanted disruptions of the origin data may occur. In this case there is a function in the main menu *Edits -> Back* and *Edits -> Forward*. The program enables 19 edits back and then forward.

There is *Edits -> Transmission...* for transmitting the ignition advance curve into the ignition. This function can be activated also by pressing the F2 key.



To set application parameters there is a dialog in the main menu *Settings -> Parameters ...* It is possible to set the language of the application.

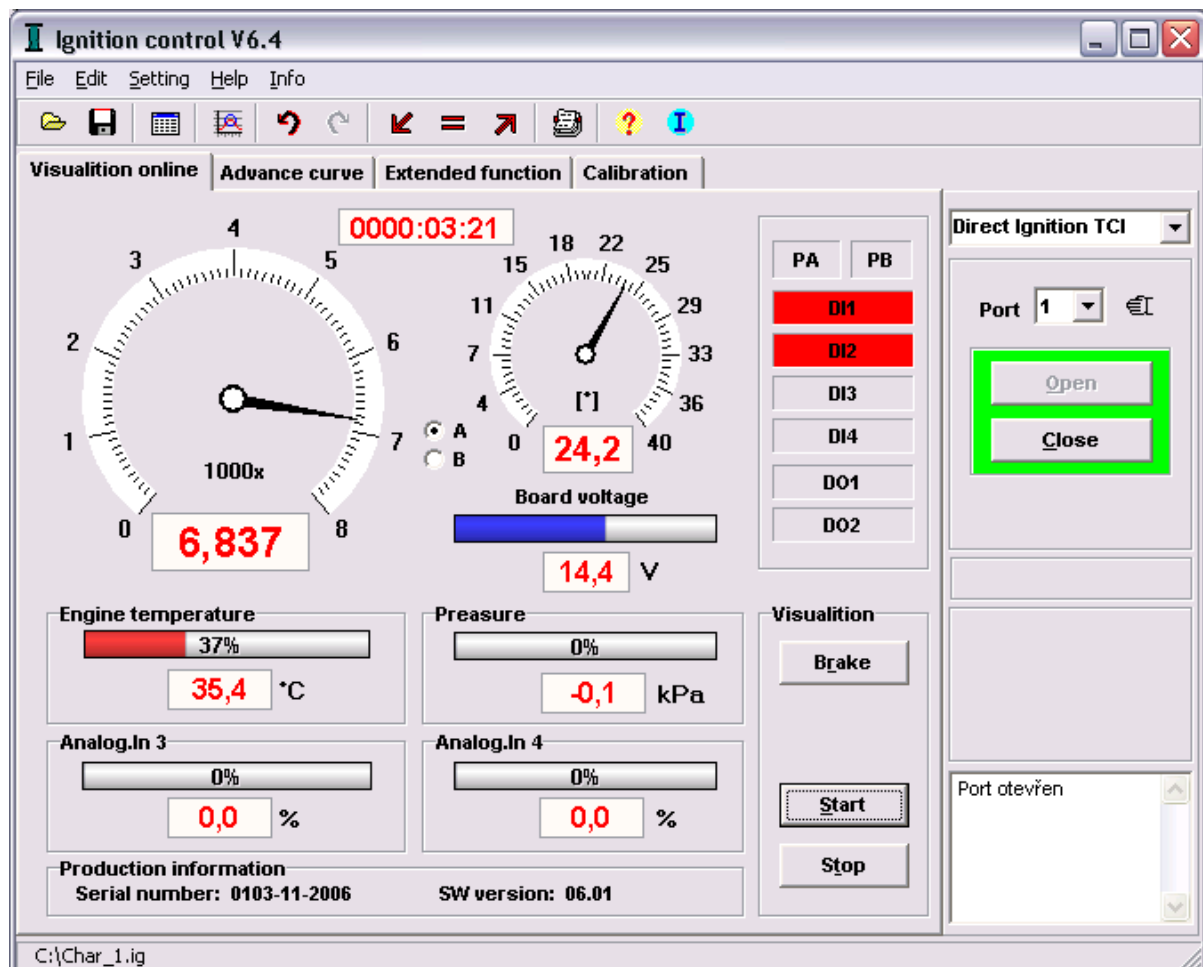
The important function items from the main menu are available also in the speed key?

On-line visualisation

Always when installing, setting and processing devices it is necessary to have the possibility to check the installed device. The ignition provides the possibility of connection and getting the real values during running the engine. On-line visualisation displays these basic parameters:

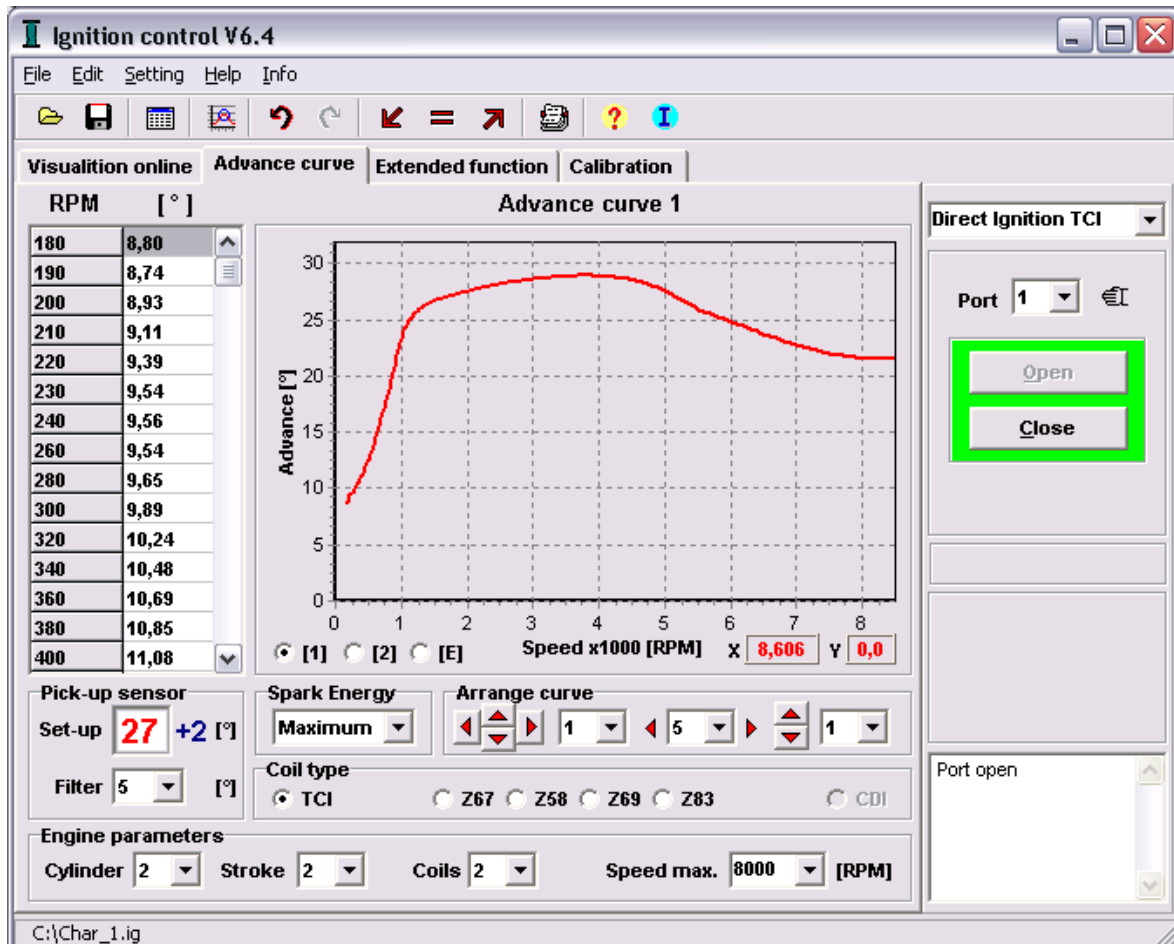
- Turns in the engine (choice channel A or B)
- Ignition advance (choice channel A or B)
- Network voltage (Board voltage)
- Digital inputs (PA, PB, DI1, DI2, DI3, DI4)
- Digital outputs (DO1, DO2)
- Analog inputs (AI1, AI2, AI3, AI4)
- Engine record working time
- Serial number and SW version of ignition

To run visualization it is always necessary to connect the computer with the ignition by a serial extended cable, to open the communication port and to run the visualization by pressing the button *Start*. In case that after pressing the button *Start* the real data do not display please control the connection of communication cable, the number of the used communication port and the voltage of the ignition.

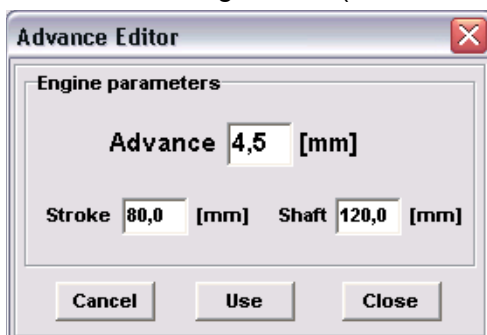


The ignition advance curve

The basic character of the ignition is the directing the ignition advance according to real turns of the engine. To set ignition advance directing characteristics there is *Ignition advance curve* bookmark.



The defining of the maximal advance is the first step before setting the advance curve that will be set in the advance reading sensor and that must be set also in položce *Advance reading sensor* (see *Advance settings*).



It is possible to activate the window for the advance conversion from [mm] to [°] by a double click of the mouse on *Advance reading sensor*. For the correctness of conversion it is necessary to set the value of the engine stroke.

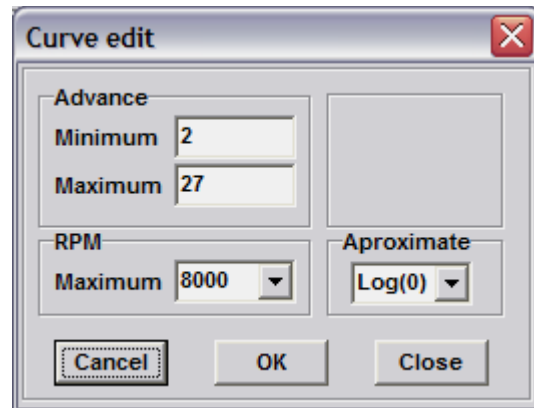
After setting the reading sensor it is possible to continue with settings maximal allowed turns in *Maximal turns* item. It is suitable to choose the nearest higher value from the offered turns.

Now the field of displaying the curve in the graph and its following conversions are determined.

By a click of the right mouse button in the area of the graph or table the menu of functions for working with the curve will display.

- Edit curve... Ctrl+E
- Filter curve Ctrl+F
- Copy char. [1] => [2]
- Copy char. [2] => [1]

To edit the curve easily there is *Curve Editor*. It enables a quick creation of an automatic curve tract with a linear or logarithmic tract or enables to specify a shortened table.



The curve tract can be edited by drawing the mouse away from the tract up or down. The width of space can be set between horizontal arrows in *Curve editing* panel. There are buttons here with vertical arrows that shift the curve according to the asked number of degrees.

When editing the curve the tract continuousness may brake. To correct it there is *Curve filter*. The effect of this filter can be emphasized by its repeated use.

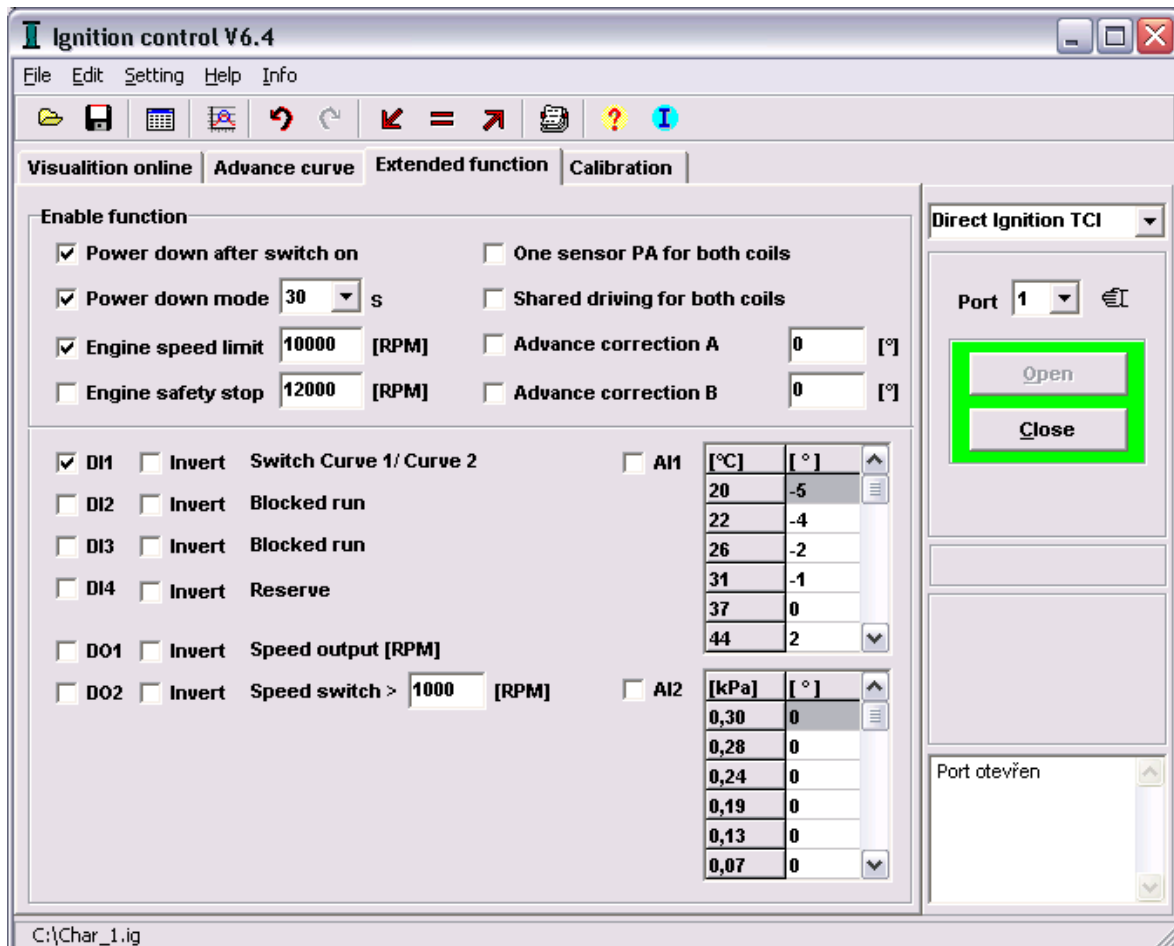
It is possible to change the tracts of the curves 1 and 2 by items [1] a [2].

To optimize the type of the inductors and its excitation there is *Flash energy* button. It is necessary to set medium or minimum excitation that will protect the inductors against the over excitation and their over heating when using inductors with resistance lower than 4Ω (min 2,5 Ω). If using the inductors with the resistance higher than 4 Ω there is medium or maximal excitation settings. The settings of *Flash energy directing* that directs exciting according to values of board voltage is the compromise of the excitation inductors.

Board voltage	Control flash energy
< 9V	Maximum
9V – 11,5V	Medium
> 11,5V / < 3300RPM	Minimum
> 11,5V / 3300 až 6500RPM	Medium
> 11,5V / > 6500RPM	Maximum

Extended functions

To increase safety of running and also for extended ignition advance curve settings possibilities there are extended functions. It is a file of digital inputs DI1 up to DI4, outputs DO1, DO2 and analogical inputs AI1 up to AI4. The functions of individual extending inputs and outputs can be permitted or inverted.



Power down after switch on

Permitting to immediately inductor excitation switch-off after ignition switch-on.

Power down mode - 5 up to 120s

Permitting to automatic inductor excitation switch-off after asked time of 5 up to 120s passed. It prevents from the inductor damage by permanent exciting current.

Engine speed limit -1000 up to 25000 RPM

Permitting turn limit function causes regular interrupting of the inductor excitation after exceeding asked turn limits.

Engine safety stop - 1000 up to 28000 RPM

Exceeding asked turns causes full interruption of excitation. It will be renewed when stopping the engine.

One sensor PA for both coils

Function enable using one sensor only for two inductor exciting. The ignition generate spark to 1A and 1B inductor output by rise and fall edge sensor signal.

Shared driving for both coils

Switch independent to shared driving of inductors. Both output 1A and 1B are switching together.

Advance correction A and B -15,5 up to 15,5°

Compensation asymmetrical crank

DI1 - Switch Curve 1/ Curve 2

It enables easy ignition advance curve switch-over whenever the engine is running. If the function is not active Curve 1 is used.

DI2 - Blocked run

It provides the immediate possibility of blocking the engine starting up or running.

DI3 - Blocked run

It provides the immediate possibility of blocking the engine starting up or running.

DI4 - Reserve

The reserved input for the future use.

DO1 – Speed output [RPM]

Output to the speed counter.

DO2 – Speed switch [RPM] > Asked turns

Output switched according to asked number of turns.

AI1, AI2 – Advance correction

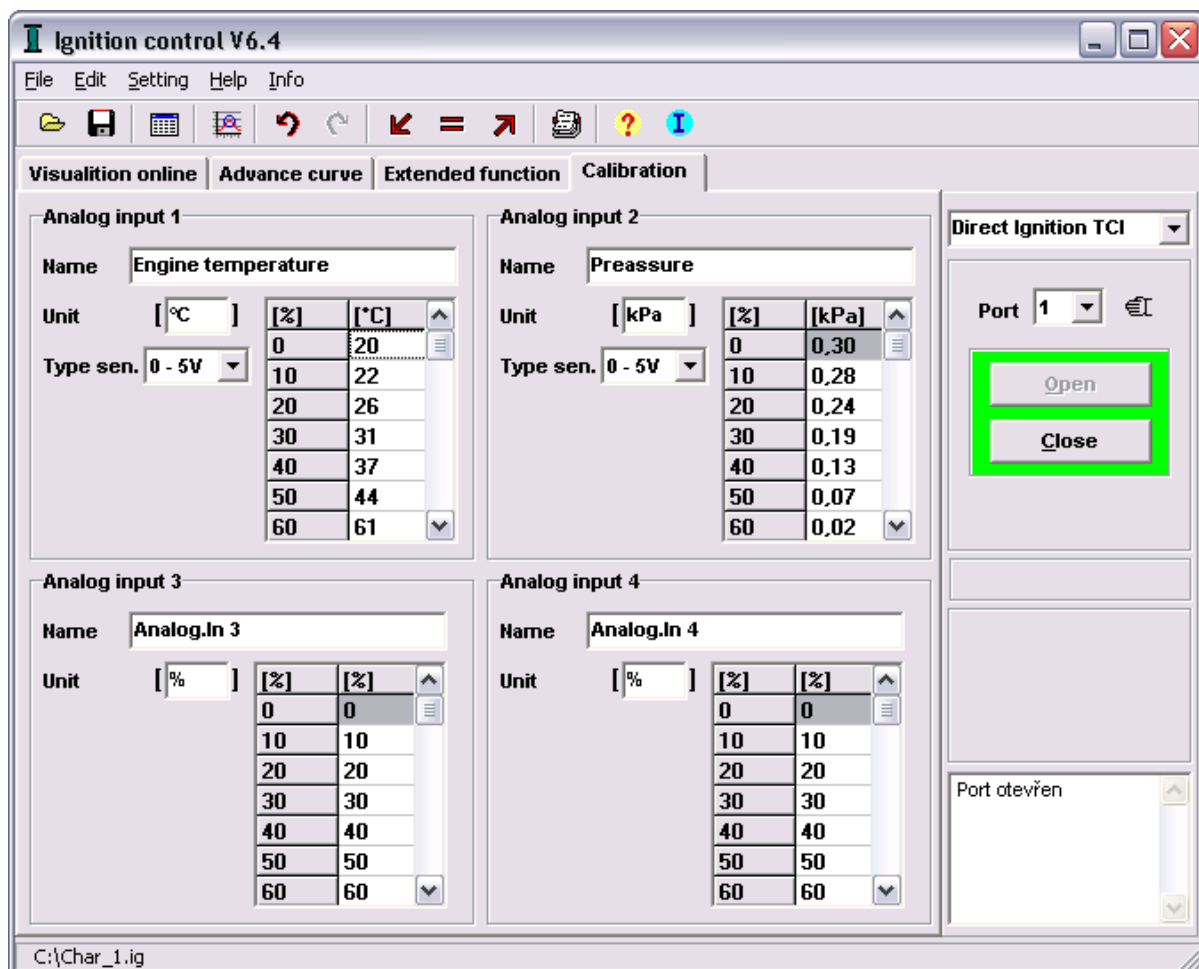
It enables change of advance curve by analog signal (temperature, pressure or resistance sensor)

Sensor Calibration

It is important to know the working states of chosen working values for the optimal engine diagnostics. There are four analogical inputs to read signals from working state values sensors.

The inputs AI1 and AI2 have adjustable limits 0–2,5V, 0–5V, 0–2,5kΩ, >2,5kΩ. The other inputs AI3 and AI4 have the concrete limits 0-5V. Alternatively inputs DI3 and DI4 can be used as digital inputs.

The sensor calibration enables settings of the input name, units and signal conversion table of limits 0 up to 100% to the values responding the real signal e.g. °C, kPa, %, etc. It is necessary to set minimally two values in the table that can be both plus or minus.



Process of Sensor Calibration:

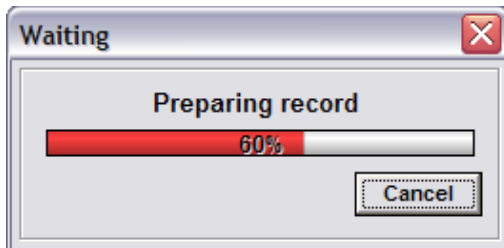
- Enter the type of output signal from the sensor to *Sensor Type* items (0 up to 2,5V; 0 up to 5V; 0,2 up to 2,5kΩ; > 2,5kΩ)
- Level down the measured value around the sensor (e.g. temperature) to minimum.
- Increase the measured value around the sensor fluently up to maximum when the measured signal in input measured limits reaches some of values of 0, 10, 20 ... 100%. Write it to the right line referring to right input.

Acceleration brake

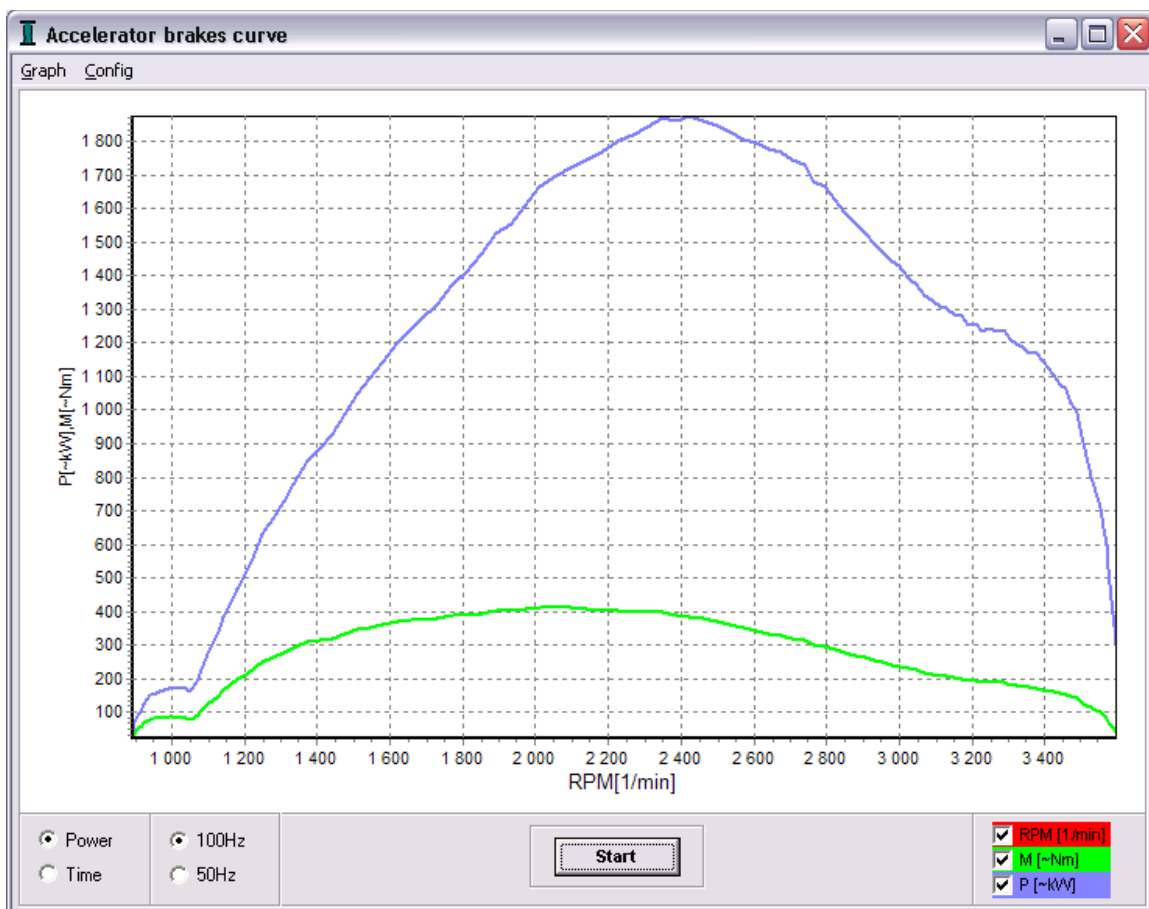
There is a new function in *Online visualization*. It is *Acceleration brake* that realizes fast 5 second engine record with the calculation of the turn derivation (acceleration). It proportionately responds to torsional moment.

Measure process

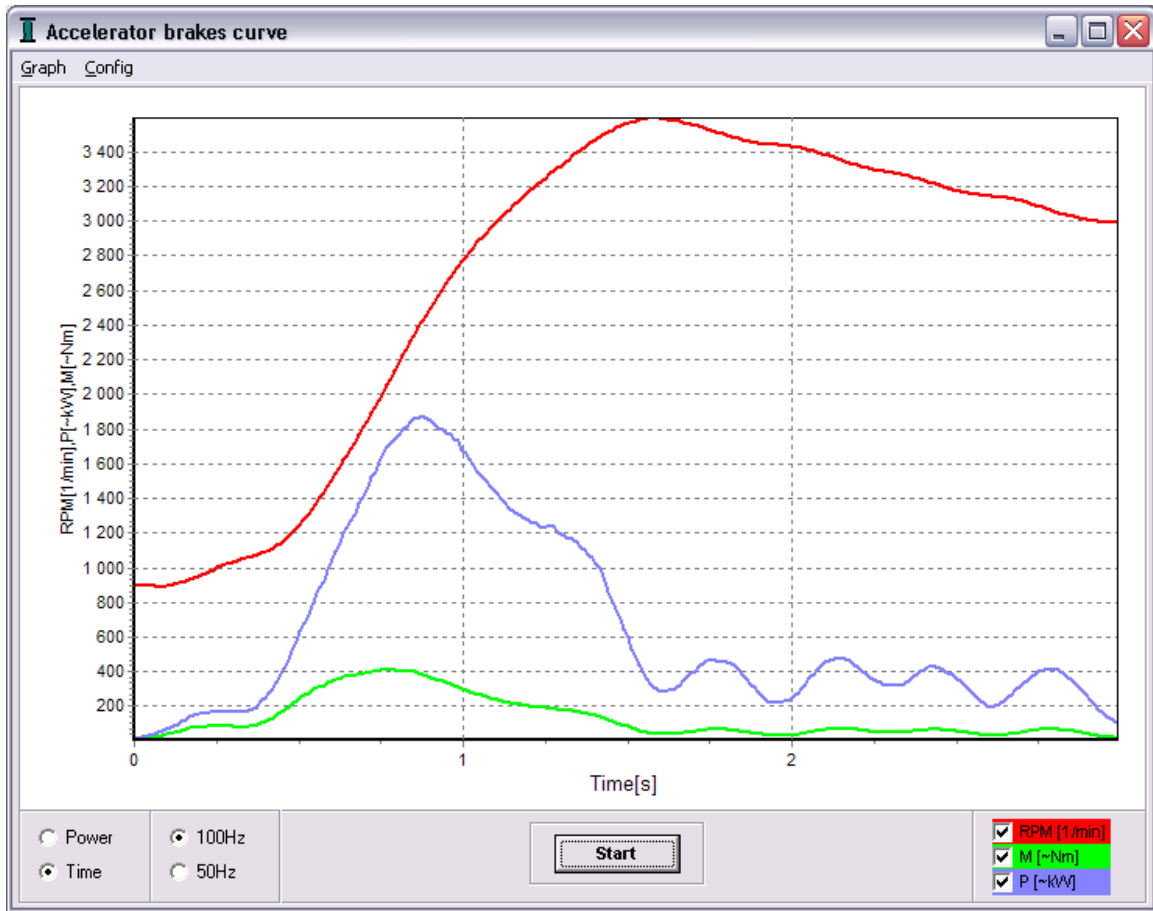
- Check the *Engine Turn Limits* settings before use
- Leave the engine run idly and get ready for its acceleration
- Press Start button
- Wait exactly 1 second to run the record



- Running of the record for 5 seconds
- End up the record and read the measured values of turns from ignition
- Display and conversion the measured values to the graph



Power and torsional moment to the engine speed



Engine speed, Power and Torsional moment in the Time