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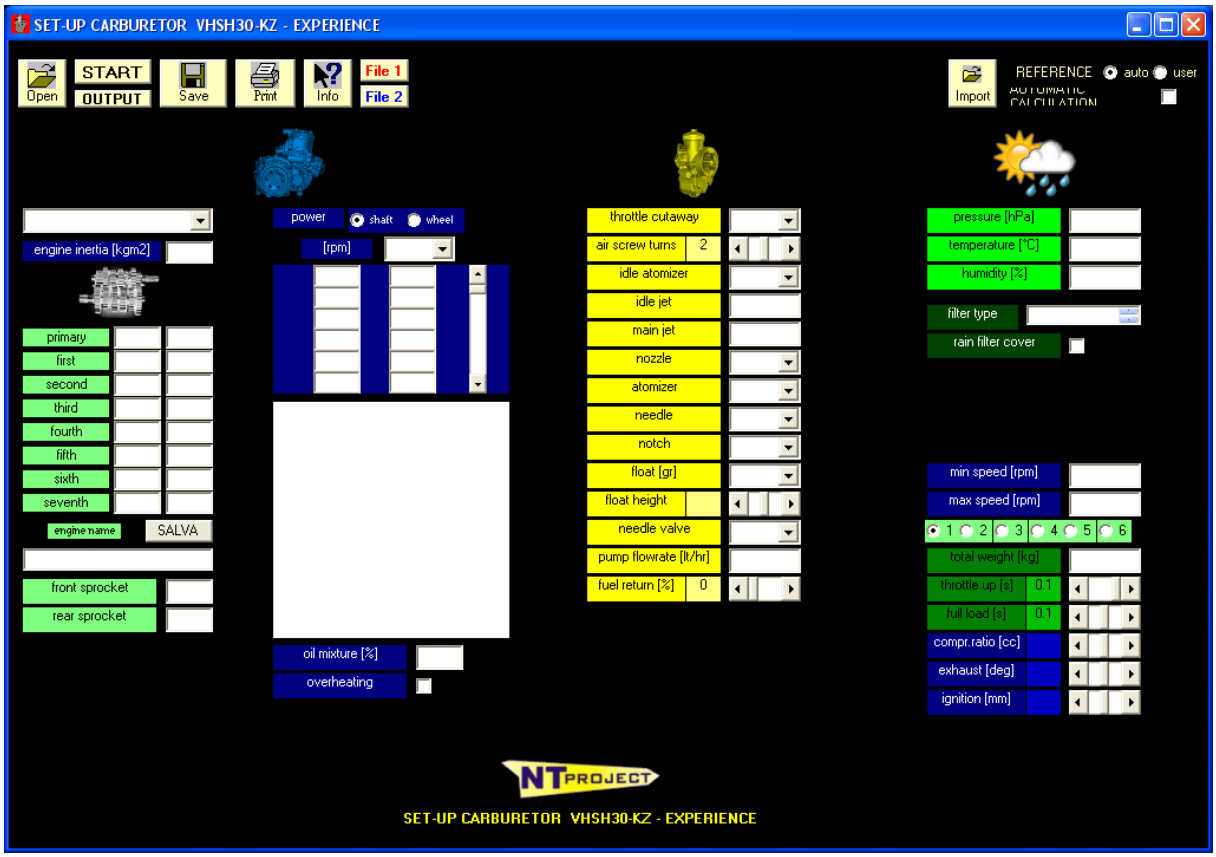
# PRESENTATION SOFTWARE
# SET-UP CARBURETOR EXPERIENCE - KZ

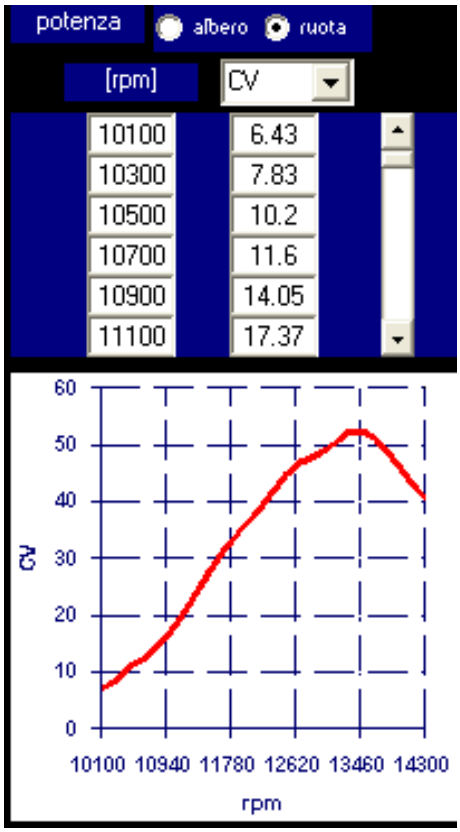
The software SET-UP Carburetor is on trade already from 20 years. Probably the first version could still be today a useful tool to aid in the carburetion, however over the years we have carried out constant research and development work on the track to offer an increasingly effective product for optimal carburettor setting, which still today remains one of the fundamental aspects for obtaining maximum kart performance.

For the main category of the karting, the KZ, we wanted to make a further evolution of our software SET-UP Carburetor, to be able to further refine the calibration on the specific characteristics of the engine.




In this new version we have therefore introduced the possibility of inserting the engine power curve. As is known, carburetor calibration is linked to the specific requirements of the engine. With the specific power curve data of the engine it is therefore possible to make a more precise evaluation of the carburetion, and refine the calibration even more in detail.

In fact, the software calculates the volumetric efficiency through the power curve, and with a sophisticated algorithm identifies the trapping ratio and the delivery ratio, which is what most influences the carburetor calibration.

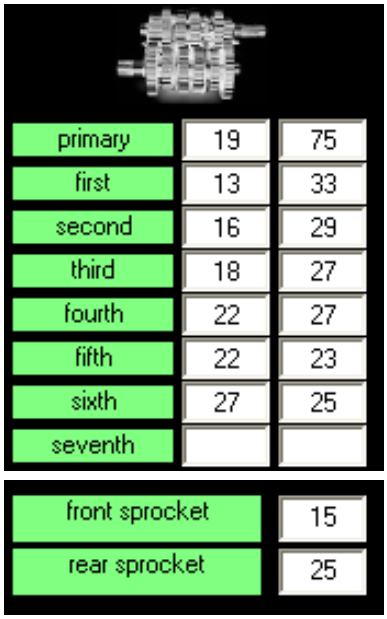



If you have a dynotest of the engine, or are using our Engine Analysis software to calculate the engine power curve from acquisition data, you can enter these data into the software SET-UP Carburetor.

If you do not have the specific engine power curve available, the software contains indicative power curves of the main engines of the category.

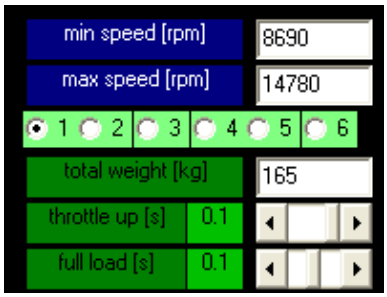
KZ - Iame Screamer 3
KZ - Iame Screamer 4
KZ - LKE Black Rock 2
KZ - Modena KK2
KZ - Modena KK3
KZ - SGM SR216X
KZ - TM KZ-R1
KZ - TM KZ-R2
KZ - TM KZ10B
KZ - TM KZ10C
KZ - Vortex RKZ
KZ - Vortex RSZ
KZ - Vortex RTZ
KZ - Vortex VTZ

The characteristics of the power curve, in addition to affect the carburetion through the delivery ratio, determine together with the gearbox ratio and the final drive ratio, the acceleration phase.




The gear ratios of all the main engines in the category are therefore entered into the software, and it is possible to enter the final ratio used.

This allows to determine how the engine speed increases when you open the throttle, which is another aspect that influences carburetion.

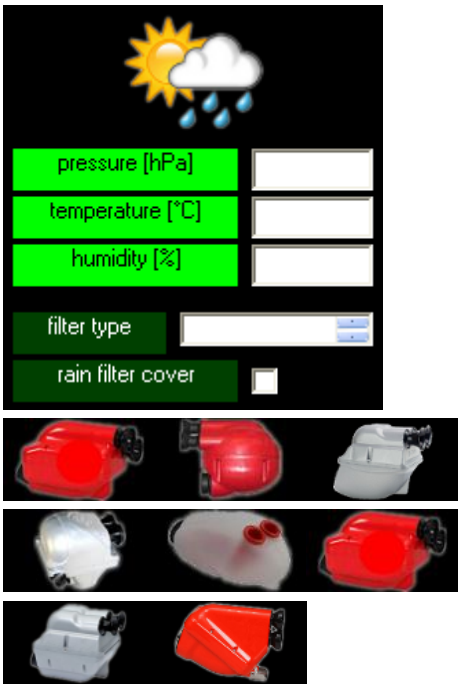



In the calculation of the carburettor calibration, in addition to defining the operating range of the engine where you want to optimize the carburetion, it is possible to evaluate how the carburetion changes in the acceleration phases with the different gears engaged, so will be possible to optimize the setting in the gear shift used in the main corners of each track.

Usually in karting the driver driving on-off, however there may be some drivers who tend to partialize slightly, therefore in the software it is possible to take into account this aspect by increasing the acceleration time.

As you have seen, in the new Experience version developed for the KZ category, has been given the possibility of inserting all the data that influence the carburetion, thus allowing to further refine the calibration for the specific characteristics of each engine, and for each operating condition.

The other features of the software maintain those of previous versions:

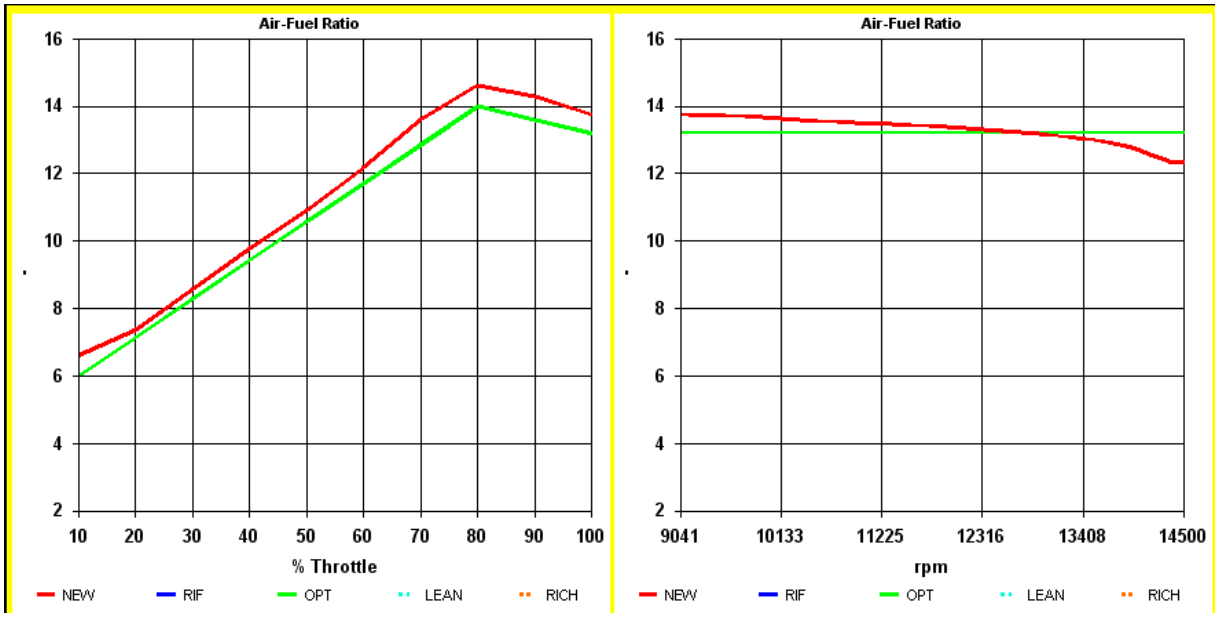




Then you will have to enter the current carburettor setting, the atmospheric conditions for which you want to optimize the carburetion, and the type of the filter used on the engine.

## calculation calibration

### simulation

When you have enter the data you can starting the simulation with the button START, at the end there is this screenshot:




### results

The software shows two carburetion graphs. The one on the left shows how the carburetion changes at different throttle openings, while the one on the right shows how the carburetion changes as the different engine speed.

In this way you can have a complete picture of how the calibration that you have entered responds to the engine's requests in all operating conditions.

In the graph the red line shows the carburetion with the calibration and the atmospheric conditions that you have entered. In addition to this, the software shows a green reference line. This line is the one that tells you which should be the optimal carburetion, and is therefore the objective to be achieved by modifying the calibration. The ideal would be to work on the calibration until your red line coincides with this green line.

In addition to the graph, the software summarizes the situation at partial and full loads.

| | | |
|---|---|---|
| LOAD 0-50% | MIXTURE LEAN 4.4% | DECREASE THROTTLE CUTAWAY - INCREASE IDLE JET - TO SCREW AIR SCREW |
| LOAD 50-100% | MIXTURE LEAN 4.8% | INCREASE ATOMIZER - PUT UP NEEDLE |
| FULL LOAD | MIXTURE OK 0.8% | |

In fact, it tells you how the carburetion is from 0 to 50% throttle opening, from 50% to 100%, and at full load, indicating in percentage how your carburetion is lean or rich (positive values indicate that the carburetion is lean, while negative values indicate that it is rich), or if it is ok. Together with the picture of the situation, the software advises you on how to modify your calibration to get closer to the optimal carburetion, in fact for each area it indicates the calibration element that is most influential for correcting the carburetion.

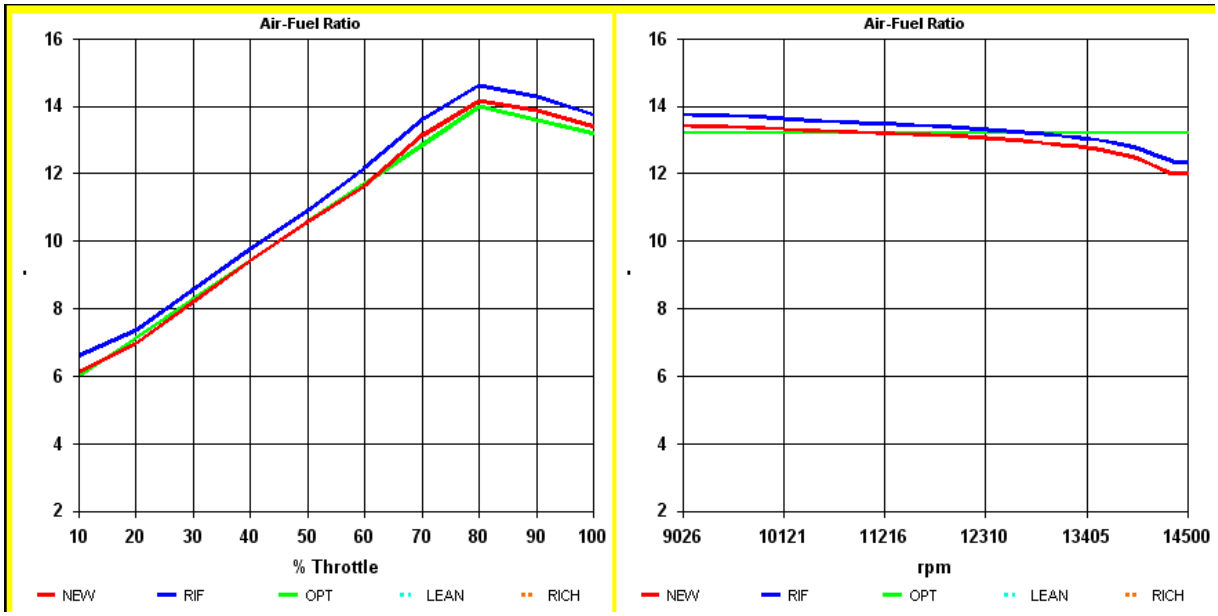
When the writing is azure-blue it means that the carburetion is lean compared to the optimal one, while when it is orange it means that the carburetion is richer than the optimal one. If it is green it means that it is within the optimal zone.

**research optimal calibration**

Pushing button INPUT you return to starting screenshot with the entered data, following the software indications you must modify the elements of calibration to move the red line on that green.
The recommended procedure to obtain rapidly the correct calibration is the following:

1. if the mixture is lean or rich at full load, you must fit before this aspect editing main jet until the mixture results ok at full load;
2. when you have fit the mixture at full load, you can modify the elements of calibration for partial load;
3. finally act again on the main jet to compensate the effects of modification at partial load.

In a few steps you will be able to correct your calibration to have optimal carburetion.

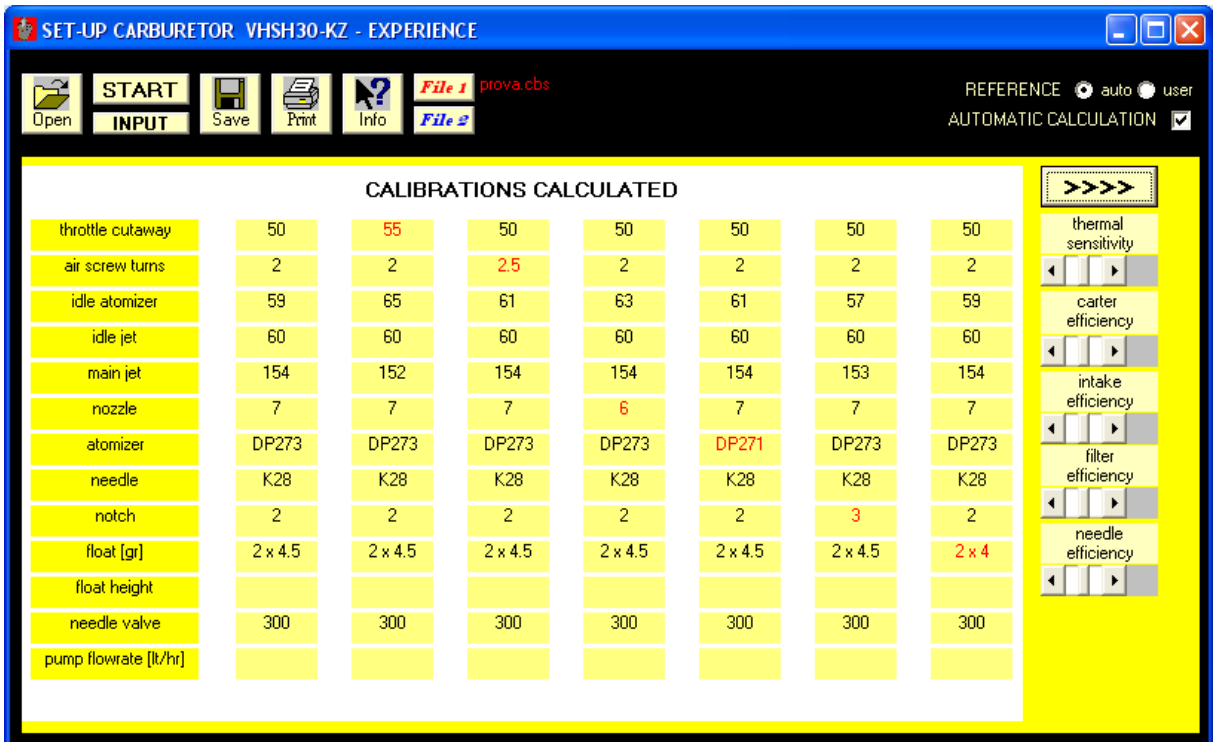


When you modify your starting calibration the red line moves, but the carburation that you had with your starting calibration still remains in the graph in the blue line, so you can see the difference due to your actions.

## automatic calculation calibration

After entering the data, as well as the calculation of the calibration in the traditional way, you can determine the best settings automatically selecting AUTOMATIC CALCULATION.

When you do START in addition to what we saw before, the software will calculate a series of calibration.




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| throttle cutaway | 50 | 55 | 50 | 50 | 50 | 50 | 50 |
| air screw turns | 2 | 2 | 2.5 | 2 | 2 | 2 | 2 |
| idle atomizer | 59 | 65 | 61 | 63 | 61 | 57 | 59 |
| idle jet | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| main jet | 154 | 152 | 154 | 154 | 154 | 153 | 154 |
| nozzle | 7 | 7 | 7 | 6 | 7 | 7 | 7 |
| atomizer | DP273 | DP273 | DP273 | DP273 | DP271 | DP273 | DP273 |
| needle | K28 | K28 | K28 | K28 | K28 | K28 | K28 |
| notch | 2 | 2 | 2 | 2 | 2 | 3 | 2 |
| float [gr] | 2 x 4.5 | 2 x 4.5 | 2 x 4.5 | 2 x 4.5 | 2 x 4.5 | 2 x 4.5 | 2 x 4 |
| float height | | | | | | | |
| needle valve | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| pump flowrate [lt/hr] | | | | | | | |

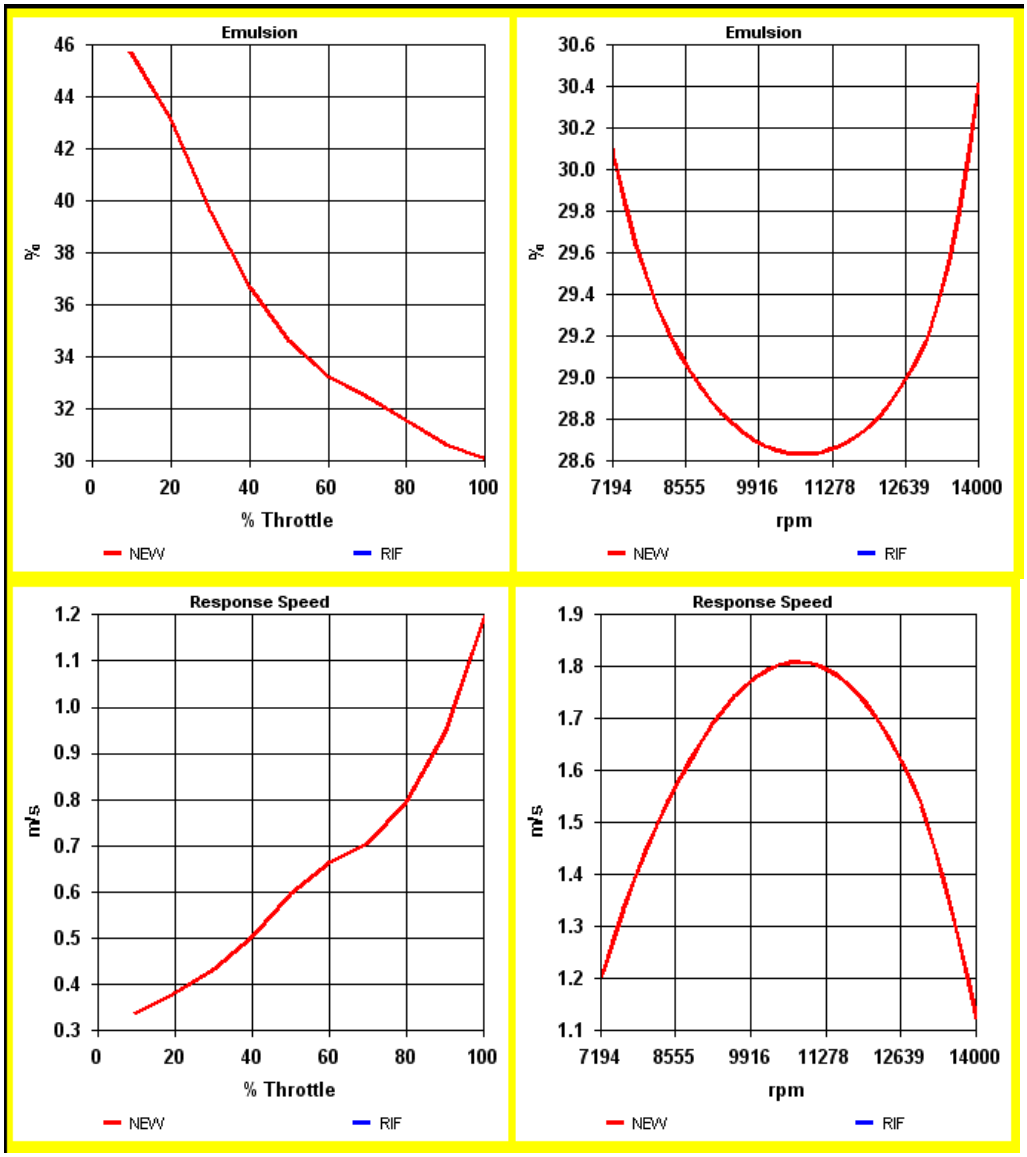
The first calibration calculated maintains fixed all the elements of setting and calculates the jets of the minimum and maximum to be used to optimize it.

In other calibrations calculated comes instead before modified in the appropriate direction one element of the calibration (marked in red), then recalculates the jets of the minimum and maximum taking account of this change.

You've then a series of calibrations calculated automatically that approach you quickly than optimal and that you can choose in according to the available material, or the feelings of the driver.

## calculation emulsion and speed response

In addition to the calculation of carburetion the software SET-UP Carburetor also calculates the percentage with which the fuel is pulverized and the speed of response that the carburetor has in different conditions, according to the calibration that has been inserted.




These parameters are very important when you want to understand the differences between two calibrations that as carburetion provide both an optimal behavior and therefore you do not know which to choose.

In fact, higher is the pulverization and better is combustion efficiency, and faster is the response of the carburetor and before you have the optimum fuel and then the engine is more ready.