

PRESENTATION SOFTWARE SET-UP KART

The use of the software SET-UP Kart is very easy:

- at the end of your track session, download your data from your acquisition system;
- import the data in SET-UP Kart;
- obtain fastly the indications to optimize your setup.

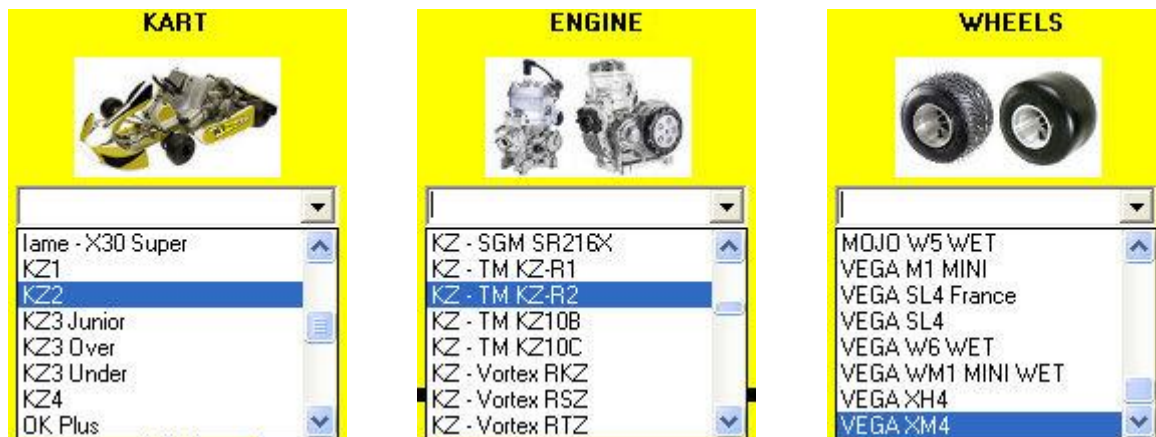
The software SET-UP Kart can work with all the main acquisition system used in the kart:

AIM Race Studio Analysis 3 and Race Studio Analysis 2
UNIPRO Unipro Analyser and Off Camber Data
ALFANO Alfano Data Analysis and Off Camber Data
STARLANE MAAT and DigiRaceMMX
COSWORTH Pi Toolbox
DAKTON Dataview

The data to enter in the software SET-UP Kart are:

KART features
ENGINE features
TYRE model

The software already has a database with the data from all the main kart categories, all the main engines homologated in the different categories, and all the main tyre models homologated in the different categories.



Then you will simply have to select your category, your engine, and your tire.

At this point you will have to insert the SET-UP and the CONDITIONS that you had in the session that you want to analyze.

CONDITIONS		
	pressure [mbar]	973
	temperature [°C]	36
	humidity [%]	20
	ground temp [°C]	45

SET-UP		
	front sprocket	16
	rear sprocket	23
	downshift engine speed [rpm]	
	upshift engine speed [rpm]	
	front brake	65 %
	front width [mm]	1230
	rear width [mm]	1400
	caster [deg]	21
	toe [deg]	-0.66
	camber [deg]	0
	axle hardness[hb]	160
	axle diameter [mm]	50
	axle thickness[mm]	2
	pressure FL [bar]	0.8
	pressure FR [bar]	0.8
	pressure RL [bar]	0.8
	pressure RR [bar]	0.8

In our manual, you'll find all the informations to measure easily caster, camber, and toe, and to enter correctly your setup data into the software. You'll also find a table showing the hardness of the different axle types available for the different categories.

Now you are ready to perform the analysis and have the indications to modify the setup in the optimal direction.

BEST SET-UP

In a few seconds the software analyses the data acquired during the session and through a sophisticated dynamic calculation model, provides indications on how to modify the tyre pressure, the camber of the front wheels, the convergence, the caster, and the hardness of the rear axle.

SETUP INDICATIONS		
pressure [bar]	cold	hot
AS	0.65	0.75
AD	0.71	0.81
PS	0.60	0.76
PD	0.64	0.82
camber	[deg]	[mm]
	-0.05	0
toe	[deg]	[mm]
	-0.6	-5
caster	[deg]	
	21.0	
hardness axle	[hb]	
	160	

These indications are studied for first to make working the tire in the optimal manner, both for the load and camber conditions of the session, both to reach the appropriate temperature to have the maximum grip.

They also try to find the best compromise to reduce oversteer and understeer conditions, and therefore improve driveability for the driver.

The software SET-UP Kart together to analyze the acquired data to optimize the chassis setup, and the tire pressures for the next sessions, thanks to the **integrated simulator** allows to have further indications to improve the final drive ratio or the best brake distribution for the kart with front and rear brakes.

FINAL RATIO SIMULATION			
	16/23	17/24	16/24
lap time [s]	54.73	54.67	54.98
slip angle [deg]	1.10	1.10	1.08
BRAKE DISTRIBUTION SIMULATION			
	65 %	60 %	70 %
lap time [s]	54.73	54.75	54.73
slip angle [deg]	1.10	1.06	1.14

Thanks to the software SET-UP Kart then you'll have a complete tool to improve fastly the performance of your kart.

PERFORMANCE ANALYSIS

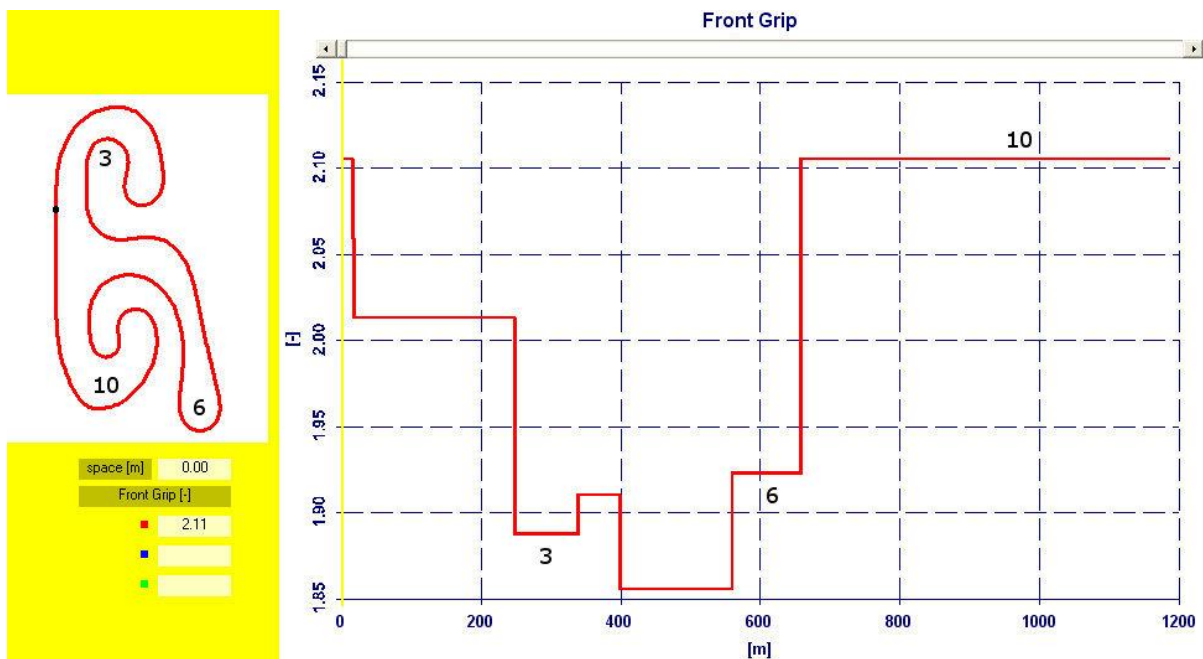
The software SET-UP Kart furthermore allows to analyze in the detail the performance evaluating the behavior of:

TIRES
DRIVEABILITY
ENGINE

for the different set-up and for the different weather and track conditions.

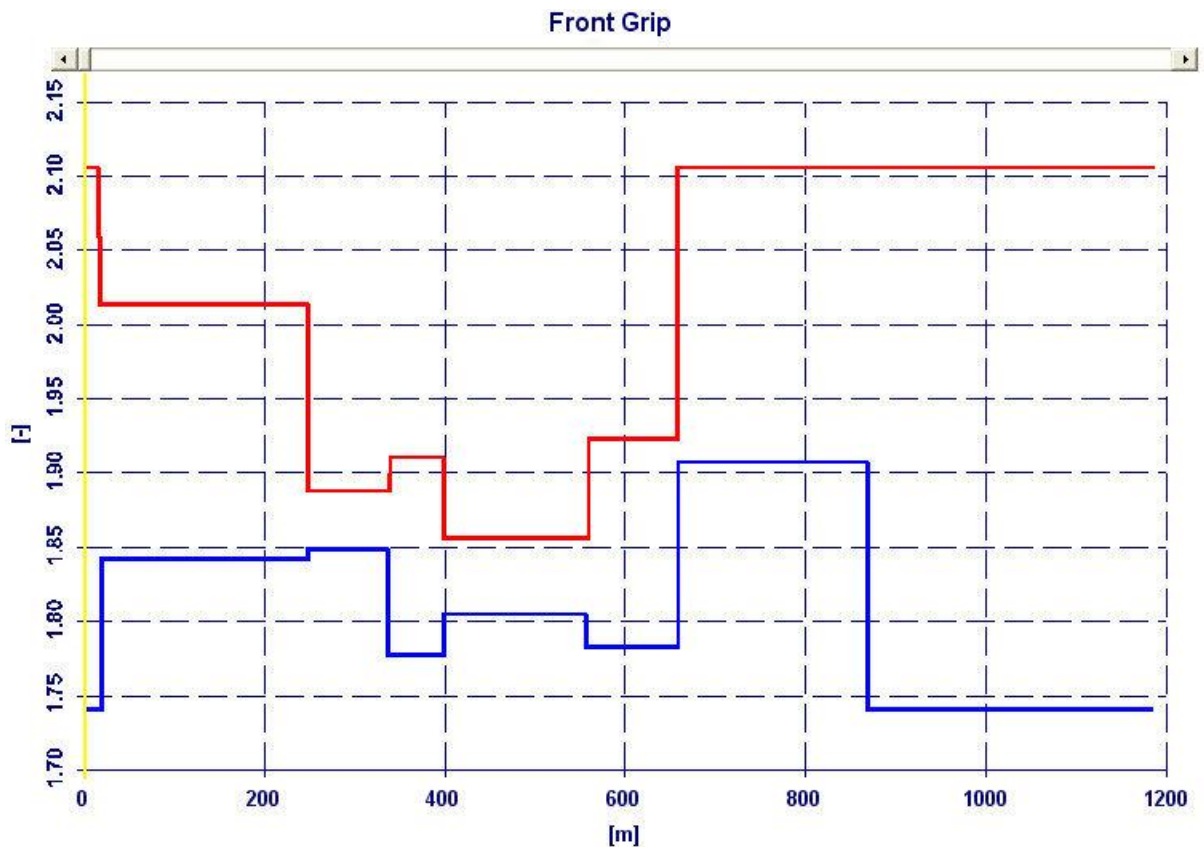
For the tires the software calculates the front grip and the rear grip that have generated in each point of the track.

This is really useful to see where the driver has been able to exploit at the maximum the tire.



In this example you see immediately how in the slow corner 3 and 6 the tires haven't been exploited as in the faster long corner 10.

These calculations are also very useful for comparing the grip level between two different sessions, and therefore evaluating the effects of any set-up changes, or of different track conditions.



In this example you see immediately how in the session 1 (red line) the tires have generated more grip above all in the fast long corner.

As regards driveability, the software, thanks to the calculation of the **front and rear slip angle**, determines the **oversteer** and **understeer** conditions at every point of the track.



In the example you can immediately see how with the set-up used in session 2 (blue), there is oversteer already at the beginning of the corner, while with the one in session 1 (red) there is only oversteer at the exit of the corner.

This is very useful to immediately understand the effects of the changes that have been made, and quickly optimize them in the optimal direction.

At the end the software calculates the **power generated from the engine**, and how the driver has been able to exploit it.



Comparing these two sessions it is easy to see that in session 1 (red) it was harder to get the power to the ground compared to what happened in session 2 (blue), while at full load the engine behaviour was similar.



In this other case, however, the chassis set-up and the driver's driving allowed the power to be put to the ground in a similar way, while the engine set-up was decidedly better in session 1 (red).

TRAJECTORY ANALYSIS

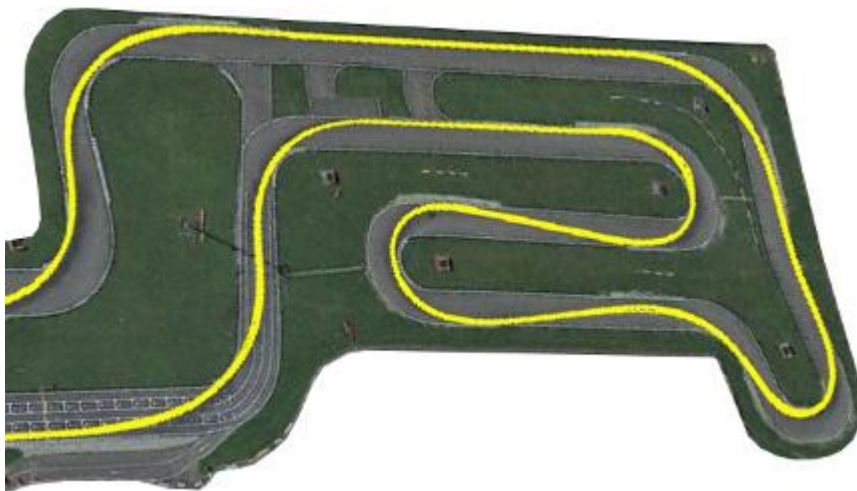
Thanks to the integrated simulator, the SET-UP Kart software allows you to identify in which lap of each session **the driver took the best trajectory**.

The software in fact, from the acquired data, calculates the trajectory taken in each lap, then, through a virtual driver, it simulates the performance by keeping fixed the power curve calculated for the engine, and the grip conditions of the track, and varying only the trajectory.

TRAJECTORY ANALYSIS			
	49.600	49.840	49.920
lap time [s]	49.27	49.19	49.21
slip angle [deg]	1.26	1.36	1.47

In this case, for example, we see that the best trajectory was not taken in the lap where was achieved the best time (49.600), but in the second fastest lap (49.840).

In your acquisition software then you will be able to compare the trajectories of the different laps completed on the track, knowing which one is the best.



As you have seen in this short presentation, the software SET-UP KART is a fundamental tool for quickly optimising the setup of your kart, and for analysing the performance session by session, and race by race.