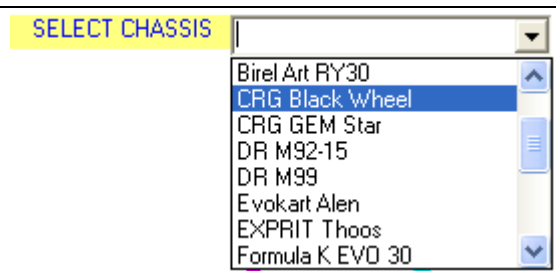
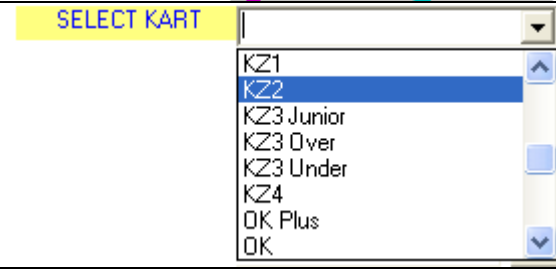
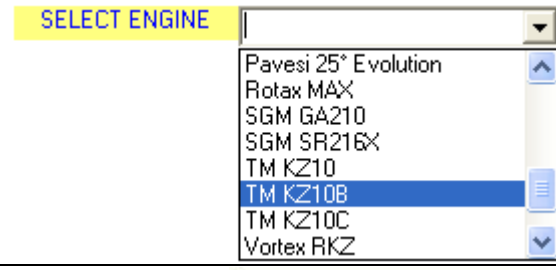
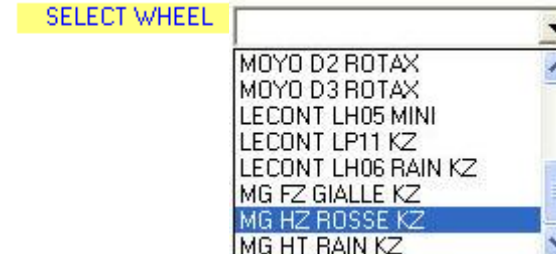


## QUICK HELP SOFTWARE KART ANALYSIS

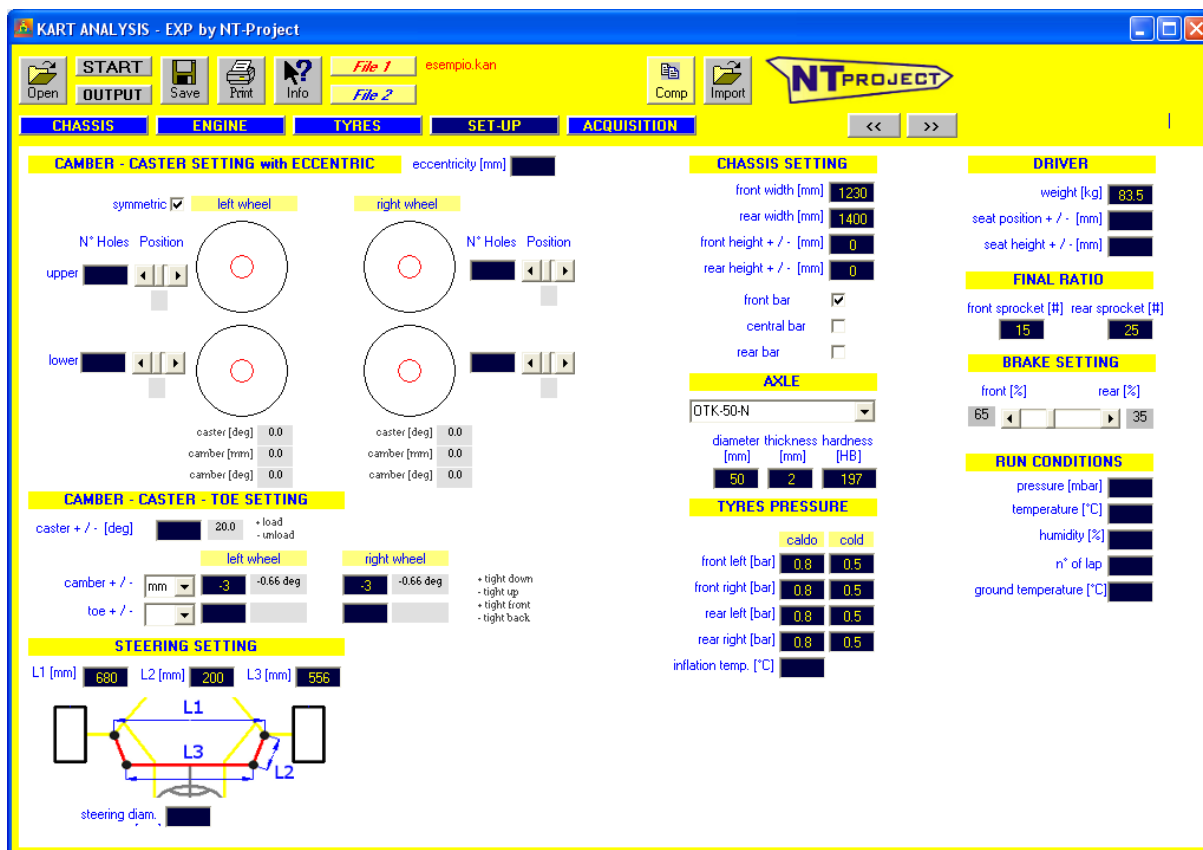
1. CREATE THE FIRST FILE ON THE SOFTWARE KART ANALYSIS WITH ALL THE DATA OF THE KART AND OF THE SET-UP IN THE CONFIGURATION THAT YOU'LL USE IN THE FIRST SESSION ON TRACK

Therefore you must select the data about your

CHASSIS	 <p>SELECT CHASSIS</p> <ul style="list-style-type: none"><li>Birel Art RY30</li><li>CRG Black Wheel</li><li>CRG GEM Star</li><li>DR M92-15</li><li>DR M99</li><li>Evokart Alen</li><li>EXPRIT Thoos</li><li>Formula K. EVO 30</li></ul>
CATEGORY	 <p>SELECT KART</p> <ul style="list-style-type: none"><li>KZ1</li><li>KZ2</li><li>KZ3 Junior</li><li>KZ3 Over</li><li>KZ3 Under</li><li>KZ4</li><li>OK Plus</li><li>OK</li></ul>
ENGINE	 <p>SELECT ENGINE</p> <ul style="list-style-type: none"><li>Pavesi 25° Evolution</li><li>Rotax MAX</li><li>SGM GA210</li><li>SGM SR216X</li><li>TM KZ10</li><li>TM KZ10B</li><li>TM KZ10C</li><li>Vortex RKZ</li></ul>
TYRES	 <p>SELECT WHEEL</p> <ul style="list-style-type: none"><li>MOYO D2 ROTAX</li><li>MOYO D3 ROTAX</li><li>LECONT LH05 MINI</li><li>LECONT LP11 KZ</li><li>LECONT LH06 RAIN KZ</li><li>MG FZ GIALLE KZ</li><li>MG HZ ROSSE KZ</li><li>MG HT RAIN KZ</li></ul>

Initially we advice don't modify the default data so you avoid errors

At this point it's necessary to enter the data of your kart set-up



In this screen, you must enter the setup of your kart that you'll use on the first session on track, therefore the data of your configuration for:

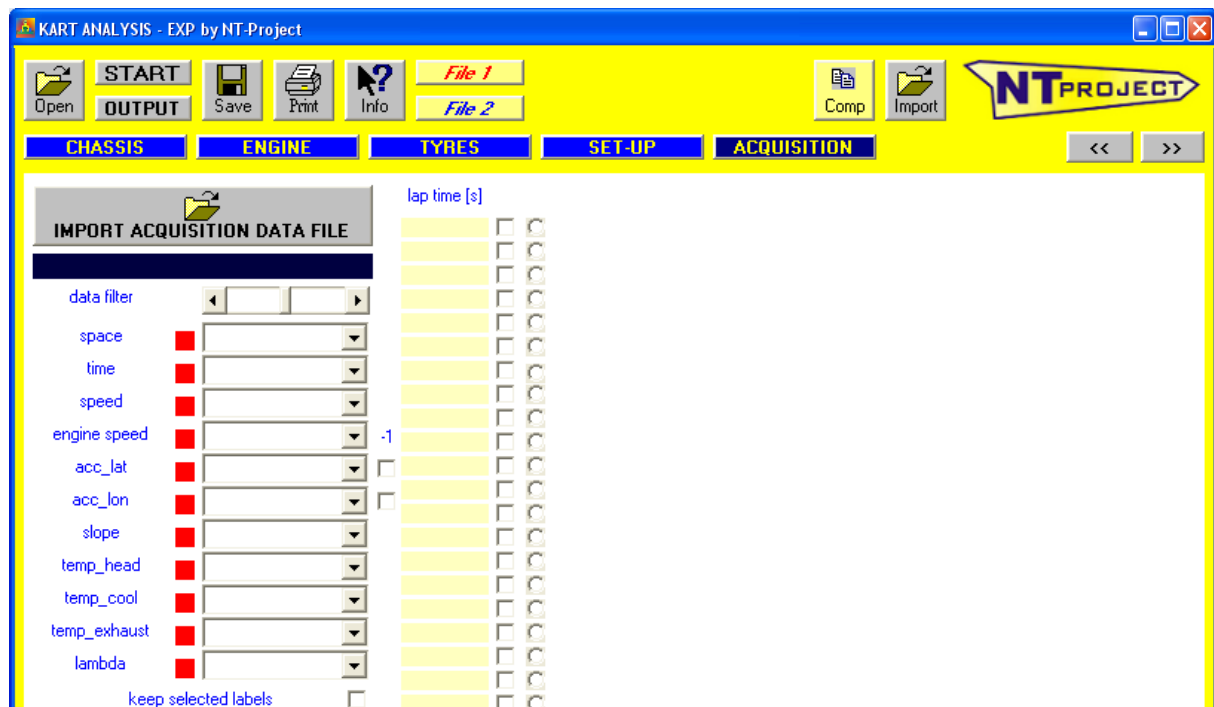
- CAMBER
- CASTER
- TOE
- FRONT WIDTH
- REAR WIDTH
- AXLE
- TYRES PRESSURE
- FINAL RATIO
- BRAKE SETTING

At this point you've saved the file with all the data of your kart and your current setup before to go on track

2. GO ON TRACK FOR YOUR FIRST SESSION
3. AT THE END OF THE SESSION DOWNLOAD THE DATA ACQUIRED, AND EXPORT IT IN THE CSV FORMAT
4. GO IN THE SOFTWARE KART ANALYSIS AND OPEN THE FILE THAT YOU HAD CREATED BEFORE
5. GO IN THE TAB ACQUISITION OF THE SOFTWARE AND IMPORT THE FILE CSV OF THE SESSION

## DATA ACQUISITION

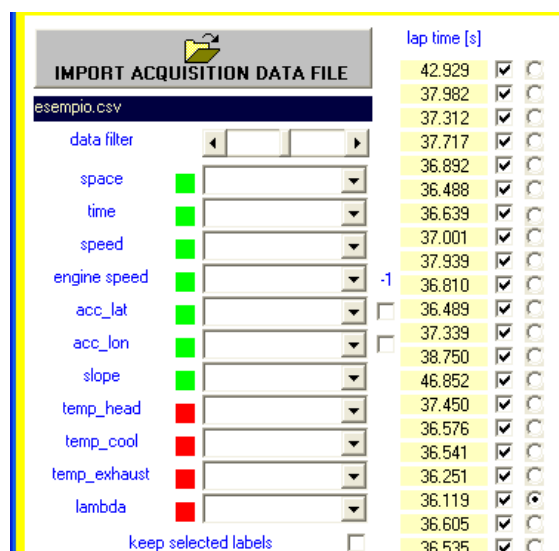
When you click the respective button you get the following screen:



For first by your acquisition data software, you must open the run that you want to analyze, and export it to a file in \* .csv format, at this point on this screen of the software by clicking the "IMPORT FILE DATA ACQUISITION" button you can load the file \* .csv that you've exported.

The software recognizes automatically your acquisition system, and if you've the default name for the channels necessary to make the analysis, you'll see the corresponding squares of color green, if instead you've different names for some channels, you'll have the square red, in this case from the list beside, you must simply select the right name of your channel for the specific quantity.

If you want keep the channel name selected you must simply check the box (keep selected labels)



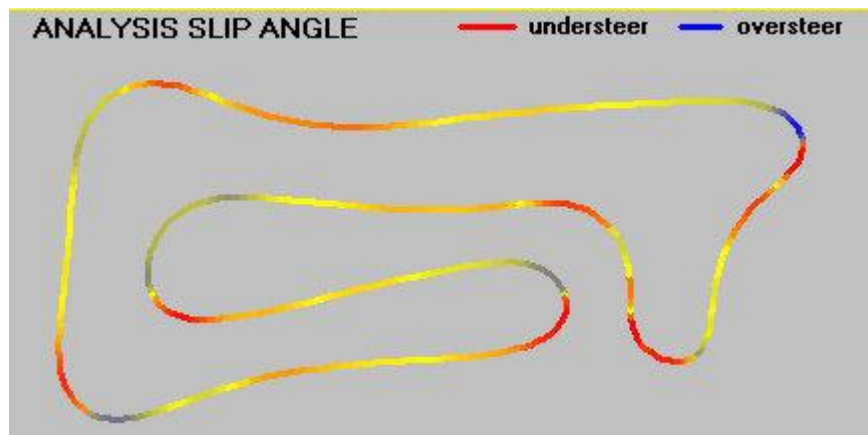
In this area you can also select the lap that you want analyze

6. CLICK ON THE BUTTON START OF THE SOFTWARE TO PERFORM THE CALCULATION

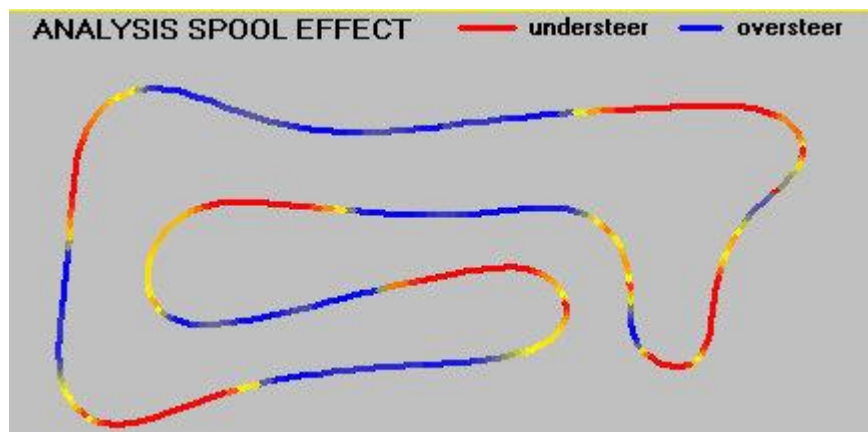
## results

ANALYSIS				
	MAX POWER			
ENGINE	50.47 CV @ 13802 rpm			
	BRAKING	TRACTION	LEFT CORNER	RIGHT CORNER
FRONT GRIP	1.21		2.23	2.28
REAR GRIP	1.28	1.08	2.20	2.31
	braking - entry	exit - traction	global	
SLIP ANGLE	-0.63 deg oversteer	1.72 deg understeer	0.55 deg understeer	
SPOOL EFFECT	7.5 % understeer	-9.3 % oversteer	-0.9 % oversteer	

At the end of the calculation, the software first shows the behavior that the kart had in the session being considered. Thanks to these calculations you can have an immediate view of the engine performance, of the grip that the tires has been able to provide on braking, traction and corner both to the front and to the rear, and of the behavior that the kart has had in the various stages of driving, braking, entry corner, exit corner and acceleration. Moreover, since that the kart doesn't have the differential, the software shows how the rear axle has affected the various driving phases.



This analysis is already very important both to evaluate the performance that the kart had in every area, both to understand how to intervene on the kart and to better interpret the feelings of the driver.



In addition to the analysis the software gives you also some indications on how we'll be better to modify the set-up to improve the performance.

The software shows three indications of SET-UP modifications, one to optimize globally the kart behaviour, one instead that allows to improve the brake phase and the corner entry, and one instead to improve exclusively the corner exit and the traction of the kart. The choice between the three setup will be oriented in function of the needs that the driver complains at the run ending.

IF YOU'RE DRIVER HAS THE MAIN PROBLEM ON BRAKING OR ENTRY OF CORNER USE THESE INDICATIONS

SET-UP		
		braking - entry
<b>CAMBER</b>		
L		-0.66
R		-0.66
<b>TOE</b>		
L		0.00
R		0.00
<b>CASTER</b>		20.00
<b>AXLE</b>		HARD 197
<b>FRONT TRACK</b>		tighten
<b>REAR TRACK</b>		enlarge
<b>BARS</b>		front
<b>ACKERMANN</b>		L3 556

IF YOU'RE DRIVER HAS THE MAIN PROBLEM ON EXIT OF CORNER AND TRACTION USE THESE INDICATIONS

SET-UP		
		exit - traction
<b>CAMBER</b>		
L		less neg. 0.81 (0.15)
R		less neg. 0.81 (0.15)
<b>TOE</b>		
L		open 0.76 (-0.76)
R		open 0.76 (-0.76)
<b>CASTER</b>		20.00
<b>AXLE</b>		HARD 197
<b>FRONT TRACK</b>		
<b>REAR TRACK</b>		
<b>BARS</b>		
<b>ACKERMANN</b>		decrease L3 3 (553)

IF YOU WANT OBTAIN A GLOBAL OPTIMIZATION OF YOUR SETUP USE THESE INDICATIONS

SET-UP		global
<b>CAMBER</b>		
L		less neg. 0.56 (-0.10)
R		less neg. 0.56 (-0.10)
<b>TOE</b>		
L		open 0.53 (-0.53)
R		open 0.53 (-0.53)
<b>CASTER</b>		20.00
<b>AXLE</b>		HARD 197
<b>FRONT TRACK</b>		
<b>REAR TRACK</b>		
<b>BARS</b>		
<b>ACKERMANN</b>		decrease L3 2 (554)

Together with the indications on how modify the kart setup, the software gives you also the indications on the cold pressure that would be better to use for the tires.

BEST LAP	Advised Pressure [bar]				
	first lap	last lap	average	oversteer	understeer
FL	0.58	0.55	0.56	0.65	0.51
FR	0.53	0.50	0.51	0.60	0.46
RL	0.86	0.70	0.75	0.79	0.93
RR	0.80	0.65	0.69	0.73	0.87

In function of the needs that you've the software calculates different tires pressure:

- if you want obtain the best performance at the begin of the run use the pressures in the column "first lap"
- if you want obtain the best performance at the end of the run use the pressures in the column "last lap"
- if you want obtain good performance averagely on all the laps of the run use the pressures in the column "average"

The software suggests also how modify the tires pressure to improve eventually problems on the kart setting:

- if you've problem of "oversteer" you could use the pressures advised on this column
- if you've problem of "understeer" you could use the pressures advised on this column

## HOW INTERPRET THE SETUP INDICATIONS

For CAMBER, TOE and CASTER the software gives the indications in degrees

If there aren't modifies to make you'll see directly the value.

For example in the figure below you see CASTER 20.00, means that initially you had caster 20 deg, and you also in the next session you'll have to use caster 20 deg.

SET-UP	
	global
CAMBER	
L	less neg. 0.56 (-0.10)
R	less neg. 0.56 (-0.10)
TOE	
L	open 0.53 (-0.53)
R	open 0.53 (-0.53)
CASTER	
	20.00
AXLE	
	HARD 197
FRONT TRACK	
REAR TRACK	
BARS	
ACKERMANN	
	decrease L3 2 (554)

If instead the software advises you to make some modifications, before writes the entity of the modification, and in brackets writes the final value that you should use.

For example in the figure below, the software advises you to modify CAMBER and TOE before to return on track for the next session.

For CAMBER the software writes that it should become less negative of 0.56 degrees, and in brackets the final value. The starting camber was -0.66 degrees, the software suggests to return on track using camber -0.10 degrees.

For TOE the software writes that it should become open of 0.53 degrees, and in brackets the final value. The starting toe was 0 degrees, the software suggests to return on track using toe open of 0.53 degrees.

SET-UP	
	global
<b>CAMBER</b>	
L	less neg. 0.56 (-0.10)
R	less neg. 0.56 (-0.10)
<b>TOE</b>	
L	open 0.53 (-0.53)
R	open 0.53 (-0.53)
<b>CASTER</b>	20.00
<b>AXLE</b>	HARD 197
<b>FRONT TRACK</b>	
<b>REAR TRACK</b>	
<b>BARS</b>	
<b>ACKERMANN</b>	decrease L3 2 (554)

For AXLE the software suggests directly the type of axle that you should use in the next session to optimize the setup.

It's selected between ultra-soft super-soft soft medium-soft medium medium-hard hard super-hard and ultra-hard

For example in the figure below the software suggests to use in the next session an axle HARD of your manufacturer.

<b>AXLE</b>	HARD 197
-------------	----------

For FRONT TRACK and REAR TRACK if you don't see indications means that isn't necessary to make modifications, else the software suggests to enlarge or tighten the front width, or the rear width.

If the software writes to enlarge or tighten, you should enlarge or tighten the width before to return on track for the next session of a value compatible of the features of your chassis, or allowed from the regulation.

For example in the figure below the software doesn't give indications, means that you should return on track for the next session with the same front width and rear width of the previous session.

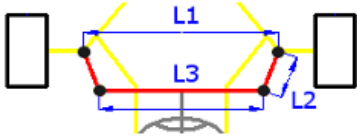
<b>FRONT TRACK</b>	
<b>REAR TRACK</b>	

For BARS the software suggests if in the next session would be better to mount or not on your chassis some bars to optimize the setup.



For ACKERMANN the software suggests if in the next session would be better modify the ackermann to optimize the setup.

The software writes if you must increase or decrease the dimension L3 of the steering system, and writes on bracket the new value that you should use for L3 before to return on track for the next session.



For example in the figure below the software suggests to decrease the dimension L3 of 2 mm, and then if initially L3 was 556 mm that the new value for L3 that you should use in the next session would be 554 mm.

**ACKERMANN** decrease L3 2 (554)

7. IN COMBINATION WITH THE DRIVER SENSATIONS FOLLOW THE INDICATIONS OF THE SOFTWARE TO MODIFY THE KART SETUP (you can just follow some of the indications provided in function of your needs and possibility of time) AND THE TIRES PRESSURE AT COLD
8. UPDATE YOUR FILE KART ANALYSIS WITH THE MODIFICATIONS THAT YOU ACTUALLY MAKE ON THE SETUP AND TIRES PRESSURE
9. GO ON TRACK FOR YOUR NEW SESSION
10. REPEAT THE PROCEDURE FROM THE POINT THREE

This is the main use of the software on track.

The other use that could be really useful it's to compare two sessions with different setup to analyze how change:

- POWER
- FRONT GRIP
- REAR GRIP
- SLIP ANGLE
- SPOOL EFFECT
- TIRES TEMPERATURE

ANALYSIS				
MAX POWER				
ENGINE	52.22 CV @ 13268 rpm			
	BRAKING	TRACTION	LEFT CORNER	RIGHT CORNER
FRONT GRIP	1.46		2.44	2.42
REAR GRIP	1.90	1.10	2.02	2.19
	braking - entry	exit - traction	global	
SLIP ANGLE	-1.47 deg oversteer	1.54 deg understeer	0.35 deg understeer	
SPOOL EFFECT	6.9 % understeer	-12.6 % oversteer	-4.9 % oversteer	

MAX POWER				
ENGINE	56.62 CV @ 13428 rpm			
	BRAKING	TRACTION	LEFT CORNER	RIGHT CORNER
FRONT GRIP	1.35		2.17	2.36
REAR GRIP	1.44	1.14	2.05	1.99
	braking - entry	exit - traction	global	
SLIP ANGLE	-2.65 deg oversteer	1.28 deg understeer	-0.26 deg oversteer	
SPOOL EFFECT	7.6 % understeer	-12.0 % oversteer	-4.3 % oversteer	

Temperature [°C]		
	RL	RR
LAP 1	29.4	29.6
LAP 2	44.8	43.3
LAP 3	53.8	51.4
LAP 4	59.6	56.6
LAP 5	63.5	60.1
LAP 6	66.1	62.4

Temperature [°C]		
	RL	RR
LAP 1	29.0	29.2
LAP 2	43.8	42.4
LAP 3	52.6	50.2
LAP 4	58.2	55.2
LAP 5	61.9	58.6
LAP 6	64.5	60.9