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Introduction

Fenix Creator is the software created by Linsys to deal with the Fenix Diesel Electronic Engine Control Unit, that has more than 5000 parameters, which can be changed from your PC while editing a configuration file or when connected with Fenix even on a **RUNNING ENGINE** so that you can immediately see what's happening.



ULL	-								Auto	Scale	
IULL		0	0	0	0	0	0	0	0	3D View	
VATER_TEMP									d		
DIL_TEMP		int	int	int	int	int	int	int	int		
DIL_PRESS		max	max	max	max	max	max	max	max		
NJ_LIMIT		half	half	half	half	half	half	half	half		SPEED
NJ_BEFORE		min	min	min	min	min	min	min	min		1000 2700 2400 2100 1000
NJ_PRE											400 600 800 1200 1200 900 600 300
NJ_MAIN	min	0	0	0	0	0	0	0	0		0 200
NJ_POST	min	0	0	0	0	0	0	0	0		1100
NJ_AFTER	min	0	0	0	0	0	0	0	0		1000
DV_BEFORE	min	0		0	0	0	0	0	0		900
IDV_PRE	min	10	0	0	0	0	0		0		800
DV_MAIN	min [0	0	0	0		0		700
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0 🗘 int max	half min	0	0	0	0	0	0	0	0		SPEED
0 int max	half min	0	0	0 ×	0	0	0	0	0		
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Main window

Main



This is the first window you can see after starting Fenix Creator, you have only two options: open an existing configuration file or connect to Fenix.





Config and Map editors

When you have opened a config file or you have established a connection with Fenix, you can access the config window or the map editor:







Diagnostic

Cockpit



The Main tab show the cockpit with standard and advanced diagnostic info, all scale are self adapting to the config parameter you can change in the config window.

The "Override Control" override the external accelerator pedal or speed reference and you can control this functions with the slidebar.





Injections

B 🖬 🛃 🗶 🅴 🕴								
Connection State	1	nfo						
Connected	Engine	IVECO Tector	IVECO Tector 6 Cil 24 Volt					
Engine State	Applica	tion base minimo	regolabile2			Ver.	0001	
Idle Start Warm Run Stop Test Error	HW Ver	sion	0102	F	N Version		0102	
Sensor State	N	Aonitor						
Flywheel Distribution Rail	Main	Injection Times	Acceleration	Wave	Test			
Speed Control	Туре	NONE				•	1	
	Cil 1	NONE						
2111112		MEAN						
S	Cil 2	MIN						
	Cil 3							
	Cil 4							
	Cil 5							
	Cil 6							
Override Control	Cil 7							
	Cil 8							

In the "Injection Times" tab you can see the average injections times of every injector to extimate the injector balance of fuel delivery.





Accellerations



The "Accelerations" tab show the average angular acceleration of every cilinder useful to diagnose a missing injection problem.





Fenix Creator 1.3.1 Beta		_ D X
<u>F</u> ile Feni <u>x</u> <u>H</u> elp		
	📕 🛛 📕 🚔	
Connection State Connected	Info	Ver 0001
	Application has minima and hill 2	Ver. 0001
Idle Start Warm Run Stop Test Error	HW Version 0102 FW Version	0102
Sensor State	Monitor	
Flywheel Distribution Rail	Main Injection Times Acceleration Wave Test	
Speed Control	Source NONE NONE RAIL ENG SPEED REF SPEED VBAT VINJ Contemport	

The "Wave" tab acts as an oscilloscope recording 30 seconds of various sensors and engine parameters, useful to diagnose one time and/or spike problems.

Wave



Test



Fenix Creator 1.3.1 Beta File Feni <u>x H</u> elp			-	-		- 0 -	×
Connection State Connected	Engine	IVECO Tector	Ver. 0001	1			
Engine State	Application	base minimo	regolabile2			Ver. 0001	ī
	HW Version		0102	F١	W Version	010	12
Sensor State Flywheel Distribution Rail	Moni	tor	Acceleration	Maria	Test		
		ectors	Acceleration	wave			7
Speed Control	© 1 ⊙ Injection	2 🔘 3 🔘 Time 0	4 ⊚ 5 ⊚ ▲ uSec	6 🔘 7	© 8 ⊚ All	None	
	Pwm Ch	annel 1		-Pwm (Channel 2		
E 8 0000 4	Enable			Enable			
	Freq	0		Freq	0	×	1000
	Duty			Duty			-
Override Control			Start/	Stop			
Stop Engine							
Connected with Fenix ID: 19191005-534e07ec-4b479b0	b-f5000005						1

The "Test" tab permits to test injectors an power pwm outputs. It is only operative while the engine state is "IDLE" meaning ready to start.





Config window

From this window you can configure all the engine structure and components, it is composed of several functional tabs:

- Main
- Custom
- Flywheel
- Distribution
- Structure
- Pump
- Injectors
- Sensors

in the following pages you will be introduced to the core of Fenix configuration.





FenixCreator.exe **®** Main Distribution Structure Injectors Custom Flywheel Pump Sensors Control Speed Limits Control Mode LOAD • Special Speed Mode Speed Min Rpm 750 🌲 1400 🌲 AdvanceTime uSec 2800 🌲 Speed Alert Rpm 500 🌲 Warming Press Bar 3100 🌲 Speed Danger Rpm 300 🌲 **Running Press** Bar Speed Min Regulation -0 164 0,2600 🌲 Engine (PID) P 1,0000 🌲 Engine (PID) I Injections 3,7500 🌲 Engine (PID) D BEFORE Load or Speed Reference V PRE Source Type PWM -V MAIN 400 🌲 Min Position Set Current POST 2100 🌲 Max Position Set Current AFTER Save As Open

<u>Main</u>

The "Main" configuration tab define:

- the control mode (load, speed by pid or speed by load)
- some basic parameters for the special speed by pid control mode
- speed limits
- load or speed reference type, source and positions (accelerator pedal or manual)
- injections to be enabled





<u>Custom</u>

- 🔪 Main	Custom	Flywheel	B Constribution	Structure	Pump	1147 Injectors	Sensor
	Power Limit	<u></u>					
			Auto Sca	ale RPM			
	600	957 📮 13:	14 💂 1671 💂	2028 💂 2385	2742	3100 💂	
			Clear I	Limits			
	0	1000 100	00 🗍 1000 🖨	1000 📮 1000	1000	1000	
	Set	Set S	Set Set	Set Set	Set	Set	
	Set	Set	Set Set	Set Set	Set	Set	
	Set	Set	Set Set	Set Set	Set	Set	
\	Varming State	Enable	Set Set	Set Set	set Set	Set	
	Set Varming State Parameter Water Temp	Enable	Set Set	Set Set	: Set	Set	
\	Set Varming State Parameter Water Temp Oil Temp	Enable C C	Set Set	Set Set Value 35 35	Je		
V	Set Varming State Parameter Water Temp Oil Temp Speed Min	Enable C C Rpm	Set	Set Set Valu 35 35 750	ue		
V	Set Varming State Parameter Water Temp Oil Temp Speed Min Speed Max	Set S Enable C C C C Rpm Rpm	Set	Set Set Valu 35 35 750 200	: Set	Set	

The "Custom" tab is devoted to:

- power limit
- warming state conditions and limits







<u>Flywheel</u>

	B		⊛'⊛		-	1 fage	
Main	Custom	Flywheel	Distribution	Structure	Pump	// Injectors	Sensors
s	tructure						
		Init Type		N-2	•		
		Init Mode	2	SING	GLE 💌		
		Count Te	oric	Į	60 💂		
		Count pe	r <mark>cili</mark> nder		20 💂		
	Sensor						
		Starting L	evel	J	1		
		Running	Level	J	5 💂		
		Operative	Edge	RISI	NG 💌		
		ſ			٦ C		

Into the "Flywheel" tab you define the structure of the flywheel and how Fenix as to operate with this informations.





Distribution

~	B		⊛'⊛	00 11 11 11 11	-	1 fag	
Main	Custom	Flywheel	Distribution	Structure	Pump	Injectors	Sensors
	tructure						
		Init Type		N+1	•		
		Count Te	oric	l	6 💂		
		Flag Start	:		1		
		Flag End		l	2 🔹		
		Flag Inve	rsion	FALS	E 💌		
	Sensor						
		Starting L	evel	l	1		
		Running	Level	l	6		
		Operative	Edge	RISI	NG 💌		
		Exclude a	fter start				
			Open	Save As			

Into the "Distribution" tab you define the structure of the distribution wheel and how Fenix as to operate with this informations.





<u>Structure</u>

1	چ 🖉) 🐠'🥘		AND .		-	Î	14y 👹	1
Main Cu	istom Flywhee	d Distributio	on	Structure		Pump	Inje	ctors Sen	ISO
Base									
Cilind	er Number			6					
Get Sp	oeed Size			1				4 💂	
SAO S	ize	Auto						10 💂	
Advanc	ed								
				Auto					
Sequence	Cilinder	PMS		SAO		GSS		GSE	
1	5 🔹	6	•	116	•	3	-	7	4
2	3 🔹	26		16	•	23	-	27	4
3	6 🔹	46		36	•	43		47	4
4	2 💌	66		56		63		67	
5	4 👻	86	Ð	76		83		87	
6	1 💌	106		96		103		107	
7	-	0		0		0		0	
8		0		0		0		0	4

The "Structure" tab is one of the more important, here you define the engine structure:

- number of cilinders
- injection order
- TDC points
- max advance points
- speed mesurement points







enixCreator.e	exe						
- Nain	Custom	(interview) Flywheel	B Constribution	Structure	- 🍜 Pump	144 Injectors	Sensors
Regulato Type PID (PID (PID (Pressure	or CP3 P) D) Sensor Type 1500	0,000081 1,000000 0,000230		Starting M Pi	lode WM ressure Bar	PID Image: Constraint of the second	
			Den Open	Save <u>A</u> s			

<u>Pump</u>

The "Pump" tab enable configuration of high pressure pump for common rail engines, simply select the pump and sensor type.

Read the "Inside PID Calculation Tutorial" to understand the meaning of these parameters.





1	5		€%	HAD	-	THOF	
Main Cust	om	Flywheel	Distribution	Structure	Pump	Injectors	Sensor
Injectors			Configu	iration			
10.000000			1210.0423		Base		
1 HOK			Max Pulse	lime	uSec		5000 🌲
			Min Pulse 1	ime	uSec	ļ	10 🌲
			High Voltag	je Time	uSec	l	100
9				nt Time	uSec	[300
				nt Value	Ampère	l	25
			Low Curren	t Value	Ampère	l	14
					Advanced		
High Voltage Ge	nerator		TurnOff HC	-> LC	uSec	l	25
Target Voltage V	olts	50 📮	TurnOff En	d Injection	uSec	l	200
Pulse Current A	mpère	7 📮	High Voltag	je Delay	uSec	Ī	10
Hvp Clk period u	Sec	300 🌲	High Curre	nt Delay	uSec	l	10
Hvp Clk pulse u	Hvp Clk pulse uSec			t Delay	uSec		35

<u>Injectors</u>

The "Injectors" tab enable configuring every parameters of injector's current profile. Read the "Injector Current Profile Tutorial" to understand what every parameters mean and how to create a current profile step by step.







~	B		⊛'⊛	Mar I	-	1 page	4
Main	Custom	Flywheel	Distribution	Structure	Pump	Injectors	Sensor
-Water T	emperature –			Oil Temp	erature		
Enable				Enable		[
High T	emp Alert	°C	0	High Ter	np Alert	°C)
High T	emp Danger	°C	0	High Ter	np Danger	°C 2	20
Stop er	ngine if over da	nger temp		Stop eng	ine if over dan	ger temp	
Low Press A Low Press E Stop engine	Nert m	nBar 0 nBar 0 danger					

<u>Sensors</u>

Into the "Sensor" tab you can enable/disable temperature and pressure sensors, set limiting and security values, and as well enable/disable the stopping of the engine if someting is going wrong.







Map Editor Window

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IULL								Auto Scale																				
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			3D Vi	ew															data x									
			 						int	int		int	int	int		int	int	int	ir	nt	int	int		int	int	int	int	int
Offset Apply						max	max		max	max	max		max	max	ma	x m	ах	max	ma		max	max	max	max	max			
Auto Inj					half	half		half	half	half		half	half	hal	f hi	alf	half	hal	F	half	half	half	half	half				
					min	min		min	min	min		min	min	mii	n m	in	min	mir		min	min	min	min	min				
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	0			int	max	half	min		0	0	÷.	0	0	0		D	0	0	0	v	0	0	÷ ()	0	0	0	0
_0	0			int	max	half	min		0	0	÷.	0	0	0		D	0	0	0	v	0	0	÷ ()	0	0	0	0
o Sca	0		l∎ ≥	int	max	half	min		0	0	-	0	0	0		D	0	0	0	v	0	0	÷ ()	0	0	0	0
Auto	0		Ê Ö	int	max	half	min		0	0		0	0	0		0	0	0	0	v	0	0	÷ ()	0	0	0	0
	0			int	max	half	min		0	0		0	0	0		0	0	0	0	v	0	0	÷ ()	0	0	0	0
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	0		-	int	max	half	min		0	÷ 0		0	0	0		0	0	0	÷ 0	×	0	0	÷ ()	0 🔹	0 ×	0	0
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Map Editor Window (map selection)

Map Editor	- Beau											-		E			
Select Map									ent	ry x							
NULL									Auto	Scale							
NULL		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WATER_TEMP									dat	ta x							
OIL_TEMP		int	int	int	int	int	int	int	int	int	int	int	int	int	int	int	int
OIL_PRESS		max	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max
INJ_LIMIT		half	half	half	half	half	half	half	half	half	half	half	half	half	half	half	half
INJ_BEFORE		min	min	min	min	min	min	min	min	min	min	min	min	min	min	min	min
INJ_PRE																	
INJ_MAIN	min 🗆	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INJ_POST	min 🗆	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INJ_AFTER		• •	• •	0	• • ▲	0		• • ∩ ≜	• •	• •	0 Å	0 ¹	0			• •	0
ADV_BEFORE			 ✓ ✓ ✓ 	• •	v v ∧	0		• •	• •	• •	• •	0 Å	0			• •	• <u></u> •
ADV_PRE	· · ·	V v	 ✓ ✓ 	•	v v	•		v _ ∧	v	•	•	•				V v	V 🗸
ADV_MAIN		U v	U 🗸	U -	U ▼	U .	U V	U -	U v	U -	U -	0	0	0	U V	U v	U 🗸
ADV_POST	min 🗆	0	0	0	0 🗸	0 ,	0	0 🗸	0	0 🗸	0 🗸	0	0	0	0	•	0
ADV_AFTER	nin 🗌	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAIL_PRESS n	nin 🗌	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INJ_NOLOAD	min 🗌	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADV_BY_TEMP	nin 🗌	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 int max half r	min 🗌	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 🛉 int max half r	min 🗆	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 🗍 int max half r	min 🗌	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 🕴 int max half r	min 🗆	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 *	0
0 (int max half r	nin 🗆	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 int max half r	min 🗆	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Y	¥	v.	Y		· · · ·	V	v	V	¥	V			¥	Y	· · · · · · · · · · · · · · · · · · ·

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3D Map Viewer



The 3D Map viewer with two slidebar enable a quick and intuitive analisys of data distribution and regularity.