

Manual Software Installation and Operating Instructions



Diagnostic Tool Stiga E-POWER Series

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2. Introduction

This manual has been draw up in order that you may feel much confident to the DIAGNOSTIC TOOL and give all the necessary instructions for using.

Diagnostic Tool supports connection with E-POWER Series, with the main purpose of supporting you with the troubleshooting, in case of malfunction of the machine.

2.1 Supported products

The Diagnostic Tool can handle connection to:
e- Ride series

PRODUCT		
	S300 – S500	C300 – C500
MODEL NAME		

2.2 Functionality

The STIGA E-POWER Diagnostic Tool allows the following operations:

- Tractor diagnostics
- Battery status
- Blade and traction status
- Usage log and statistics
- Error log
- Real time diagnostics
- Report generation
- Firmware upgrade
- Multilingual support

2.3 Kit components

The E-power Diagnostic Tool system is composed by the following parts:

1. Hardware Diagnostic Tool: the hardware consists of a STIGA CAN OBDII adapter



2. Software: to be installed on MS® Windows OS and allows the analysis and the status reports creation for machines.

2.4 Minimum System Requirements

The following prerequisites are requested in order to properly operate the system:

- PC with USB 1.1/2.0/3.0/3.1 Host Controller (USB Port) and Microsoft © Windows OS rev. 7/8/8.1/10: both 64 and 32 bit (x86) versions are supported;
- [*]Microsoft Update for Windows 7 KB3004394;
- [**]Microsoft .NET Framework rev.4.x (x64/x86);
- [**]Kvaser CAN Driver WHCP;

Note:

[*] – Already installed through MS Windows Update for up-to-date systems. It must be manually installed only in case of Diagnostic Tool installation failure;

[**] – If needed, the setup for these components is executed automatically by the Diagnostic Tool installer

3. Software Download

The software can be downloaded through our portal STIGA Connect:

<https://stiga.ev-portal.com/LogIn/Stiga>

3.1 Connection to STIGA Connect

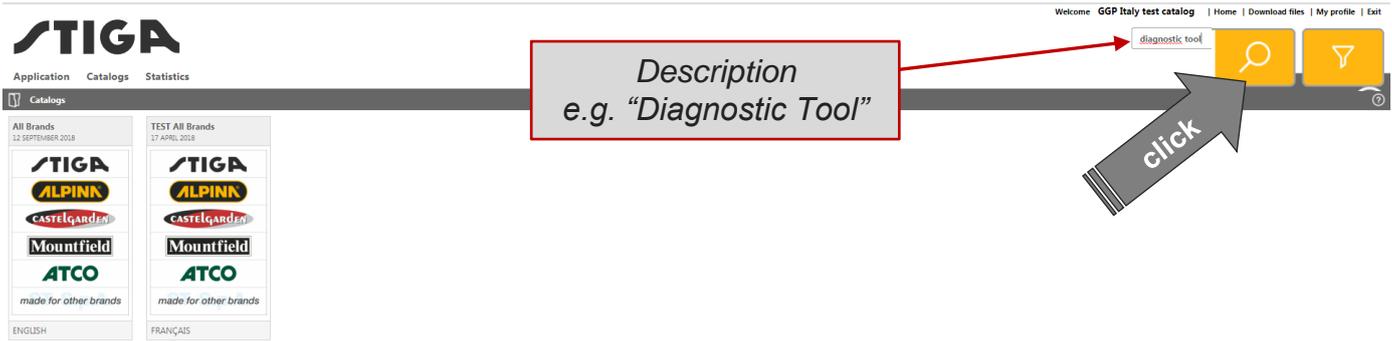
Connect to STIGA Connect web site <https://stiga.ev-portal.com/LogIn/Stiga>

Log in with your user name and password:

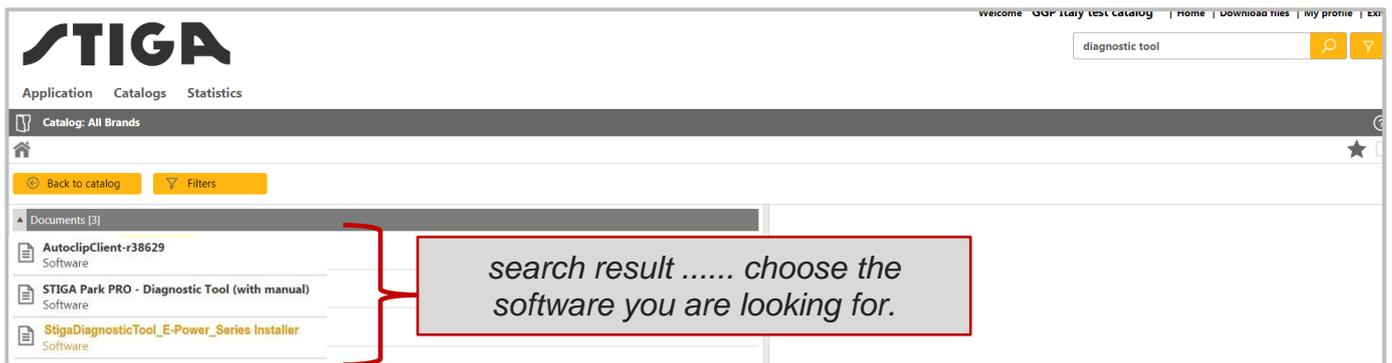
Once Catalog (All Brands) and language has been selected, the release package can be retrieved by [3.2 Download by the description](#) and [3.3 Download with a search by type of document](#) instructions.

3.2 Dowload by the description

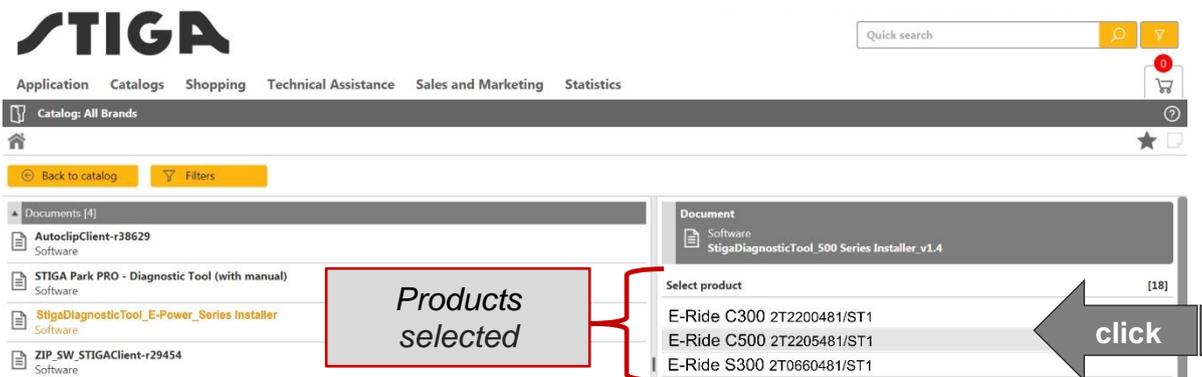
- click on the “lens” button;



- click on the software you are looking for;



- click one of the products selected;



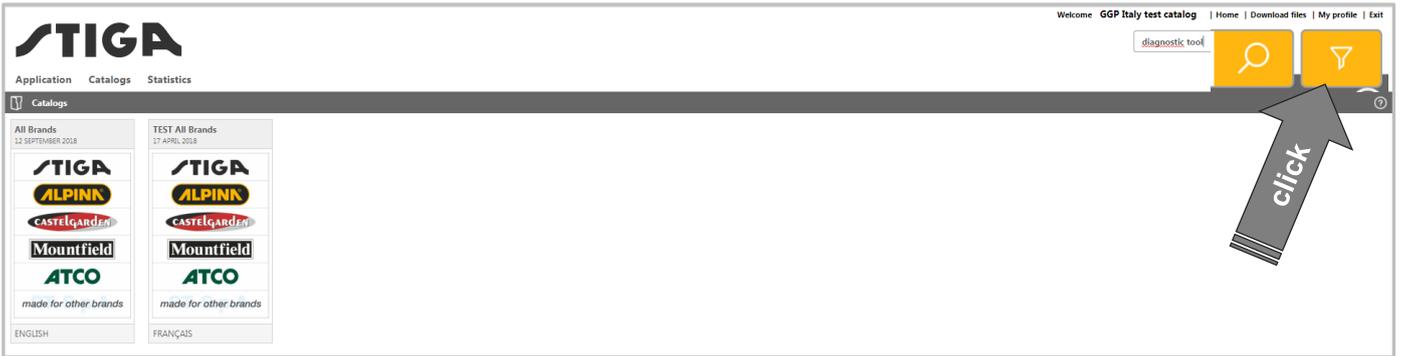
- click on “[click here](#)”;



Now you get in the DOWNLOAD folder a .zip file with software and this manual.

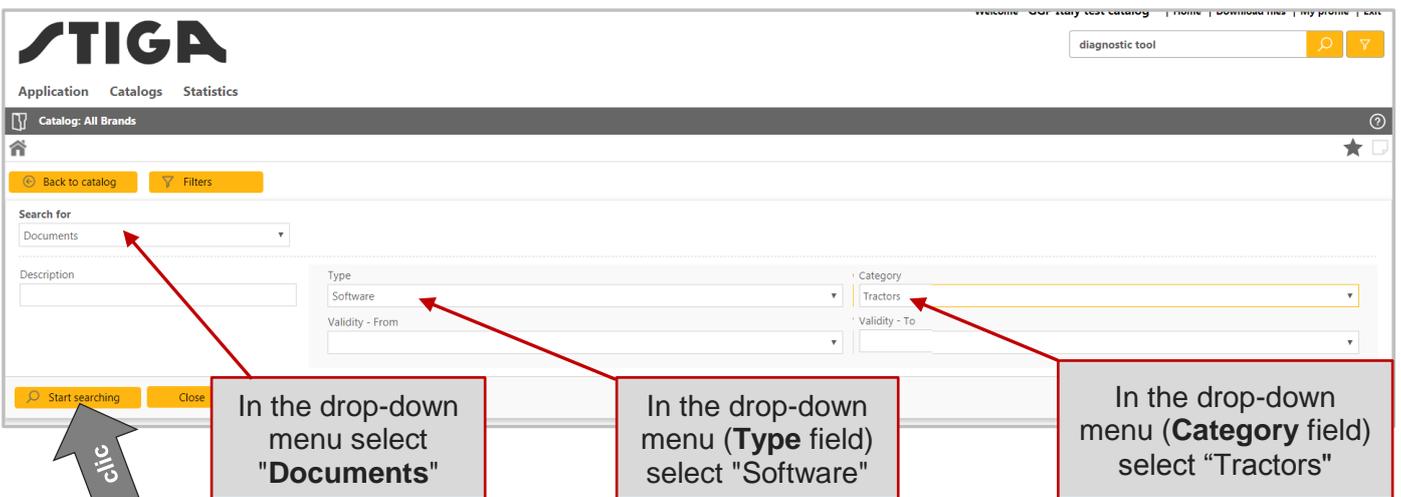
3.3 Download with a search by type of document.

- click on the “Filter”;

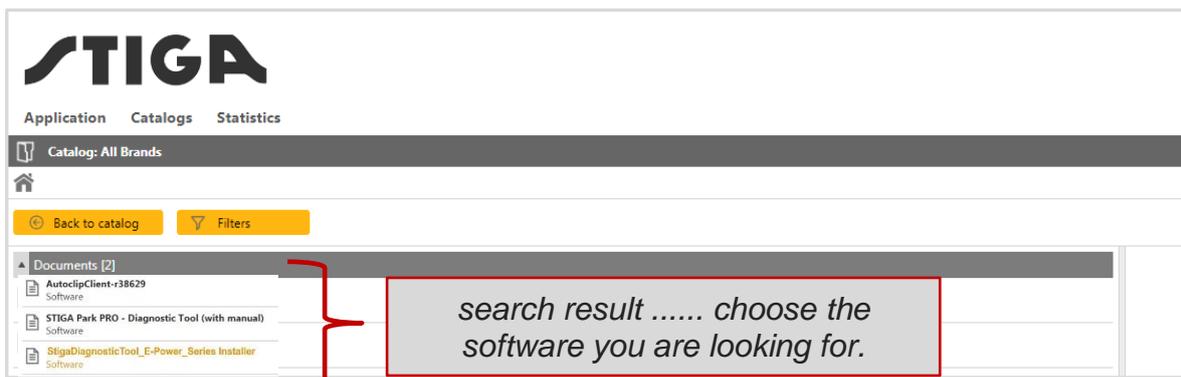


A dialog appears to ask you which kind of document you are looking for:

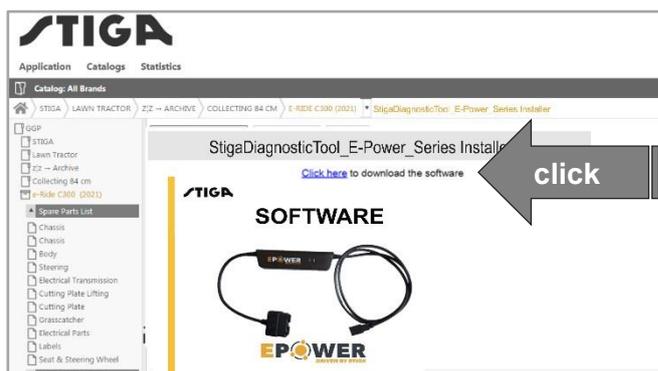
- select the “Documents, Type field and “Tractors”;
- click on the “Start searching”



- click on the software you are looking for;



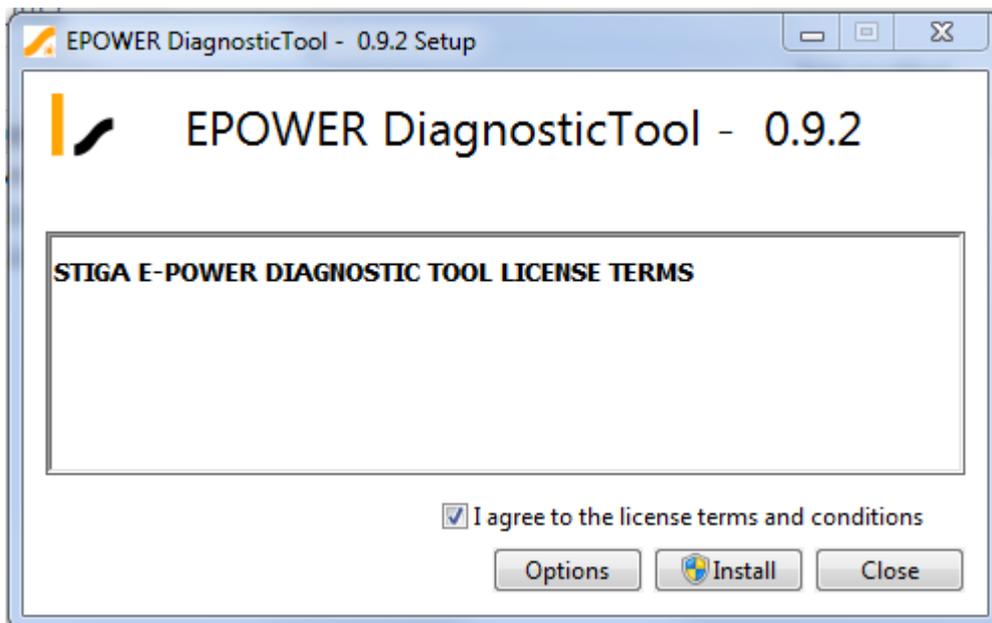
- click on “click here”;



Now you get in the DOWNLOAD folder a .zip file with application installer and this manual: please extract the content to a suitable temporary folder.

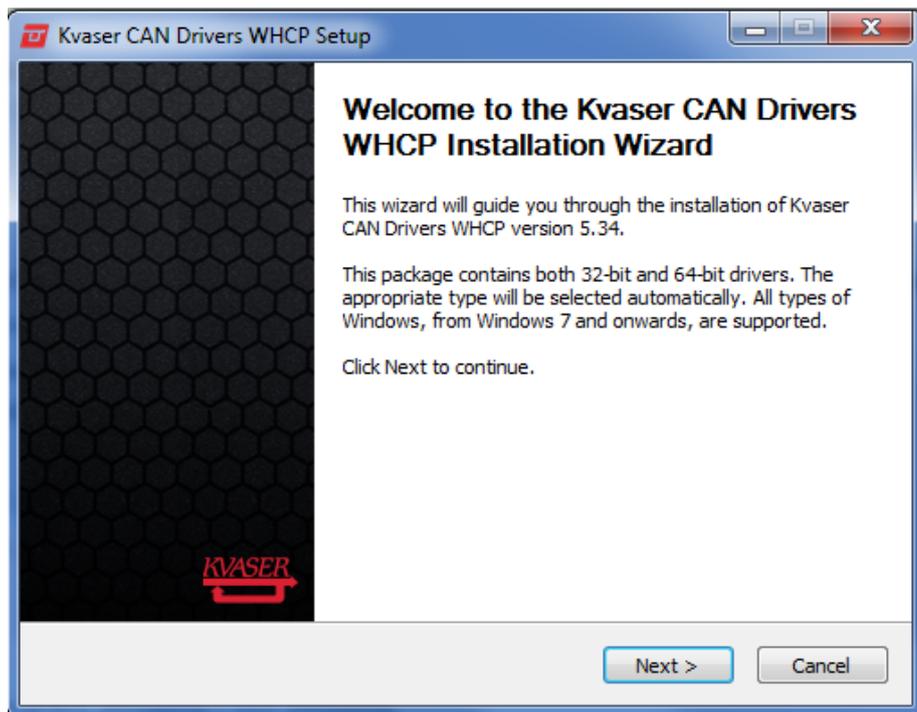
4. Software installation

1. Launch installer executable (*64bit/x86* systems supported):
 - a. EpowerDiagnosticTool-x_y_z.exe
2. Installer's user interface will pop-up: confirm the license terms checkbox to enable the installation.



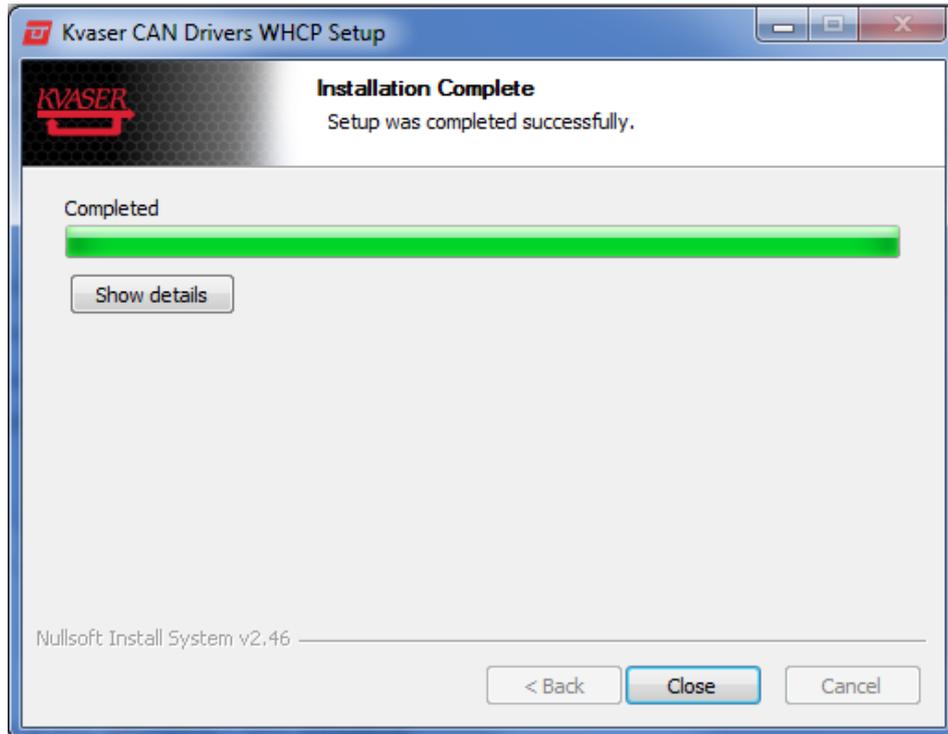
Picture 1

3. If the CAN interface drivers are not installed in the system, the related setup will pop up:



Picture 2

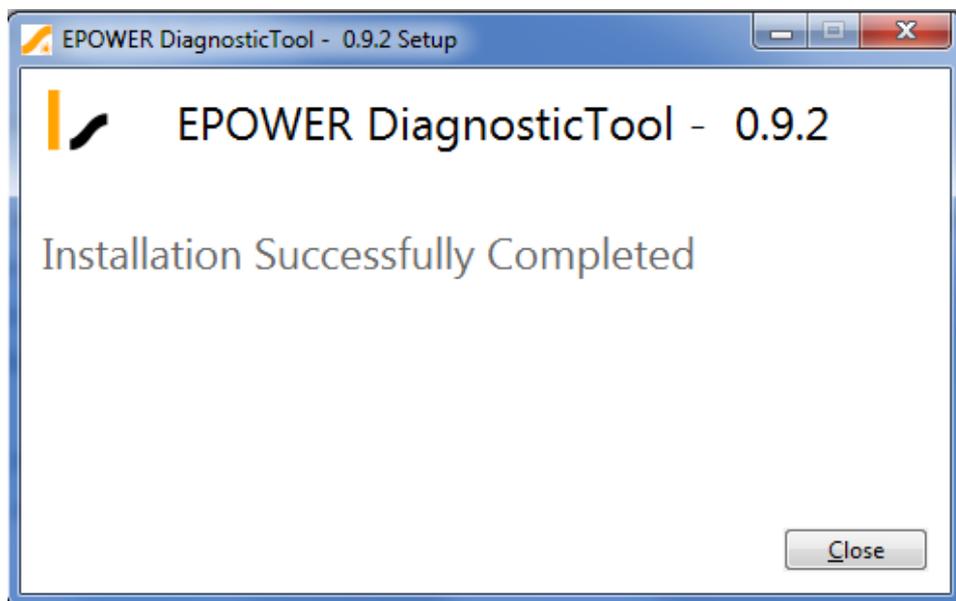
- Follow the on screen procedure and confirm the default options through *Next* and *Install* buttons when requested.



Picture 3

- Closing the completion dialog will give the focus back to the Stiga Diagnostic Tool installer.

After application files setup, the following completion dialog will pop up:



Picture 4

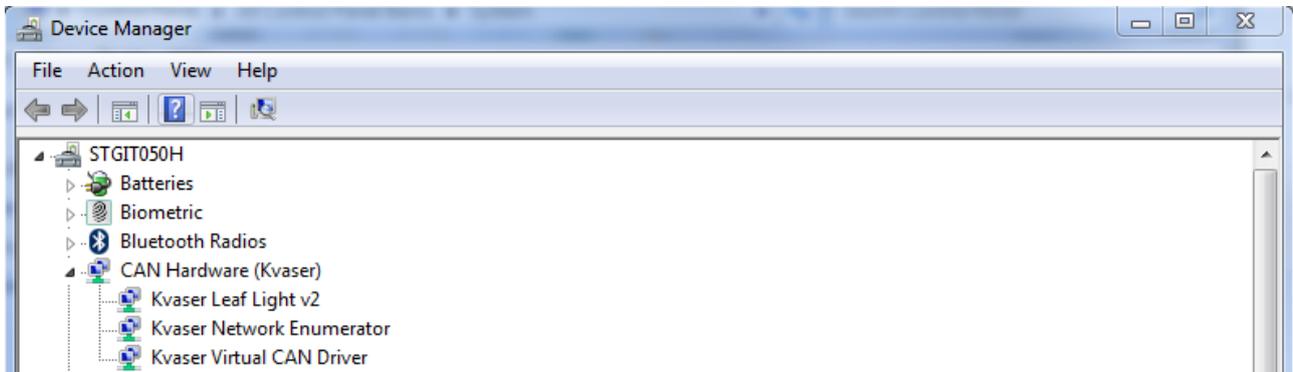
User's desktop will be populated with a shortcut in order to ease launching the application:



Picture 5

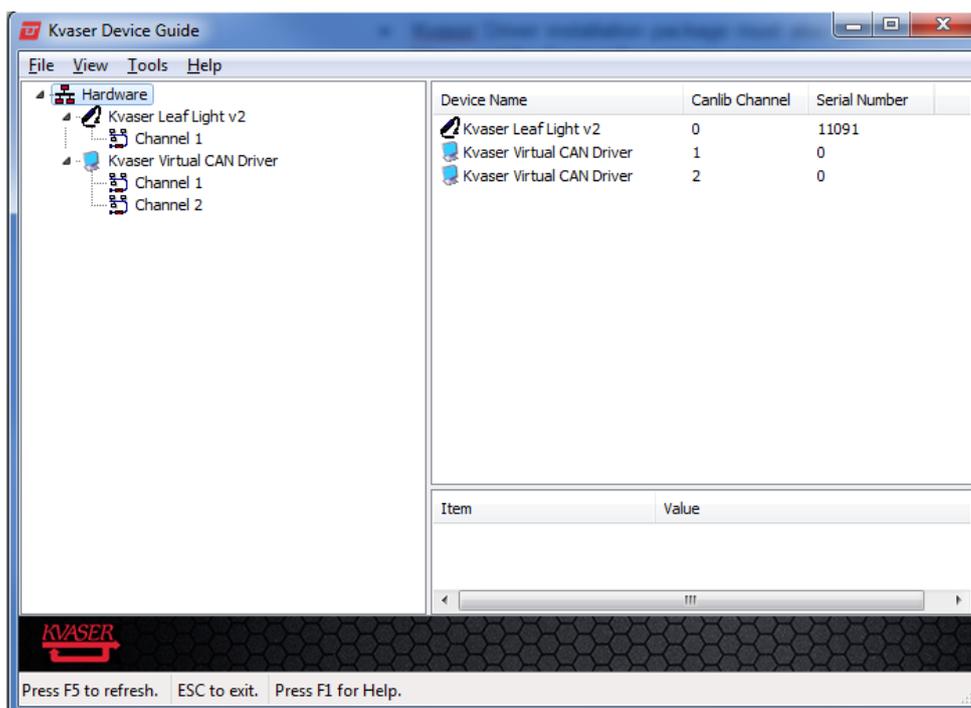
6. Check if device driver are properly installed executing the following procedure:

- a. Connect the diagnostic tool interface to an available USB port
- b. Open the *Device Manager* and check if the **PKvaser Leaf Light v2** device is detected and assigned to the system:



Picture 6

- c. Kvaser Driver installation package must also add the following Device Guide to the *Start Menu* and the *Control Panel* Home screen:



Picture 7

4.1 Installation notes

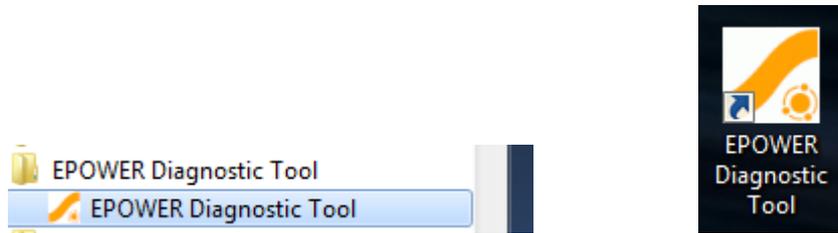
Stiga Diagnostic Tool desktop application relies on **Microsoft .NET Framework**. If this is not installed on the host system, the installer will launch the related installation: please follow the procedure and confirm the default options.

Moreover, for legacy *MS Windows 7* systems not regularly updated by *Microsoft Windows Update Service*, the installation procedure could fail due to some missing security-related items: if this is the case, the provided **Windows6.1-KB3004394-v2** shall be installed.

Manufacturer details for this patch (*Windows Root Certificate*) are published at <https://www.microsoft.com/en-us/download/details.aspx?id=45588>

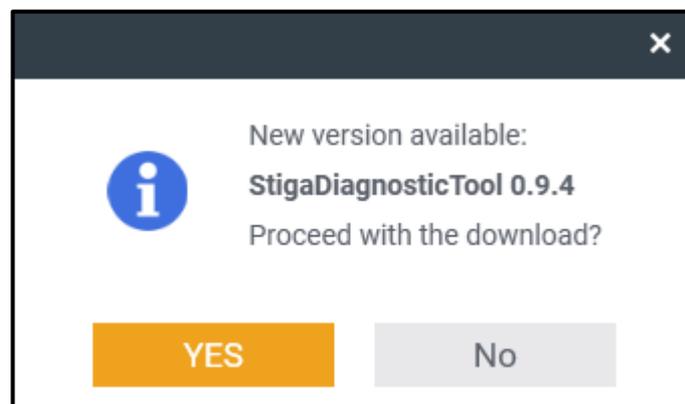
4.2 Application launch and Update check

When the installation is complete, shortcuts to installed program are created in the start menu and on the desktop.



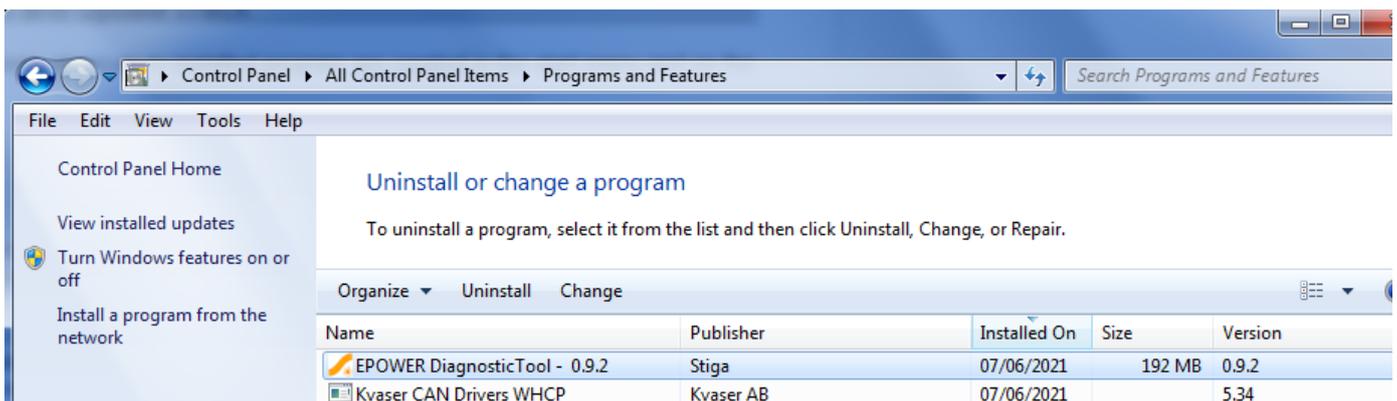
Whenever the host PC can access the web, a software update check is performed at application launch: in case a newer version is available, a message-box will pop-up.

Clicking **OK** button leads the user to STIGA Connect login page as per par.3.1.



If this is the case, proceed with application update:

- Uninstall current application version through OS control panel



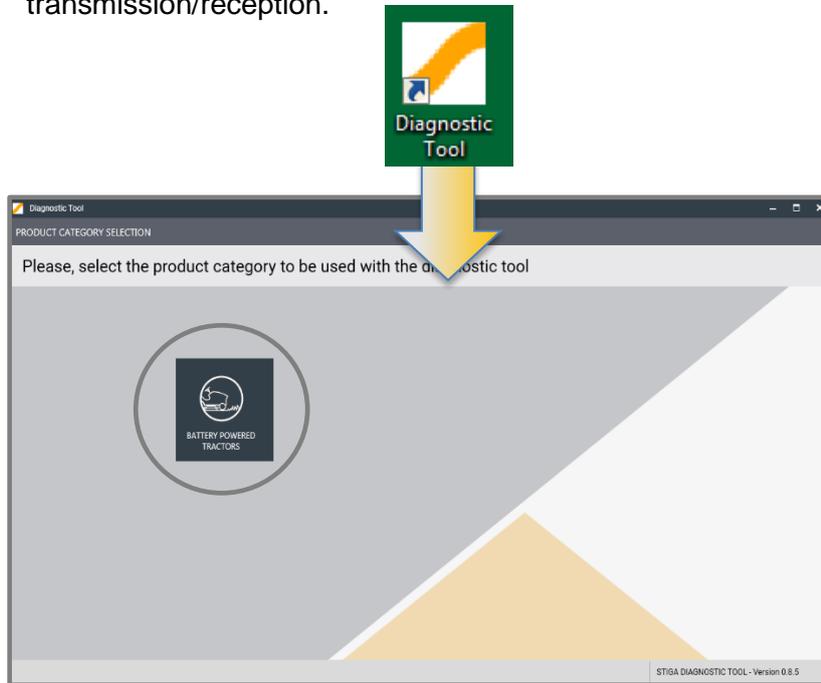
Picture 8

- Download and install new version following [3 Software Download](#) instructions. Refer to [4 Software installation](#) for OS version checking guidelines

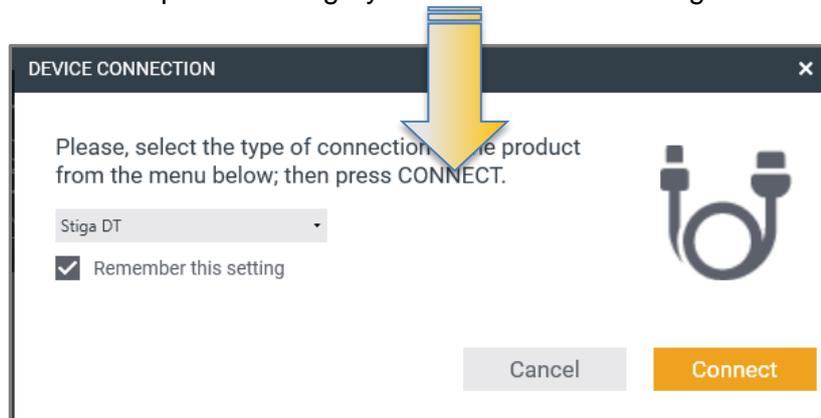
5. Diagnostic Tool connections

The diagnostics tool can communicate with control unit of the machine.

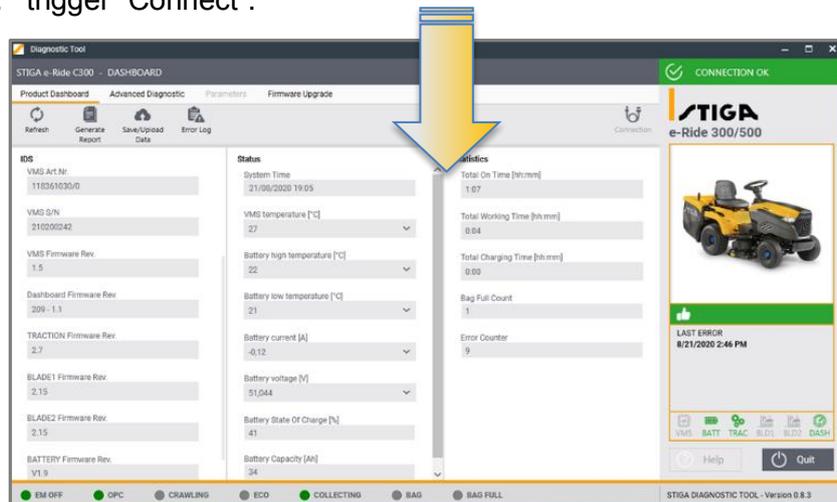
1. Start the machine (see Start up procedure in the Owner Manual);
2. connect the Diagnostic Tool to the machine (**see picture 1**);
3. connect the usb cable to the host computer;
4. launch Diagnostic Tool Application and start data transmission/reception.



5. select the product category to be used with the Diagnostic Tool



6. trigger "Connect".



6. Software dialogs user's guide

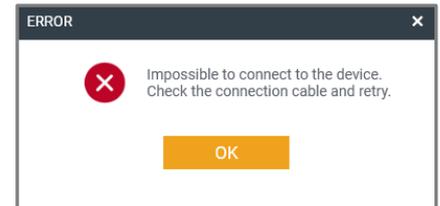
The main application dialog shows the vehicle identification data, main statistics and status details. It also implements controls (buttons / menus) for the following features:

- Vehicle black box download
- Vehicle data refresh
- Firmware upgrade
- Report generation
- Row data download

6.1 Communication error

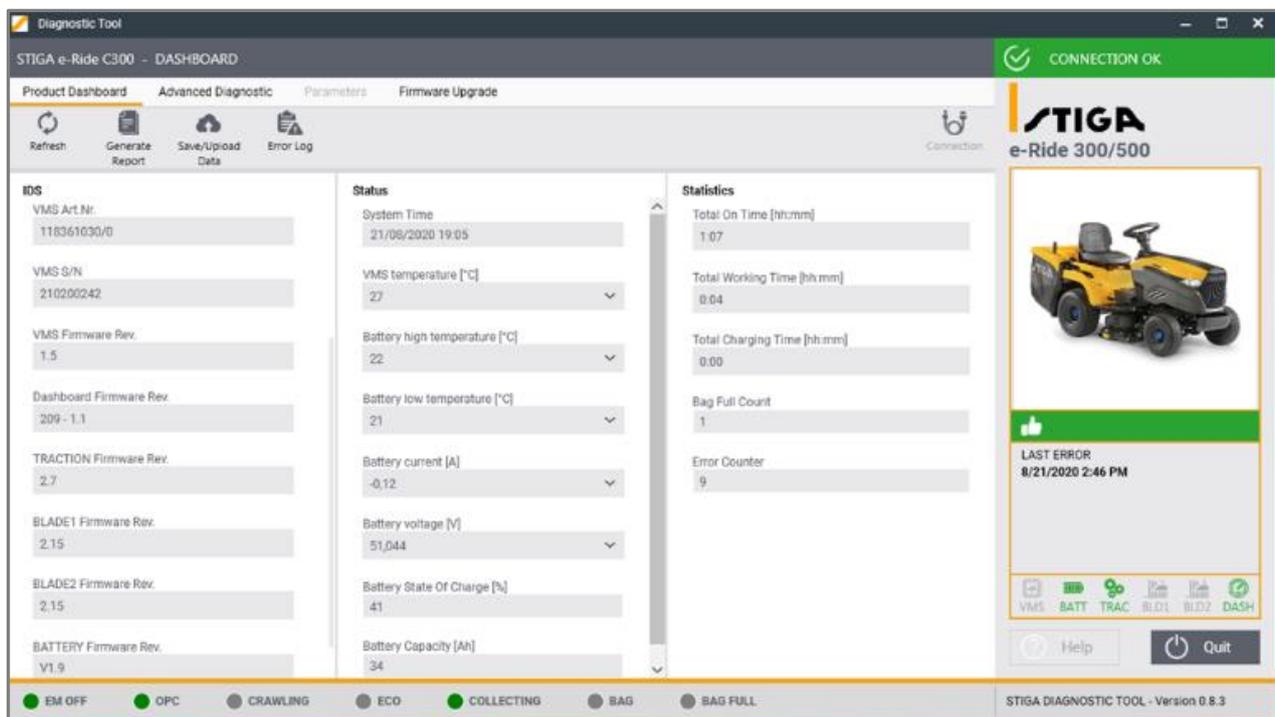
The application will show an error message box whenever the initial machine detection fails:

- communication to the machine failure: check that the machine is on and the connection cable is properly connected;
- check **Kvaser** device availability through system control panel (see [Check if device driver are properly installed executing the following procedure:](#))



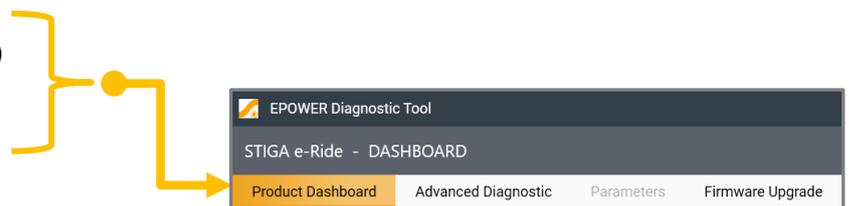
6.2 Main dialog (Dashboard)

This is the dialog window that the program shows when starting



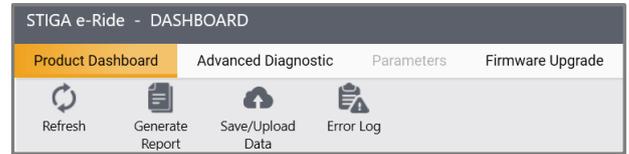
From this window you get access to the following main menus:

- Product Dashboard (current menu)
- Advanced Diagnostic
- Firmware Upgrade



From Product Dashboard menu you get the following options:

- Refresh
- Generate Report
- Save/Upload Data
- Error Log



The window offers the following informations:

Product's IDs

Battery and VMS Status

Main Counters

Microswitch Status

Heartbeats communication status

Error notification area

STIGA e-Ride - DASHBOARD

Product Dashboard | Advanced Diagnostic | Parameters | Firmware Upgrade

Refresh | Generate Report | Save/Upload Data | Error Log

CONNECTION OK

STIGA e-Ride C300/C500

IDS

- VMS Art.Nr. 118361030/0
- VMS S/N 210300534
- VMS Firmware Rev. 1.6
- Dashboard Firmware Rev. 209-1.2
- TRACTION Firmware Rev. 2.7
- BLADE1 Firmware Rev. 2.16
- BLADE2 Firmware Rev. 2.16

Status

- System Time 14/08/2020 23:55
- VMS temperature [°C] 33
- Battery high temperature [°C] 25
- Battery low temperature [°C] 25
- Battery current [A] -0.05
- Battery voltage [V] 51.535
- Battery State Of Charge [%] 20

Statistics

- Total On Time [h:mm] 0:31:39
- Total Working Time [h:mm] 0:11:34
- Total Charging Time [h:mm] 0:00:04
- Bag Full Count 3
- Error Counter 9

Microswitch Status

- EM OFF
- OPC
- CRAWLING
- ECO
- COLLECTING
- BAG
- BAG FULL

Heartbeats communication status

VMS BATT TRAC BLD1 BLD2 DASH

Error notification area

LAST ERROR 01/01/2020 20:36:56

STIGA DIAGNOSTIC TOOL - Version 0.9.1

6.2.1 Battery and VMS Status

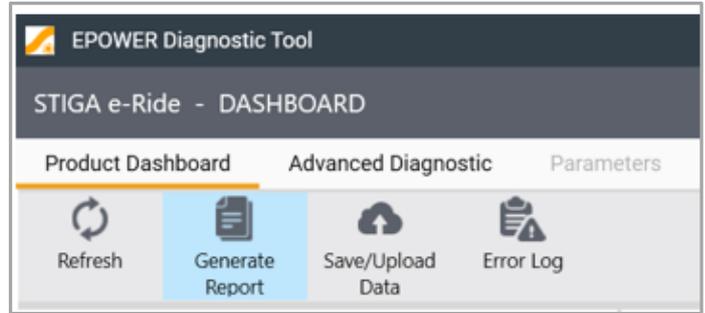
By clicking the drop down menu of the various selections, you will see the conditions (temperature, current, voltage..etc) of the battery and VMS.



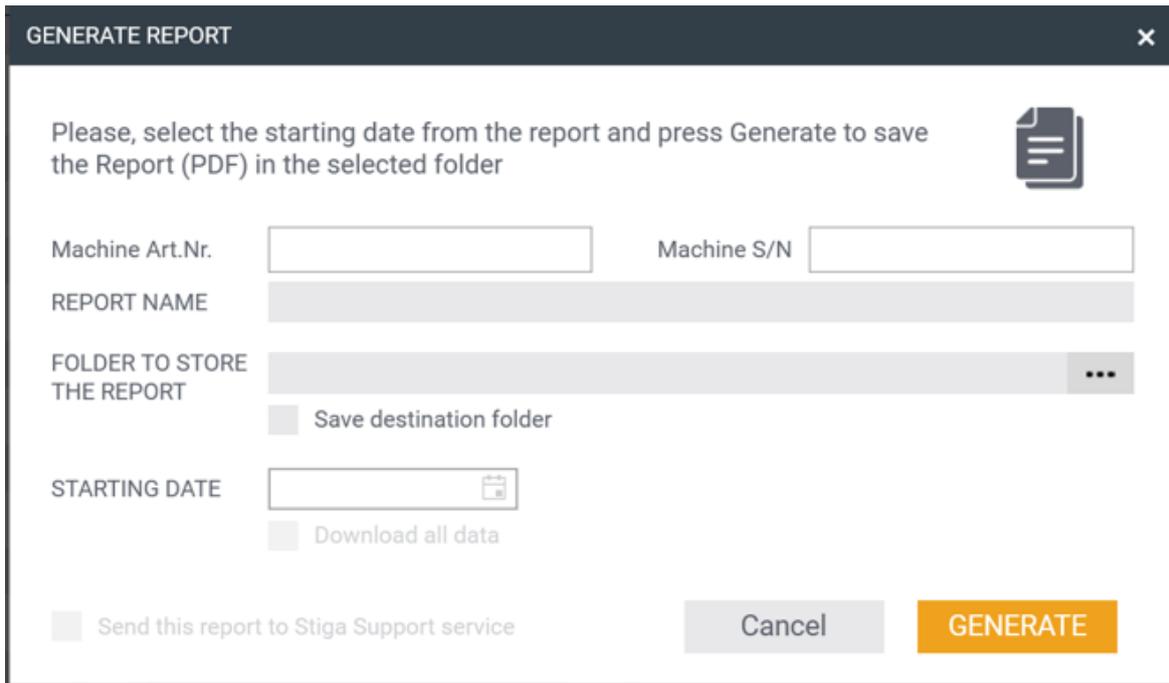
6.2.2 Generate Report

Through this control a PDF file is generated including:

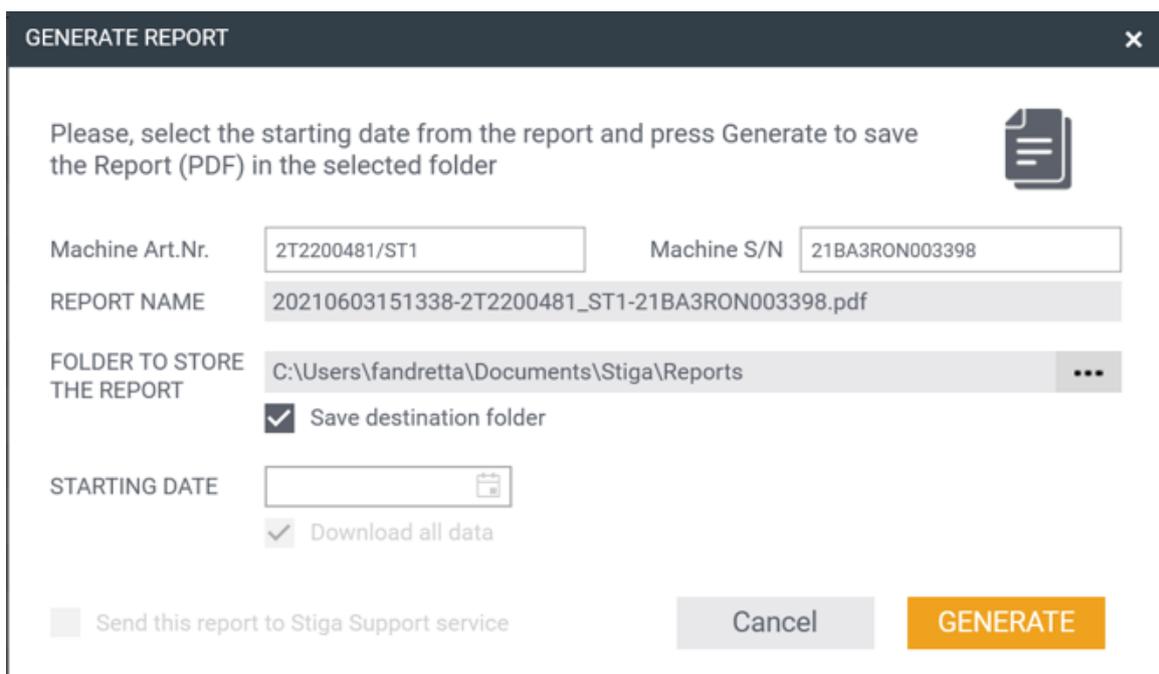
- details of Product’s IDs;
- the total working time;
- the Error Log (detailed list of all errors occurred);
- the work Log (working sessions of machine);



Trigger the control and a dialog window will appear; fill in the fields “Machine Art. Nr.” and “Machine S/N” when required and chose the folder where to save the report.



Press “GENERATE” to save the report



Here below an example of report generation:

STIGA

Diagnostics report - eRide C300/C500

Brand	Machine Art.Nr.	Machine S/N
	2T2200481/ST1	21BA3RON003398
Manufacturing Date	VMS Art.Nr.	VMS S/N
	118361030/0	210300534

Versions			Status	
	Hardware	Firmware		
VMS	2.0	1.6	VMS temperature	34
DASHBOARD	1.0	209 - 1.2	Traction temperature	28
TRACTION	1.4	2.7	Motor temperature	27
BLADE-1	1.0	2.16	Blade temperature	25
BLADE-2	1.0	2.16	Battery max temperature	26
BATTERY	-	V2.6	Battery min temperature	25
			Battery current	-0.05
			Battery voltage	51.533
			Battery CAP (design)	34
			Battery CAP (current)	6.5
			Battery SOC	20
			Battery last charge	01/01/2020 06:43:25 - 59%

Statistics				
Total On Time [hh:min]	0:32:05			
Total Working Time [hh:min]	0:11:34			
Total Charging Time [hh:min]	0:00:04			
Bag Full Count	3			
Error Counter	9			

Error log					
Index	Date	Code	Description	Subsystem	Level
1	01/01/2020 20:36:56	6	DSG_UNDERTEMP	BATTERY	ALARM
2	01/01/2020 20:41:23	29	TRACTION_BRAKE_CONN	TRACTION	CRITICAL
3	01/01/2020 20:41:00	29	TRACTION_BRAKE_CONN	TRACTION	CRITICAL
4	01/01/2020 10:09:30	16	BLADE_VOLTAGE	BLADE2	ALARM
5	01/01/2020 10:09:30	16	BLADE_VOLTAGE	BLADE1	ALARM
6	01/01/2020 09:56:57	24	TRACTION_UNDERVOLTAGE	TRACTION	ALARM
7	01/01/2020 09:50:07	16	BLADE_VOLTAGE	BLADE2	ALARM
8	01/01/2020 09:50:07	16	BLADE_VOLTAGE	BLADE1	ALARM
9	01/01/2020 00:00:24	10	BATTERY_DETECTION	BATTERY	CRITICAL

ALPINK Mountfield ATCO CASTELGARDEN Page

STIGA

Work Log						
Index	Date	Time Total / PTO	Battery	Traction avg/peak	Blade avg/peak	Pitch peak
5	01/01/2020 16:49:59	0:00:39 / 0:00:17	6.0 A	0 W / 0 W	560 W / 1100 W	+1°
7	01/01/2020 20:35:08	0:04:55 / 0:04:25	0.0 A	0 W / 0 W	2 W / 242 W	+1°
10	01/01/2020 23:22:31	0:00:07 / 0:00:04	0.0 A	0 W / 0 W	3 W / 9 W	+1°
11	01/01/2020 23:01:03	0:03:03 / 0:02:24	0.0 A	0 W / 0 W	3 W / 200 W	0°
13	01/01/2020 20:40:51	0:03:55 / 0:02:53	13.0 A	0 W / 0 W	767 W / 1149 W	+1°
16	01/01/2020 09:49:26	0:03:46 / 0:00:11	0.0 A	0 W / 0 W	0 W / 0 W	+1°
22	01/01/2020 06:40:24	0:01:20 / 0:00:42	4.0 A	22 W / 423 W	321 W / 1120 W	+4°
24	01/01/2020 00:00:05	0:00:42 / 0:00:14	1.0 A	0 W / 0 W	0 W / 0 W	+69°

Charge Log				
Index	Date	Time	SOC Start	SOC Stop
1	01/01/2020 06:43:25	0:00:03	59.00%	59.00%

ALPINK Mountfield ATCO CASTELGARDEN Page

6.2.3 Save/Upload Data

Through this control the machine raw data will be downloaded an encrypted file.

Trigger the control and a dialog window will appear; fill in the fields “Machine Art. Nr.” and “Machine S/N” when required and chose the folder where to save the file.

EPOWER Diagnostic Tool

STIGA e-Ride - DASHBOARD

Product Dashboard Advanced Diagnostic Parameters

Refresh Generate Report **Save/Upload Data** Error Log

SAVE UPLOAD DATA

Please, select the location to save data.

Machine Art.Nr. 2T2200481/ST1 Machine S/N 21BA3RON003398

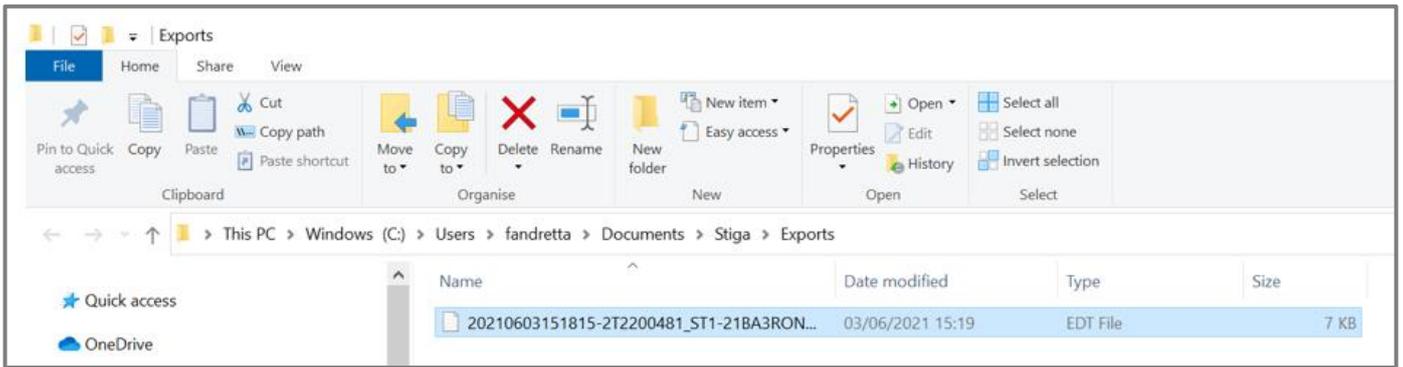
EXPORT FILENAME 20210603151815-2T2200481_ST1-21BA3RON003398.edt

SELECT FOLDER TO STORE THE DATA C:\Users\fandretta\Documents\Stiga\Exports

Save destination folder

Cancel SAVE

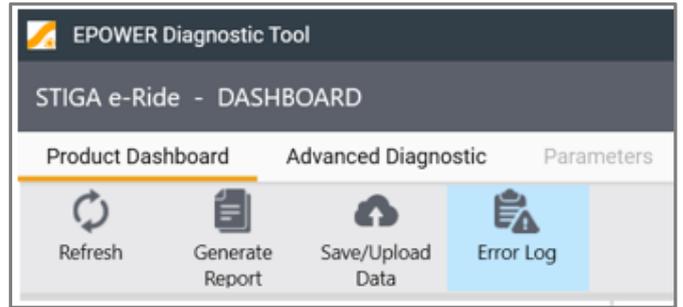
Press “SAVE” to save the EDT file.



6.2.4 Error Log

Through this control the complete machine error log is shown.

Trigger the control (or the notification area and the dialog window with the log appear)

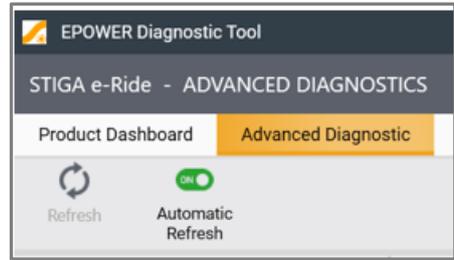


ERROR LOG			
Type	Code	Message	Date
ALARM	6	DSG_UNDERTEMP	1/1/2020 8:36:56 PM
CRITICAL	29	TRACTION_BRAKE_CONN	1/1/2020 8:41:23 PM
CRITICAL	29	TRACTION_BRAKE_CONN	1/1/2020 8:41:00 PM
ALARM	16	BLADE_VOLTAGE	1/1/2020 10:09:30 AM
ALARM	16	BLADE_VOLTAGE	1/1/2020 10:09:30 AM
ALARM	24	TRACTION_UNDERVOLTAGE	1/1/2020 9:56:57 AM
ALARM	16	BLADE_VOLTAGE	1/1/2020 9:50:07 AM
ALARM	16	BLADE_VOLTAGE	1/1/2020 9:50:07 AM
CRITICAL	10	BATTERY_DETECTION	1/1/2000 12:00:24 AM

Cancel ADVANCED DI...

6.2.5 Advanced Diagnostic

This Menu provides the status of different key components (VMS, BATTERY, TRACTION, BLADE1 and 2). Drop down menu will give reference values for the analysed data.



VMS STATUS	BATTERY STATUS	TRACTION STATUS	BLADE1 STATUS	BLADE2 STATUS
System Time 15/08/2020 00:10	Voltage [V] 51.532	Error Code 2	Error Code 0	Error Code 0
Pitch Angle -1	Current [A] -0.05	Motor Status 0	Motor State 0	Motor State 0
Roll Angle 0	Max Cell Voltage [V] 3.685	Direction 0	Motor Command 255	Motor Command 255
Temp. VMS [°C] 35	Min Cell Voltage [V] 3.676	Brake State 0	Direction	Direction
Temp. Blade ECUs [°C] 25	Capacity [Ah] 34.0	Brake Wire State 0	BLADE2 STATUS	BLADE2 STATUS
Temp. Traction ECU [°C] 28	Actual Capacity [Ah] 6.5	Driver Voltage [V] 0.0	Error Code 0	Error Code 0
Temp. Traction Motor [°C] 27	State Of Charge [%] 20	Pedal Voltage [mV] 1,456.796	Motor State 0	Motor State 0
Temp. Battery Max [°C]	Temperature 1 [°C]	Temp. Motor [°C]	Motor Command 255	Motor Command 255
			Direction	Direction

LAST ERROR
01/01/2020 20:36:56

EM OFF OPC CRAWLING ECO COLLECTING BAG BAG FULL

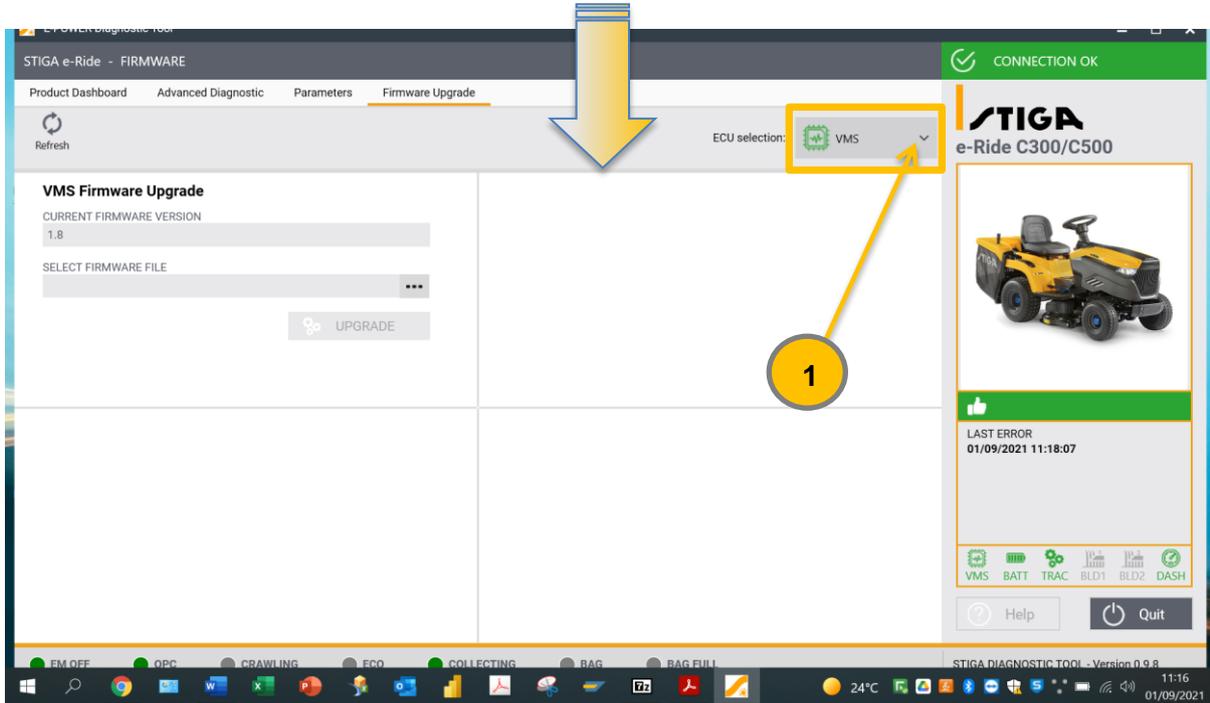
STIGA DIAGNOSTIC TOOL - Version 0.9.1

6.2.6 Firmware Upgrade

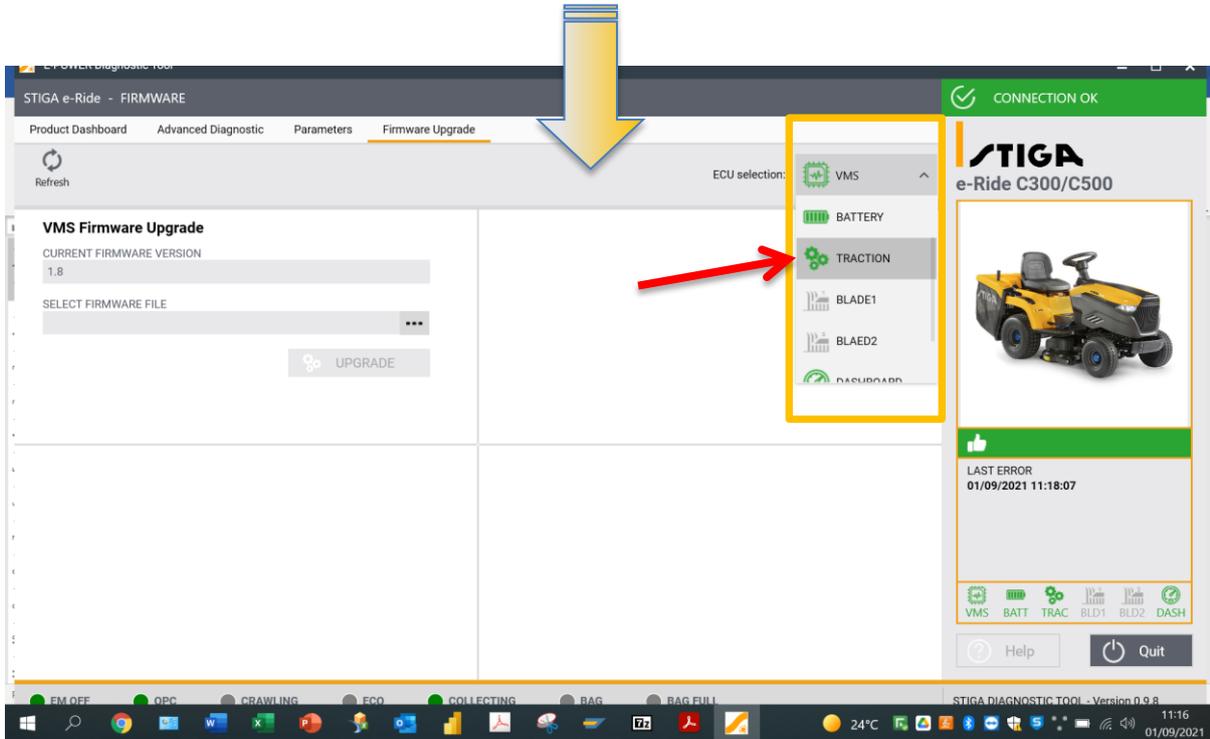
With this Menu you get access to the firmware updates.

to

Press Firmware Upgrade

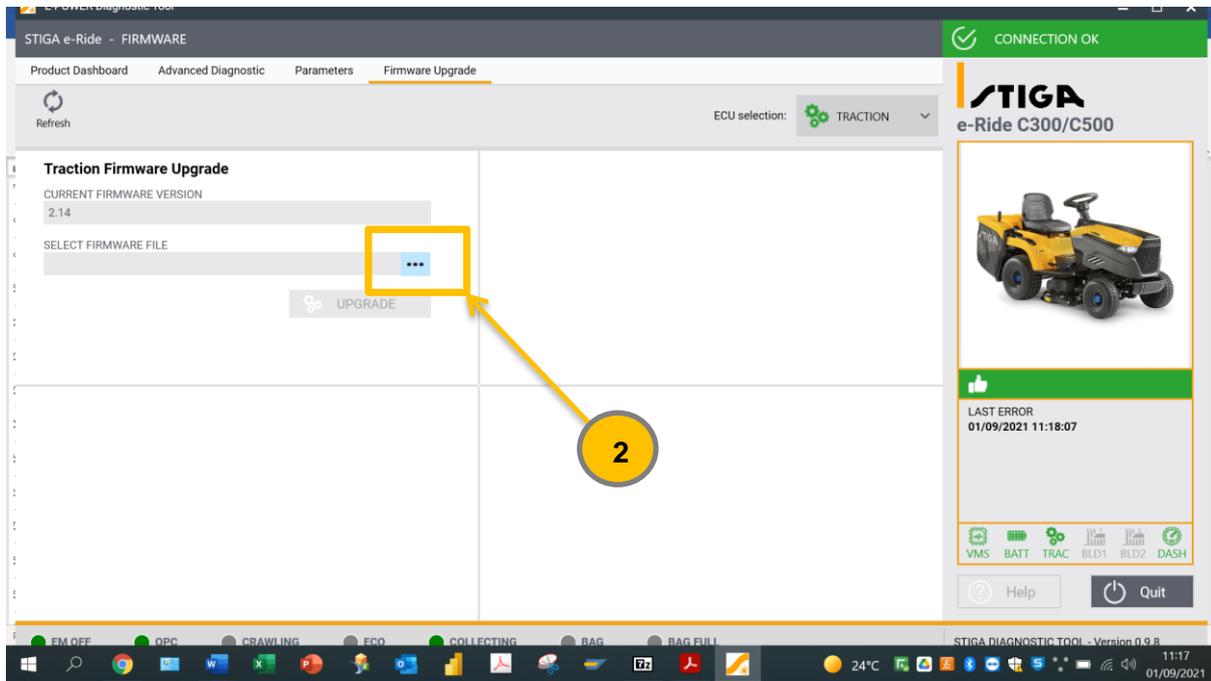


By clicking on "1" the available firmware will be visible in the pop up.

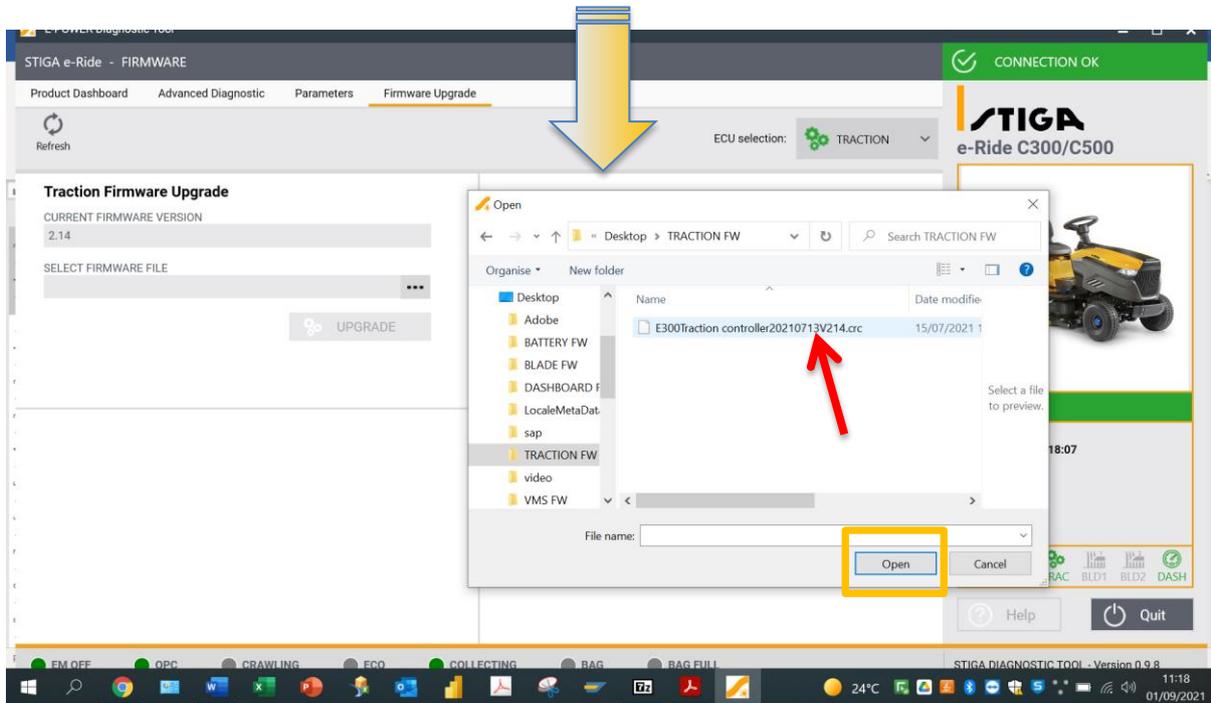


Select the firmware to update (in the example **the traction** firmware has been selected)

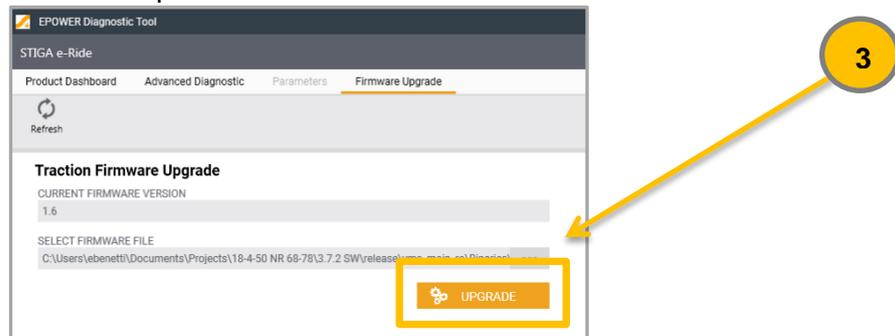
E-POWER SERIES DIAGNOSTIC TOOL



By clicking on “2” the Traction firmware versions will be visible.

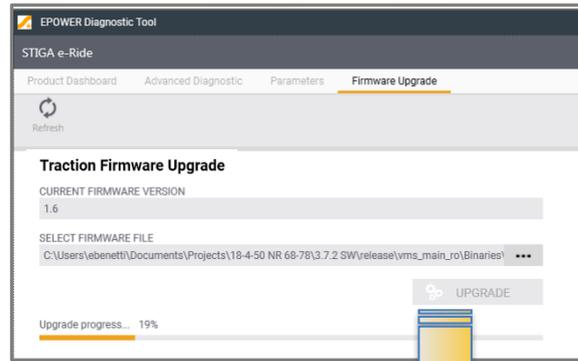


Select the firmware file and click on “Open”

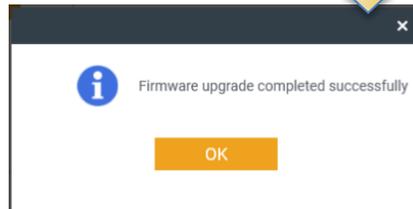


By clicking on icon “3” UPGRADE starts Uploading.

E-POWER SERIES DIAGNOSTIC TOOL



The uploading ongoing



After the firmware update, close and restart the application. New firmware version will be then shown on the dashboard window.

**NOTE: as for the traction Firmware Upgrade, the machine must be switched on with the Start button and seated operator
If OPC is missing during the update, traction is disabled (and turned off)**