

BELROBOTICS

Dealer Tools Suite 6.0 User Manual



English Version

BELROBOTICS 
THE GRASS MASTERS

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1. INTRODUCTION

The 'Dealer Tools Suite' (DTS) is an application SW running on PC that gives you the following functionality:

- Upgrade the FW embedded in your Belrobotics robot (mower or ballpicker) so that you can benefit of new features, functionalities of the robot or improve its performances.
- Analyze the activity (working time, alarms,...) and the settings (parameters, options,...) of the robot so that you can optimize its performances by better understanding its behavior. This analysis is performed by downloading into DTS an "history log" of the robot.

To use DTS6.0, you need :

- A PC running under windows operating system (Windows xp, Windows 7.X, Windows vista (not tested), Windows 8.X)
- To connect physically to the robot, you need the Belrobotics USB cable (reference part BR19130). When you are connected to the robot, you will be able to upgrade the FW of the robot or download its latest "history log".
- If you robot has Track&Trace module, you can also download robot "history log" from the streamline server. (see Track&Trace manual).

This user manual gives you the following information :

- How to install or upgrade the DTS SW on your PC (Chapter 2)
- How to use the DTS SW :
 - o Description of the main DTS window, the database window and the menus (Chapter 3)
 - o Import a "history log" from a robot and add/create the robot inside the DTS database (Chapter 4)
 - o Upgrade the FW embedded in your robot (Chapter 5)
 - o Understand and analyze the content of an "history log": machine information and settings (Chapter 7), machine programmed rest periods (Chapter 8) and machine activity (Chapter 9)
 - o Recuperate into DTS6.0 information available on your PC from usage of earlier versions of DTS4.X or DTS5.X (Chapter 6)

2. INSTALLING 'DEALER TOOLS SUITE' SW ON PC

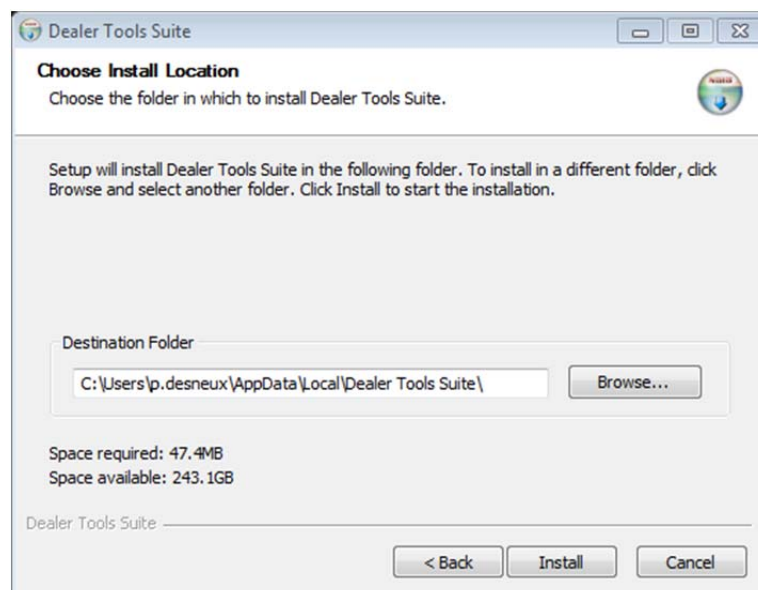
- Download from Belrobotics extranet the latest version of "DTS6.0_setup.exe"
 - o Go to Belrobotics extranet (<http://www.belrobotics.net/football/>)
 - o Login (bottom of the page)
 - o Go on extranet category "Dealers Tools Suite/DTS6.0"
 - o Download the "DTS6.0_setup.exe" and store it on your PC
- Execute "DTS6.0_setup.exe". The following window will appear.



- Choose the Destination Folder where the DTS executable and the DTS database information will be stored on your PC. Then, click on 'Install'

It is strongly recommended that you do not change the Destination Folder and keep the default path proposed by the DTS installer.

If this is NOT your first DTS6.0 installation on this PC (you are upgrading DTS6.0 SW), the installer will propose you the path where DTS6.0 is currently installed. DO NOT CHANGE the path otherwise you will have multiple versions of the tool installed on your PC and you will not be able to access your existing DTS6.0 database.

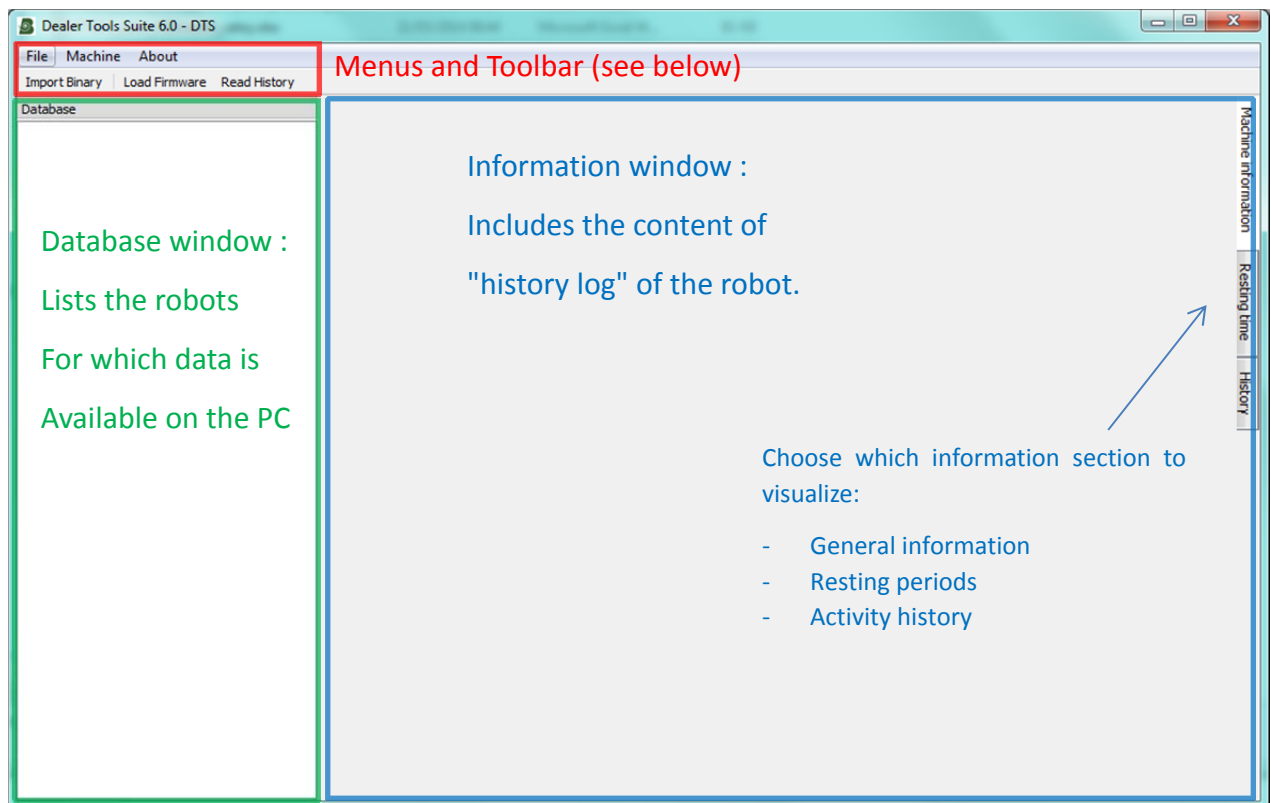


- After installation, an icon is created on the desktop of your PC and you can use this icon to start the DTS application.



3. DTS 6.0 MAIN WINDOW AND MENUS DESCRIPTION

The main window of DTS6.0 is described here below:



3.1. THE DATABASE WINDOW

The database window is showing you the list of robots for which some information is available in the DTS6.0 database.

The robots are ordered by type (BM, BP, GM, PM), then by construction year and machine number.

The log which is currently visible in the information window is highlighted in "**BOLD**".

When a machine contains multiple "history log", only the 3 last logs are directly accessible but the older logs are stored in "Old logs".

Database

- BM-13-903-B
 - Customer: Machine#1 M1
 - SNB: 0C8A3764
 - Logs
 - Comments
 - GMT2-10-327-B
 - Customer: Machine#2 GM2
 - SNB: 0CA4A655
 - Logs
 - Comments
 - BP-13-303-B
 - Customer: Machine#3 M3
 - SNB: 0D742884
 - Logs
 - 11/09/2013 16:03:48
 - 16/08/2013 15:09:41
 - Comments
 - BM-13-977-B
 - Customer: Machine#4 M4
 - SNB: 0CA4B094
 - Logs
 - 17/10/2013 17:35:57
 - 26/09/2013 09:12:52
 - 25/09/2013 07:40:14
 - Old logs
 - 05/09/2013 14:54:14
 - 05/09/2013 14:47:46
 - 20/08/2013 17:35:47
 - 20/08/2013 17:35:03
 - 20/08/2013 17:30:40

Customer: Machine#4 M4
SNB: 0CA4B094

Logs

17/10/2013 17:35:57

26/09/2013 09:12:52

25/09/2013 07:40:14

Old logs

05/09/2013 14:54:14

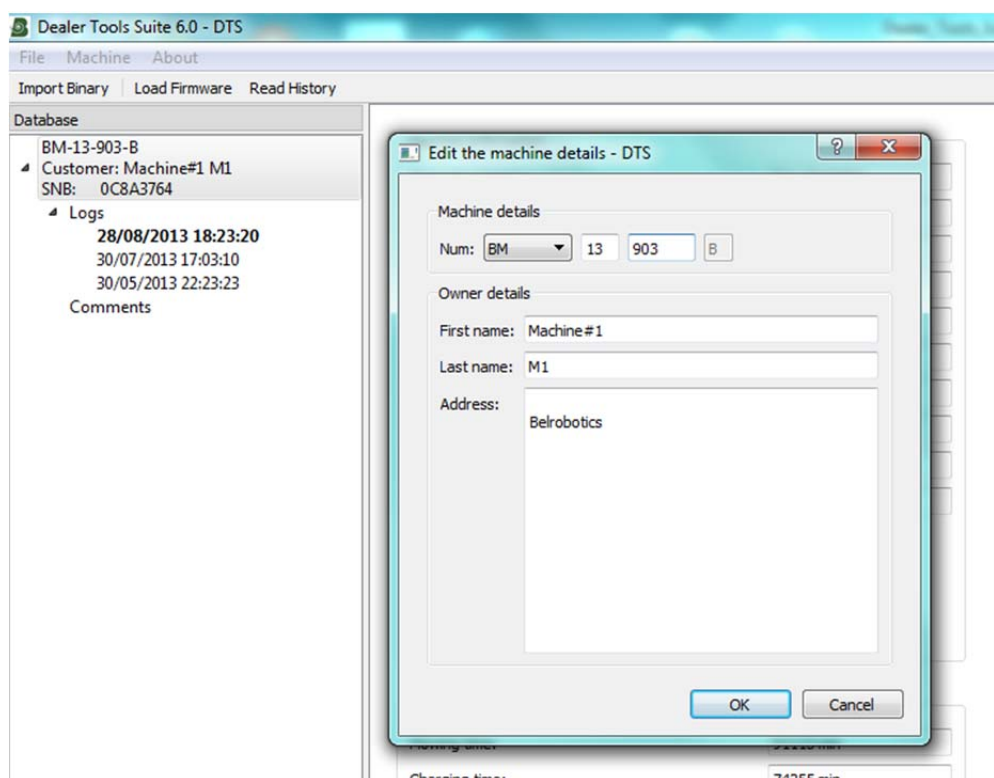
05/09/2013 14:47:46

20/08/2013 17:35:47

20/08/2013 17:35:03

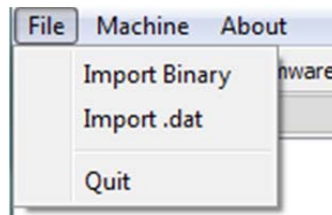
20/08/2013 17:30:40

When you want to modify the identification of a robot, you have to "double click" on the robot in the database window. A new window will open where you will be able to edit the robot identification details : type, number, owner name, owner address.



3.2. FILE MENU

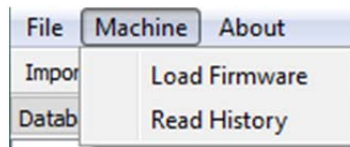
The 'File' menu is giving you the following functionality :



- Import Binary : download inside DTS tool an history log of a robot that is stored on your PC. Typically, this is used for importing into DTS a log which is available on the Track&Trace server. Refer to chapter 4 for more details.
- Import .dat : recuperate inside DTS 6.0 database the information of robot present in your existing DTS4.x or DTS5.x database. Refer to chapter 6 for more details
- Quit : Exit DTS6.0 application

3.3. MACHINE MENU

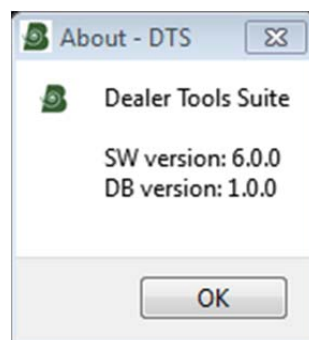
The 'Machine' menu is used when you are connected to the machine with the Belrobotics USB cable (BR19130). This menu is giving you the following functionality :



- Load Firmware : upgrade the FW of the robot. Refer to chapter 5 for more details.
- Read History : download an "history log" directly from the robot. Refer to chapter 4 for more details.

3.4. ABOUT MENU

The 'About' menu gives you the version of the DTS6.0 tool currently installed on your PC.



4. IMPORT A "HISTORY LOG" AND CREATE/ADD A ROBOT IN YOUR DATABASE

Creating/Adding a new robot in the database is achieved by importing a "history log" of this robot. When a "history log" is imported, DTS6.0 is checking the "SNB" (serial number of the mainboard) included in the "history log" :

- o If DTS6.0 is recognizing a "SNB" already present in its database, then the new log is added to the existing machine with that "SNB".
- o If DTS6.0 is not recognizing the "SNB", the following window is popping up and gives you the possibility to :
 - Add the log to an existing machine – this occurs if you have changed the mainboard of the machine – you then have a new "SNB" attached to this machine
 - Create a new machine : you then have to enter the details of it.on the right side of the window below.

Select or create a machine - DTS

Existing machines

- BM-13-903-B
Customer: Machine#1 M1
SNB: 0C8A3764
- BM-13-977-B
Customer: Machine#4 M4
SNB: 0CA4B094
- BP-13-303-B
Customer: Machine#3 M3
SNB: 0D742884
- GMT2-10-327-B
Customer: Machine#2 GM2
SNB: 0CA4A655

Machine details

Num: BM 14 0001 B

Owner details

First name: Machine#5

Last name: Manual DTS

Address: Belrobotics

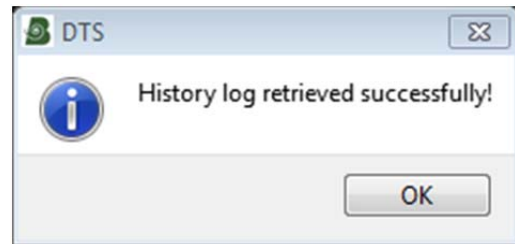
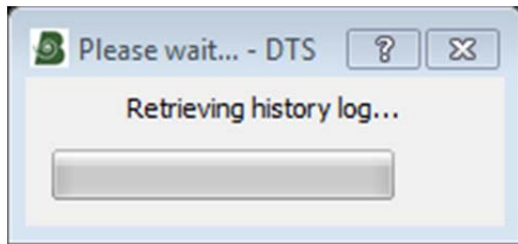
OK Cancel

Importing a "history log" can be done in 4 different ways:

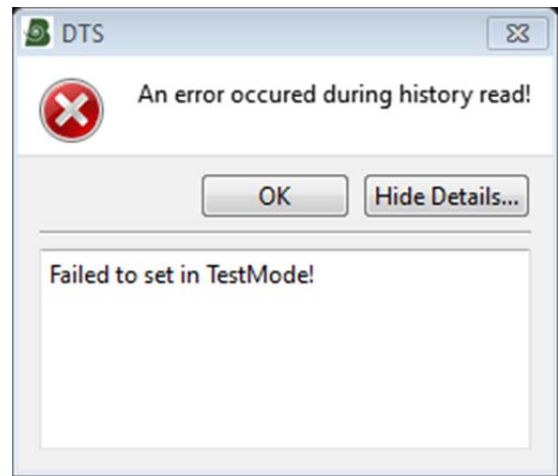
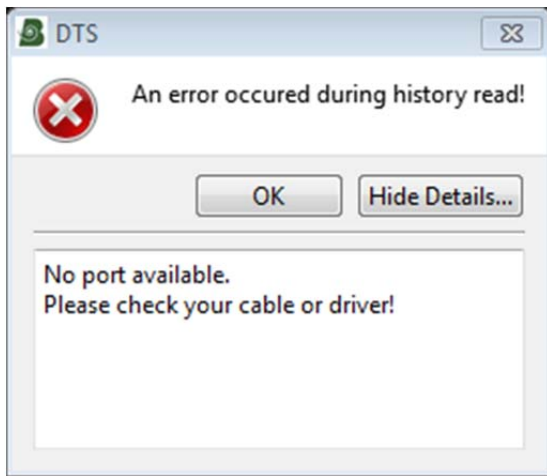
- o Menu 'File => Import Binary' : importing a file in native format from the robot located on your PC. Typically, you download this file from the Track&Trace server where the robot has sent it.
- o Menu 'File => Import .dat' : see chapter 6.
- o Menu 'Machine => Read History' : you are connected to the robot with the Belrobotics USB cable and you take the latest log from the robot.

- o Menu 'Machine => Load Firmware' : see chapter 5.

When you are importing a "history file", the following screens will appear :

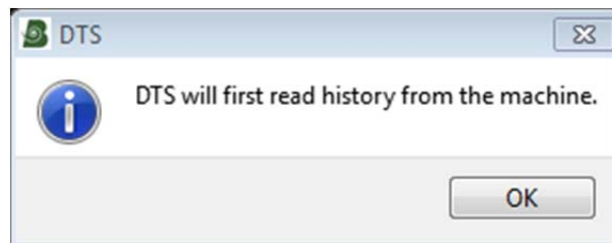


If you are connected to the robot and you get following screens, it means that the connection to the robot is not correct. Check your cable is properly plugged in the PC and in the robot and check that the robot is switched on. If still problem, contact your Belrobotics dealer.



5. UPGRADE THE FW OF THE ROBOT

Before upgrading the FW of the robot, DTS6.X will first download the latest "history log" :



Then you have to choose the BMB file (format of the robot FW) that you have downloaded from the Belrobotics extranet (<http://www.belrobotics.net/football/index.php/fr/software-robotics>) :



EN FR DE IT ES SE NO DK NL

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The FW you have to choose is depending on the HW configuration of the robot as you can select it on the Belrobotics Extranet (see above). You can identify the HW configuration corresponding to your robot (if no recent HW change) in the 'Machine information' tab inside DTS tool (see chapter 7).

If you have not modified the HW of your robot you can also verify you pick up the right FW as depicted in the picture below (red characters must match):

dc01 (Z:) > Support Technique

Machine Information

Firmware version: **C4140228B0**

Serial Number: 0CA4B030

Language: French

Type: BM

Batteries: Lithium

Motors: M4 DPM/IMS

Charger: DC

Sonar: Waterproof

Signal: Multichannel

SW Zone: Multi

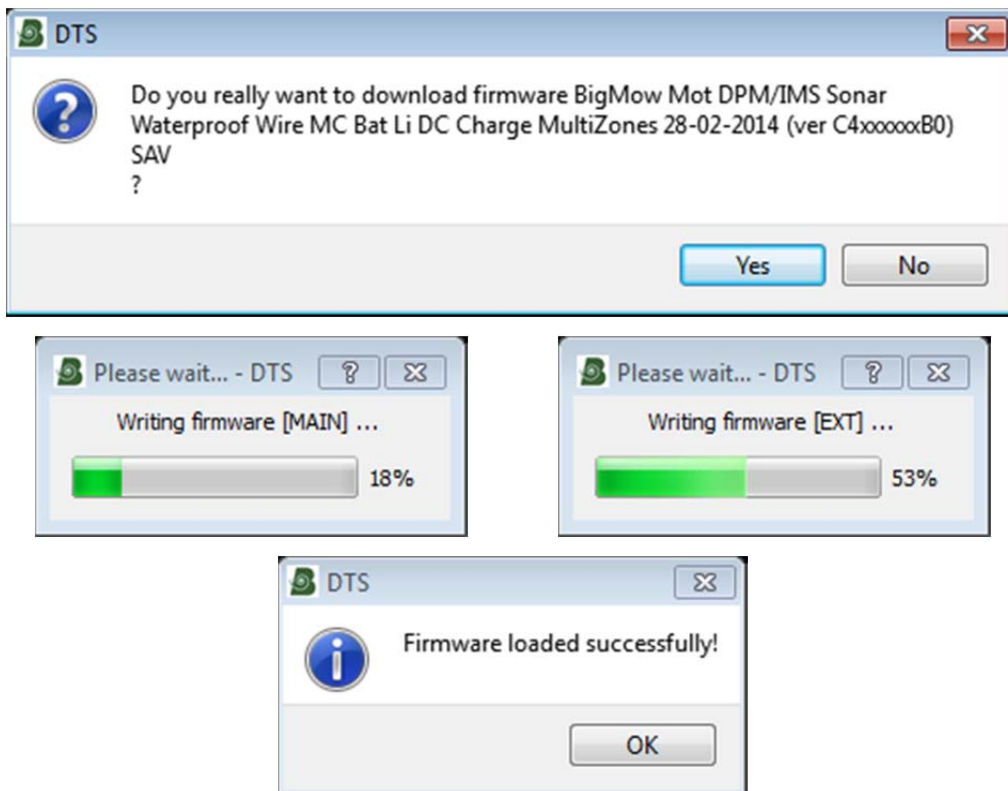
Choose your firmware

<< Support Technique > Firmware > Main > SAV > 140228 >

Name	Date modifie
BMV(M4_SW)F414022810S.BMB	14/03/2014 1
BMV(M4_SW_Li)E414022810S.BMB	14/03/2014 1
BMV(M4_SW_Li_DC)C414022810S.BMB	14/03/2014 1
BMV(M4_SW_WMC)F414022830S.BMB	14/03/2014 1
BMV(M4_SW_WMC_Li)E414022830S.BMB	14/03/2014 1
BMV(M4_SW_WMC_Li_DC)C414022830S.BMB	14/03/2014 1
BMV(M4_SW_WMC_Li_DC_MZ)C4140228B0S.BMB	14/03/2014 1
BMV(M4_SW_WMC_Li_MZ)E4140228B0S.BMB	14/03/2014 1
BMV(M4_WMC)F414022820S.BMB	14/03/2014 1
BMV(M4_WMC_Li)E414022820S.BMB	14/03/2014 1
BMV(M4_WMC_Li_DC)C414022820S.BMB	14/03/2014 1

File name: BMV(M4_SW_WMC_Li_DC_MZ)C4140228B0S.BMB

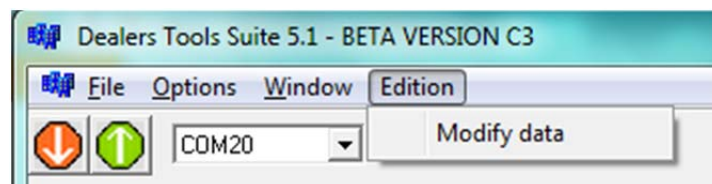
After you have selected the BMB file, you are asked for a last confirmation before the FW is downloaded towards the robot.



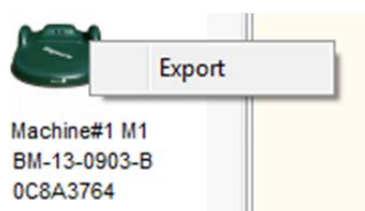
6. RECUPERATE DATA FROM DTS4.X OR DTS5.X INTO DTS6.X

To transfer information that you have in your existing version of DTS (DTS 4.X or DTS 5.X), you first have to 'export' the data of the robot. (Currently, DTS6.0 can only import data robot per robot, hence you have to export robot per robot.)

Open DTS4.x or DTS5.x and select the robot to export. If you want to modify the coordinates details of the robot, you can use the menu 'Edition => Modify Data' :

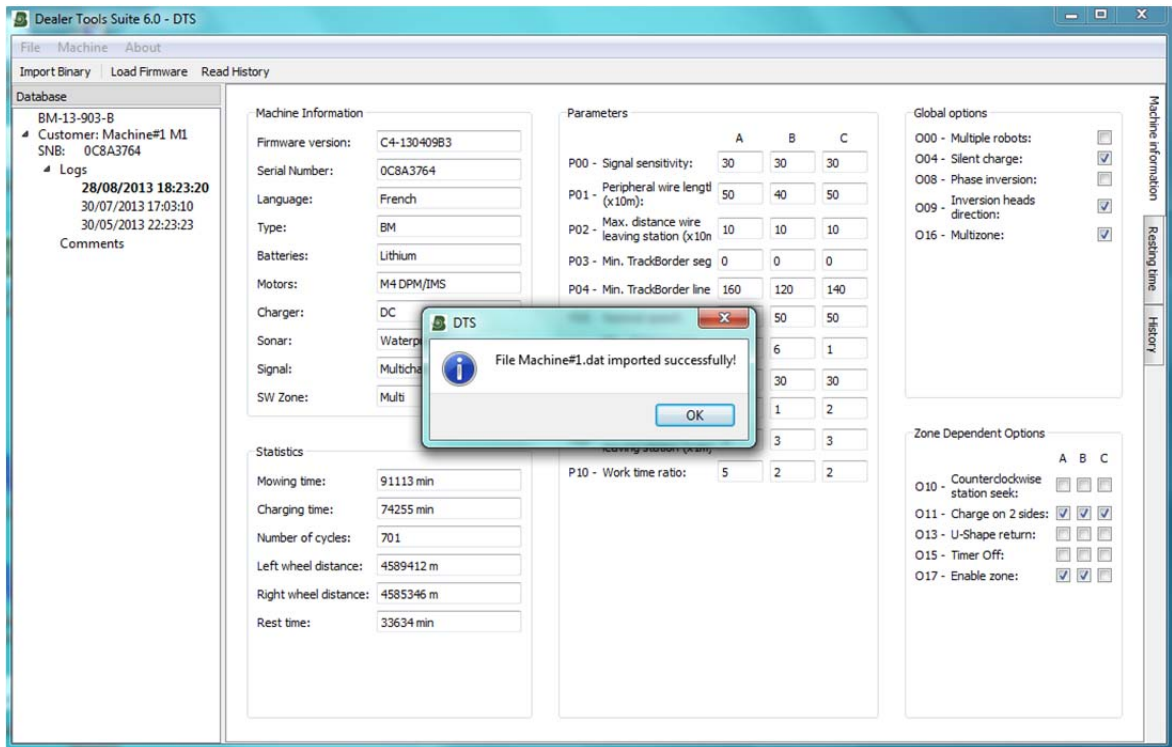


Then you have to export the data by clicking with the right mouse button when the mouse is located on the icon of the robot :



Save the "robot_to_export_file.dat" at a location on your PC. Then inside DTS6.0, use the

menu "File=>Import .dat" and select the file you just have created. This will create a new robot in the DTS6.x database and import all the logs of the robot.



7. MACHINE INFORMATION' TAB

When you are visualizing a "history log" of a machine (highlighted in bold in the database window), the machine information tab gives you the settings of the robot as described in below pictures (respectively for a log corresponding to a monozone SW or multizone SW).

The screenshot shows the 'Machine Information' tab for a monozone SW machine. The interface is divided into several sections:

- Database:** Lists machines with their SNB and logs. The log for 'Machine#1 M1' is highlighted.
- Machine Information:** Displays fields for Firmware version (CB-13071031), Serial Number (OCA4A655), Language (French), Type (GMT2), Batteries (Lithium), Motors (M4 DPM/IMS), Charger (Waterproof), Signal (Multichannel), and SW Zone (Mono).
- Statistics:** Displays moving time (86060 min), charging time (13310 min), number of cycles (307), left wheel distance (1845355 m), right wheel distance (1845065 m), and rest time (169044 min).
- Parameters:** A list of 10 parameters (P00-P09) with their respective values, such as Signal sensitivity (30), Peripheral wire length (35), and Nominal speed (25).
- Global options:** A list of 18 options (O00-O18) with checkboxes, including Multiple robots, Silent charge, Phase inversion, and Multizone.

Annotations on the screenshot include:

- FW version:** A red box highlighting the Firmware version field.
- FW configuration:** A blue box highlighting the Machine Information fields.
- User parameters (keyboard *13870):** A red box highlighting the Parameters section.
- Options:** A green box highlighting the Global options section.
- Statistics:** A purple box highlighting the Statistics section.

The screenshot shows the 'Machine Information' tab for a multizone SW machine. The interface is divided into several sections:

- Database:** Lists machines with their SNB and logs. The log for 'Machine#1 M1' is highlighted.
- Machine Information:** Displays fields for Firmware version (C4-13040983), Serial Number (0C8A3764), Language (French), Type (BM), Batteries (Lithium), Motors (M4 DPM/IMS), Charger (DC), Sonar (Waterproof), Signal (Multichannel), and SW Zone (Multi).
- Statistics:** Displays moving time (91113 min), charging time (74255 min), number of cycles (701), left wheel distance (4589412 m), right wheel distance (4585346 m), and rest time (33634 min).
- Parameters:** A table of 10 parameters (P00-P09) with values for three different zones (A, B, C).
- Global options:** A list of 18 options (O00-O18) with checkboxes, including Multiple robots, Silent charge, Phase inversion, and Multizone.
- Zone Dependent Options:** A table of 10 options (O10-O17) with checkboxes for three different zones (A, B, C).

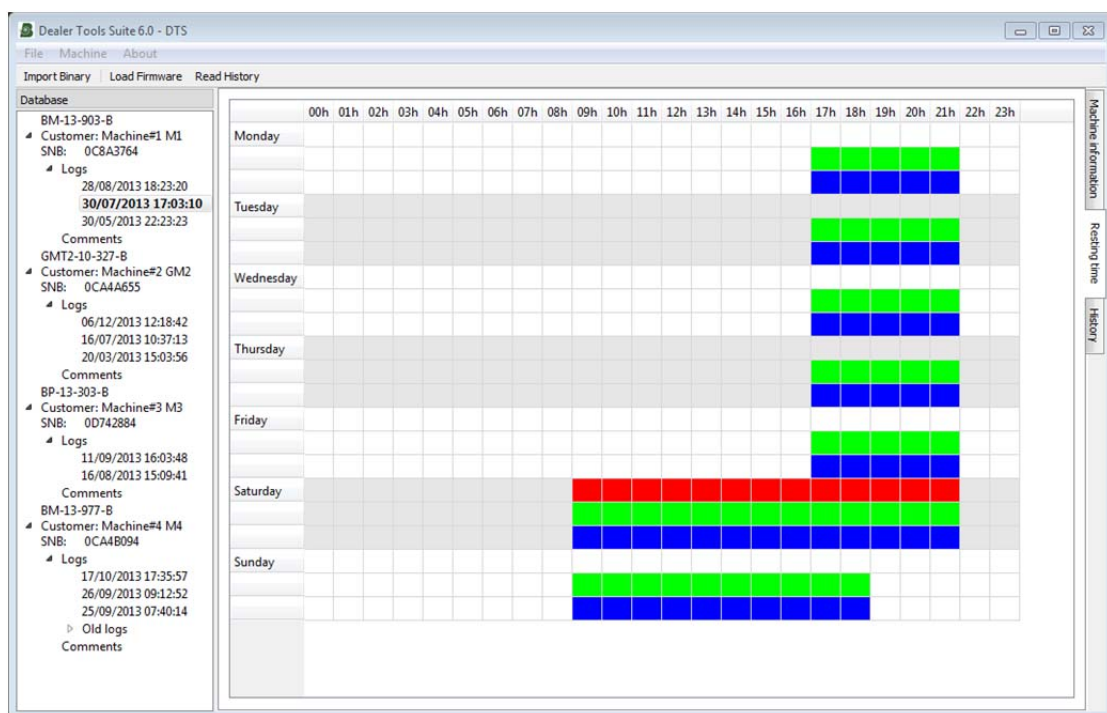
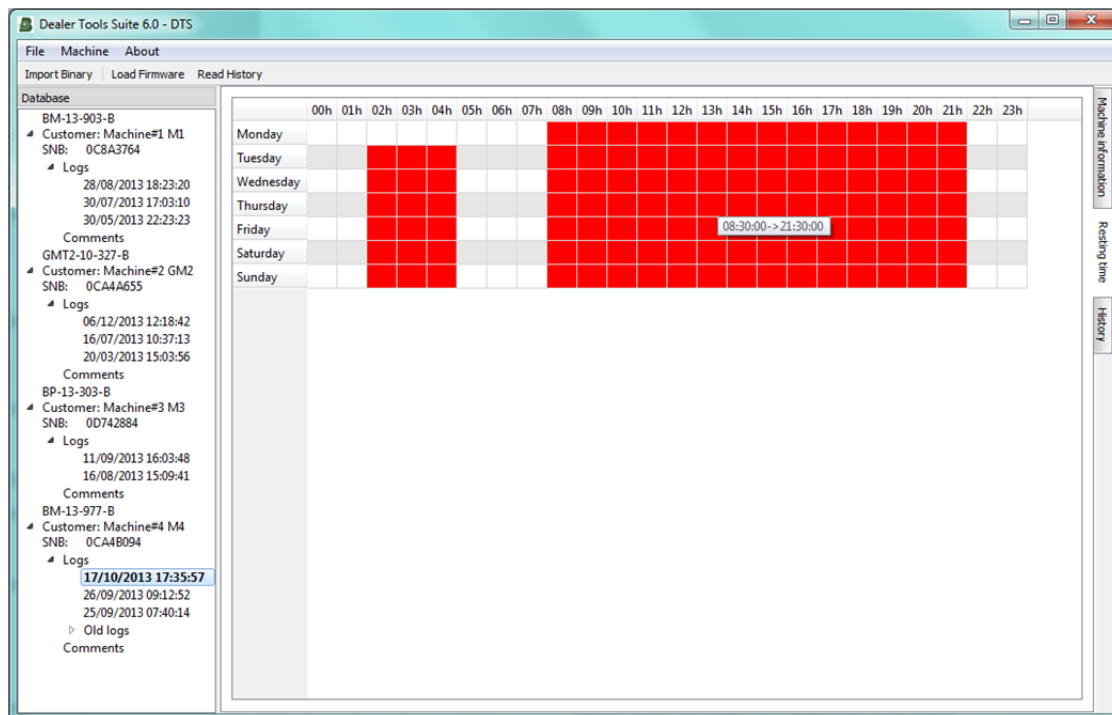
Annotations on the screenshot include:

- FW version:** A red box highlighting the Firmware version field.
- HW configuration:** A blue box highlighting the Machine Information fields.
- User parameters (keyboard *13870):** A red box highlighting the Parameters section.
- Generic options:** A green box highlighting the Global options section.
- Statistics:** A purple box highlighting the Statistics section.
- Zone dependant options:** A blue box highlighting the Zone Dependent Options section.

8. 'RESTING TIME' TAB

The 'resting time' tab gives you the information of the resting periods as configured at the moment when the "history log" has been generated by the robot. Take care that the visualization of the resting period is rounded to hours. To get the exact timing of the resting periods, you have to bring the mouse over the period. You then can see the exact details.

For a multizone FW, the different colors correspond to the different working zones : Red=ZoneA, Green=ZoneB, Blue=ZoneC.

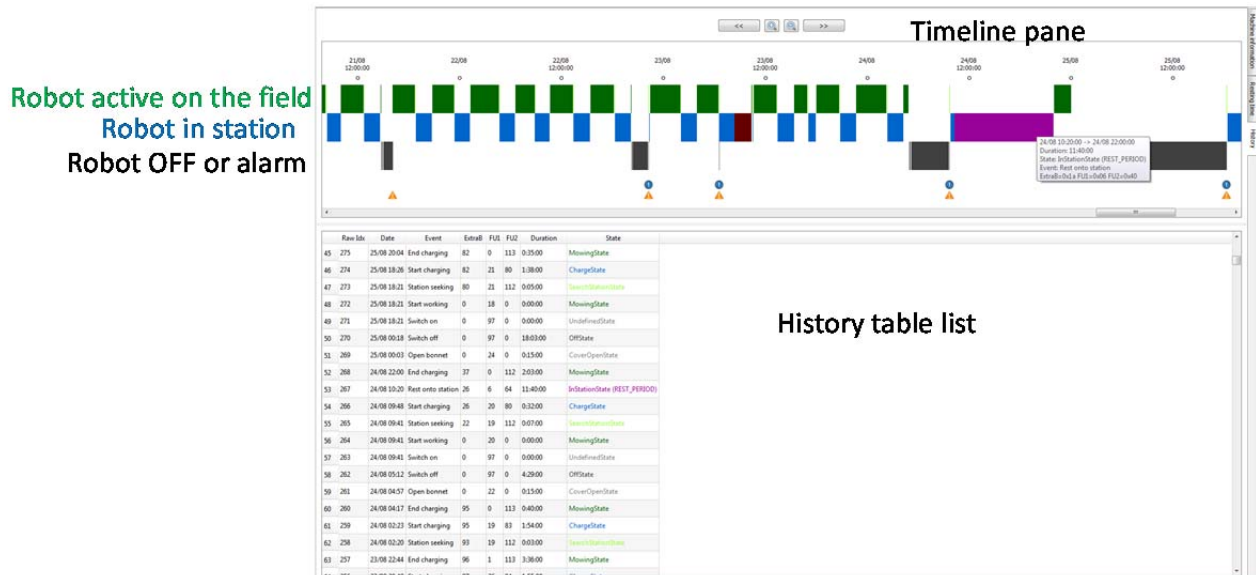


9. 'HISTORY' TAB

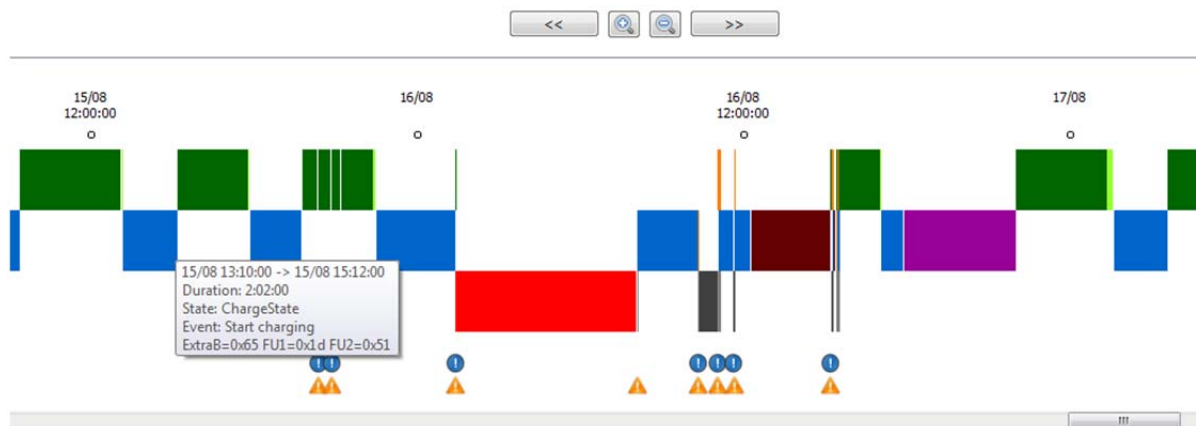
The 'History tab' gives you the activity (mowing, charging,...) and events (alarms, on-off, open cover,...) of the robot. It is structured in two panes : a timeline and a list of events.

The timeline is splitted in 4 parts :

- o Part 1 : indicates the time
- o Part 2 : indicates the periods of time when the robot is active on the field : mowing (mower) or picking balls (ballpicker) (■) or going back to its station (■).
- o Part 3 : indicates the periods of time when the robot is in station : charging (■) or waiting in station (backhome (■), rest period (■), low cut resistance (■),...).
- o Part 4 : indicates the period of time when the robot is stopped either due to an alarm (■) or due to an action of the user switching off the robot (■).



You can zoom and move into the timeline using the buttons located at top of the window or using your mouse (scroll wheel) or using the left/right arrows of the keyboard.



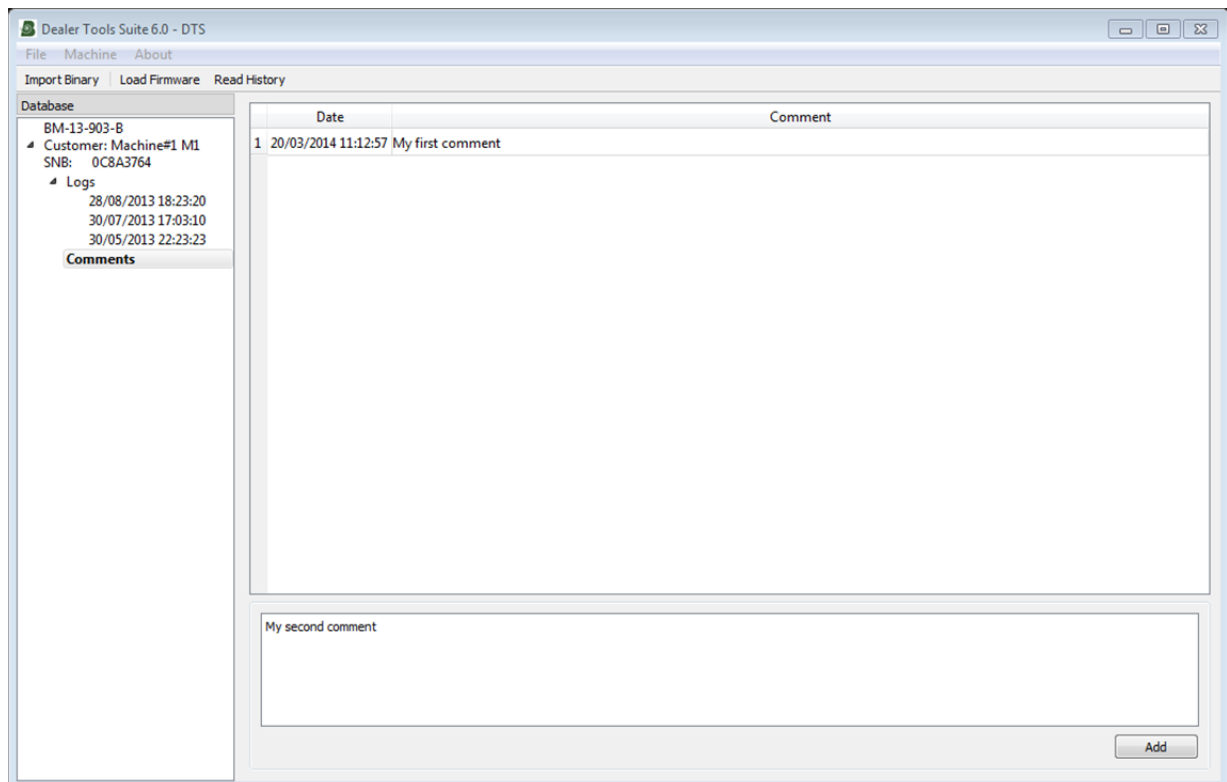
When setting the mouse over an event, DTS will highlight the details. If you click with the mouse on an event, the history list will be centered over that particular event.

The  sign in the timeline is indicating that multiple events are overlapping on each other because the zoom factor of the timeline is not sufficient. If you zoom-in to see a shorter period, these signs will progressively disappear.

The  sign in the timeline is indicating that some events have a zero-length duration in the history. Hence the visualization in the timeline cannot be accurate enough. Click on the  sign to see the details in the history list and be able to analyze properly the sequence of the robot activity.

10. COMMENT WINDOW

You can also add comments related to your robot. Click on the "Comment" in the database window and you will be able to add comments.



11. KNOWN BUGS AND LIMITATIONS

When having a problem with the tool, contact your Belrobotics Dealer.

Herebelow a list of limitations of the initial release 6.0.0. The future releases of the tool will improve those aspects :

- o Some dat file or log file may not be imported into DTS6.0.0 based on their internal content. If you are facing this issue, contact Belrobotics.
- o It is not possible to export the information from the database or from a robot from DTS6.0.0 so to be able to read in into another PC.
- o When importing a .dat file from DTS4.X or DTS5.x, the comments that were stored in the logs are not imported into DTS6.0.
- o DTS6.0.0 only exists in English language.