

Bowmonk Connected User Guide – Release 1.0

We strongly recommend you read this guide completely before attempting to use Bowmonk Connected for the first time.

Section 1 - Getting started with Bowmonk Connected

Overview

‘Bowmonk Connected’ is the name given to Bowmonk’s range of electronic decelerometers that are suitable for use with the ‘Connected MOT’ facility of the DVSA’s MOT Test system (known as ‘MTS’).

MTS now has the ability to *automatically* accept results from the items of garage equipment used to perform an MOT test, for example rolling road brake testers or emissions analysers, etc. However, Bowmonk decelerometers are hand-held and portable so some manual actions are still required.

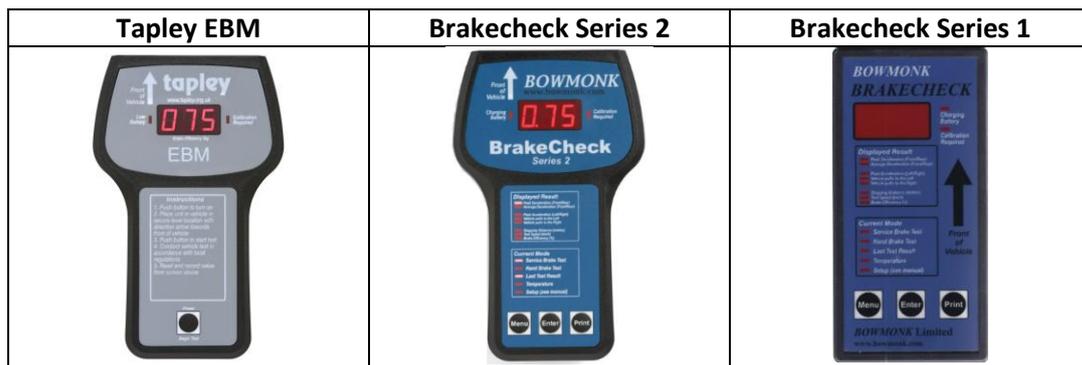
These devices communicate directly with MTS over your existing internet connection when performing an MOT test. This actually speeds up the process of performing an MOT test.

Bowmonk periodically update ‘Bowmonk Connected’, so before installing and using Bowmonk Connected, please visit www.bowmonk.com/mts and check you are using the latest Release version available.

Please Note: This guide is for the ‘Release 1.0’ version of Bowmonk Connected, which was released in November 2019.

There are two parts to Bowmonk Connected.

- The portable decelerometer device itself.
- A software program running on at least one computer at the Vehicle Testing Station (VTS).
- The software program is only for use with Bowmonk Connected compatible decelerometers.
- Please see the pictures below to identify the type of equipment you have.



User Manuals for the Tapley EBM and Brakecheck decelerometers shown above are provided on the USB ‘Thumb Drive’ supplied with your Bowmonk Connected device.



The “Thumb Drive” supplied looks like this:

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The actual in-vehicle testing process involving Brakecheck units has not changed, but existing users of an older, non-connected Tapley EBM device should read the new manual as the control button function has been updated.

The computer that the software program is used on **MUST** :-

- Be running Microsoft Windows 7 or later (Both 32-Bit and 64-Bit versions are supported).
- Have a reliable connection to the Internet.
- Have at least one USB port available for use.

Most test stations use the same PC that the tester(s) already use to work with MTS.

The MOT Test uses the terms 'Service Brake' and 'Parking Brake', however Bowmonk Connected uses the terms 'Service Brake' and 'Hand Brake' throughout.

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Step 1.1 : DVSA-Issued 'Key' Certificate Package.

Before using any item of 'connected' equipment, your testing site must apply to the DVSA for a 'certificate package' known as a 'Key'. The DVSA will then send you a file containing information that allows your Bowmonk Connected system to communicate directly with MTS.

These security certificates are just as important as a user name and password. They should be treated as such when it comes to your internal security policies. If you lose this information or you suspect that it has been used outside your organization, we recommend you contact the DVSA for a replacement key.

You will require one unique 'key' for each computer testers will be using during the MOT process, even if your VTS only has one Bowmonk Connected decelerometer. Each 'Key' must be a 'Single Client' key.

To obtain your 'Key' from the DVSA, e-mail motadministration@dvsa.gov.uk at least 14 calendar days before your equipment is due to be used.

You need to include this information in your email:

- Your MOT centre number (sometimes called 'vehicle testing station' or 'VTS' number).
- Your AE name and number.
- Why you need a key, for example, you're installing new equipment, or you've lost the original key.
- The name, role, username (if applicable) and e-mail address of the person who needs to be sent the key.
- Which type of equipment is being installed (in this case a 'Bowmonk Connected' Decelerometer).
- Which type of 'key' you require. For Bowmonk Connected units, this **must** be a 'Single Client' key.

The DVSA will then e-mail the 'Key' information (as a 'zipped' file attachment) to the person nominated above.

You must store this information somewhere after use, as it will be needed during any Bowmonk Connected software upgrades.

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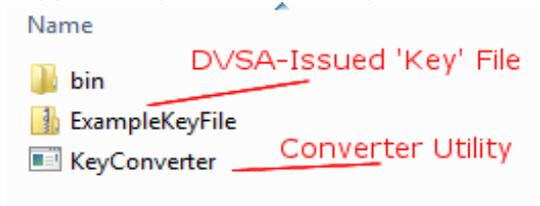
Step 1.2 : Certificate Conversion

The 'Key' package(s) supplied by the DVSA are not suitable for use with Bowmonk Connected as they are, and require conversion to a different format before use.

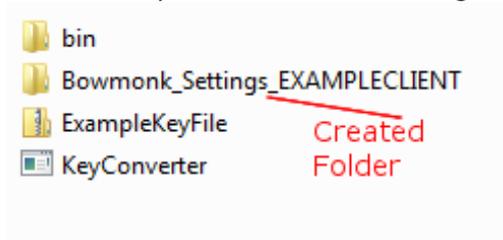
Bowmonk has provided a simple utility program to perform this conversion for you. This is present on the USB 'Thumb Drive' supplied with your Bowmonk Connected device. You can find it in the 'KeyConverter' folder.

To convert the DVSA-issued key package :-

1. Copy the 'Key' file(s) sent to by the DVSA into the 'KeyConverter' folder.



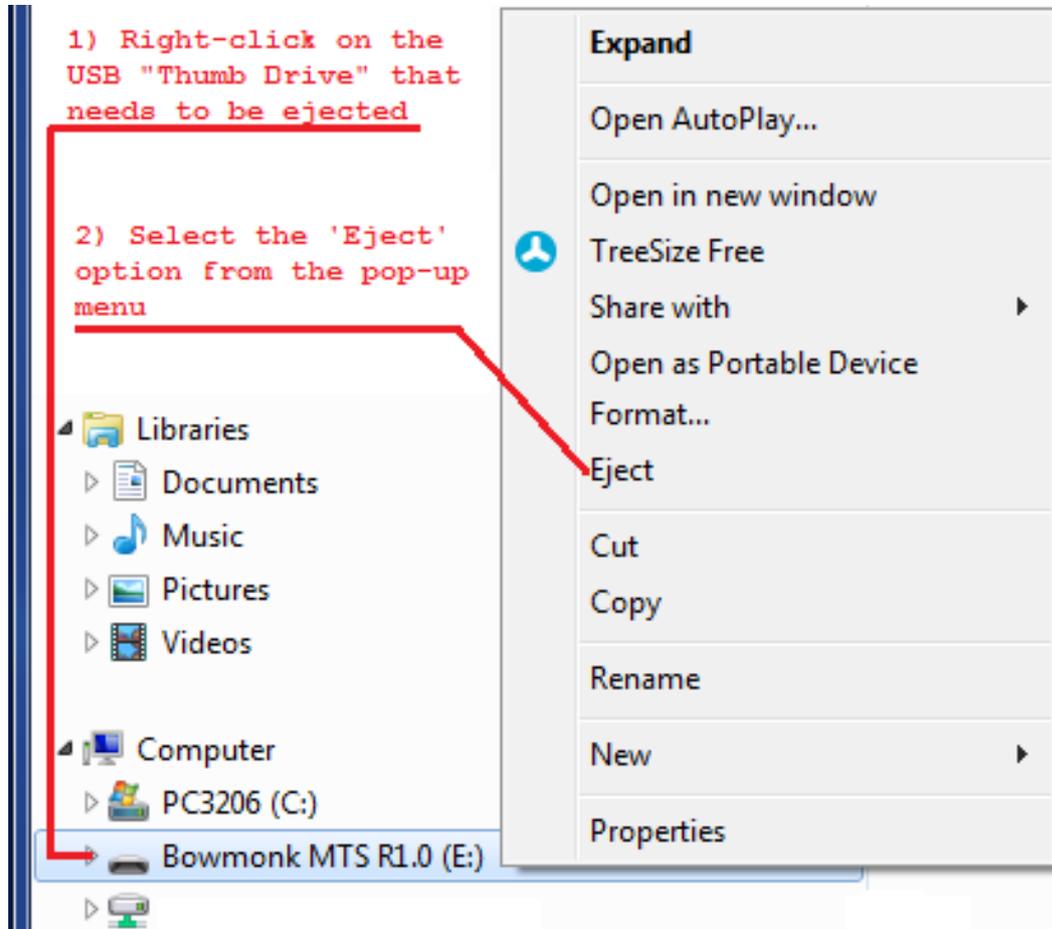
2. Double-click (run) the 'KeyConverter' program. Only the first available key file will be processed.
3. The utility will create a new folder containing the PC-specific converted key certificates and some information you will need when configuring each PC used below.



Please note, if you have multiple DVSA Key files in this folder, you must 'left-click-drag-and-drop' the appropriate key file directly onto the Key converter utility, one after the other. This should only be necessary if you have more than one test lane, *and* have a computer in each lane.

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4. Once all your DVSA Key files have been converted, please 'Eject' the USB Thumb drive **before** removing it from the computer. To do this, open the windows File Explorer, right-click on the drive you need to eject, then select the 'Eject' option from the pop-up menu.



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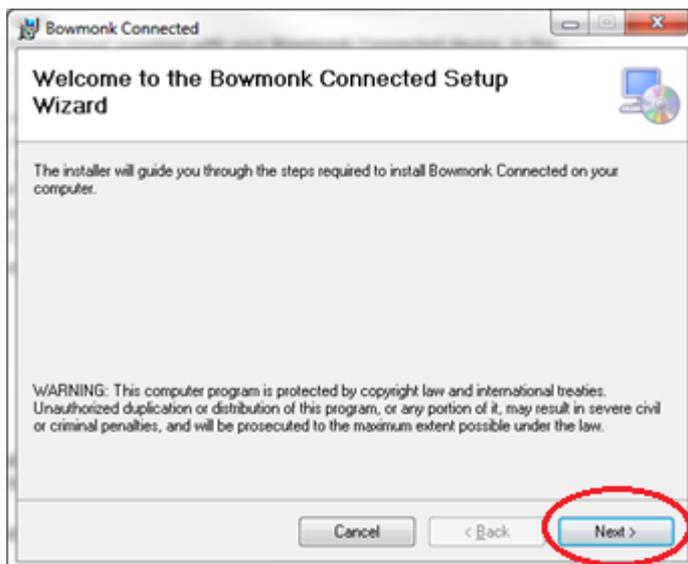
Step 1.3 : Installation of the Bowmonk Connected software

The Bowmonk Connected software needs to be installed on each computer in your VTS that will be used to send decelerometer test results when performing MOT tests.

It can be found on the USB 'Thumb Drive' supplied with your Bowmonk Connected device, in the '*BowmonkConnected*' folder.

To install the Bowmonk Connected software on a PC :-

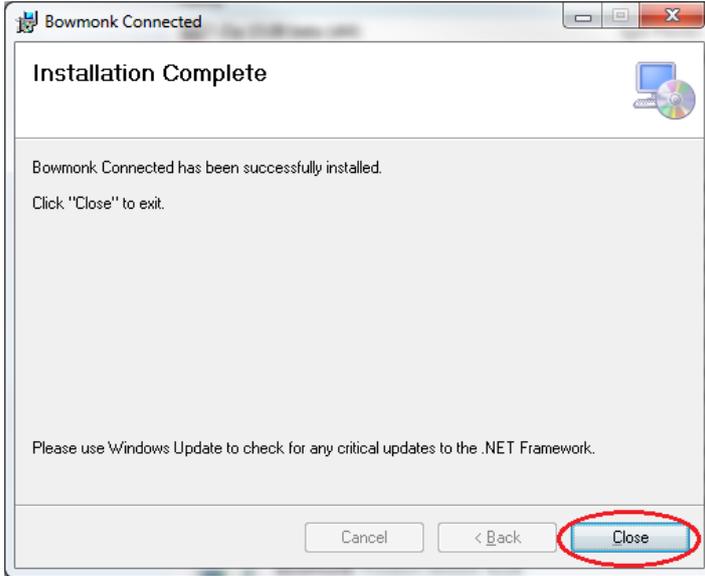
1. Make sure the target PC is operating normally **AND** has a working connection to the Internet (Hint: You should be able to browse the Internet with a web browser).
2. Plug in the USB 'Thumb Drive' containing the software into a spare USB port.
3. Locate the 'Setup' program in the '*BowmonkConnected*' folder.
4. Double-click (run) the 'setup' program, which will begin the installation process. If the computer asks if it OK to use this program, answer 'Yes'.



5. The installer program will present you with several options. We recommend you use the 'default' options, by clicking the  button every time the installer program asks you for a decision. If you are prompted by the installer program to download and install a '.NET' package, please do so, as Bowmonk Connected will not function without this.

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6. When the installer program says it has completed, click the 'Close' button.



7. When the installer program finishes, you will find a new  icon on your desktop. **DO NOT** use this yet.
8. Please run Windows Update and ensure that all current updates, especially for '.NET', are applied before using Bowmonk Connected. Bowmonk assume you are already know how to do this on your computer.

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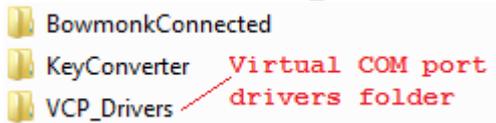
Step 1.4 : Configuration of the Bowmonk Connected software

Once the Bowmonk Connected software is installed on a computer, it needs to be configured before use. You will need to copy the converted 'Keys' assigned to this computer from the USB "Thumb Drive".

Step 1.4.1 : Virtual COM Port Driver Installation

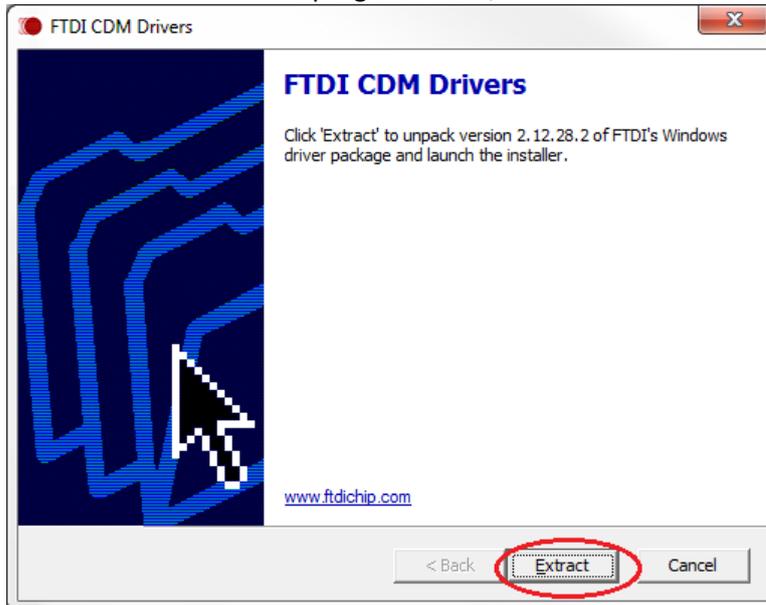
Bowmonk recommend that you install the required 'Virtual COM Port' drivers at this point.

The driver installer is present on the USB 'Thumb Drive' supplied with your Bowmonk Connected device. You can find it in the 'VCP_Drivers' folder.



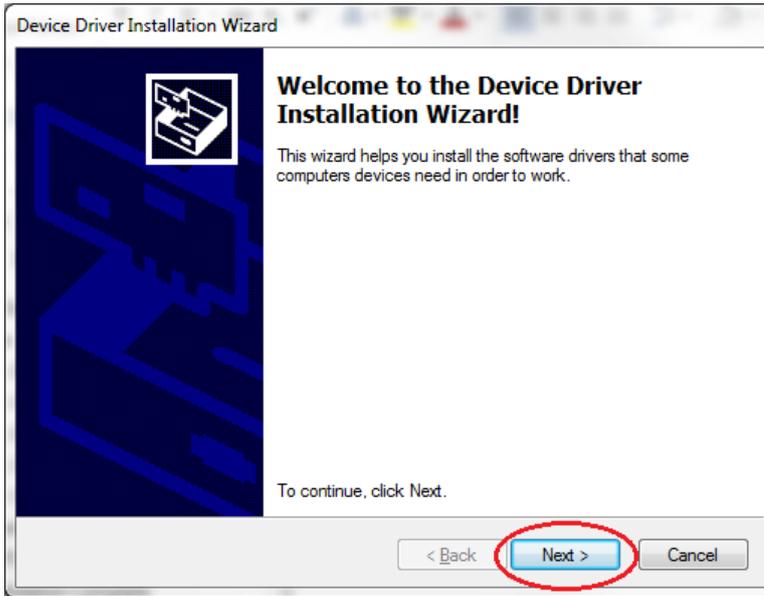
To install these drivers:-

1. Open the 'VCP_Drivers' folder. You should find a single file inside.
2. Double-click this executable file and follow the instructions presented by the installer program. If you are asked if it OK for this program to make changes to the computer, click 'Yes'.
3. When the driver installer program starts, click the 'Extract' Button.

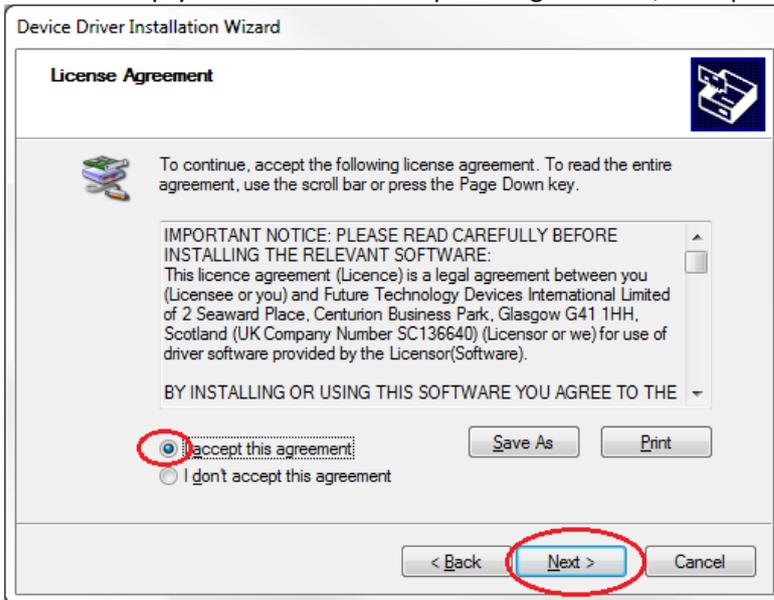


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4. The installer will then continue. Press the 'Next' button.

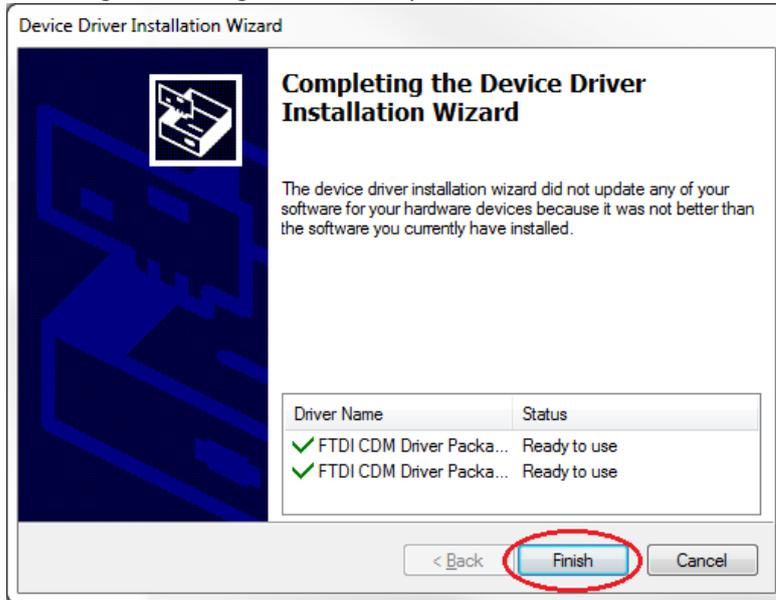


5. Click the empty circle next to 'I accept this agreement', then press the 'Next' button.



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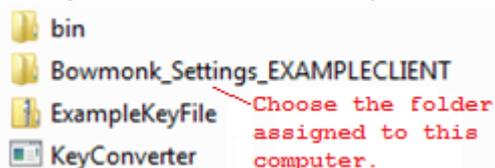
- When the driver installer program completes, click the 'Finish' button. The installer program will then begin installing the necessary drivers.



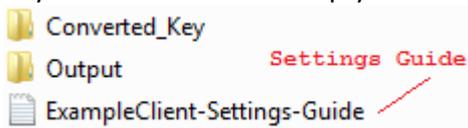
- If you are prompted to restart your computer, please do so when prompted.

Step 1.4.2 : Copy 'Key' information data to this computer

- The settings for each individual computer used are defined in the "Key" supplied by the DVSA that you converted above with the 'KeyConverter' program, and can be found in the 'Bowmonk Settings' folder assigned for use with *this particular computer*. Make sure you do **NOT** use the same settings on more than one computer.



- Copy this 'Bowmonk_Settings_<whatever>' folder (The entire folder, NOT just the contents) to a location on this computer's local disk. Bowmonk recommend the top-level (root) folder of the drive containing the operating system, which is usually drive C:\. Remember or note down the place you copied it to - this is known as the 'local settings location'.
- Once you have copied the settings data from the USB "Thumb Drive" to the computer's disk, please 'Eject' the USB Thumb drive **before** removing it from the computer (As above).
- You will find a 'Settings Guide' file stored at the local settings location, along with the converted Key information and an empty folder ready for some possible output from Bowmonk Connected.



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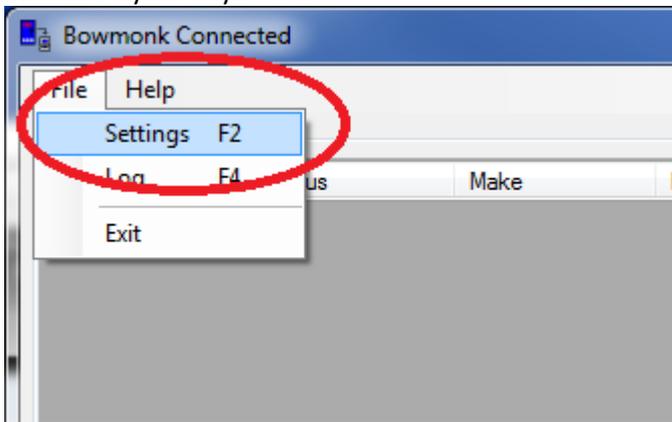
5. Double-click the Settings Guide file, which will then open in your preferred text editor (Probably 'Notepad'). This document shows the information you will need to enter into the Bowmonk Connected settings page as described below.

Step 1.4.3 : Start Bowmonk Connected for the first time.

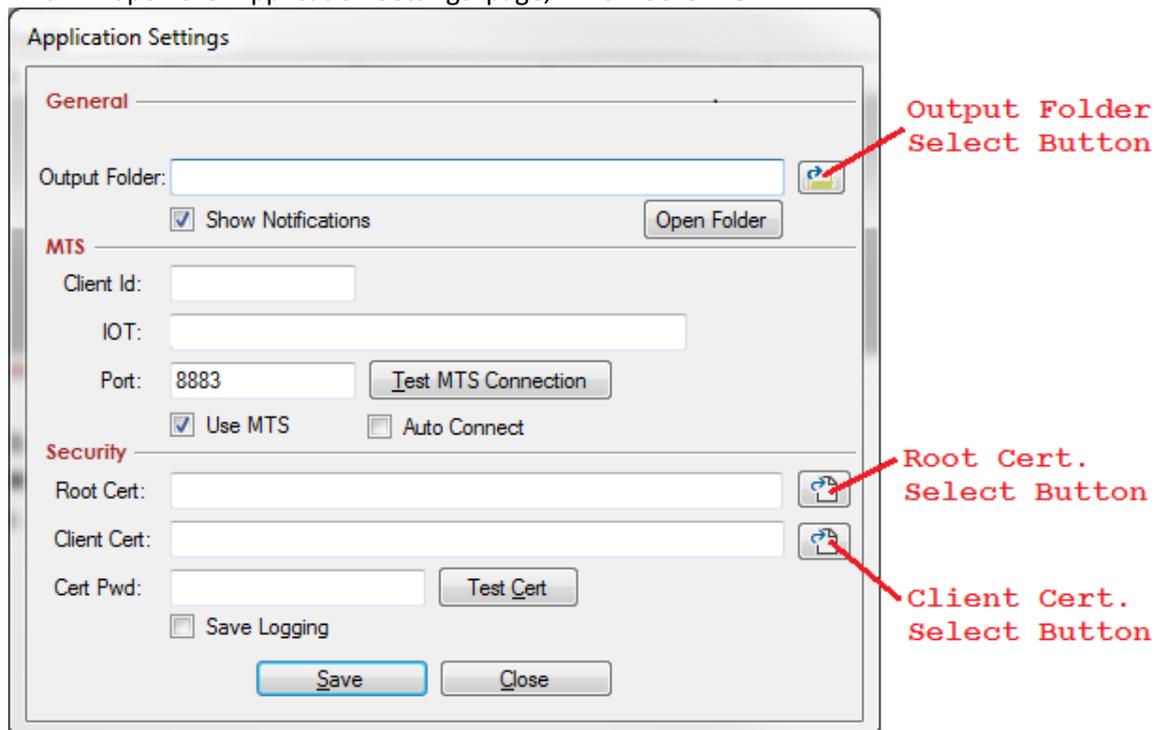
1. Make sure your Bowmonk Decelerometer is **NOT** connected to the computer at this point.
2. Double-click the  icon on your desktop to launch Bowmonk Connected for the first time.

Step 1.4.4 : Prepare to Configure Bowmonk Connected

1. Once the application starts, either click on the 'File' menu and select 'Settings', or press the 'F2' button on your keyboard.



This will open the 'Application Settings' page, which looks like:-



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Step 1.4.5 : Configure Bowmonk Connected

The individual setting values shown in the Settings Guide text file must be entered into the corresponding areas of the Application Settings page.

WARNINGS:

- The values shown in the Settings Guide text file must **REPLACE** any existing information present.
- Please take care when either typing in or 'copy & pasting' values into the Application Settings page fields, as the information *must* be copied *exactly* as shown, without any leading or trailing characters (including 'spaces') at all.

Using the information in the Settings Guide text file as necessary :-

1. Click on the "*Output Folder Select*" button, and select the 'Output' folder below the 'local settings location'
2. Enter the '*Client ID*' value shown in the Settings Guide into the 'Client ID' field of the settings page.
3. Enter the '*IOT*' value shown in the Settings Guide into the 'IOT' field of the settings page.
4. Enter the '*Port*' value shown in the Settings Guide into the 'Port' field of the settings page.
5. Make sure the '*Use MTS*' box **IS** ticked.
6. Make sure the '*Auto Connect*' box is **NOT** ticked.
7. Click on the "*Root Cert. Select*" button, and select the root certificate file contained in the 'Converted_Key' at in the 'local settings location'. (The computer will show you the correct 'Security Certificate' .CRT file)
8. Click on the "*Client Cert. Select*" button, and select the client certificate file in contained in the 'Converted_Key' folder at the 'local settings location' (The computer will show you the correct 'Personal Information Exchange' .PFX file)
9. Enter the '*Cert Pwd*' value shown in the Settings Guide into the 'Cert Pwd:' field of the settings page.
10. Make sure the '*Save Logging*' box is **NOT** ticked.
11. Now double-check that you have entered all the necessary values correctly. For *example*, if :-
 - a) You 'local settings location' folder was copied to **C:**
 - b) The 'Client ID' assigned to you by the DVSA is **Z000999**
 - c) The 'IOT' value is **a21k9hb9bk41au.iot.eu-west-1.amazonaws.com**
 - d) The 'Port' value is **8883**
 - e) The 'Cert Pwd' value is 8 characters long....then the settings screen should appear thus:-

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Application Settings **Note : For Example Only**

General

Output Folder: C:\Bowmonk_Settings_Z000999\Output

Show Notifications

MTS

Client Id: Z000999

IOT: a21k9hb9bk41au.iot.eu-west-1.amazonaws.com

Port: 8883

Use MTS Auto Connect

Security

Root Cert: C:\Bowmonk_Settings_Z000999\Converted_Key\AmazonRootCA1

Client Cert: C:\Bowmonk_Settings_Z000999\Converted_Key\Z000999.cert.pfx

Cert Pwd: *****

Save Logging

The associated 'Settings Guide' text file for this particular example is:-

```
#####  
# !!! FOR EXAMPLE ONLY !!! #  
#####  
  
Please use the following information when configuring the 'Bowmonk Connected' application settings:-  
NOTE : Settings marked with a "*" are 'case sensitive' and must be entered -exactly- as shown.  
NOTE : You may find it convenient to 'copy&paste' the value of each individual setting.  
  
GENERAL Section  
- Output Folder : <Path\To\Settings>\Output  
MTS Section  
- Client ID      * : Z000999  
- IOT           : a21k9hb9bk41au.iot.eu-west-1.amazonaws.com  
- Port         : 8883  
SECURITY Section  
- Root Cert.   : <Path\To\Settings>\Converted_Key\AmazonRootCA1.crt  
- Client Cert. : <Path\To\Settings>\Converted_key\Z000999.cert.pfx  
- Cert. Pwd    * : dn1kv8iv
```

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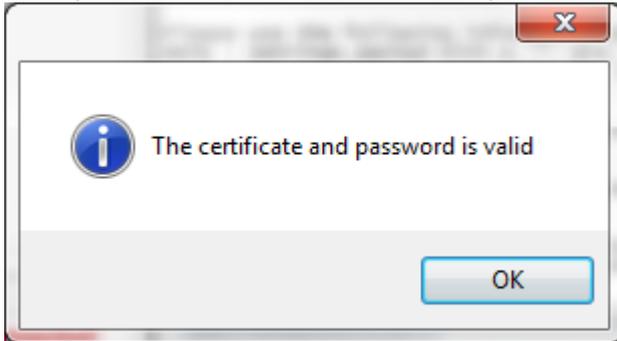
Step 1.5 : Validating the Configuration

Once the correct information has been entered into the 'Application Settings' page above, it is time to check these settings are correct.

Step 1.5.1 : Certificate and Password Check

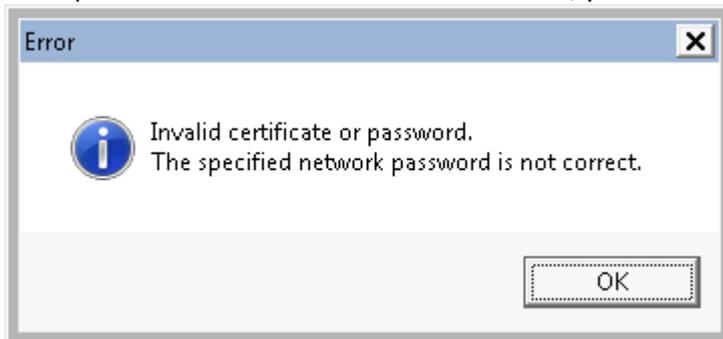
To check the client certificate and password are correct, click the  button.

- If the password matches the certificate, you should see:-



..and you should proceed to the 'MTS Connection Check' step below.

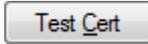
- If the password does **NOT** match the certificate, you will see



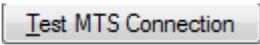
Bowmonk Connected will not function until this has been resolved.

You should check that the unique password entered for these certificates is correct. The most common cause of this error is that the 'Cert Pwd' value has been entered incorrectly.

Re-enter the correct password (From the Settings Guide text file) and re-test this by pressing the

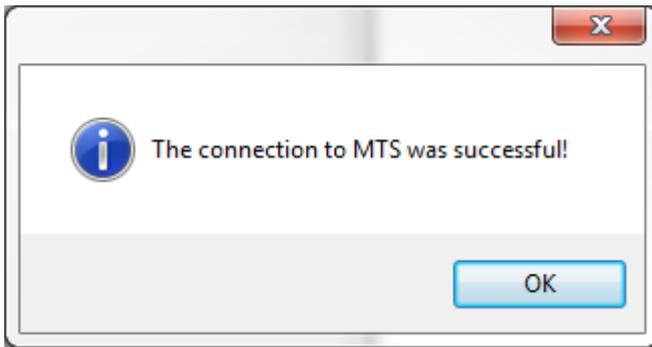
 button again.

Step 1.5.2 : MTS Connection Check

To check that communication with MTS is possible, click the  button.

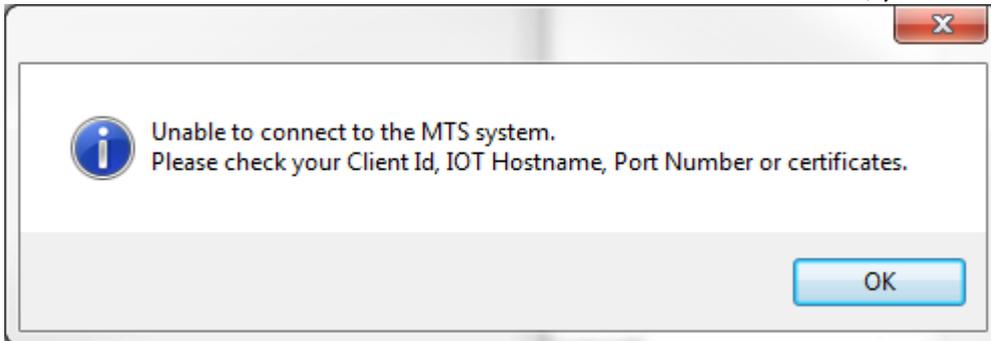
- If Bowmonk Connected can successfully communicate with MTS, you should see:-

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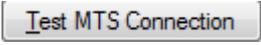
...and you should now proceed to the 'Validation Complete' step below.

- If Bowmonk Connected cannot communicate with MTS for some reason, you will see:-



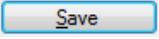
Bowmonk Connected will not function until this has been resolved.

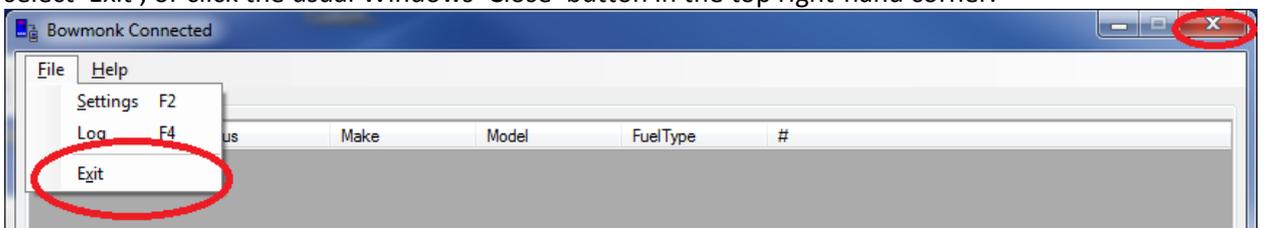
You should check that the values you entered for 'Client Id', 'IOT' and 'Port' match the corresponding values in the Settings Guide text file.

Once corrected, re-test the connection by clicking the  button again.

Step 1.5.3 : Validation Complete

Once both the 'Certificate and Password' and the 'MTS Connection' checks above pass, Bowmonk Connected is correctly configured and ready for use.

- Click the  button at the bottom of the 'Application Settings' window.
- Close the Bowmonk Connected application. To do this, either click on the 'File' menu item and select 'Exit', or click the usual Windows 'Close' button in the top right-hand corner.



- Close the Settings Guide text file you opened above (This is no longer required).

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Step 1.6 : Installation and Configuration Complete

Congratulations. Bowmonk Connected is now installed, configured, and ready for use.

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Section 2 - How to use Bowmonk Connected

Once the Bowmonk Connected software is both installed and successfully configured as above, the system is ready for use.

Perform the MOT Test normally, including any Service Brake and Handbrake tests that require the use of a decelerometer.

Any test results from the decelerometer must be sent to MTS **BEFORE** logging back into MTS to complete the test.

Step 2.1 : Connecting your decelerometer

When you are ready to send the test results from the decelerometer to MTS, the unit must be attached to the computer. How you do this depends on the type of decelerometer you are using – some are required to be turned on, others do not need to be.

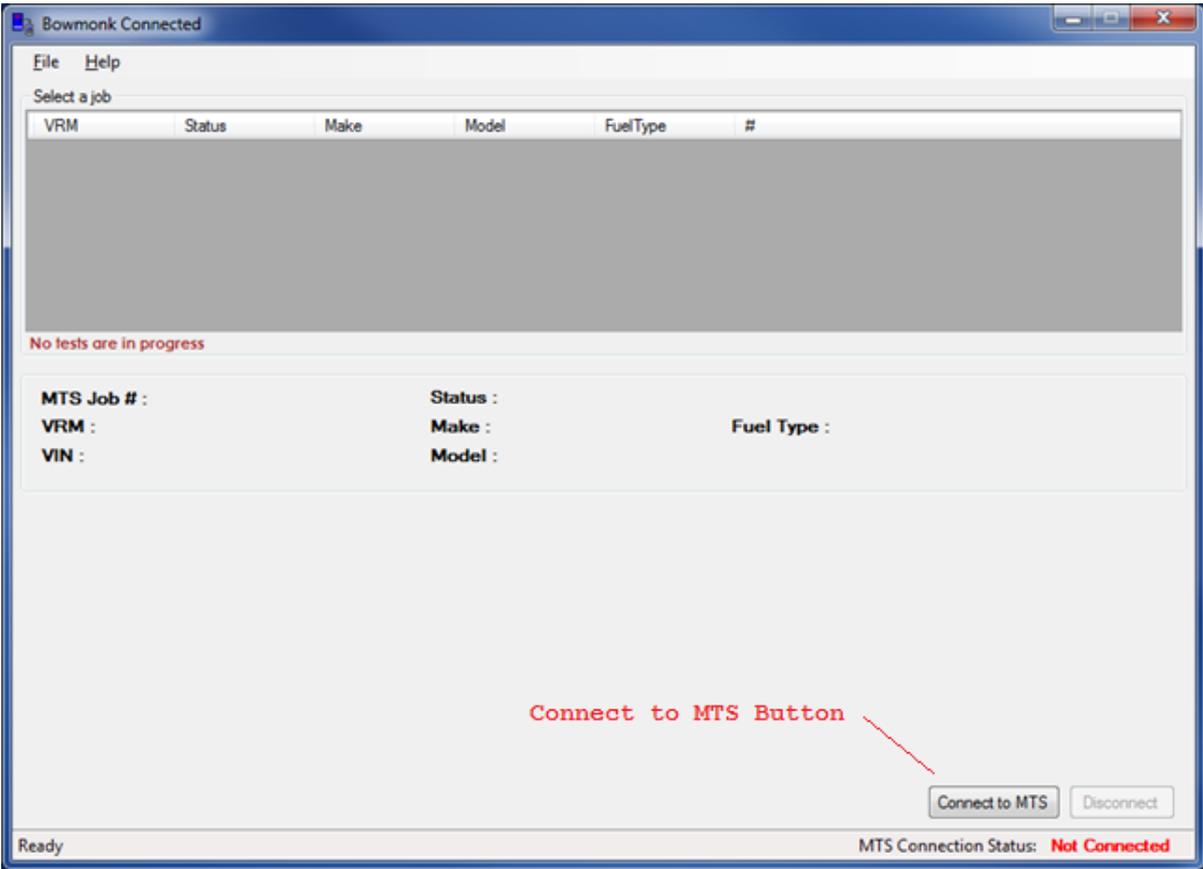
First, connect your decelerometer to the computer using the USB cable supplied with it, then :

1. If you are using a **Tapley EBM** decelerometer, switch the unit on by pressing the black 'Power' button until the device display shows '**Sbr**'.
2. If you are using the older **Series 1** decelerometer, switch the unit on by pressing the 'Menu' button until the device display shows '**Sbr**'.
3. If you are using the latest **Series 2** decelerometer, it does not need to be switched on in order to send test results.

Step 2.2 : Starting Bowmonk Connected

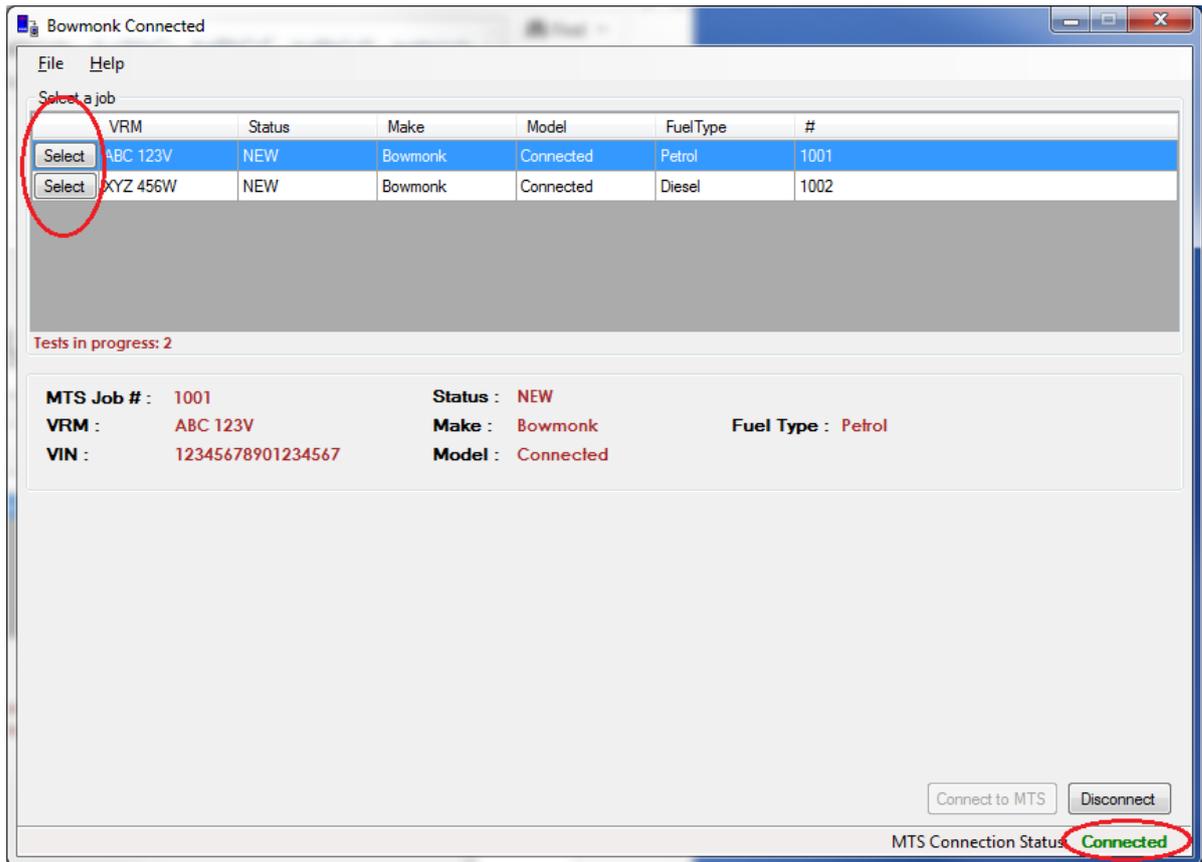
- Double-click the  icon on your desktop to start Bowmonk Connected.
- There will be a brief pause while the application automatically locates the decelerometer you connected above. You will then see :-

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- Click on the button. The display should shortly change to show a list of MOT tests in progress at your VTS, for example :-

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The example above shows:-

- a) That your computer is now 'Connected' to MTS as expected.
- b) There are two MOT tests currently in progress at your VTS.
- c) If no button is shown, this means the connected decelerometer has not been recognised and you should check that the unit is actually connected and/or turned ON as needed (See above).

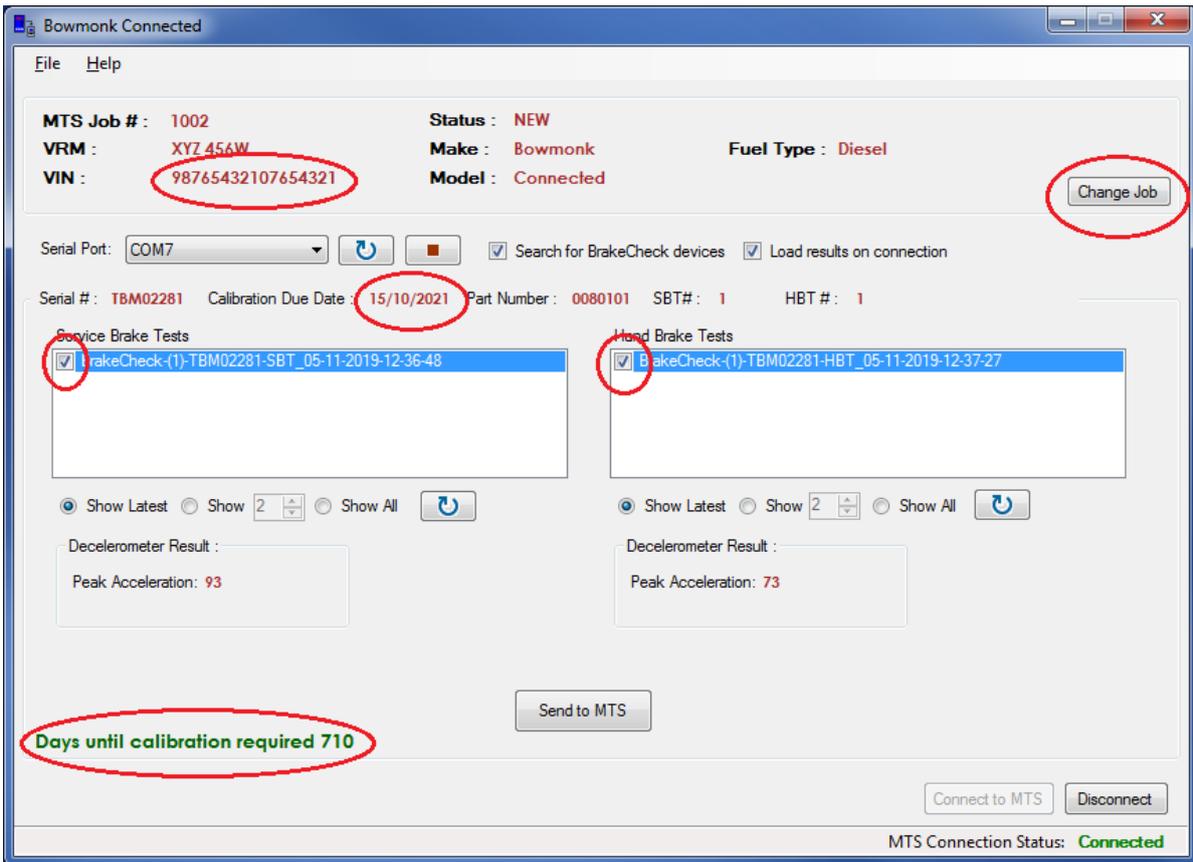
Step 2.3 : Sending test results

Option 2.3.1 : Sending both Service Brake and Hand Brake results as a pair.

Choose this option if the vehicle being tested requires decelerometer testing of **both** the Service Brake **AND** the Hand Brake.

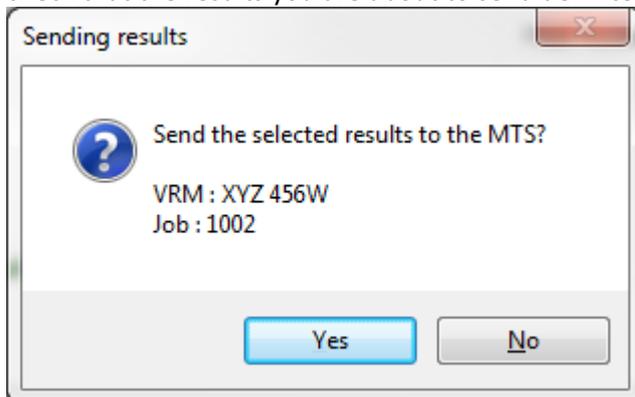
- Click the button next to the VRM of the vehicle you have just tested with the decelerometer. The screen will change to :-

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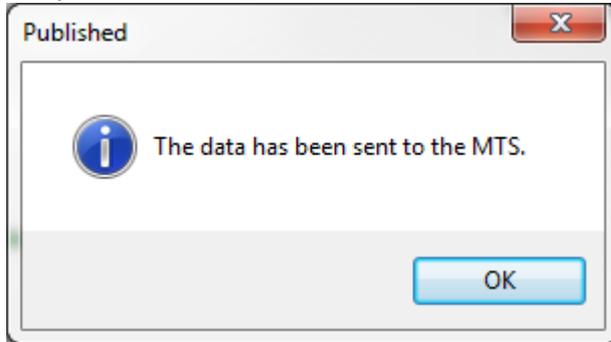
The example above shows:-

- You are about to send test results for both the Service Brake and Hand Brake relating to vehicle 'XYZ 456W' - If the last test result in the decelerometer unit is NOT for this vehicle, then click the **Change Job** button and re-select the correct vehicle from the list of tests in progress.
 - The VIN for this vehicle is '98765432107654321'
 - Your decelerometer is due for re-calibration on the 15th of October 2021, in 710 days time. You will not be able to automatically send results to MTS on or after this date.
- Make sure the tick-boxes next to the latest Service Brake and Hand Brake test are BOTH ticked.
 - To send the brake test results to MTS, click the **Send to MTS** button. You now will be asked to confirm that you wish to send these results – you should now double-check that the results you are about to send definitely relate to the correct vehicle.



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- If this **IS NOT** the correct vehicle, click the 'No' button followed by the button and re-select the correct vehicle.
- If this **IS** the correct vehicle, click the 'Yes' button. The test results will now be sent to MTS, and you should see:-



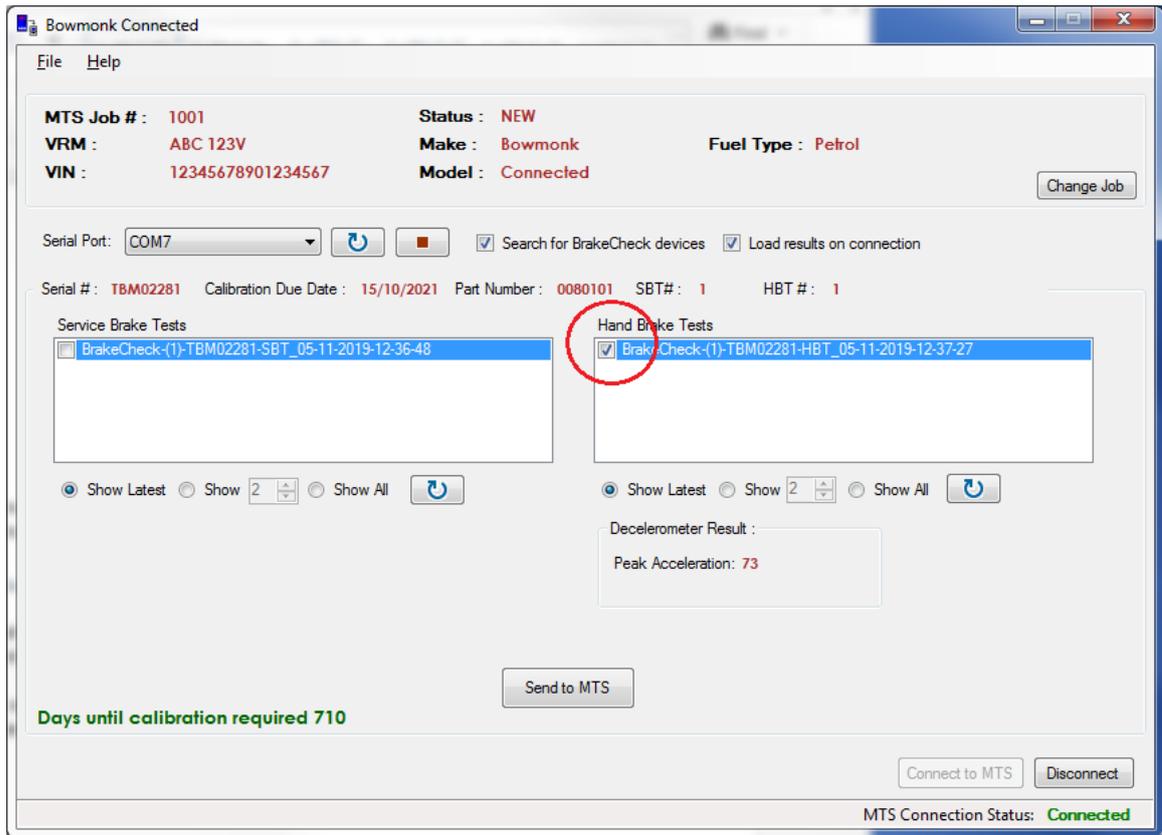
Option 2.3.2 : Sending only Service Brake or Hand Brake results individually.

Choose this option if the vehicle being tested requires decelerometer testing of the Service Brake *OR* the Hand Brake only, not both. (Sending only Hand Brake test results is the usual case).

The process is the same as sending both Service Brake and Hand Brake results as a pair above, however instead of both the Service Brake and Hand Brake tick-boxes being ticked, you should tick only the one that applies, and un-tick the one that does not apply.

- For example, to send only a Hand Brake test result, only tick the Hand Brake Test result, and un-tick the Service Brake Test result.

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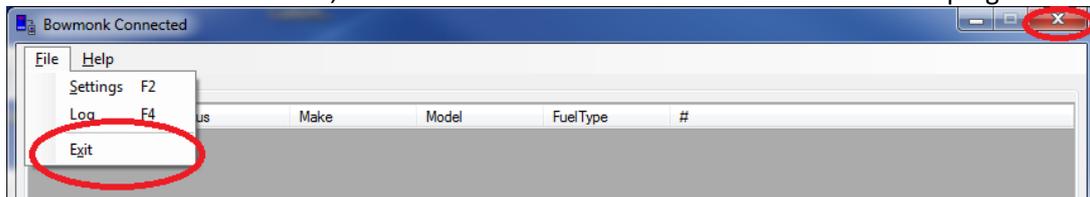


In this example, only Hand Brake results will be sent to MTS.

Step 2.4 : After sending test results

Bowmonk recommend that :-

- Both **Tapley EBM** and **Brakecheck Series 1** decelerometers are disconnected from the computer after sending test results.
- **Brakecheck Series 2** decelerometers may remain connected to the USB port to charge their internal batteries.
- The Bowmonk Connected program is closed between tests. To do this, either click on the 'File' menu item and select 'Exit', or click the usual Windows 'Close' button in the top right-hand corner.



Step 2.5 : Completing the MOT Test

Once you sent the necessary decelerometer results to MTS, log in to MTS using your Web Browser as normal.

The brake test results will already be present in MTS, just as if you had typed them in manually when using an older 'non-connected' decelerometer.

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