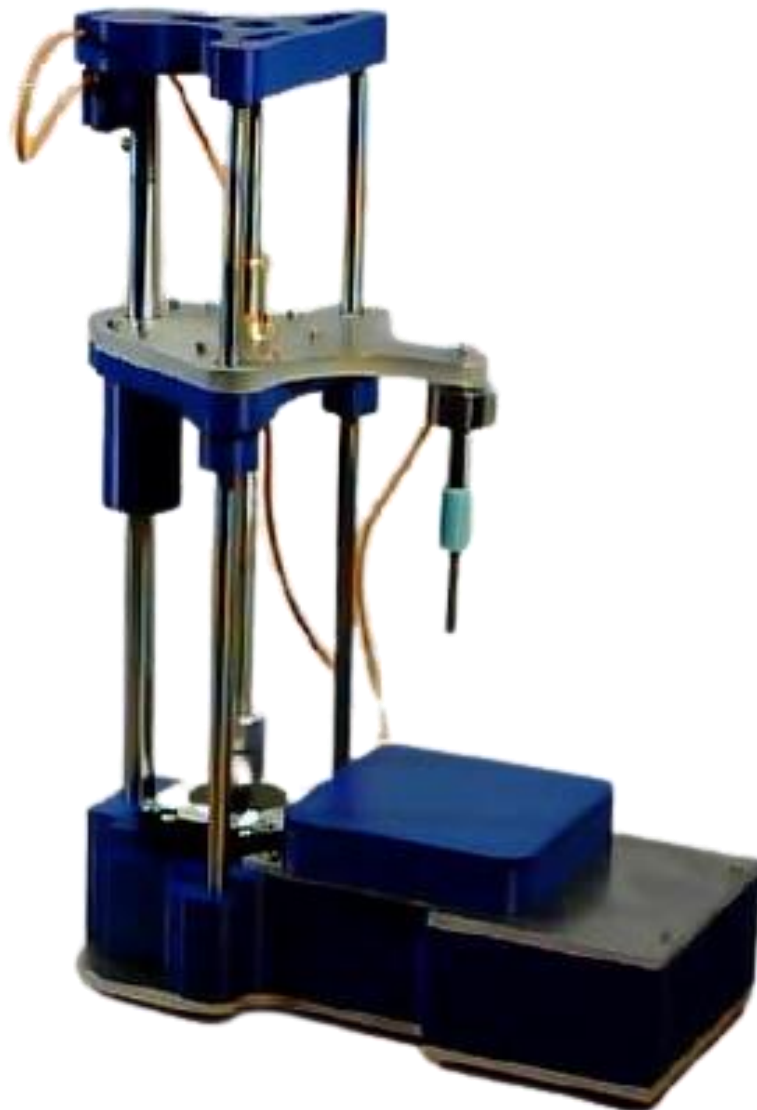


The Agrosta® Belle has been designed in 2019

In order to provide to researchers a simple and reliable tool to determine : Freshness, spreadability, Tenderness, Springiness, Gumminess, Hardness, Firmness, Consistency, Fracturability etc of a variety of Food Products and soft materials



Your package contains :

- The instrument itself
- 1 Beakers and / or one table
- Tips according to your requirements
- A calibration stand
- A power supply & a USB cable
- The software for windows on USB stick (With video for software training)
- A certificate of conformity
- A manual

**Agrosta® Belle has been designed and produced in France by Agrosta**

- The motor is a Nema 23 stepper motor
- The machine comes with a double core microprocessor (ESP32) : One core is managing the pressure measurements, the other one manages the motors and distance measurements
- Comes with a light version of Excel (Inside machine software)

|   |  |
|---|--|
| LOAD RANGE (LOAD CELLS TYPES AVAILABLE) | 5 Kg or 17 Kg  |
| AVERAGE ACCURACY                        | +/-0.5 g or +/-3 grams   |
| POSITION RANGE                          | 0 to 150 mm  |
| TEMPERATURE MEASURING RANGE             | 0 to 90 °C   |
| COMPATIBILITY                           | Windows 2000<br>XP<br>Vista<br>Windows 7<br>Windows 8<br>Windows 10                                    |
| POSITION ACCURACY                       | 0.03 mm  |
| SPEED                                   | Up to 27 mm/s  |
| SPEED ACCURACY                          | +/- 0.1% of set speed  |
| CUSTOM DESIGN FIXTURE AND PROBE         | YES (3D printing, immediate result)  |
| CUSTOM SOFTWARE                         | Option   |
| CUSTOM ELECTRONICS                      | Electronics can be customized<br>Additional features available   |
| OPEN SOURCE                             | Code provided to pilot the machine<br>Standard Nema 23 motor<br>Standard ESP32<br>Low cost spare parts |
| DESIGN Generation                       | ~ 2019   |
| TEMPERATURE PROBE                       | No   |
| CALIBRATION                             | Check using Calibration stand with calibrated weight   |
| VARIETY OF BASE PLATES AND PROBES       | More than 100  |
| TEST PARAMETERS                         | 14   |
| PRE-CONFIG TEST MODES                   | 4  |
| MADE IN                                 | FRANCE   |
| DATA EXPORT FROM SOFTWARE               | Excel, Word, Xml, Jpg  |
| WORKS WITHOUT COMPUTER                  | NO   |
| GUARANTEE                               | 2 Years full guarantee   |
| STATISTICS                              | Unlimited data   |

## 1/ Install Driver

- Don't connect your machine
- Insert USB stick in your computer

| Nom                | Modifié le       | Type                | Taille    |
|--------------------|------------------|---------------------|-----------|
| CH341SER           | 14/04/2018 10:23 | Dossier de fichiers |           |
| INSTALL            | 14/04/2018 10:23 | Dossier de fichiers |           |
| Agrosta_Driver.EXE | 24/01/2017 01:17 | Application         | 238 Ko    |
| INSTALL.EXE        | 26/02/2014 10:39 | Application         | 212 Ko    |
| INSTALL.ZIP        | 16/02/2018 15:50 | Archive WinRAR ZIP  | 11 735 Ko |

- Double click on "Agrosta\_Driver" – Follow setup procedure

## 2/ Connect Usb cable between instrument and your computer

## 3/ Wait a few seconds till it is recognized (Driver linked to device)

## 4/ Install Software from USB Stick

| Nom                | Modifié le       | Type                 | Taille     |
|--------------------|------------------|----------------------|------------|
| CH341SER           | 27/08/2019 14:07 | Dossier de fichiers  |            |
| INSTALL            | 29/08/2019 17:00 | Dossier de fichiers  |            |
| Agrosta_Driver.EXE | 24/01/2017 01:17 | Application          | 238 Ko     |
| autorun.inf        | 03/08/2019 16:27 | Informations de c... | 1 Ko       |
| BelleSoftPubli.mp4 | 29/08/2019 16:56 | Fichier MP4          | 309 095 Ko |
| INSTALL.EXE        | 30/10/2017 11:38 | Application          | 232 Ko     |
| INSTALL.ZIP        | 29/08/2019 17:00 | Dossier compressé    | 19 304 Ko  |

- Double click on "INSTALL.EXE"
- Follow Setup procedure

## 5/ Connect the camera via USB

## 6/ Connect Power Plug

### Operating :

- In case of EMERGENCY = REMOVE POWER PLUG !
- Start the software from the PC, and select the COM port corresponding to your device - Usually, the last COM is the good one (As far as the driver has been installed according to previous instructions)



## First Cycle :

- Once the COM is selected, a window is displayed and asks you the maximum acceptable pressure for the tests you are going to perform
- Choose 1000 grams for very fine testing like Bloom, and 17 000 grams for fruit penetrometry for example
- Then click on “OK”

For testing the machine, place the table, put any tip on the sensor head, and place something thick and soft on the table, like a piece of foam

Then click on the preset button “BLOOM PARAMETERS”

Then click on “LAUNCH CYCLE (PUSH)”

The tray moves down, and a graph of pressures is displayed

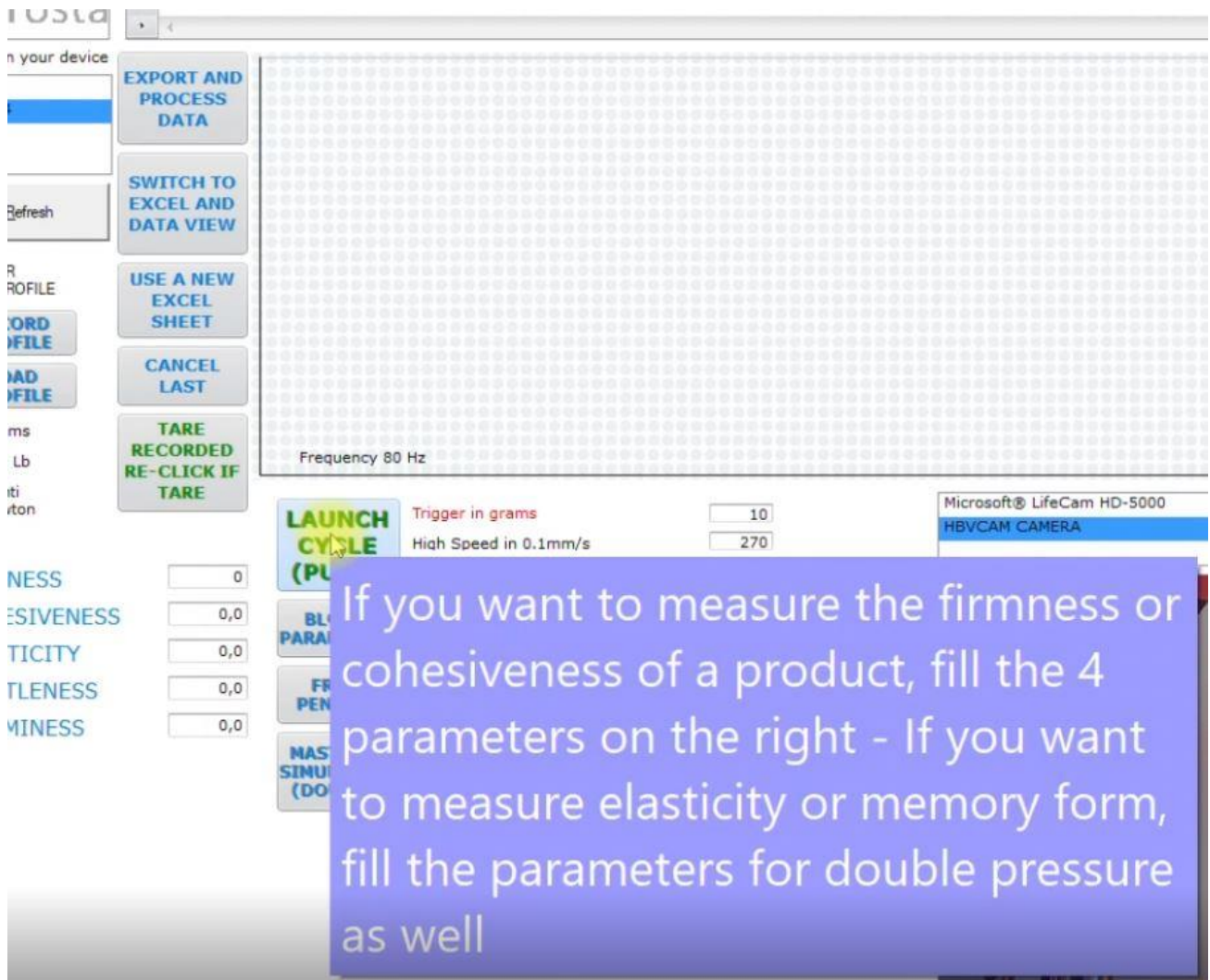
Select “HBVCAM CAMERA” in the list of cameras – As far as the camera provided with the machine has been connected

The screenshot displays the software interface for the Agrosta Belle texture analyzer. Key elements include:

- Device Selection:** A dropdown menu showing 'COM1' and 'COM6'.
- Control Panel:** Buttons for 'Erase data', 'Export to Excel', 'Record Max and Erase', 'Record Min and Erase', 'Export Min/Max chart and statistics', 'TARE RECORDED RE-CLICK IF TARE CHANGES', 'LAUNCH CYCLE (PUSH)', 'BLOOM PARAMETERS', 'FRUIT PENETRO', 'MASTICAT. SIMULATION (DOUBLE)', 'RECORD PROFILE', and 'LOAD PROFILE'.
- Parameters:**
  - Trigger in grams: 10
  - High Speed in 0.1mm/s: 270
  - Low Speed in 0.1mm/s after contact: 150
  - Stroke after contact in 0.1mm: 100
  - Return Speed before second pressure: 270
  - Return stroke for second pressure: 100
  - Pause time before second press in ms: 300
  - Low Speed second pressure: 150
  - Stroke for second pressure: 101
- Camera Feed:** A live video stream showing a sample being tested, with a 'CAPTURE IMAGE' button and 'Number of captures: 20' and 'Time between captures in 0.1 sec.: 5'.
- Readouts:** Large numerical displays showing '122' and '0'.
- Additional Controls:** 'CHANGE PRESSURE RANGE', 'STOP DATA FLOW', 'DISPLAY PRESSURES WITHOUT MOVEMENT', and 'EXPORT TO EXCEL + ERASE'.

## Parameters :

- You can hover over each button with the mouse to get the corresponding explanations :



- You can hover over each parameter field to get corresponding explanations :



## Calibration check :

The calibration stand is provided with the machine – You can check the calibration using any calibrated weight and measuring the corresponding value

If the spring is mounted, remove it

Then put the calibration stand in place :

- Connect the machine, and start the software
- If the machine was already connected and soft already started, click on the button “TARE” once the calibration stand is mounted
- Then click on “DISPLAY PRESSURES WITHOUT MOVEMENT”
- And place the calibrated weight on the tray (as shown on picture before)
- The corresponding weight shall be displayed by the software
- You can change the load cell factor in order to calibrate the machine
- Look at the value obtained once weight stabilized : For example if you obtain a value of 1003 grams for a weight of 1000 grams, with a cell factor of 1294 change the factor as follows : New factor =  $1294 * 1003 / 1000 = 1298$
- Change the value, click on the button, remove the weight from stand, remove usb plug, re-connect usb plug, click on Refresh, select the COM of your machine and check again

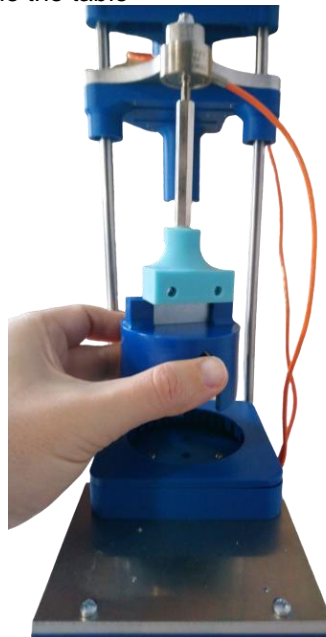


**Specific items :**

When using the Kramer / Ottawa cell (5 bladed), the cell is not fixed to the sensor (The light blue tip is linked to the sensor and is free when pushing on the blades)

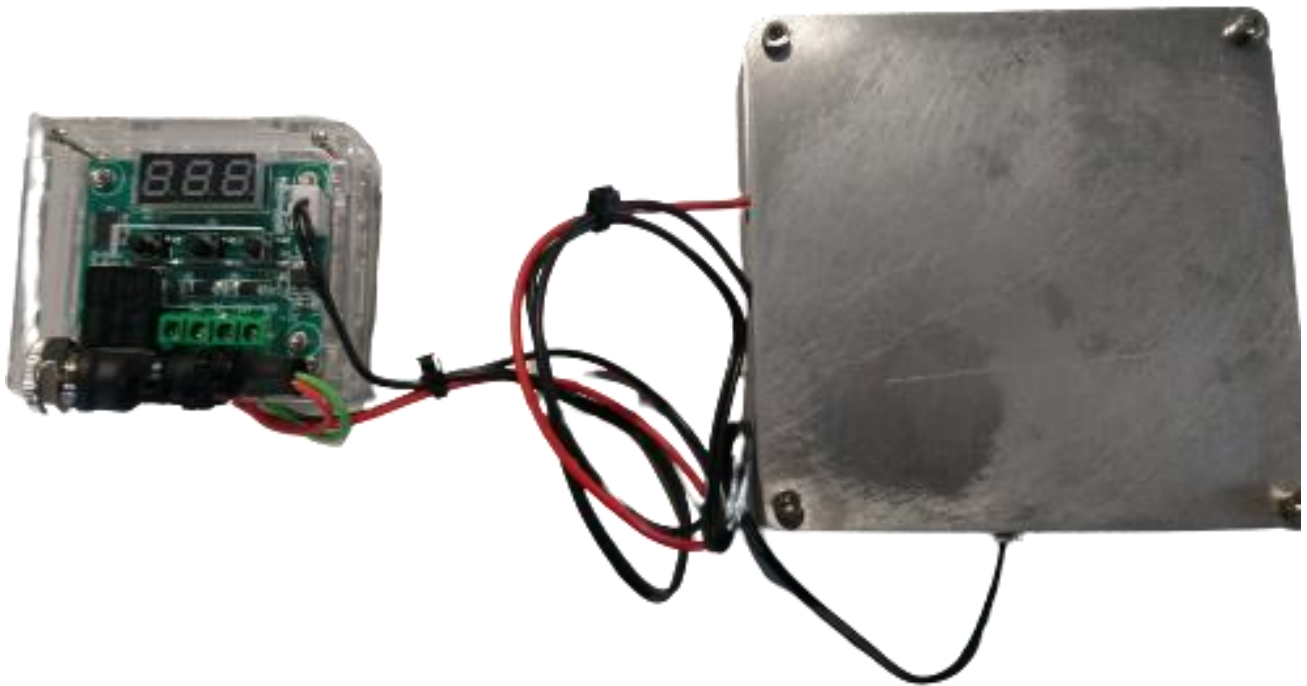


When fixing the Warner bratzler module, insert the blade in the female module, then fix the blade by screwing, and then insert the female module inside the table





Concerning the use of thermal regulation :



There are 3 buttons :

- Short click on the button on the left in order to set the temperature
- Then Button in the middle to increase and button on the right to decrease