AniloxSearch v 1.9.3 - NEW FEATURES

Print contrast: A higher print contrast value increases the amount of tonal steps in the printout. This value can be increased until the saturation of the solid, where the screened steps have their density increased, reducing the printing contrast. Therefore, exist a window of balance of values.

Normally simple densitometer have the function of printing contrast, if you don't have this in your device, you can collect the density in solid and 70%, applying in the equation below:

$$\text{Print Contrast} = \frac{(D_s - D_{70})}{D_s}$$

where D_{70} is the Density of the 70% tint and D_s is the Density of the solid.

Color	Analog Plates	Digital Plates
Cyan	>25%	>35%
Magenta	>25%	>35%
Yellow	>20%	>30%
Black	>25%	>35%

Print contrast equation and IC values - according to FIRST Standard.
reference: Tom Cassano - Arc International

Using print contrast to optimize ink viscosity: Tom Cassano - Arc International (https://bit.ly/2TQR02b), did an interesting publication, relating print contrast to different ink flow times.

In an older document by Tom Cassano, we found a very detailed study, summarized in the graph below:
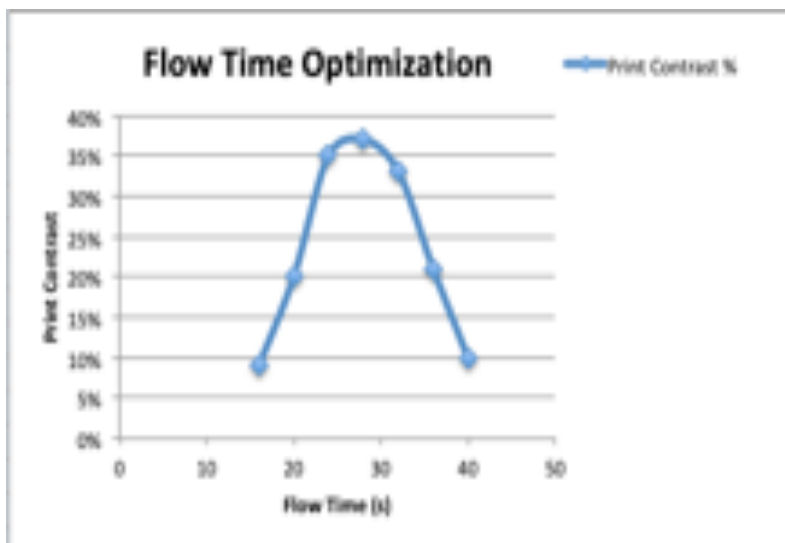
Zahn #2 (s)	Print Contrast %
40	10%
36	21%
32	33%
28	37%
24	35%
20	20%
16	9%

Flow time x print contrast ratio, reference to Tom Cassano

In this study, we can clearly see a window with better print contrast as well as its decay due to the thickening or dilution of the ink.

A great control reference, but we need to understand that: flow time is not viscosity...

Viscosity: In the Brazilian printing industry, is common to check the viscosity of an ink, using a standard cup (Zahn ™, Ford ™ etc.). The most interesting fact is that most operators confuse the ink flow time with the viscosity.

There are two types of viscosities, Dynamic (absolute) and kinematic. We can cite numerous publications on the subject, so we will use a more summarized and easily accessible for those who want to go deeper into the study.
Reference: "The engine box (https://bit.ly/38AFKfC)" **

Read the liquid flow time using a standard cup, we apply this time to the formula of the cup (or table provided by the manufacturer), the table or formula provides the kinetic viscosity in cSt (centistokes). For example:
- Cup: Zahn # 2
- Time: 18 seconds
If ν = 3.5 (t - 14), then the kinetic viscosity is: 14 cSt

However, the kinetic viscosity depends on the specific weight of the liquid evaluated, as ** tells us that:
$\nu = \mu / \rho$, where ρ is the specific weight of the liquid and μ is the dynamic viscosity of the same liquid

We deduce, in formulas or tables, the specific weight is not considered, so the results is dynamic viscosity, or ρ = 1.

Important: Consider any change in the concentration of solid (body or dilute), changes the specific weight of the liquid.

Kinetic viscosity depends on yet another factor: temperature.
This is very clear in the flow cups manual produced by the American company "GARDCO® - PAUL N. GARDNER". Reference: EZ ™ Zahn Cups Manual (https://bit.ly/2xjrzP3)
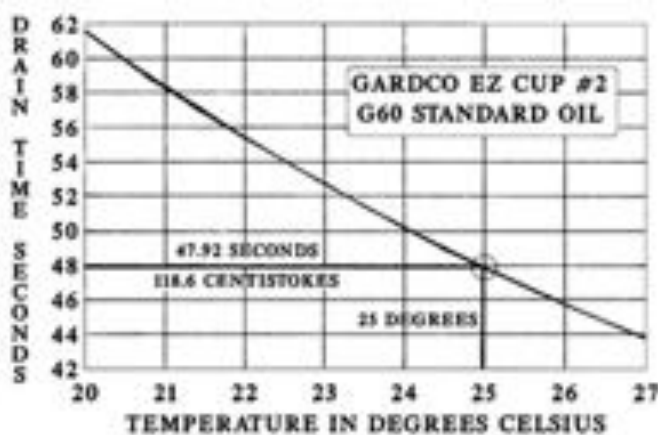
Demonstration of the G60 calibration oil at different temperatures. Reference: "GARDCO® - PAUL N. GARDNER"

We can observe, for each temperature there is a different flow time.

Therefore:
- Flow time is not viscosity;
- Viscosity depends on the concentration of solid;
- The flow time depends on the temperature of the liquid.
- Viscosity depends on the flow time;

Returning to the FLOW TIME OPTIMIZATION graph, not enough to just measure the liquid's flow time, we also have to consider the temperature of this liquid, because the number we have to fix is the kinetic viscosity, not simply the flow time.

APP VISCOSITY TOOL: Allows to easily calculate the dynamic viscosity of a liquid (adhesive, paint, etc.). Just choose the standard cup and inform the flow time. The viscosity calculated will be kinetic, considering the specific weight, if informed.
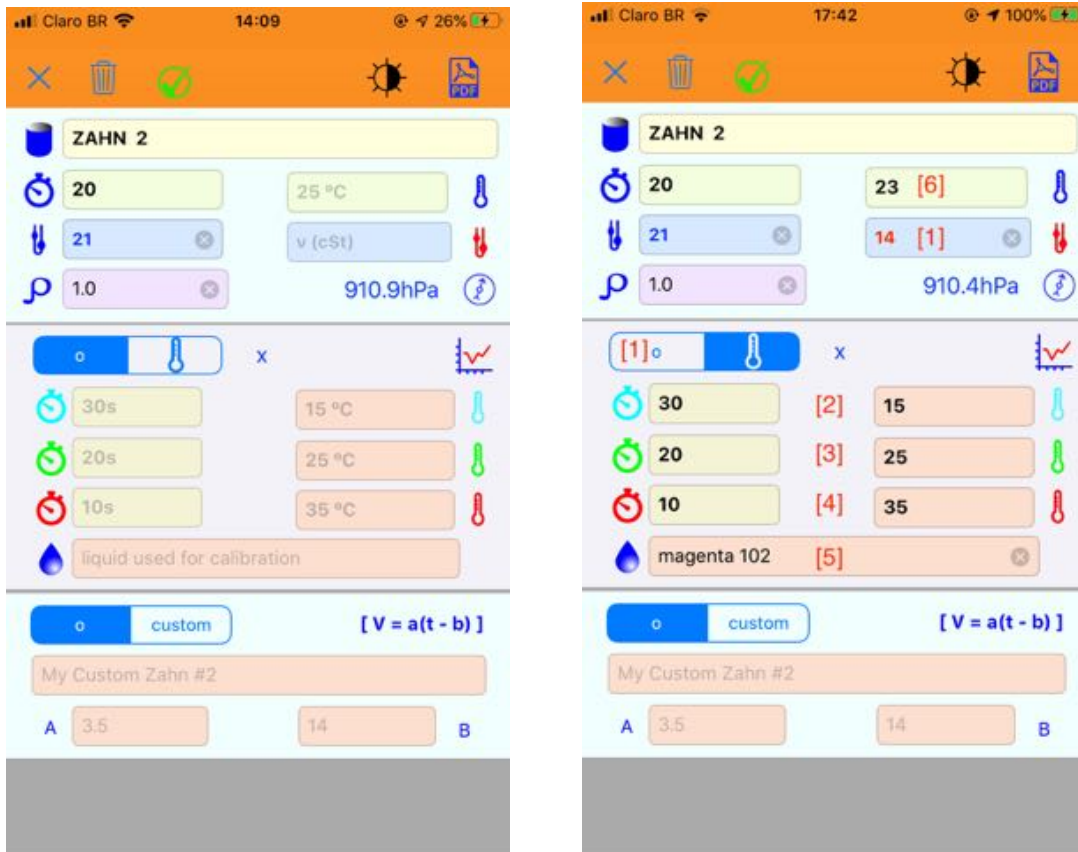
To create the thermal flow curve of the liquid, proceed as follows:
- Access the function   [1]
- Measure the flow time and temperature of the liquid under normal conditions
- Cool the liquid to a lower temperature of use (recorded in winter for example).
Measure the flow time and temperature of the liquid under these condition
- Heat the liquid to the highest temperature of use (recorded in the summer for example).
Measure the flow time and temperature of the liquid under these conditions
- Fill the values in the appropriate fields
1] Longer time vs. lower temperature   [2]
2] Average time x average temperature (or current)   [3]
3] Shortest time vs. highest temperature   [4]
- Fill the identification of the liquid.   [5]

Now you can fill the current liquid temperature field [6], the APP will calculate the correct kinetic viscosity [7], considering the deviation from the original table (for laboratory temperature).
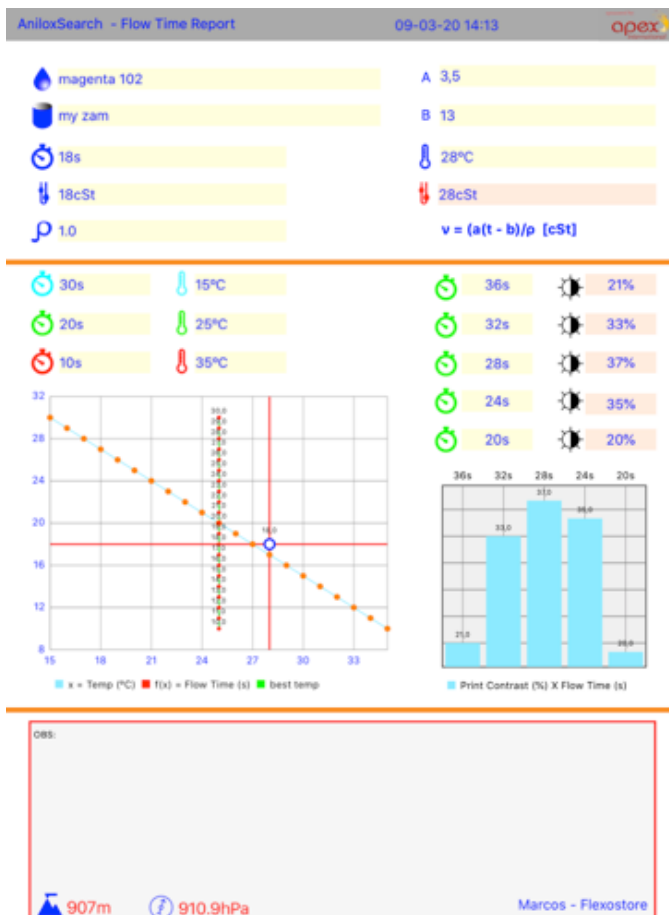
In this example: for 20 seconds (Z # 2), we would have a viscosity = 21 cSt, doing the correction, we see the correct viscosity would be 14 cSt.

Now we can to analyze the print contrast!

D Max	D 70%	⏱ [s]	☀ [%]
1.39	1.10	36	21
1.35	0.90	32	33
1.31	0.82	28	37
1.20	0.78	24	35
1.00	0.80	20	20

Print Contrast (%) X Flow Time (s)

Using a densitometer, read the Dmax and D70%, preferably in different flow time situations:

- In this example, are 5 flow time variations, indicating the best time window [32-24s].
- Remember that this time is related to the temperature observed during the test.
- Consider ever the calculated as the point to be fixed.
- The MR icon contains sample data; it is not your reality.

AniloxSearch - Flow Time Report   09-03-20 14:13   apex

magenta 102   A 3,5
my zam   B 13
18s   28ºC
18cSt   28cSt
1.0 $v = (a(t - b)/\rho$ [cSt]

⏱ 30s	🌡 15ºC		⏱ 36s	☀ 21%
⏱ 20s	🌡 25ºC		⏱ 32s	☀ 33%
⏱ 10s	🌡 35ºC		⏱ 28s	☀ 37%
			⏱ 24s	☀ 35%
			⏱ 20s	☀ 20%

x = Temp (ºC) f(x) = Flow Time (s) best temp

Print Contrast (%) X Flow Time (s)

OBS:

⛰ 907m   ⓘ 910.9hPa   Marcos - Flexostore

You can create a report, with all control reference data for each liquid considered (ink, adhesive, etc.).

This report includes:
• Chart of the viscosity curve interpolated between the flow times X temperatures of the samples (Lagrange method);
• Indication of time x temperature of the sample analyzed at the time and its distance from the curve;
• Chart of the relationship between flow time x printing contrast of the measured samples;
• Altitude and atmospheric pressure at the moment of read;
• calculation of standard and corrected kinetic viscosity.

DCW: The dry coat weight tool, calculates the weight of ink or adhesive applied, in the **current situation of anilox volume**. The result is recorded in the inventory.
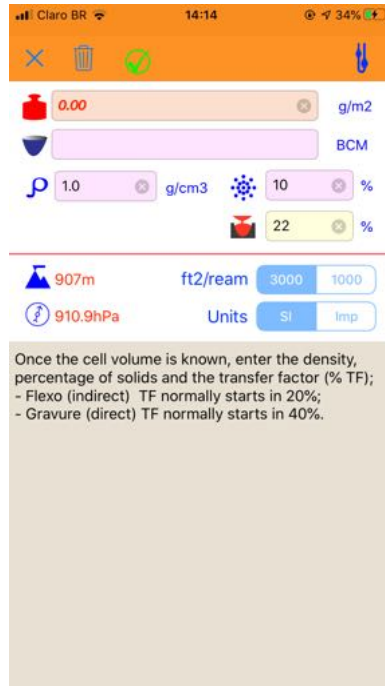
According to Dr Paul E. Gloor Johnson (Polymer Inc), in his article "Coating Control, Quality & Paperboard Packing" of May 1, 2002, the DCW (g / m2) is given by the equation:

$$DCW = TE/100 \cdot CV \cdot \rho \cdot S/100$$

Where:
TE = transfer efficiency (%)
CV = anilox cell volume(cm3/m2)
ρ = density or specific gravity (g/cm3)
S   = percent solids

Reference: Dr Paul E. Gloor Johson:
https://bit.ly/2xsmFj1

• with a volume reading, click the DCW icon, fill the basic data as specific weight, ,percent of solid and transfer factor, the calculation is automatic. If you do not know how to fill the parameters, consult your ink manufacturer / supplier.
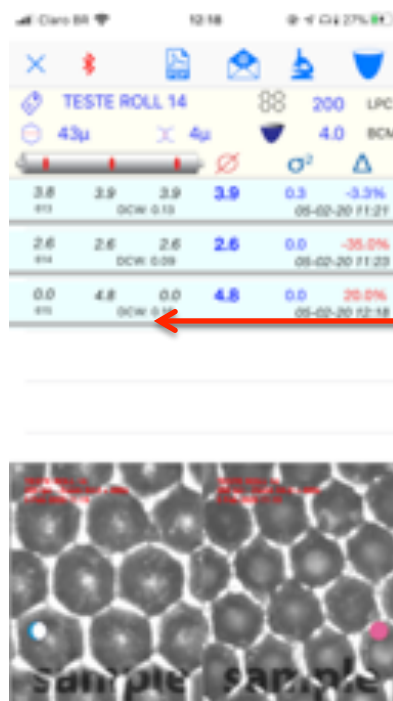

• • the App shows the result, next to the average volume, in the inventory line and in the reports.
** The DCW can also be accessed in the tools main screen, but the cell volume must be informed manually, so there will be no record in the inventory.

RENAME: You can rename an anilox TAG. This function keeps all photos and volume readings already registered.
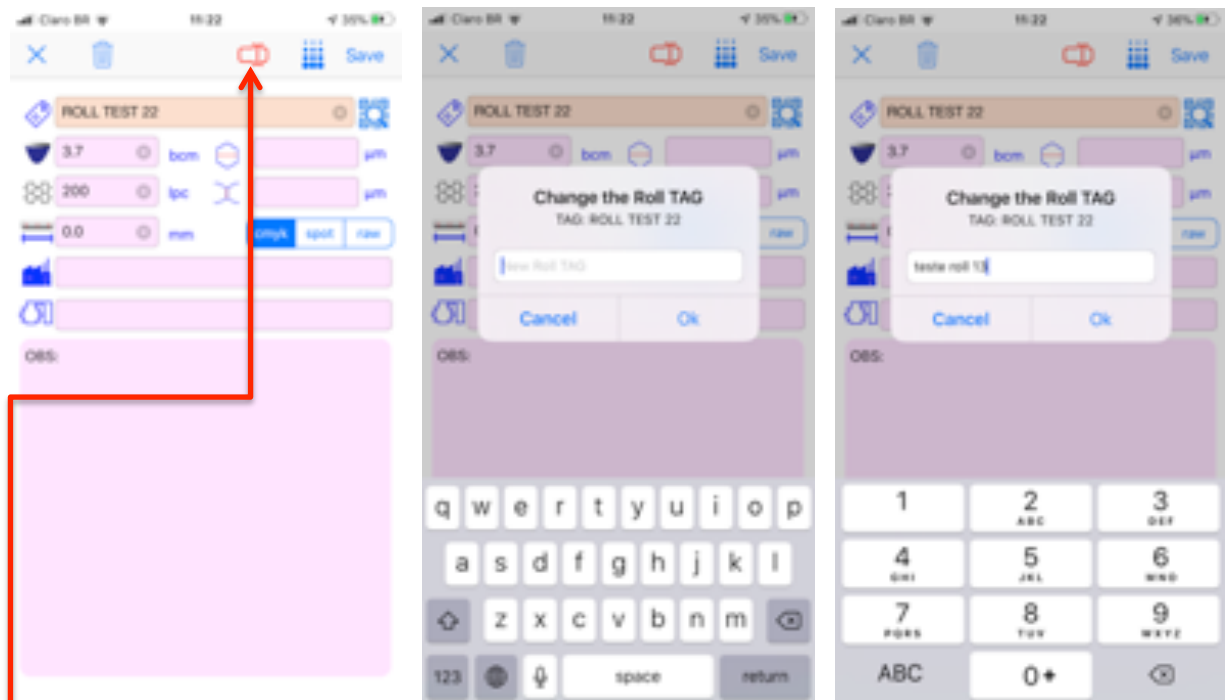

• no modo EDIÇÃO, clique no ícone RENOMEAR, preencha o novo nome e confirme.

QRCode Scan: Using a PDF report (on screen) or on paper, you can create a new record in the DB without typing.
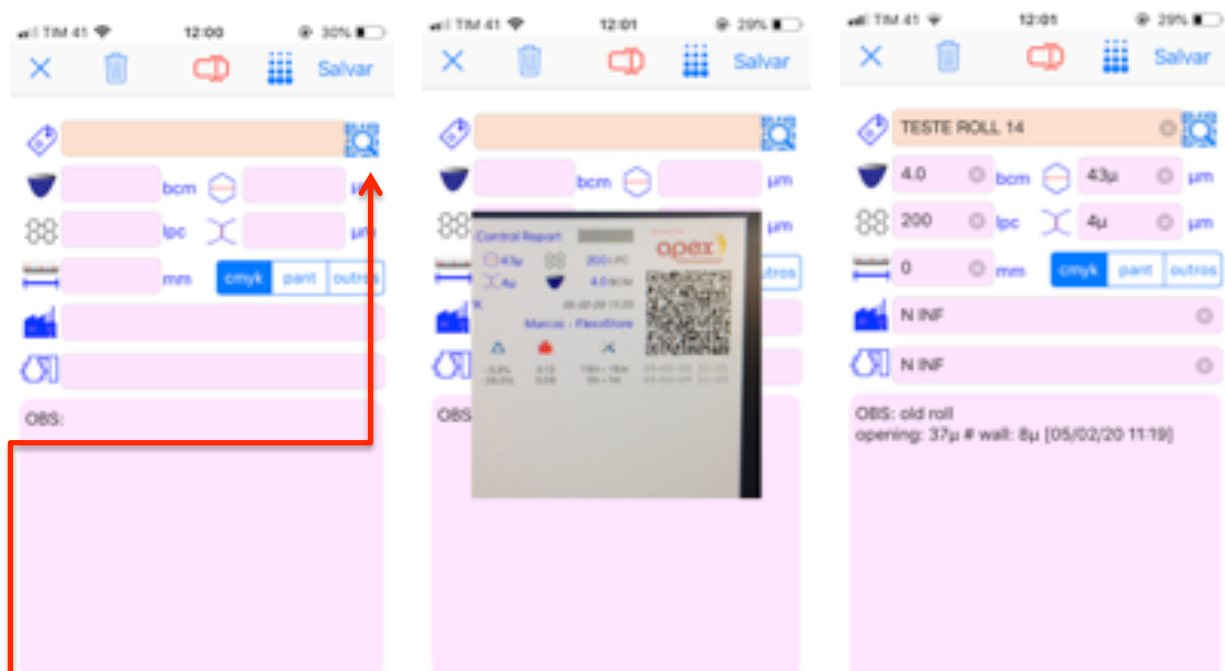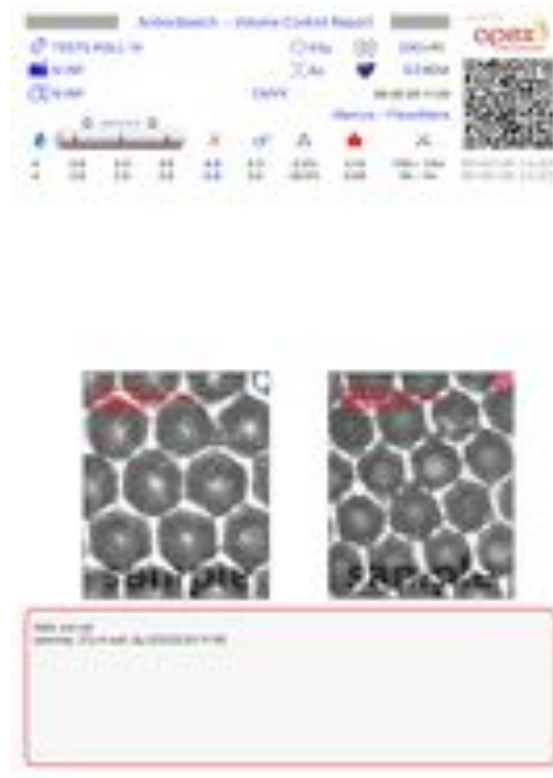

*• in ADD RECORD, click the QRCODE icon, point to the QRcode ** of the old report, on screen or paper*
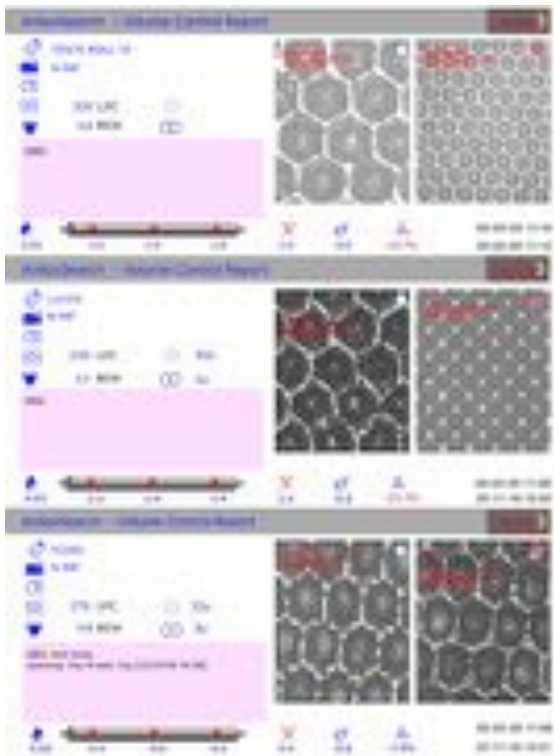* ** only available for QRCodes generated from version 9.x and above.*

Relatórios: larger OBS field, including DCW info and calibration date. All fields (less movement) are included in the QRCode.
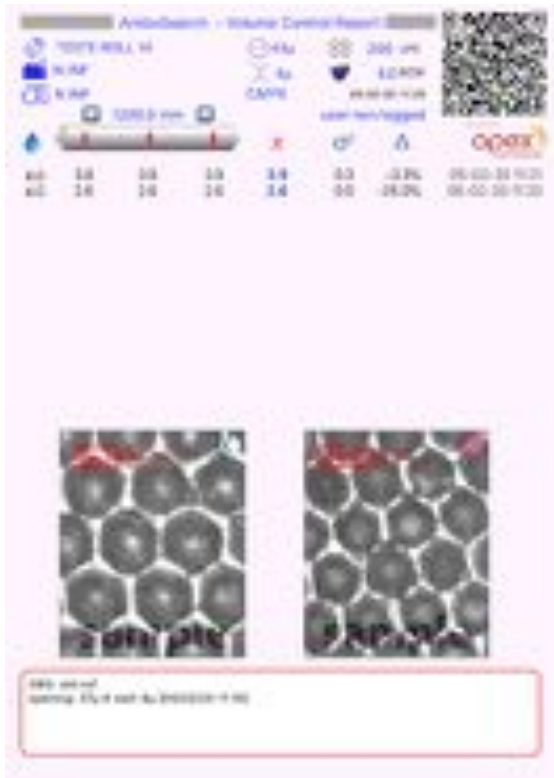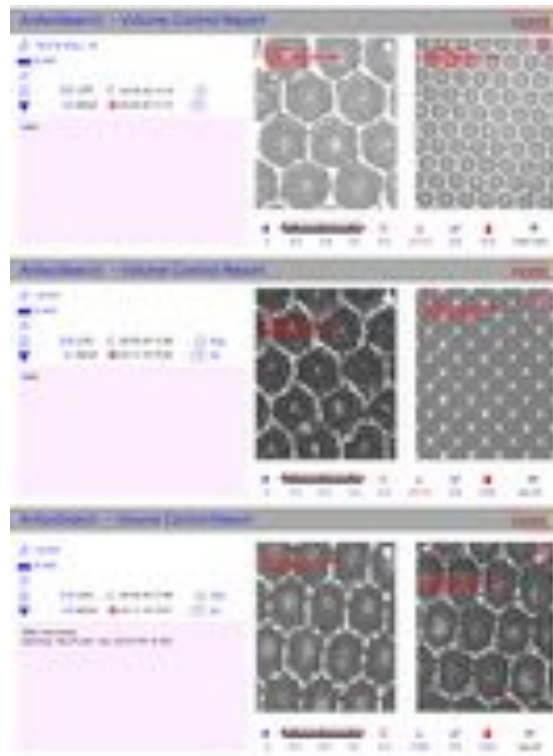

Full report, old version

Full report, new version

3X, old version

3X, new version