

# FLEX<sup>3</sup>PRO FLEYEplus preliminary user manual

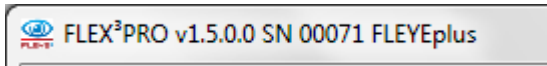
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## Introduction

FLEYEplus is an optional software Module that makes the FLEX<sup>3</sup>PRO a fast and efficient quality control system for daily manufacturing. FLEYEplus adds reporting functions to the existing FLEX<sup>3</sup>PRO software. Every system comes with a free, 100 day timed demonstration version of FLEYE+ to allow you to evaluate the software. If you have purchased the permanent FLEYEplus license and it is activated on your system than you will see FLEYEplus in the title line of the main window.



**Important:** *This manual describes the current version of the FLEX<sup>3</sup>PRO hardware and software. Future enhancements or modifications are reserved.*

## FLEYEplus Settings

The FLEYEplus Software module offers an additional page in the File/ Settings tab to support managing your files and features.



## Preview the PDF report when created

☒ Preview Report

Select Preview Report to preview the PDF report after creation.

## Use 3 Patches

☒ 3 Patches


The standard application measures the pixel version 50% patch of the DFTA Control wedge which is job independent and used as a black box control of the plate making process. In addition there is a second 50% patch that is affected by all work flow process steps such as dot compensation, ICC profile, job dependent screen ruling, screening angle etc. This will lead to a different dot sharpening compared to the pixel version and help to identify the dot loss that is dependent upon the current job parameters.



Version 3.0.1 now supports three measurement patches in the top view, dot area mode. This third patch can be a second work flow-dependent control patch of your choice

As an alternative you can use any three tint percentages as a reference and create a report.



## Use Network Directory to save Report PDF files with JOB ID

☒ Use Network Directory to save Report PDF files with Job ID  

If this setting is checked, then the software will prompt for acceptance of the report file name such that any information can be added (for example version number of a plate). In this case a copy of the PDF reports will be saved to the directory specified right below using the modified file name.

## Number of control Patches in Reports/Job statistics

Job Statistics

# of Halftone Patches	<input type="text" value="5"/>	
# of Thickness/Relief Patches	<input type="text" value="2"/>	

Specify the number of halftone patches and thickness and relief pair patches used in your control wedge. This will set the number of columns of the spread sheet containing the measurement data to match your control wedge.

## Select how to pre-select operator and plate name

Handle Operator and Plate names for new plate

☐ Clear Operator and Plate Type

☐ Don't clear Operator and Plate Type

☒ Get Operator Name from Windows login

☐ Get Operator Name from Computer Network name

## Job Statistics Path

Job Statistics



The Job Statistics path setting is used to specify the folder where Job statistics data should be saved. This file path is used in the Job statistics of the Tools/Statistics Window as well as for data of the Tools/Reports/Job Statistic function.

## Enable / Disable Pages of the statistics Window

FLEX<sup>3</sup> Statistics

☒ Dot Measurements

☒ Series

☒ Job Statistics

☒ Line width

☒ Relief Measurements

Not all statistical functions are typically used for daily work. By un-selecting some of these the Statistics window becomes less cluttered.



## USB Foot Pedal

FLEYEplus allows the use of a USB Foot Pedal. Select the proper Item in the settings menu. The USB Foot Pedal option is particularly useful when handling large plates with the XXL Long Arm Adaptor. The three pedals are mapped to the most frequently used Function keys; F2 [Preview], F4 [Capture and Analyze], and F6 [Write Data].

☐ USB FOOT PANEL

## Customized Plate Types



Customized Plate Types are helpful when none of the standard Plate Type settings (Light Flexo Plate, Medium Flexo Plate, Medium Dark Flexo Plate, Dark Flexo Plate, etc.) consistently produce the optimum image quality and measurement result. Before adding a customized plate type, the plate must be tested using the functions of the main window. When the optimum setting is determined in the main window, open the settings and click the + icon. Enter a customized Plate name. All of the settings used in the main Window application (Fuzzy, Max Brightness, Smooth, Exposure, Brightness, and Contrast) are linked to the new plate type. The new plate name will be automatically added to the plate type list of the main Window. This feature is offered for transparent plates and non-transparent plates.

A pre-defined plate type can be removed by clicking the '-' icon. Use this function with care as the definition is deleted permanently. Do not delete a plate type after it has been put into production.

## FLEYEplus DFTA wedge Function philosophy

FLEYEplus is based on the principles of the DFTA Control wedge and on the idea that the plate manufacturing process is black box that has to be kept constant and repeatable. All job-specific variations required in plate making are done in image setup before downloading the digital image to the plate making process.

The plate making process (Image Setter, Exposure, Wash-out, Drying) is optimized for a material (plate type) and tested using the DFTA-Control Wedge in pixel format or any other similar control wedge in pixel format. The pixel format makes sure that no job-specific settings (screen ruling,



DGC-curve) will have an impact on the result. As a result of this initial test step the following reference information is stored for a specific material:

#### Imaging process (Laser)

- **Laser power:** the maximum Stain density is controlled during daily work and should never be higher than the reference. Stain density can be lowered by adjusting the laser power or the RPM.
- **Laser linearity:** The Dot area value of the 50% patch in pixel format is measured on the mask before washout. The resulting value is an indicator for the linearity of the imaging process and typically will be close to 50%. If the Stain density is in tolerance, but the 50% patch is out of tolerance, there might be a Laser Focus problem.

#### Plate making process (Exposure, washout, drying, finishing)

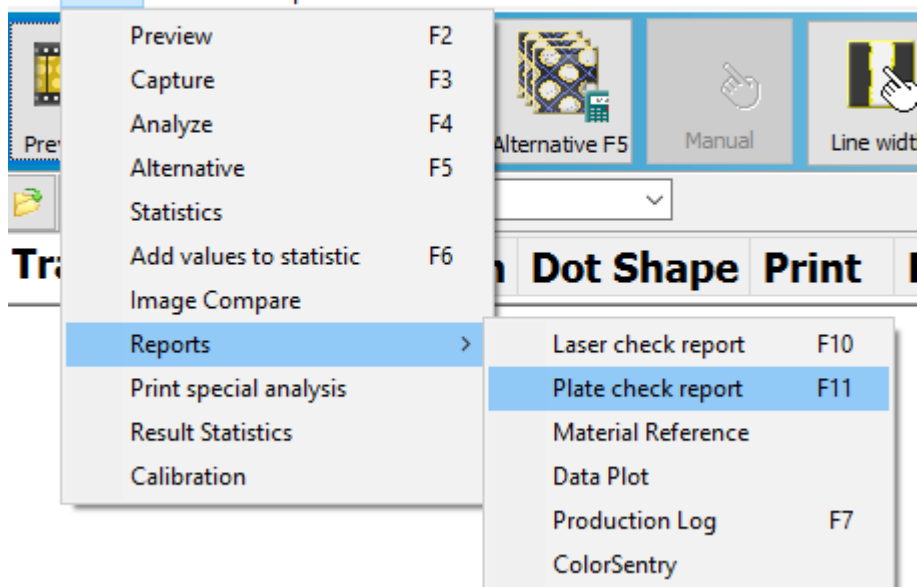
- **DOT LOSS:** In digital plate making there is usually a dot loss between imaged dots on the ablation mask and the final plate. This dot loss compensates the dot gain in print such as the overall process gets more linear. The dot loss should be kept constant to make sure that the image preparations can be done based on a predictable physical plate making process. The dot loss is controlled by measuring the 50% pixel oriented patch of the DFTA Control Wedge.
- **Minimum dot shape control – UV Exposure.** The minimum dot is selected once during the Plate making process characterization (for example one out of the A-U patches of the DFTA-control wedge) and a patch in pixel format is provided on every production plate. In case of minimum dots the shape is more important than the apparent dot area. Therefore a reference of the shape is saved. The minimum dot shape is quite sensitive to changes in UV Exposure.
- **Washout and drying, Relief Depth:** In addition it is possible to directly add relief depth characteristic measurements to the reports
  - 100% - measures the thickness of the plate
  - 50% - TO measure the difference between 100% and one of these patches as an indicator for the drying process. Solvent will lead to swelling of the plate during wash out. Drying causes solvent to leave the plate. The closer the 100% is to the 50%/TO the more solvent has left the plate.
  - Relief depth – measures the maximum Relief depth.

Dot area value of the 50% in vector format. This patch shows the effect all job specific adjustment in plate making such as screen ruling or Dot Gain Correction-curve.

## FLEYEplus functions

The FLEYEplus functions can be accessed clicking the Tools/Reports in the main menu items:  
Tools -> Reports







## Material References

Up to 64 Material references can be stored. Follow the procedure in the sequence shown below:



Click the ADD icon to create a new record. Type in a Material name and select if it is a transparent plate (Transmission) or a non transparent plate (Reflection). Laser Check functions are available only for transparent plates.



Click the EDIT icon to edit an existing record.



Click the OK icon to confirm modifications and to permanently save the current record





Click the DELETE icon to delete the selected record or to cancel the current modifications.



Click the Bulls Eye Icon to copy the most recent Laser Check or the most recent Plate Check into the reference

The allowable tolerance for each parameter may be set in the +/- fields.

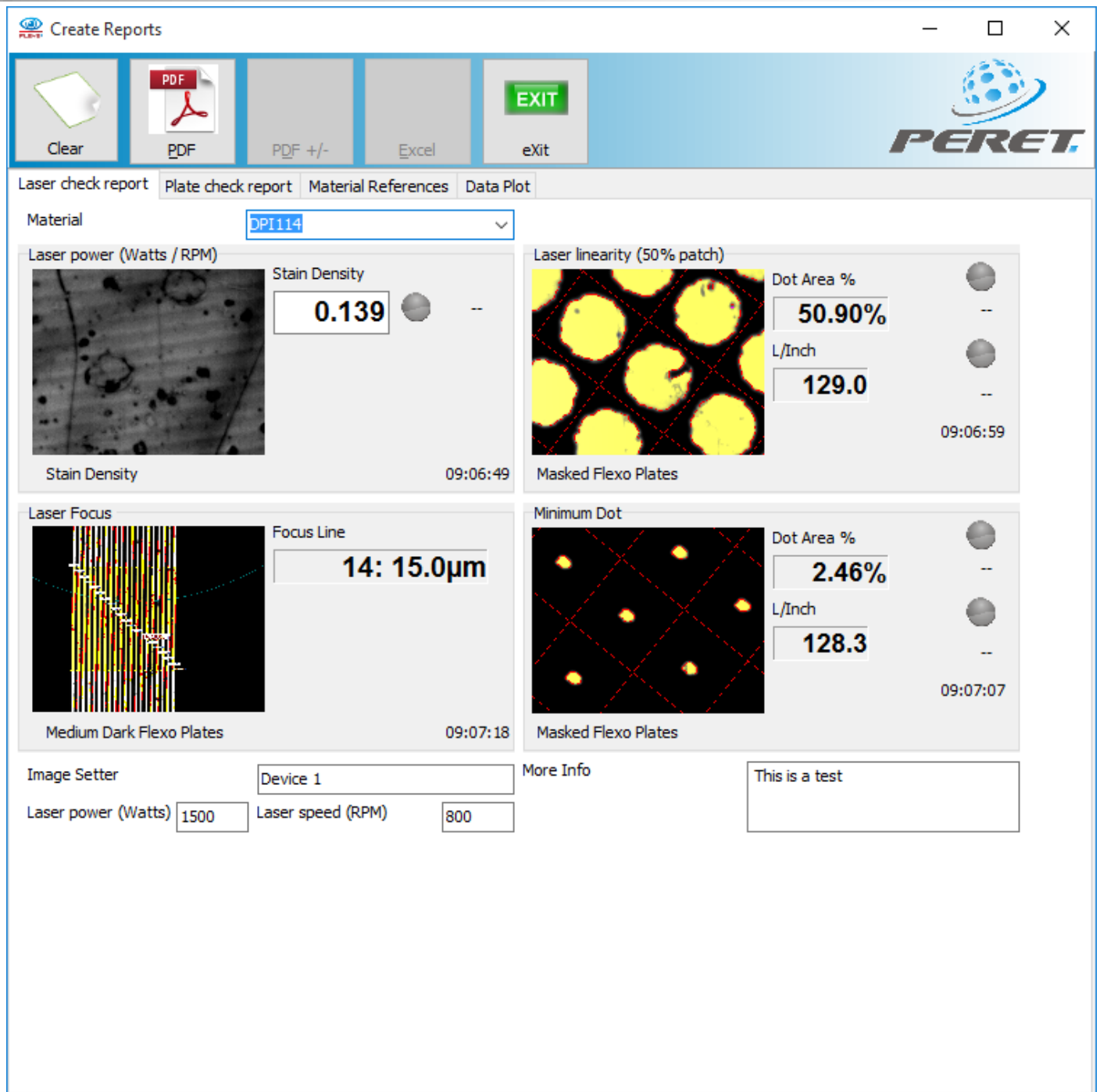
### ***Execute a Laser Check***

A Laser Check report should be run once a day, when you change material, or when you clean the optics.



To create a new Laser Check report click on the Clear symbol and select the material from the materials list (if there is no material to select, create a new material reference)





Click inside the Laser Power Image Panel to start a Stain Density measurement. The Reports window will close and the main FLEX<sup>3</sup>PRO application will automatically be set to Stain Density measurement. Zero on a tape-pull area and then measure the Stain Density as usual. The Result is automatically copied to the Reports Window. The Reports Window will automatically re-open.

Click inside the Laser Linearity image panel to start a Laser Linearity measurement. The Reports window will close and the main FLEX<sup>3</sup>PRO application will automatically be set to MASK measurement. Measure the 50% patch on the mask as usual. The Result is automatically copied to the Reports Window. The Reports Window will automatically re-open.

Click inside the Minimum Dot Image Panel to start the measurement of the Minimum Dot. The Reports window will close and the main FLEX<sup>3</sup>PRO application will automatically be set to MASK



measurement. Measure the minimum dot on the mask as usual. The Result is automatically copied to the Reports Window. The Reports Window will automatically re-open.

Click inside the Focus Test Image. Execute a Focus Test. The Result is automatically copied to the Reports Window. The Reports Window will automatically re-open.

The green icon adjacent to the measurement results indicates the result is within tolerance of the selected material record. In case the icon turns red the results don't fit with the selected material record.

Add additional Information such as Image Setter or other comments.

### **Create a Laser Check Report**

There are two different reports that can be created: One Report without reference and tolerance information suitable for distribution to customers and one Report with tolerance Information suitable for QC department documentation.



Click the PDF Icon to create a report without references

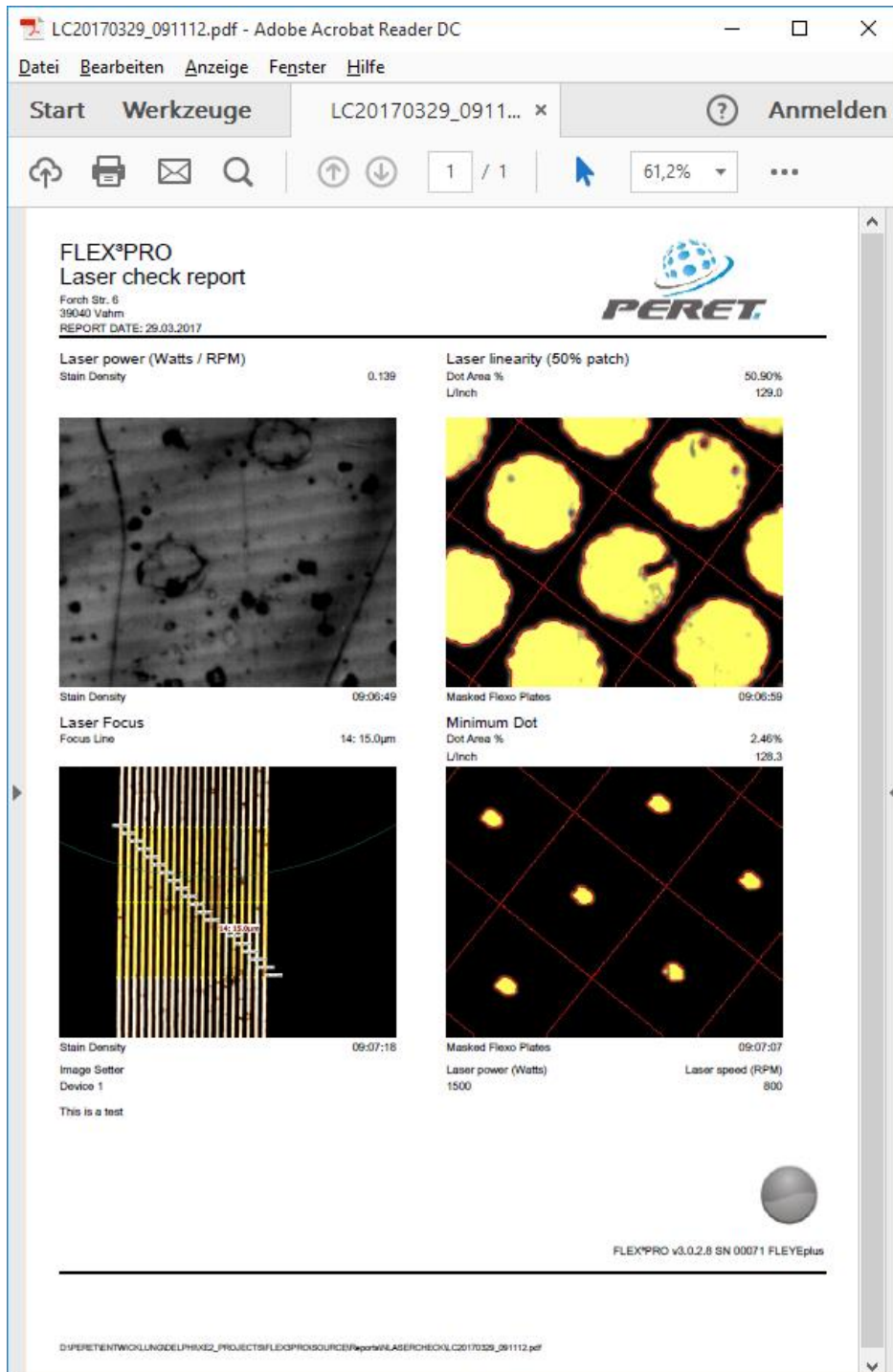


Click the PDF+/- Icon to create a report including references



The report is created as a PDF file and displayed using the Windows Browser. Sometimes Windows is not fast enough in running the browser. Click the refresh Icon in this case until you get the report is displayed properly.





If you are using an older version of the software the report is automatically saved as PDF file in the subdirectory

...PERET\FLEX3PRO\Reports\LASERCHECK

If you use the software version 1.5.x or newer the PDF is saved in the subdirectory

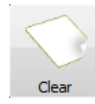
...PERET\FLEX3PRO\Reports\NLASERCHECK



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## ***Execute a Plate Check***

A Plate Check report is typically run for every single plate made.



To create a plate check report first click on the Clear symbol and then select the material from the Materials list (if there is no material to select, create a new material reference).







Laser check report	Plate check report	Material References	Data PI
Material	DPI114		
Job ID	123		
<input type="radio"/> Gear side			Control side <input checked="" type="radio"/>
Color separation	cyan		
Image Setter	device 1		
More Info	this is a test		
<input type="image"/> <input checked="" type="image"/>			

Select the Material reference, insert the Job ID, specify the strip location, specify the color of the plate and the image setter on which it has been imaged. Add any additional information required.

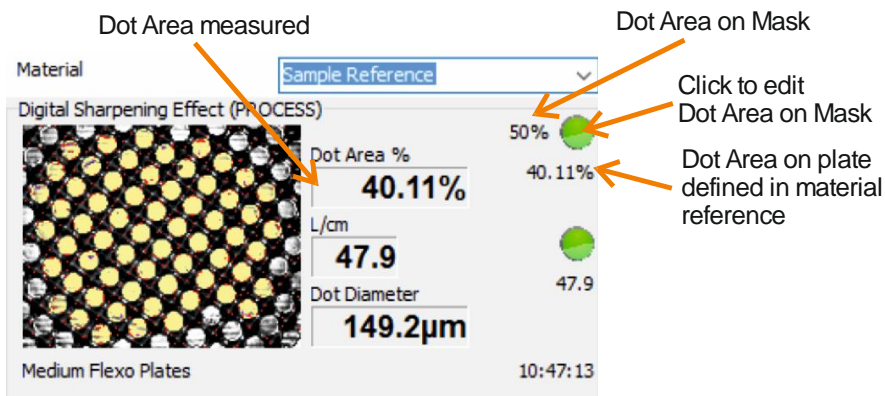


Add an image representing the job by clicking this icon.



Remove the image representing the job by clicking this icon.

Click inside the Digital Sharpening Effect (PROCESS) panel to start a Dot Area measurement on the **Pixel** variant of the 50% patch. The Reports window will close and the main FLEX<sup>3</sup>PRO application will automatically be set to dot area measurement. Measure the 50% pixel oriented patch as usual. The Result is automatically copied to the Reports Window. The Reports Window will automatically re-open.



Click inside the Digital Sharpening Effect (WORK FLOW) panel to start a Dot Area measurement on the **Vector** variant of the 50% patch. The Reports window will close and the main FLEX<sup>3</sup>PRO application will automatically be set to dot area measurement. Measure the 50% vector oriented patch as usual. The Result is automatically copied to the Reports Window. The Reports Window will automatically re-open.

Click inside the Test Patch panel to start the measurement of the additional test patch. This is available only if '3 Patches' are selected on the settings FLEY+ page.

Click inside the Minimum Dot (PROCESS) panel to start a 3D Minimum Dot analysis. The Reports window will close and the main FLEX<sup>3</sup>PRO application will automatically be set to Dot Shape measurement. Measure the minimum Dot as usual. The Result is automatically copied to the Reports Window. The Reports Window will automatically re-open.



Measure the thickness of the relief with the RELIX. The results will appear in the selected fields with a mouse click.



Digital zero the micrometer on the instrument surface without a plate.



Measure the solid (100%). The difference between the zero and the solid measurement value tells you the thickness of your plate. The solid measurement is stored permanently as the solid reference.



Measure the relief depth clicking the relief depth icon. The relief depth is the difference in thickness between the previously measured solid on the printing area and the thickness of the non-printing area.



In addition there are measurements available to control the drying process. Perfect drying is achieved when the height of the 50% patch or the TO micro line patch matches the 100%. If drying is continued after this point in time, the plate might be damaged.

Add additional Information like Image Setter, Color separation, or other comments.

### **Create a Plate Check Report**

There are two different reports that can be created: One Report without reference and tolerance information suitable for distribution to your customers and one Report with tolerance Information typically used by management



Click the PDF Icon to create a report without references



Click the PDF+/- Icon to create a report including references



The report is created as a PDF file and displayed using the Windows Browser. Sometimes Windows is not fast enough in running the browser. Click the refresh Icon in this case until you get the report displayed.







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The report is automatically saved as PDF file in the subdirectory

...PERET\FLEX3PRO\Reports\PLATECHECK

If the software version is 1.5.x or newer the PDF will be saved in

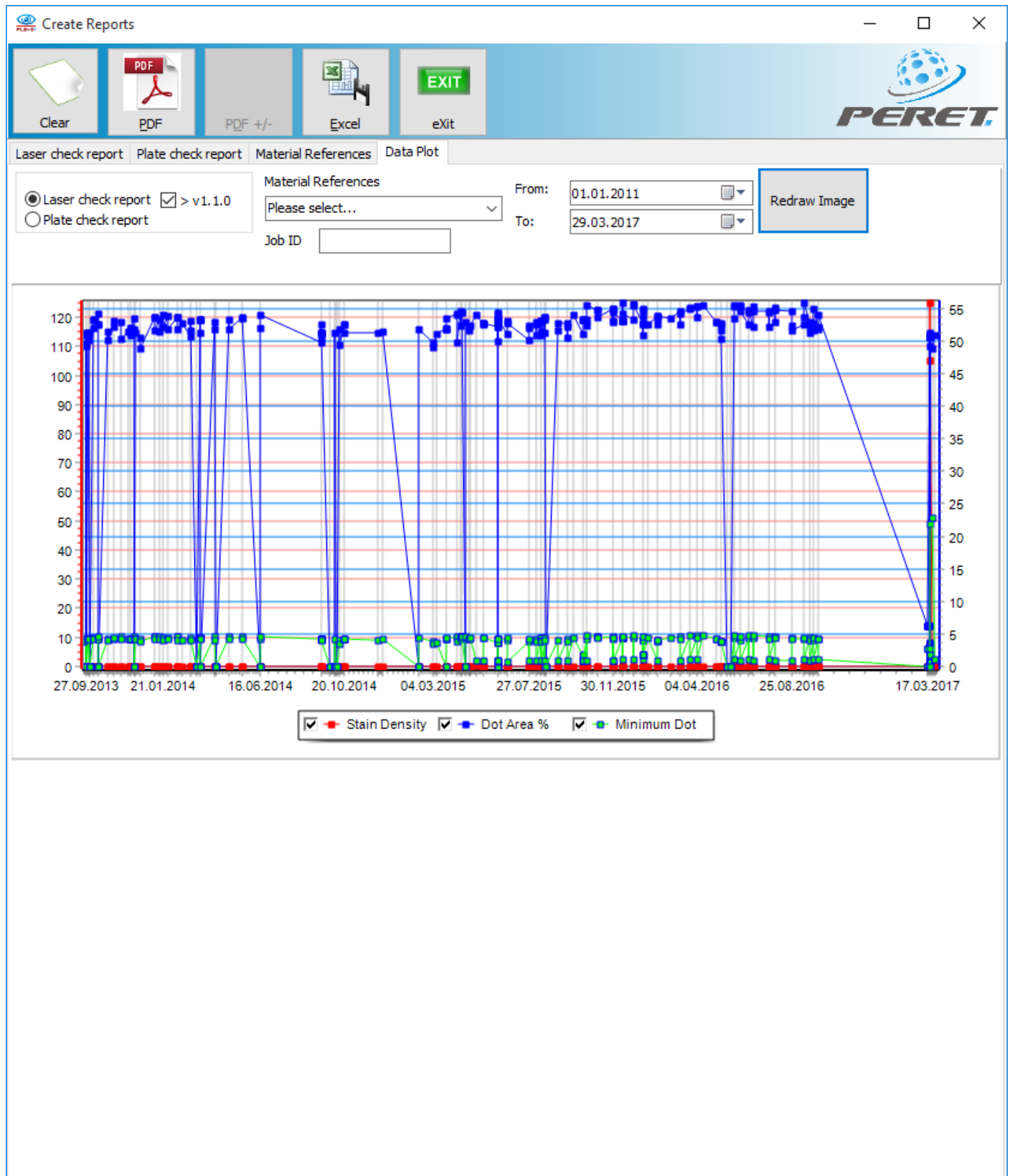
...PERET\FLEX3PRO\Reports\NPLATECHECK

If 3 patches are used the software will be saved in

...PERET\FLEX3PRO\Reports\N3PLATECHECK



# Report Data Plot



- Select Laser Check reports if you would like to analyze the behaviour of your Laser over time.
- Select Plate Check Reports if you would like to analyze the your plate production
- Select the Material from the Materials list you would like to analyse

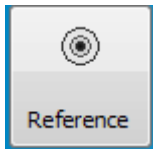


- Select the time frame you would like to analyse
- Click Redraw Image to draw the graph
- You can zoom the diagram with the mouse
- Click on an Item of the graph to show the proper report file name. Click on the filename to open the report.
- Click on the PDF Icon to create a Summary Report.
- Click on the EXCEL Icon to export data to EXCEL

## Reports Job Statistics (Production Log)

Select Job Statistics from the Tool/Reports Menu or press F7 on your keyboard to open the Job Statistics panel. It is important to understand that the References and Tolerances are now linked to the Plate Type setting, which also controls the exposure and other image capture and analysis parameters.

## Enter Job References by Plate Names





**Job Reference**

Plate Name  Operator

Plate Name

☒ Transmission  
☐ Reflection





Plate Type


L/cm  +/-

Dot Area %  +/-   +/-   +/-   +/-   +/-

Thickness  +/-

Relief  +/-

 OK



Add new Plate Name – insert data and confirm



Edit selected Plate Name data



Confirm modifications

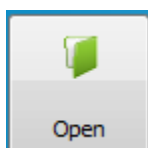


Permanently delete the selected plate name

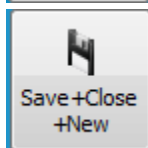
## Start a new shift data collection

In order to start to collect data the following conditions have to be true:

- A file name has to be selected by OPEN or SAVE+CLOSE+NEW function

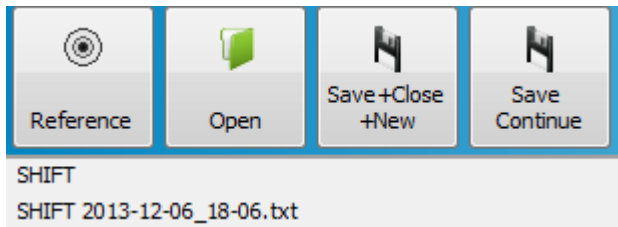


- Open an existing data table

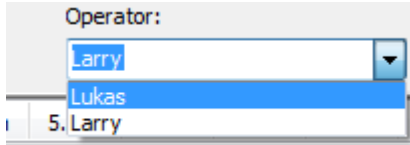


- Save the current data table, close it and create a new data table.
- The Table name will show up on the left top





- An Operator's name must be inserted next. Insert the name and press ENTER on your key board. The operator's name will be added to the operators name list and can be selected the next time from the list. After a restart of the Software this list will be empty.



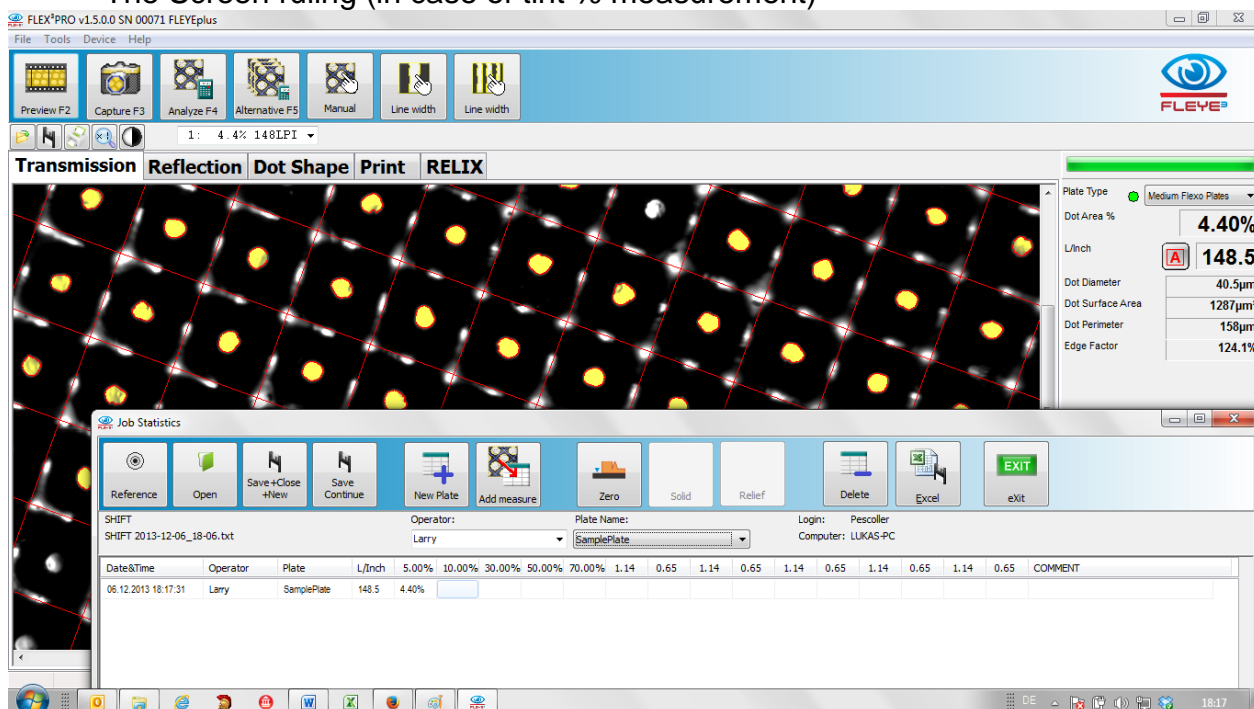
- A Plate name has to be selected. Select one from the drop down list.



Execute a halftone dot area measurement on the main screen as normal by pressing F2 for preview, F4 for capture and analysis.

Press F6 or Click Add Measure to add the first measurement to the current row. As it is the first column of the row, the following fields will be inserted automatically

- A Date & Time stamp
- The Operator's name
- The Plate name
- The Screen ruling (in case of tint % measurement)

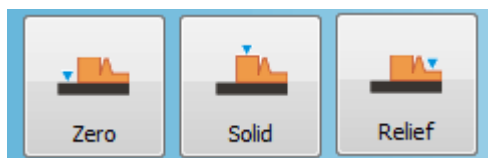




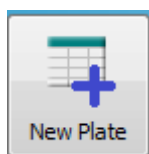
If the measurement is in tolerance, the value will be displayed on white background. In case it is out of tolerance the value will be displayed on red background.

5.00%	10.00%
4.40%	11.53%

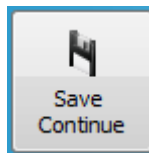
Continue to insert all measurements followed by thickness and relief measurement.



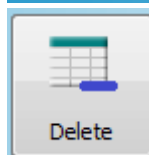
Finally the software will prompt for a comment.



Click the New Row to proceed with the next plate.



Save your data from time to time to make sure it does not get lost



Delete the current row from the table permanently

Job Statistics

SHIFT 2013-12-09\_14-57.txt

Operator: Pescoller Plate Name: Platenname1 Login: Pescoller Computer: LUKAS-PC

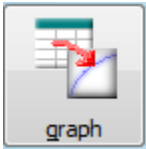
Date&Time	Operator	Plate	L/Inch	5.00%	10.00%	20.00%	30.00%	70.00%	1.14	0.65	1.14	0.65	COMMENT
09.12.2013 16:48	Pescoller	Platenname1	149,7	4,64%	9,73%	20,43%	30,41%	69,65%	1,143	0,697	1,132	0,673	
09.12.2013 16:50	Pescoller	Platenname1	150,1	4,52%	10,07%	20,48%	29,90%	69,77%	1,092	0,683	1,111	0,689	
09.12.2013 16:52	Pescoller	Platenname1	150,0	4,95%	9,57%	20,32%	29,54%	69,96%	1,172	0,681	1,165	0,631	
09.12.2013 16:54	Pescoller	Platenname1	149,6	5,09%	10,28%	20,11%	30,21%	69,81%	1,160	0,621	1,145	0,619	
09.12.2013 16:56	Pescoller	Platenname1	149,8	5,01%	10,21%	20,34%	29,95%	69,52%	1,142	0,602	1,146	0,679	
09.12.2013 16:59	Pescoller	Platenname1	149,7	5,38%	10,07%	19,57%	30,12%	70,26%	1,095	0,669	1,175	0,652	
09.12.2013 17:01	Pescoller	Platenname1	150,3	5,47%	9,86%	19,73%	30,38%	69,90%	1,141	0,624	1,130	0,651	
09.12.2013 17:03	Pescoller	Platenname1	150,5	5,32%	10,17%	19,96%	30,20%	69,53%	1,186	0,638	1,162	0,687	
09.12.2013 17:05	Pescoller	Platenname1	149,7	5,22%	10,11%	20,05%	29,57%	69,72%	1,094	0,682	1,117	0,645	
09.12.2013 17:07	Pescoller	Platenname1	149,9	4,54%	9,86%	19,69%	29,56%	69,84%	1,118	0,670	1,109	0,665	
09.12.2013 17:09	Pescoller	Platenname1	150,4	5,21%	9,77%	20,42%	29,77%	69,60%	1,153	0,672	1,173	0,648	

P:\PERET\ENTWICKLUNG\DELPHI\XE2\_PROJECTS\FLEX3PRO\SOURCE\JOBSTATISTIC\SHIFT 2013-12-09\_14-57.txt

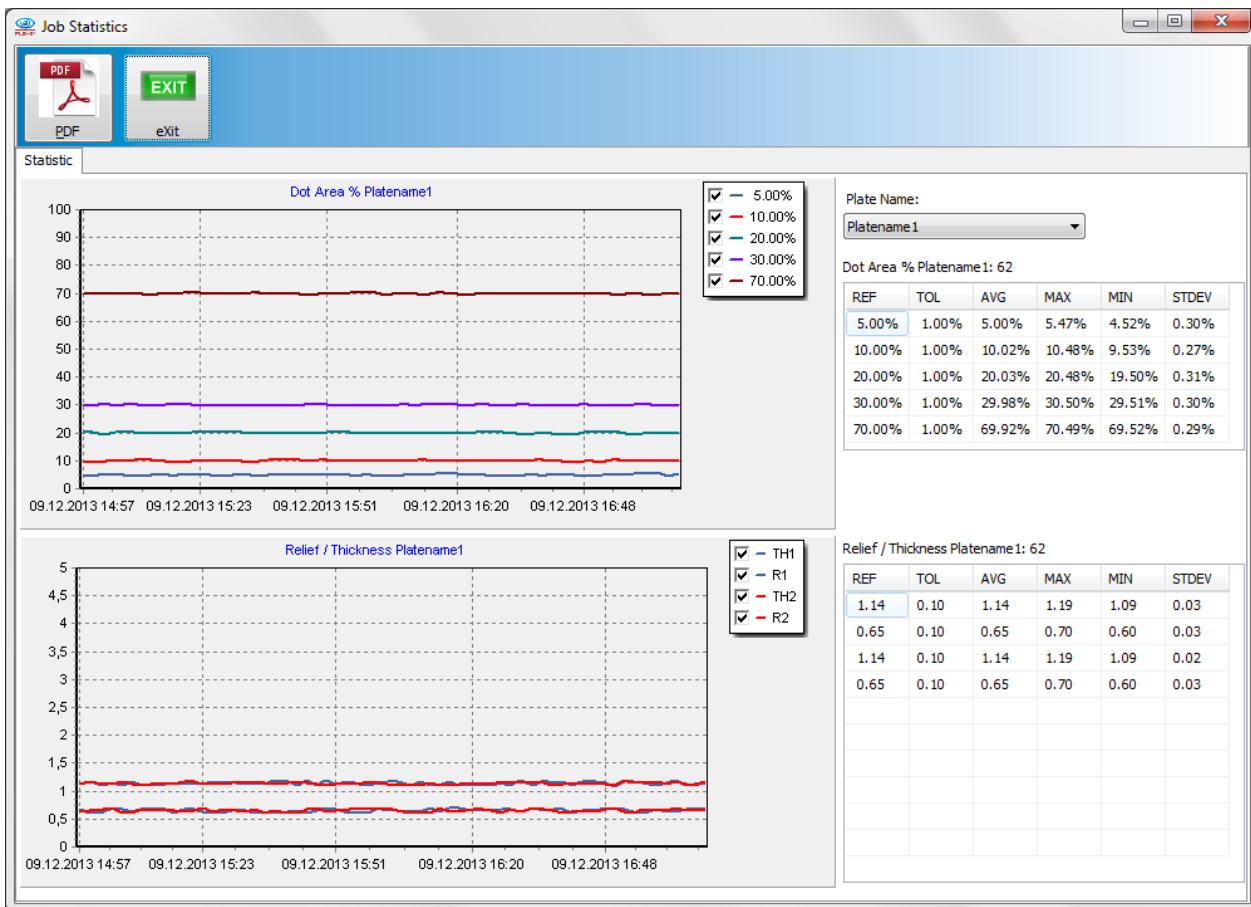


Export the data to an EXCEL file.





Click the graph icon to open the summary report

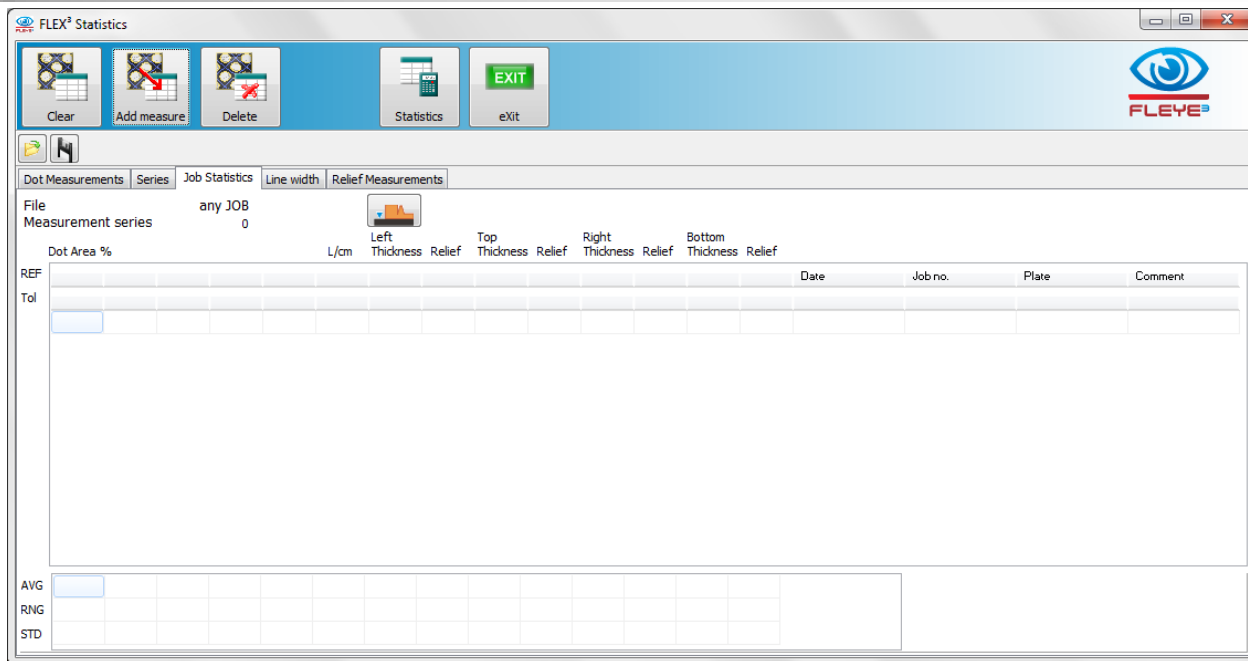


Click the PDF Icon to create a PDF report.

## Fast Job Statistics

The FLEYEplus license offers an additional data table in the statistics form. Open the Statistics Window from the Main Menu / Tools. Select the job statistics page.

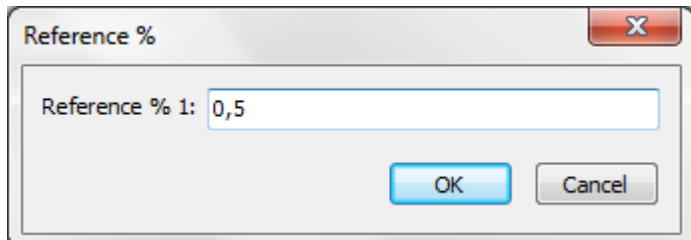




### Definition of the control wedge and RELIX references

The job statistics table offers up to 5 dot area measurements, one screen ruling column and 4 digital micrometer measurement locations with a thickness and a relief measurement each.

To enter a reference dot area click the with the left mouse button in the proper cell. An input window will open. Enter the reference number and click OK.



The reference will appear now in the table at the proper position.

Dot Area %											
REF	0.5%										
Tol											

Now click the tolerance cell below. The input Window will open again. Insert the tolerance of this measurement.



**TOLERANCE %**

TOLERANCE % 1: 0,3

OK Cancel

The tolerance will appear in the table after you click the OK icon.

**Dot Area %**

REF	0.5%		
Tol	0.3%		

Continue to insert dot area references and tolerances up to a maximum of 5 patches.

Now insert the screen ruling in L/cm or L/Inch, depending on the setting in the settings Window of the main application.

**Dot Area %** **L/Inch**

REF	0.5%	1.5%	31.0%		127
Tol	0.3%	0.5%	1.0%		2

In this example we are using a control wedge with 3 patches at 127 L/Inch. Patch 4 and Patch 5 are not defined and therefore skipped during the measurement sequence process.

Finish by entering references and tolerances for the thickness and relief measurements for a maximum of 4 locations.

File Measurement series any customer.txt 0

Dot Area % L/Inch Left Thickness Relief Top Thickness Relief Right Thickness Relief Bottom Thickness Relief

REF	0.5%	1.5%	31.0%		127	70	28	70	28								
Tol	0.3%	0.5%	1.0%		2	2	2	2	2								

Date Job no. Plate Comment

References are automatically saved and will be automatically reloaded at the next software launch.

## Collect job data

Every plate is measured and the data is collected in one single row of the table.

Select the main window, position the first patch below the sensor and take a measurement. Click the ADD MEASURE icon or press F6 to add the first measurement to the current cell (for example 0.5%). The first measurement will also update the Screen ruling column and insert a date and time information.



The cursor will automatically move to the next column with a reference value. Measure the next patch and press F6 to add the dot area value.

After the last dot area column the cursor will automatically jump into the first thickness measurement column.



Make sure that the micrometer is digitally zeroed by clicking the Zero Icon before the first RELIX measurement. Zeroing typically does not need to be done before every single plate.

Now position a solid area of the plate below the measurement pin of the digital micrometer. Press F6 on the keyboard to measure the plate thickness and to copy the value into the proper cell of the table. Position the plate relief area below the pin of the digital micrometer and press F6 again. The relief depth will be calculated based on the previous thickness measurement and copied to the proper cell of the table.

Continue to perform RELIX measurements until all measurements are made according to the references available.

At the end of the measurement process for one single plate the cursor will automatically jump to the comment cells asking to input additional information such as:

- Plate – insert plate name, color set etc. in this field
- Job number – insert the job number in this field
- Comment – insert processor id, operator or any other information in here

The measurement procedure for one plate now is finished. Continue with the next plate.

The screenshot shows the FLEX² Statistics software window. The interface includes a toolbar with icons for Clear, Add measure, Delete, Statistics, and EXIT. Below the toolbar, there are tabs for Dot Measurements, Series, Job Statistics, Line width, and Relief Measurements. The main area displays a table with columns for File, Measurement series, Dot Area %, L/Inch, Thickness, Relief, Top Thickness, Right Thickness, Bottom Thickness, Date, Job no., Plate, and Comment. The table contains several rows of data, with one cell (34.63%) highlighted in red. At the bottom, there are input fields for AVG, RNG, and STD.

File	Measurement series	Dot Area %	L/Inch	Thickness	Relief	Top Thickness	Right Thickness	Bottom Thickness	Date	Job no.	Plate	Comment
larry.bt	0											
REF		0.5% 1.5% 31.0%	127	70	28	70	28					
Tol		0.3% 0.5% 1.0%	2	2	2	2	2					
		0.28% 1.30% 31.10%	126.6	69	27	69	27		07.03.2013 10:44:29	123	ACE-C	CDI1
		0.51% 1.58% 34.63%	126.4	69	27	69	27		07.03.2013 10:47:23	123	ACE-M	CDI1
		0.20% 1.52% 31.23%	126.9						07.03.2013 17:31:21			

Whenever a measurement value is out of tolerance the value will be displayed on red background. Click the save icon to save the table. Click the load icon to reload any table.