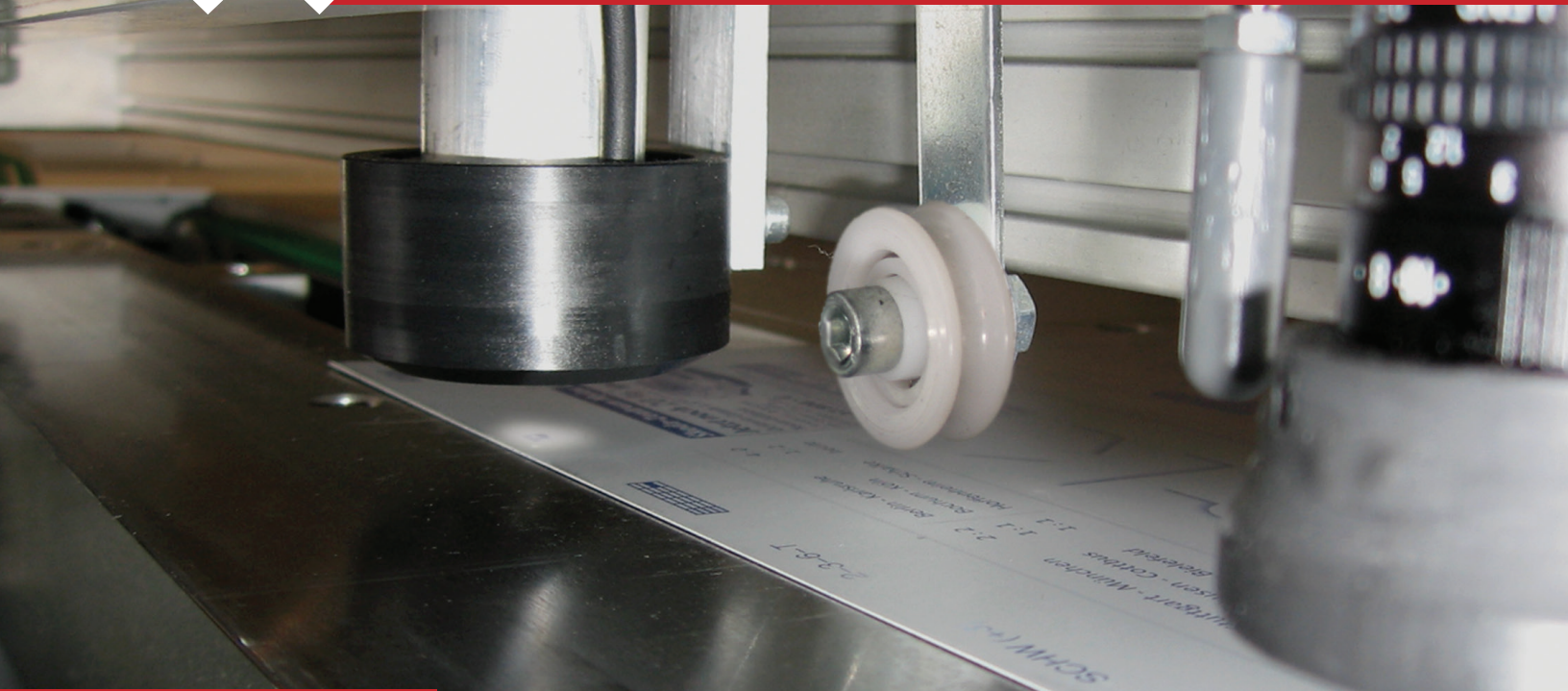




see. control. automate.



NELA Plate Quality Management

The NELA PQM⁺- measuring system for highest quality standards in printing plate production.

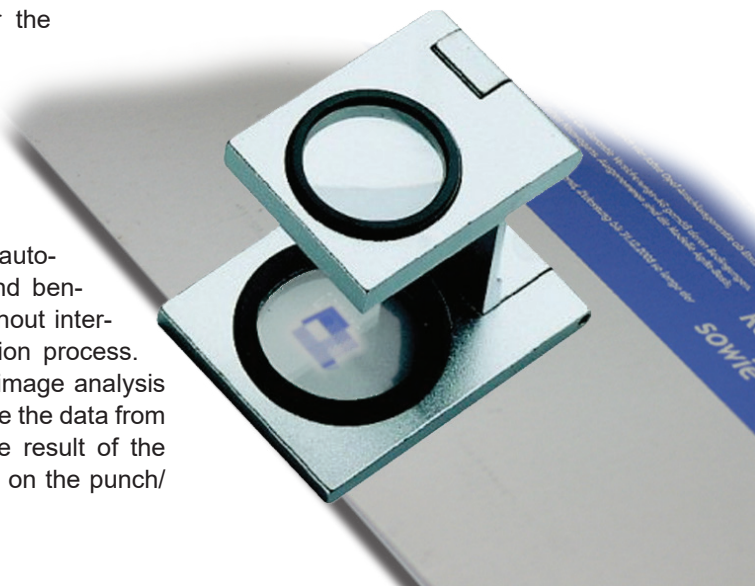
In times of total automation of printing plate production, constant monitoring of the quality of all imaged plates is essential in order to avoid bad surprises at the start of print. Prior to punching and bending, printing plates must be imaged and processed. A number of factors during these processes may influence the quality of the imaged plates.

Although many processes in the production of imaged plates have been digitalized there are still many analogue factors that have great influence on the quality of the image. Fluctuating laser energy, variations of the laser focus, the developer chemistry, or the sensitivity of the plate material – all of these parameters may cause variations in the image quality, which makes manual control necessary at this stage.

Typically, imaged plates are taken from the process cycle in certain intervals and the image quality is manually measured. It is the goal of NELA PQM⁺ to automate and to standardize this stochastic measuring method. The fully automatic monitoring system profits from the fact that the characteristics of the dots in imaged

areas of the plate alter when process parameters change – alterations, which can only be seen under the microscope. These alterations can be identified by analyzing a specific measuring patch, which must be imaged on each plate.

Measuring occurs fully automatic during punching and bending of the plate, and without interrupting the plate production process. An especially developed image analysis software is used to analyse the data from the measuring patch. The result of the analysis is shown directly on the punch/bender's user interface.



Variations of certain parameters in the plate production process often are the reason for inferior plate quality that may not be detected at first glance and, therefore, lead to interruptions in the production process. Delayed production



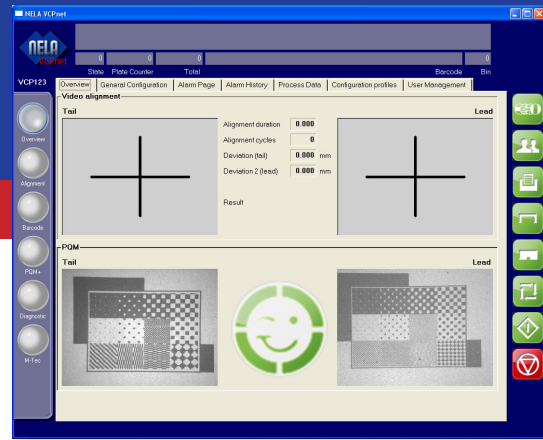
and quality issues are major causes for declining profits.

NELA has developed the fully automatic plate quality monitoring system **NELA PQM+**, which automatically analyses each and every imaged printing plate and immediately shows the result on the operator interface. Even from across the room one can see on the screen when a plate was out of tolerance.

In addition to saving all measured quality data for each plate, limits can be defined for all parameters; an alert signal is emitted when limits are over- or under-run. Next to specific hard- and software for image processing, the **NELA PQM+** system requires a CCD precision camera with a microscope object lens.

Function

A small measuring patch with 18 different measuring fields must be imaged on the non-print area of each printing plate. A high-resolution camera with microscope optics registers the patch, which is then analyzed in the PC. Depending on individual customer configurations, the measuring results may be used within the workflow. Data may either just be saved on the PC, or they may be transferred to various other components of the workflow. Alert messages may also be sent as a text message to a mobile phone, or an HTML page can be automatically updated. Automatic quality monitoring thus helps to set pre-press staff free for other duties.



The plate imaging process can be constantly monitored, even during night shifts. When a problem occurs, an alert is emitted and – if necessary – the production can be stopped automatically.

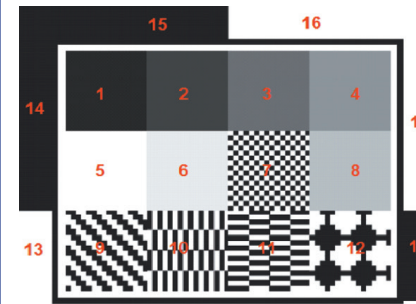
Parameters that are analyzed

- Calculation of screen percentage
- Calculation of grey values
- Analysis of homogeneity of background (fogging)
- Analysis of pixel edges
- Determination of screen ruling, screen angle, and type of screen
- Comparison of specific data with customer's MIS system

Product features

- Variations in the CtP-process, which may be the cause of quality deficiencies, will be recognized at a very early stage
- Configuration of different exposure head lines, and automatic recognition of selected configuration via barcode identification
- Optical or acoustic alert in case of error, and/or sending of e-mail or text message
- Analysis and display of an error
- All relevant measuring results are saved for quality documentation purposes
- Remote support with access to all measuring images and results

The Wedge:



Area 1:	raster	98 %
Area 2:	raster	90 %
Area 3:	raster	70 %
Area 4:	raster	50 %
Area 5:	raster	2 %
Area 6:	raster	10 %
Area 7:	checkerboard pattern	1 x 1 px
Area 8:	raster	30 %
Area 9:	lines diagonal	5 x 2 px
Area 10:	lines	5 x 1 px
Area 11:	lines	5 x 1 px
Area 12:	checkerboard pattern	4 x 4 px
Area 13-18:	Surface areas for fogging- and background analysis	



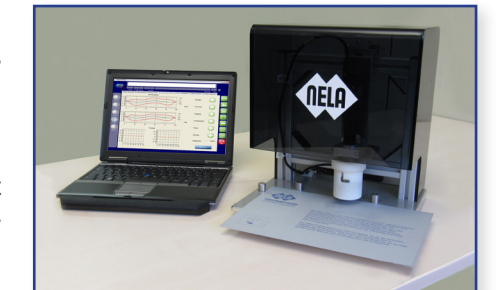
Integration in punch/bender

This option is for new installations but can also be retrofitted into existing punch/benders. The **NELA PQM+** system is integrated in the punch/bender (above). Measuring occurs fully automatic, during processing of the plate.



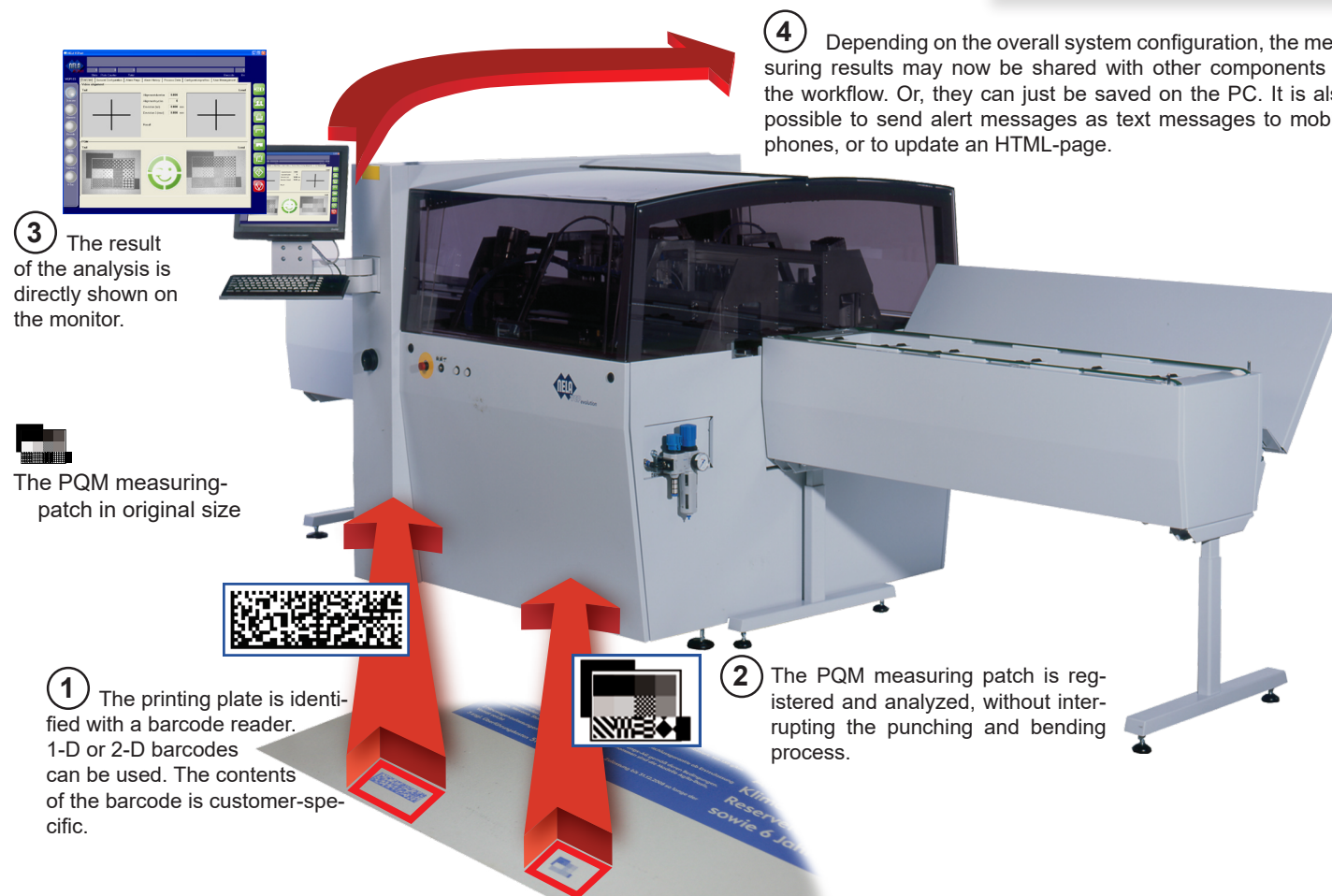
Stand-alone system

This option is for manual measurement of printing plates (below). The measuring device is delivered with a software package for installation on an existing PC.



Integration in roller conveyor

This option is for system configurations without punch/bender, or when several exposure lines are bundled together. The **NELA PQM+** system is installed on a roller conveyor within the transport system (above). All plates are automatically stopped, positioned, measured, and sent on again.



NELA PQM+ the solution for all quality issues

Surveillance of all quality-relevant criteria in the quality circle

- RIP-settings
- Exposure unit
- Printing plate
- Plate processor

Advantages of NELA PQM+

- Quality monitoring of daily production
- Fast and reliable information
- Proven quality
- Measuring results as quality check after installation
- Reduced testing during imaging

Optimizing potentials with NELA PQM+

- Standardization of all workflow parameters
- Designation of optimized exposure characteristics

- Detection of deviation to standard defined by UGRA/FOGRA
- Detection of process fluctuation
- Identification of optimal settings

Results by using NELA PQM+

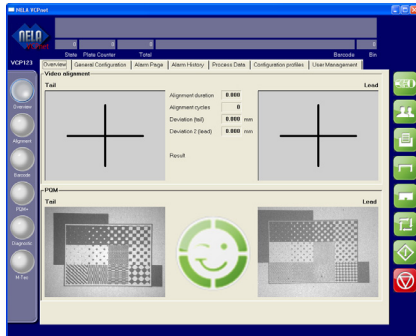
- Stable, standardized quality according to IFRA standard
- Reduced operator intervention after installation
- Cost reduction
- Documented quality of plate production

This means for you

- Professionalism
- Competency
- Safety

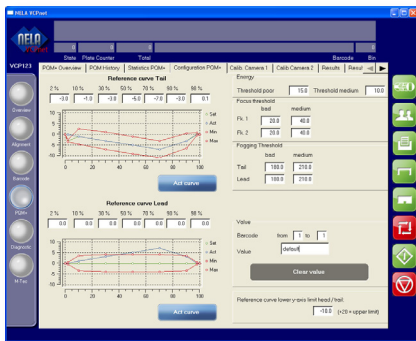


NELA Plate Quality Management



Main page:

On the main page, the results of video alignment (if installed) and of NELA PQM⁺-measurements are displayed. The camera shots of the current measurement are also shown.



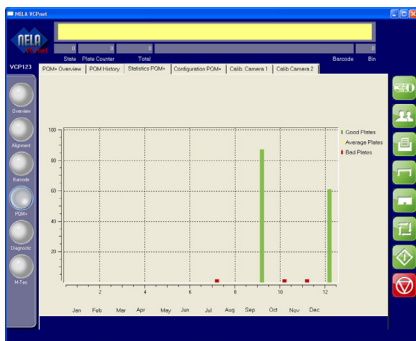
Overview:

The overview page shows the CtP-curves for each measuring patch, and below them the histograms for the laser energy. On the right side of the screen, the user can see from the individual quality results if a single measurement has delivered an error. From there he can conclude which one of the components involved in the plate making process may have a quality issue.



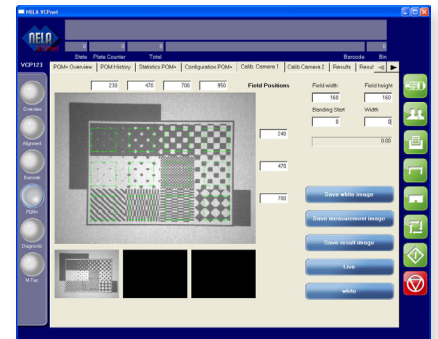
Configuration:

On this page, the individual parameters and tolerances can be defined.



Calibration of the cameras:

The exact position of the individual measuring fields within the measuring patch is defined on the calibration page. White balance and calibration of the camera optics are required to guarantee reliable and consistent results.



Statistics:

This view shows the measurement results of the last 12 months. "good" plates are green, "acceptable" plates are yellow, and "bad" plates are shown in red.



NELA - Who we are:

The NELA group, consisting of NELA USA, NELA Brüder Neumeister GmbH and NELA Asia, form one of the largest manufacturers of high-quality optical control devices for industrial applications, process control and automation. NELA register systems include newspaper and commercial solutions for plate handling, punching/bending of plates and transport systems. With more than 2000 installations around the world, NELA is the technology leader in their field; with presence in all 5 continents.



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