DFTA TECHNOLOGIEZENTRUM
Die FlexoKompetenz.

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Handling and Processing Description

Important Notice!
Due to changes in available technologies for Flexographic platemaking we need to emphasize that the signal element at hand will only deliver its full benefits if it is being used in a so called **Round-Top** platemaking workflow! In a Flat-Top process it will only show part of its strengths and functions. We do recommend its use under Flat-Top conditions only after in-depth evaluation of suitability.

DFTA Flexographic Signal Element „Combi" KE V1.0

The document at hand describes the DFTA Flexographic Combination Signal Element KE, Version 1.0, its goals, it application and its evaluation, as well as the benefits to be derived from it by the user.

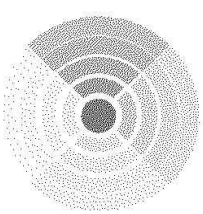
Basics

In Flexography it is the press operator who has to establish the correct impression engagement settings between printing plate and substrate, as well as between Anilox roller and printing plate. This job may be made more precise and reproducible using the DFTA KE 1.0. Moreover, the application of the DFTA KE 1.0 may yield a greater quietness and harmony of the rotation of the cylinders through optimization of the respective impression engagement settings. Generating vibration lines that disturb the printed design may be avoided more safely than otherwise. Generally the respective print job may typically be run at a higher press speed.

Description

The DFTA KE 1.0 has a round shape with concentric rings that are segmented in different levels of grey. It will be delivered as a high resolution file in a bitmap format of one bit data depth. Hence, it is a black and white bitmap file that can be processed by the respective platesetters. The apparent grey levels are realized by different populations of black pixels. There are 17 of those pixel patterns that have been composed to the adjacent target shape.

The original size of the delivered DFTA KE 1.0 element is 2.5 mm in diameter [without the DFTA logo] at the standard resolution of 2540 dpi. When outputting the element at the different resolution its size will change accordingly.



Pic. 1: the DFTA KE 1.0 magnified (original size 2.5 mm in diameter at 2540 dpi imaging resolution)

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Possibilities of application

The DFTA KE 1.0 is suitable for so called digital (LAMS) photopolymer Flexographic printing plates that work in a so called Round-Top process. It may be introduced into all such workflows that enable outputting bitmap files of this kind. In case it will be introduced to the original file it must be obeyed to not introduce any changes in resolution, neither deliberately nor through any automatisms of data processing.

Function

The DFTA KE 1.0 causes the digital LAMS mask that has been imaged with it to develop what appear to be grey levels although the involved platesetters are not capable of producing true grey levels. Through the „grey levels" in the digital mask the DFTA KE 1.0 initiates a filtering effect for the actinic UV radiation during main exposure of the photopolymer plate. This reduction of the radiation energy is it that causes photopolymerisation (i.e. cross-linking of the molecules) to get recessed against normal printing height. After full processing of the respective printing plate a progressive height differentiation will be established over the area of the DFTA KE 1.0.

The height differentiation may be utilized during printing for indicating the currently applied impression engagement between Anilox roller and printing plate, as well as between printing plate and substrate. Otherwise, these important factors of press setup will be attributed solely to the talent and "feel" of the operator. As one now has the aforementioned press settings under good control the following advantages may be derived thereof:

1. Visual control over the absolute amount of printing impression engagement between Anilox roller and printing plate on one hand and between printing plate and substrate on the other hand. Deficits and excesses are being indicated very apparent and may therefore be corrected right away.
2. When placing the DFTA KE 1.0 on either side of the printing plate (operator and drive side of the press) the parallelism of the involved cylinders may be checked very quickly and easily.
3. The DFTA KE 1.0 may be utilized as a very sensitive signal element for reproducibility and consistency of photopolymer plate making over longer time frames.

Processing the DFTA KE 1.0 in Repro and Plate Making

1. *Check for the required resolution of the DFTA KE 1.0*

   The DFTA KE 1.0 will usually be distributed at a resolution of 2540 dpi. In case you require a different resolution version, please contact one of the DFTA TZ team. Individual resolutions are available at a moderate handling fee.

2. *Importing the DFTA KE 1.0 into the original Repro file*

   The DFTA KE 1.0 will usually be imported as a bitmap in TIFF file format into the Repro file, then being placed and processed along with it. Masking off the DFTA logo and the copyright is allowed. The commercial RIP engines will normally not introduce an unwelcome change to the element if the output resolutions match.

   The DFTA KE 1.0 may and should be inserted into each colour separation printer at least one time. This requires the monochrome file to be "coloured" accordingly. It must be recommended

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one more time to place the DFTA KE 1.0 on either side of the press as this enables verification of the important parallelisms of the involved cylinders.

3. *RIPping of the Design File or Utilization of the DFTA KE 1.0 as an Output File for the Platesetter*

   You may as well use the DFTA KE 1.0 file directly as an output file for the Platesetter. However, it will then not have an integral relationship with the design file and may therefore not be placed inside it. This case will therefore be an exception.

   Usually, the design file including the placed DFTA KE 1.0 will be sent through the RIP to the Platesetter. In that the DFTA KE 1.0 is nothing else than a high resolution line work file the RIP will typically not apply any screening or other manipulation to it. Thereafter, the integrated high resolution bitmap file may be used as regular for the imaging of digital photopolymer Flexo printing plates.

   According to our current understanding a distortion of the design file that is meant to counter the printing plate elongation and therefore is no greater than 5% should be OK to perform with the DFTA KE 1.0 included.

4. *Plate Making*

   Imaging of digital photopolymer Flexo printing plates should always be performed under the high technical standards determined by the ***DFTA Digital Flexo Plate Making Guide***. If so, except for the respective optimisation of the Laser-Power-Balance there are no specific measures needed to apply in the vicinity of the Platesetter in order to image the DFTA KE 1.0 correctly. We do, however, warn against operating the platesetter in under power mode. This would damage the DFTA KE 1.0 due to its delicate structures more than would be the case with a regular design file. Achieving the optimal Laser-Power-Balance may be verified by utilization of the ***DFTA CtP Strip 2.0*** in a very simple and user friendly way.

   Regarding the main exposure of the imaged printing plates a warning must be expressed here in correspondence with the aforementioned Guide. Digital photopolymer Flexo printing plate raw materials react to various intensities of the UV radiation applied through main exposure with different levels of Dot Sharpening. Compensation with prolonged exposure time, as has been performed with analogue photopolymer plates in the past, does NOT work here! The DFTA KE 1.0 utilizes this generally advantageous Dot Sharpening effect, but will show the inevitable differences between various exposure frames much more drastically than would be the case with usual imaging bitmap files. It must therefore be paid much attention to which kind of instrument is being used (devices do differ in their principal output intensity potentials) and which ageing status they currently have. The DFTA KE 1.0 will exhibit pronounced output differences of the devices very drastically.
   The final printing plate will show the DFTA KE 1.0 in the shape of a cone shaped "hill" with mild slopes of different steepness.

Application in Printing

When setting up the printing press with printing plates that have been equipped with copies of the DFTA KE 1.0 the operator must initially NOT pay attention to the signal element and establish the impression engagement settings as usual. As a next step the copies of the DFTA KE 1.0 of a printing deck should be compared with one another for similarity, particularly if they have been placed on either side of the web. A simple visual comparison will enable to establish parallelism between the cylinders very easily.

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The DFTA KE 1.0 may indicate the impression engagement settings between Anilox roller and printing plate or between printing plate and substrate respectively separately from one another to a certain extent. An increase in engagement from the Anilox roller to the printing plate will express predominantly in extra rings becoming visible, while an increase in engagement between printing plate and substrate will express through a closing of the yet open rings.

Pic. 2 to 5, left to right: DFTA KE 1.0 at Kiss print; normal impression engagement; increased impression engagement at normal Anilox engagement; increased impression engagement both between plate and substrate and between Anilox and plate

Bearing this in mind the interpretations and the conclusions about corrective action are self explanatory. This may be carried out separately or in parallel over multiple print decks.

Finally, it is only the total amount of impression engagement between the various print decks that needs to be supervised. In case they do have about equal total area coverage they will need about the same amount of impression engagement. This is typically the case with fingerprinting test formes. Larger differences in the appearances of the printed shapes of the DFTA KE 1.0 copies, which would indicate bigger variations of impression engagement settings between the involved print decks, should be equalized in the final step of setup.

Caution! As has been demonstrated in the print trials of the DFTA Technology Centre, the quality of the prints of the DFTA KE 1.0 strongly depends on the quality of evenness of the substructure of the printing plate. For instance the thickness tolerances of the usual foam adhesive tapes may cause such differences in the appearance of the various copies of the DFTA KE 1.0 and may consequently trigger false corrective actions by the operator. It is therefore very advisable to place the DFTA KE 1.0 as many times as possible on every single colour separation. A good compromise turned out to be the placement of four copies, one each in either corner, as the thickness tolerances typically express with only one of the copies and may hence be identified as such very easily.

The above pictures show an exemplary appearance of the DFTA KE 1.0. In being a highly sensitive signal element the DFTA KE 1.0 may as well be rendered significantly different in plate making and consequently produce a substantially different printed appearance at normal and high impression engagement settings. Hence, the above pictures do NOT show an absolute reference but are meant to give a good example only. When using the DFTA KE 1.0 highest emphasis should be placed on the evenness of its rendering over multiple copies on a single colour printer as well as their stability and reproducibility over time.

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Disclaimer of Warranty

The DFTA Technology Centre as the initiator of the DFTA KE 1.0 may not be held liable for any usage of the DFTA KE 1.0 or collateral damage thereof. You may use the DFTA KE 1.0 at your own risk. Moreover, no demand for correct functionality of the DFTA KE 1.0 may be derived from its purchase or use, particularly when deviating from the processing conditions explained by this document or from the standard resolution of 2540 dpi.

The DFTA KE 1.0 may particularly not exhibit larger differences of height of the printing plate, the printing press components or the print substrate. For avoiding any print voids it is necessary to check the entire colour separation printer on press after the setup process that uses the DFTA KE 1.0.

Stuttgart, July 2016

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