

Printing Terms Glossary

A

Abbreviation

A shortened form of a word or phrase.

Ablation (thermal erosion)

A technique for the imaging of offset plates, by which a thermal erosion layer is removed. The printing plates then only require mechanical treatment and in some cases can be rinsed with water. The main disadvantage of this system is that it produces debris which must be removed from the CtP system.

Accordion fold

See "zig-zag fold".

Acrobat

A software program developed by Adobe, which allows documents to be viewed using a reader (available free of charge) on every commonly used computer platform and to be printed on PostScript printers. The major advantage of the program is that all fonts, colors and the layout itself are identical to the original document, even if the fonts or the program used to create it are not installed on the viewer's computer. It is a global standard in document management.

Acronym

A shortened form of a word or compound term usually formed from its initial letters.

Additive color

A color produced through the addition of light of various colors. In theory, every color can be produced by mixing the primary colors of the visible light spectrum: red, green and blue (RGB), as the color vision of the human eye works through red-, green- and blue- sensitive sensory cells. RGB is the usual additive color system and is used predominantly for television screens, computer monitors and scanners. Combining two of the primary colors in equal parts produces the secondary colors cyan, magenta and yellow, which in turn form the basic colors of the subtractive color system (CMYK).

Additive color mixing

This is the process of producing color through the addition of different colors of light. Computer and television screens use thousands of red, green, and blue phosphor dots, which are so small and close together that the human eye cannot see them individually. Instead, the eye sees the colors formed by the mixture of light.

Adhesive binding

A binding method which uses thread-free adhesives to secure loose leaves into a solid text block.

Administrator

Person with all rights of access to a network and responsible for its management and maintenance.

Adobe

Adobe Systems Incorporated, headquartered in San Jose, California, is a leading software manufacturer in the field of graphics and image editing. Established in 1982, the company's products include the image editing program "Photoshop", the illustration program "Illustrator" and the desktop publication programs "InDesign" and "Pagemaker." Adobe is also the creator of the page description language "PostScript" and the device-independent data format "PDF" (Portable Document Format).

Algorithm

A structure, basic scheme or pattern used for software, process or decision functions.

Align

To place the material to be cut at the correct position in the machine.

Alpha channel

An eight-bit storage segment reserved for masks in an image processing software program; a feature incorporated into image processing software programs and image data formats for storing processing routines and an image's special properties (for example, background transparency).

Altar fold (gatefold or windowfold)

Folding a sheet of paper so that two flaps are formed that can be opened from either side.

Amplitude modulated screening (autotypical screening)

A halftone screening method in which equidistant dots are used, the variation of the size of which produces continuous tone pictures. In combined printing, several colour forms must be arranged at varying, exactly defined screen angles in order to avoid moiré patterns.

Anchor point

Defines the start or end of a path segment (a path consists of one or more segments). They fix the path at a specific position. The path segments and the shape of the path are changed by moving the anchor points.

Aniline printing

An old term for flexographic printing whose name is derived from the aniline-based inks employed during the process. Printing presses using this process employ rubber rollers as letterpress forms and print with quick-drying, low-viscosity inks. The first presses of this type appeared on the market at the beginning of the 20th century. They were mainly used to print packaging material.

Anilox letterpress printing

A form of printing which uses a very simple ink dispensing system borrowed from gravure printing. An inking roller ("anilox roller") with small recesses arranged in a grid form is inked to excess and a doctor blade is then used to remove the excess ink. This immediately results in a very uniform film of ink, such that no further rollers are needed in the inking unit for ink distribution. The advantages of this process include the simple design of the inking unit and the ease with which ink feed can be controlled.

Animation

Generic term for the combination of image, text, graphics and moving images (videos) within a file and its presentation on a computer monitor.

Application server

A network server in which a group of programs are collectively integrated into a Web server's environment. Instead of having individually installed programs, network users have access to the server program. These applications are connected to an Application Program Interface (API) which allows higher-level tasks to be performed remotely. Another advantage of these applications is that licensing requirements can be more easily met, as the users do not usually have their own hard drive, which prevents the installation of so-called pirate copies. It is also possible to install the latest software available on all computers in the network with a single update on the server. This kind of server enables a user to perform sophisticated interactions over the internet, such as querying a database or running other programs loaded on the server.

Application software

A program with specific functions, not to be confused with an operating system, which controls a computer's internal functions. All software is application software.

Areometer

A device for determining the density of liquids used in printing to measure the concentration of alcohol in water-containing process liquids. The device consists of a sealed glass tube filled with air with a weight at one end. Once the areometer is placed in the liquid being tested, it floats either higher or lower, depending on the density of the liquid. The density can then be read using a scale graduated in special units (Bé after Baumé or Brix). Because the density of liquids changes with temperature, the scale of an areometer is always relative to a specific temperature. To make correct measurements easier to obtain, some areometers also feature a thermometer.

Art printing

High-quality sheetfed offset printing on high-quality paper typically used for the production of sophisticated illustrated books.

Art printing paper

A premium-grade stock coated on both sides (C2S), preferable for the high-quality reproduction of color prints. Art printing papers usually have a very smooth, glossy surface, though some have a matte or semi-matte finish. They allow illustrations to be reproduced by offset or letterpress in much finer halftone screens.

Artificial parchment

Wood-free paper with properties similar to those of genuine parchment, above all in its grease resistance, which results from the smeary grinding of the chemical pulp.

Ascender

The utmost point of the cap height, the extension of the font from the baseline to the upper end of an uppercase letter.

ASCII (American Standard Code for Information Interchange)

Used to encode letters and numbers in digital form for electronic storage and processing. Originally binary numbers with seven digits (seven bits) were used, which made it possible to represent a total of 128 characters. The use of 8-bit numbers was later introduced, increasing

the total to 256 characters. Unicode notation based on 16-bit numbers has been gaining increasing acceptance in recent years. It can be used to represent 65,536 different characters.

Ash content

The quantity of anorganic substances in a paper stock that will be converted to ash when burned.

Asphalt coating

Term given to a dark brown–black mixture made of wax, resin and asphalt. It is easy to melt and can be dissolved in organic solvents such as gasoline, petroleum or turpentine. Due to its resistance to acids, asphalt coating serves as a covering layer in the etching processes used for manufacturing printing forms.

Assymetrical fold

A fold made by folding the original into unequal lengths. This type of fold is used for parallel fold products and concertina folds.

AT (advanced technology)

Descendant of the XT computer and built on a 80286-Processor from Intel. Introduced by IBM in 1984, today every PC that works with a 16- or 32-Bit processor is called an AT computer.

Attachment (attached file)

Data included (or "attached") either Uuencoded or MIME-Standard as part of an e-mail message. Attachments are usually archived, especially when the files are larger. Attachments carry the greatest danger of transferring computer viruses.

Autograph

Derived from the Greek ("self-written"), refers to a document handwritten, or at least signed, by an author. There have been collections of the autographs of famous persons, and a corresponding trade in these documents, since the end of the 16th century.

B

B2B

A business operation in e-commerce by which businesses can offer and market their products and services.

B2C

An e-commerce business process by means of which consumers can buy goods and services over the Internet.

Backbone

The part of a network that handles the most traffic, providing particularly high-capacity and high-speed connections.

Backup (backup copy)

A duplicate file made to protect against the unexpected loss of data.

Banding

Unaesthetic jagged lines that occur when printing color breaks in gradations; caused by tonal jumps when adjacent dots become interconnected, leading to a perceptible increase in tone value. (See also “tonal jump”.)

Bandwidth

Refers to the amount of data that can pass through a transmission channel while transmitting data from one computer to another in a given period of time. The standard measurement for bandwidth is "bits per second" (bps), it is also known as the maximum data transfer rate.

Banner

A rectangular window on a web page with text and graphics used for promotional purposes. A distinguishing feature of banners is that they invite users to interact. By clicking the mouse, the user is usually taken to the web site of the advertiser, where more detailed information is available. Banners have been in widespread use since the mid-1990s. In recent times, they have often been animated to attract the attention of the user.

Barcode

Used to display characters in such a way that they can easily be read by a machine. The code consists of a system of narrow and wide, dark and light strips. One of the most common applications for barcode markings is the EAN code for identifying all types of merchandise. The EAN code also defines the barcode's representation of the individual figures.

Baseline grid

A grid used to ensure that the lines on both sides of a page are aligned, for example with thinner paper grades where the text tends to be visible on the opposite side of the page, in order to increase legibility. The term refers to the division of a sheet in sections using horizontal lines. Freely definable horizontal lines with fixed intervals are generated starting from a given point, marked paragraphs can then be assigned to the baseline grid and the leading adjusted to it. Higher quality DTP typesetting programs allow a baseline grid to be specified under the page characteristics.

Basle II

Regulation initiated by the Basle-based Bank for International Settlement that began receiving worldwide acceptance in 2005. It ties banks to a credit risk: the more uncertain a transaction, the more capital the bank must advance, which results in higher interest for enterprises.

Beta test

A test under real conditions which usually represents the last stage of testing before the commercial release or market launch of a software program.

Bézier curves

A curve with a particular shape defined by two end points and whose tangent points (also called handles or nodes) have special characteristics. Any curve can be presented as a Bézier curve by dividing it into segments.

Bindexpert

Product of Heidelberg Druckmaschinen AG used for finishing print products. The device functions as an adhesive binder and features two exchangeable glue pans for dispersion adhesive or hot-melt glue. Formats from A6+ to A3+ and all sizes in between can be processed. The Bindexpert is designed to process a maximum binding length of 43

centimeters with a book thickness of 4 centimeters. The unit also features a spine-processing station that can be used to notch or rout the spine of a book. The Bindexpert has been designed to process many different types of paper, including coated, uncoated and laminated stock.

Bit (binary digit)

The smallest possible unit of information. A bit can only have two states (1/0, yes/no, on/off etc.) and serves as the basis for the binary system used in all computers. The bit is thus the basic unit for information technology and communication.

Bit depth

The bit rate and brightness resolution per pixel of a scanner; determines the contrast range of a digital image.

Bit rate

The number of bits transmitted in a specified interval (typically one second) over an interface or bus/line; the speed of transfer and throughput.

Bitmap

The simplest format for graphics, where the pixels within a two-dimensional coordinate system are described by an x,y value (position of the pixel) and a color value.

Bitmapped graphic

See "pixel graphic".

Black generation (black ink limit)

A term used to describe how the color black is used in a set for four-color printing. In theory, black is not required in the CMYK color system for representing various hues of an image. In practice, however, it is used whenever contrast and detail are to be enhanced in dark areas.

The term short black or skeleton black is applied if the color is only used for this purpose, in which case only a small amount of black is required.

Blanket cylinder

The blanket clamped around a cylinder; the core element of offset printing. It transfers the printed image from the printing form to the paper. The process of depositing the ink onto the blanket also gave rise to the term "offset printing". Blankets enable consistent printing over large areas and are ideal for rough or grained papers. The blanket on the cylinder is usually 1.65 or 1.95 millimeters thick and consists of two, three or four fabric interleaves in addition to the actual covering layer. A distinction is usually made between the conventional blankets, which can be deformed but not compressed, and the compressible, air-cushioned blankets. Standard DIN 16621 describes the requirements for "blankets for indirect lithographic printing (offset printing)".

Blind embossing

A paper processing stage in the print process where male and female dies are used to generate an impression in the paper under high pressure. Embossing with raised motifs is known as high embossing and embossing with sunken motifs as deep embossing. There are also multi-stage embossing procedures where the motif has different levels, and relief embossing, which creates a spatial effect with three-dimensional profiles. High embossing can also be simulated by applying and melting special powder materials.

Blueprint

The term used for monochrome prints of finished printing copy, derived from the light blue color of these prints. Today, even corresponding, simple black-and-white prints are generally referred to as blueprints. They serve as proofs for checking the completeness, position and content of the individual graphic elements (texts, images, etc.).

Blur

Generic term for image manipulations that reduce the sharpness of an image or reduce the definition of an image's outlines. Image processing programs offer a wide selection of blur filters, the best-known of which is the Gaussian blur.

Board

Flat substrate made of mostly uniform fiber layers of over 225 grams per square meter.

Bogus paper

A simple type of paper made exclusively from unsorted waste paper, usually has a gray, or sometimes brownish tint, and a weight of 80 g/m² or more; primarily used as a starting material for corrugated board.

Book face (bread-and-butter face)

The font used for the standard mass composition of a print product.

Books on demand

Books produced and shipped on the basis of orders. This method, made possible by digital printing, can cut the cost of fairly small run lengths, as the expense of storage and producing excess copies is eliminated. In addition, it is also possible to compile customized books from pre-defined sections of an existing work

Book paper

A bulkier paper used for bound books, made both with and without woodpulp.

Book printing

A general term used for the printing of books and brochures that consist mainly of text and few pictures.

Bookmarks

A list of URLs that a browser records for a specific user.

Brace

In typography, curly brackets "{ }" are known as a brace.

Bread-and-butter type

The type or face used for the running text of a printed product. The term is said to originate from the days of lead composition when compositors were paid by piecework and earned the majority of their pay with texts in this type.

Bristol board

Paperboard comprising three or more layers, where the outermost layers are wood-free, while the inner material may contain wood. Bristol board is not coated and is therefore a natural paperboard; it is durable and produces good results in offset printing and finishing. Typical fields of application include postcards, envelopes and packaging materials.

Brochure

A printed product consisting of a cover stuck or stitched directly to the spine of a single-layer or multi-layer block. The cover generally has the same format as the book block and is made either of material similar to the interior of the brochure or of card. The brochure was originally a temporary form of binding used until the purchaser of a book had opted for a high-quality book cover, which was often very expensive. Nowadays, this binding technique is used as a low-cost mechanical production method.

Broken type (block type)

A main category in the classification of type fonts; a group of type fonts defined in DIN 16518; a generic term for a range of Latin type fonts in which all curved elements of lower case letters have totally or partly broken or disjointed strokes and joints. Broken types were created during the German Renaissance.

Browser

A program used to view, download, upload, surf, or otherwise access documents on the Internet.

Bulky paper

A soft, elastic, extremely thick stock. Also known as thick printing paper.

Byte

The byte is the smallest addressable unit of memory in a computer. A byte consists of eight bits and can thus assume either 28 or 256 different values, which means the character sets of most languages can be encoded in a single byte. The encoding of character sets using two bytes per character (Unicode) is now also playing an increasingly significant role. When combined, two bytes can assume a total of 65,536 (216) different values, enough for all the characters in all of the world's major languages. The capacity of storage media is expressed in multiples of 2¹⁰ or 2¹² bytes: 1 Kbyte = 1024 byte, 1 Mbyte = 1024 Kbyte, 1 Gbyte = 1024 Mbyte etc.

Bytemap

Refers to the color shades or gray steps created by screening

C

Cache

A particularly fast memory architecture (RAM) and administration for rapid access to data on mass storage units (hard disks); data is temporarily stored in case of accidental loss and thus a cache is something like a "hidden memory" or a folder for temporary files.

CAD

Acronym for 1) "computer aided design"; 2) "computer aided drafting".

Calendering

Process of smoothing the surface of the paper between the rollers (or calendars).

Calibration

The task of coordinating devices to ensure correct operation. At the prepress stage, input and output devices. Monitors, scanners, imagesetters, etc. are generally calibrated to test how colors are depicted.

Calligraphy

From the Greek kalos (beautiful) and grafein (writing): the art of handwriting.

Cameron Book Production System

A system designed by Prosystem Inc. (Somerset, New Jersey) for complete book production in a single run from the paper reel to the bound book. The system (now no longer in production) uses letterpress printing.

Capstan imagesetter

Imagesetters that operate using a capstan roller, which moves the film material for imaging. The film material is stored on a roll. A laser beam is used for imaging, and its movement is set in line with the film transport so that the imaging process takes place line by line. The use of roll material means that the length of the output film format is theoretically unlimited. This is an important feature of this type of imagesetter.

Carbon paper

Paper with a coat of carbonic ink one side, allowing print or ink applied to the original to be transferred to the paper underneath.

Cartography

The science of producing maps. The special problems of cartography include the correct determination of ground elevations (topography) and the most realistic possible rendering of the curved surface of the earth on plane map material.

Cartridge

Storage unit for materials (ink ribbon cartridges) or for software (font cartridges for laser printers); a storage module that can be removed and transported.

Cast-coated

Paper or board with a particularly high gloss. This is obtained not by calendering, but by rolling the moist or specially moistened printing material with a chrome-plated drying cylinder polished to high gloss. Cast-coated papers have a shiny mirrored surface.

CCD elements

The three rows that typically comprise the CCD line of a scanner with different color filters (red, green and blue). There are three CCD elements for every pixel, each with a red, green and blue color filter in front. The optical resolution of the scanner is determined by the number of juxtaposed CCD elements in the sensor row, though the width of the original also plays an important role.

CeBIT (Centrum für Büro und Informations-Technik)

The Center for Office and Information Technology, which hosts the largest trade fair for the information and telecommunications industry in the world every spring in Hannover.

Cellophane

Hygroscopic film once commonly used and since replaced by plastic films.

Cellophane coating

Refers to film lamination of all kinds, not just those performed with cellophane-based films.

Cellulose

In chemical terms, a chain molecule consisting of glucose elements (polysaccharides). As the most important constituent of paper, cellulose provides strength, either in the form of wood or plant fibers, or in the form of chemical pulp, which consists of pure cellulose fibers. Cellulose is used not only in paper production, but also as a base material for plastics and fibers.

Cellulose wrapping paper

A stock consisting of at least 65 percent primary pulp (sulfite and groundwood pulp) and a maximum of 30 percent wastepaper.

Character set

Refers to the range of letters, numbers and other characters that a font contains or that an input or output device can process.

Characteristic curve

See "printing characteristics".

China grass

A fibrous material obtained from the subtropic nettle plant called ramie. Its high purity and strength make it ideal in the production of banknote paper.

Choking

See "trapping".

Chromo board

Board coated on one side with approximately 18 grams per square meter, basic product is chromo imitation board.

Chromo duplex board

Board coated on one side with approximately 12 grams per square meter; basic product is duplex board.

Chromo imitation board

Folding box carton with a smooth coating on one side and with a light intermediate ply of wood pulp and a wood-free ply on one or both sides.

Chromo paper

Includes woodpulp or woodfree stocks coated on one side. The coating is always waterproof and is designed for maximum embossing, varnishing, and bronzing performance in offset environments. Chromo paper is used mainly to make labels, wrappings, and cover paper.

Chromolux board

A brand name for a high-gloss, cast-coated board that is white on one side.

CIE (Commission Internationale de l'Eclairage)

An international organization that has developed and defined a number of generally used color definitions. The best known of these is the CIE Lab color space, which was defined in 1976.

CIE Lab color space

The CIE Lab color space was defined by the Commission Internationale de l'Eclairage (CIE) in 1976 and represents a three-dimensional, rectangular coordinate system. The vertical coordinate L specifies the lightness of a color, the 2 horizontal coordinates a and b represent the hue and the saturation on red/green and blue/yellow axes respectively. The CIE Lab color space is also ideal for representing color differences, since geometric distances in the color space more or less approximate the intuitive color differences.

CIP3

International Cooperation for Integration in Prepress, Press and Postpress is a manufacturers' association established in 1995 to promote the non-proprietary digital integration of the printing process, from prepress to postpress. Its most important achievement has been the definition of the Print Production Format, a data format for recording all information relevant for the print process. In 1999, CIP3 was incorporated into CIP4, which deals with a broader range of subjects.

CIP4

Created in 2000 from the manufacturers' association CIP3 and with headquarters in Zurich, the International Cooperation for the Integration of Processes in Prepress, Press and Postpress seeks to provide the basis for the computer-based integration of the entire process involved in the production of print products, from preliminary costing and quotations to delivery and billing. One of the first results has been the establishment of the Job Definition Format (JDF) as a common standard. This was achieved in conjunction with Heidelberger Druckmaschinen AG, Adobe Systems, MAN Roland, Agfa and the Fraunhofer Institut für grafische Datenverarbeitung (IGD).

Clean proof

A proof page without any misprints.

Cleartype

A further development of the principles used to create font software TrueType and Adobe Type 1 with the goal of generating the clearest possible typeface on computer screens. This is primarily achieved by "anti-aliasing" to smoothed lines and edges that have a staircase-like appearance due to pixels. Developed by Microsoft, Cleartype is specifically intended to improve the legibility of smaller fonts on color LCDs, such as those used or envisaged for laptop computers and electronic books.

Client/server

A network relationship in which one computer program (the client) requests information from another computer program (the server), and the server fulfills the request. Client/server architecture is the design model for applications that run on a network, and can be used for data banks as well as the sending and receiving of e-mails. Requirements include the proper hardware and a common protocol.

Clipping path

Silhouette in the image file which serves as a mask. In layout programs it allows cut-outs to be placed over a background.

CMYK (cyan, magenta, yellow, black)

The color model usually employed in printing technology which uses the basic colors cyan, magenta and yellow. Black is used to ensure a visually satisfying black tone.

Coated paper

Paper grades coated with at least five grams per square meter of a substance containing a pigment on one or both sides.

Coating

A layer added to paper to improve surface smoothness, shine, whiteness or printability, which consists of pigments, a binding agent and/or other substances.

Cockling

The phenomenon by which, when the relative humidity of the air is lower than that of the paper, the edges of stacked sheets dry out and contract (tight edges), causing the paper to buckle in the middle.

Collaborative filters

Term used to refer to a personalized internet marketing approach based on information obtained from the customer. Information regarding a customer's interests and preferences are used to customize and present offerings presumed to be of most interest.

Collating mark

Name given in book printing to a short line printed in a staggered fashion in the gutter between the first and last page of each sheet. Once the sheets have been folded and collated, the lines appear on the spine of the book block, enabling the sequence of the individual sheets to be checked based on the position of the lines.

Color density

Describes the optical density of areas printed in color. This value is important when monitoring quality in printing processes and can be measured using reflected light densitometers. It is only possible to compare the color densities of the same individual hue.

Color depth (bit depth)

Number of bits available for each pixel of a color for the classification of color values in red, green and blue. Eight bit, for example, allows for the differentiation of 256 hues for each of the three primary colors and thus for the specification of millions of color tones.

Color management

The control of color reproduction in a digital graphic production process. The various input and output devices from the scanner to the printing press support different color spaces, depending on the device. In order to standardize the way colors appear throughout the production process, color profiles are generated for all devices and processes. The combination of these color profiles makes it possible to calculate the coefficients necessary for data conversion. Those colors in a given color space that cannot be displayed in another color space are approximated as closely as possible.

Color profile

The color profile of an image input or output device (scanner, monitor, printer, printing press, etc.) is an element of color management which indicates how the color information supplied by the device behaves with respect to a superordinate, device-neutral color system (e.g. the CIELAB color space). Manufacturers supply color profiles with professional devices. To ensure high-quality results, profiles need to be created individually using special instruments.

Color proof

A test of the colors of a printed product, it is simpler than a press proof on the press itself and can be performed away from the printing site. The prerequisite for an accurate color proof is reliable control of the (electronic) preprint process with a color management system that takes into account the press and paper to be used.

Color saturation

The intensity of a color. Saturation is highest when no complementary color has been added. A highly saturated color is brilliant while a color with low saturation appears dull.

Color separation

The color component of a digital print original which corresponds to a color in multicolor printing. The most popular four-color printing process is the CMYK color model which requires four separations in the colors cyan, magenta, yellow and black to produce the corresponding printing plates. The color separations that together form a complete color original are known as a color set.

Color space

Model for the description of colors by means of measurable values. Some of these models are device-specific, for example the RGB color space for monitors (light colors) or the CMYK color space for printers (process colors), while others are based on mathematical models and thus device-independent, for example the CIE. A color space is a three or four-dimensional theoretical model. Colors can be shown by their red, green and blue content (RGB), by hue, saturation and brightness (HSB color space), or by their cyan, magenta, yellow and black content (CMYK).

Color temperature

A simplified way of defining the spectral properties of a light source. Low color temperature imparts the impression of a warmer light color (yellow/red), while high color temperature lend the feeling of a cooler color (blue). The standard unit for color temperature is the Kelvin (k). In technical terms, color temperature relates to the temperature to which a theoretical black body would need to be heated in order to emit light of exactly the same color.

Color wedge

Measuring strip used as a control instrument in four-color printing.

Colored paper

Refers to paper grades that are colored, coated, flock-coated, patterned, bronze-dusted or marbled.

Column

Refers to the vertical sections in a newspaper or magazine or to a brief, regularly published opinion article in this format. In technical printing terminology, a column is the text designed for a page of a printed product. The uppermost text in a column is known as a "head".

Compatability

Degree to which elements, files or formats can be processed interchangeably.

Complementary color contrast

See "complementary colors". The phenomenon by which, when two colors on opposite sides of the color wheel are placed next to each other, the brilliance of each color is increased.

Complementary colors

Colors on opposite sides on the color wheel. When mixed in an additive system, the complementary light colors RGB combine to make white. When mixed in a subtractive system, the pigment dyes and colors CMY produce a dark gray to black tone.

Compression

A method of reducing the amount of data contained in a file in order to reduce file size and/or up and downloading time. With images and sound files there are so-called “lossy” and “non-lossy” compression methods. The latter allow for more compression, but some details are lost in the process.

Computer-to-film

The process of creating films for printing plate production which uses electronic sheet assembly. To this end data are gathered from various sources and transferred to a filmsetter. A more recent version of this, suitable for linework or contone originals, is desktop computer-to-film. Here the film used for producing the printing plate is not processed photographically but printed. This requires the printer to be capable of true-to-size printing on the foil.

Computer-to-plate

A process by which data from the computer is imaged directly onto the printing plate without using film as a transference medium, thus reducing costs, though the printing foils used in this process wear out faster than conventional printing plates. Depending on the process, in addition the foils cannot always be stored once they have been printed. New materials that use thermal energy instead of visible light for imaging have made it possible to process film in daylight conditions and to develop film without using chemicals.

Computer-to-print

Refers to all printing processes that do not require physical printing plates. Using processes derived from computer technology (for example laser printing) specially equipped presses can print directly from correctly processed data. Computer-to-print is ideal for short runs, and in particular for personalized printing.

Concertina fold

The continuous parallel folding of brochures and similar printed material in an accordion-like fashion, that is with folds alternatively made to the front and back.

Content

The text and graphics contained in a Web site. Individuals and companies who create this information are known as content providers. Web sites are often judged and rated on the quality, quantity and navigational flow of their content.

Continuous tone positive

In offset printing, an original copy, in general a wrong-reading line-positive or contone positive; depending on the image definition, partly translucent negative or positive originals of images or texts used to duplicate by contact or to transfer information to the printing forme.

Contone original

Print originals with colors of more than one lightness level. Because printing technology can only recognize full colors, contone originals must be screened before reproduction, that is broken down into dot systems. By varying the size or frequency of the screen dots, an impression is created of different shades.

Control strips

The basis of efficient quality control in reproduction and printing and part of a comprehensive quality assurance system. There are a variety of control strips for the printing process, such as the media step wedge for proof and printing, the digital plate wedge for the control of printing plates, the digital print control strip for the control of the print production run, among others.

Conversion

The transfer of a file or data from one format to another.

Cookie

A small file automatically sent by a Web server to a computer browsing a web site. Cookies are stored as text files on the hard drive so that servers can access them every time the computer browses the site. Cookies contain information relevant to the user: user names, passwords, preferences, etc.

Copper gravure (halftone gravure)

A rotogravure process today that employs copper-coated impression cylinders onto which the motif (text and image) is transferred directly using a screening process performed with chemicals (etching) or by engraving recesses using a stylus or other instrument. The most popular rotogravure process today, its high setup costs are offset by long print runs that can be increased to several million copies by chrome-plating the prepared press roller. The use of low viscosity, fast drying inks allows for high printing speeds, and high print quality can be achieved even with low grade papers, though fine type is rendered less clear by the screening process. Copper gravure presses offer greater flexibility in print formats than rotary offset presses, since impression cylinders of different circumferences can be used in a single press. Gravure printing was invented by the Czech painter and graphic artist Karel Klic (1841 [Arnaud/Ostböhmen] – 1926 [Vienna]). In 1904, the Elsässische Maschinengesellschaft in Mülhausen built the first rotogravure press.

Copying paper (typing paper)

Thin (30-40 grams per square meter), machine-finished, mostly wood-free, well-sized paper primarily intended for typing.

Corporate design

The look or style that a company implements in order to communicate a distinct image in communications media like web sites, brochures, catalogues, packaging, etc. This style extends to graphic elements, such as the company logo, the company's colors or a particular typeface. In many cases corporate design also encompasses product design and can even include the architecture of company buildings.

Correction marks

The system of notation used by the print industry to indicate corrections in texts. This system has been made a binding standard and defined in DIN 16 511.

Corrugated board

A packaging material that, in its simplest form, consists of a corrugated sheet of paper produced using two intermeshing, grooved rollers and by applying pressure and heat, with flat paper sheets glued to either one or both sides. Corrugated board was invented in the U.S. in 1871 and, thanks to its high strength and low weight, quickly became a favored packaging material.

Couching

Refers to the dehydration of paper by means of pressing, whereby the fibers combine to form the paper structure. This process forms the basis of an old printer's ritual, in which colleagues who have just completed their apprenticeship are welcomed to the profession in a humorous ceremony: the candidates are dunked in a vat filled with water or deposited on an enormous, wet sponge.

Cover paper

See "paperboard".

Cromalin (sometimes spelled "chromalin")

Process developed by DuPont for simulating print results, used as a proofing tool in color reproduction.

Crossfold

Folds made by knife or buckle folders, in which the printed sheet is folded several times at a right angle to the previous fold. The result is a product with several pages.

Crossmedia

Describes the common processing of content for different media. Texts and images, for example, are saved in a database that can be used to produce printed catalogs, data media (CD-ROM), as well as electronic catalogs which can be accessed online. One important benefit of this procedure is the fact that changes to the content only need to be performed once for all media.

CRT (cathode ray tube)

An electron tube for the generation of electron beams, which can be used to show, among other things, rapidly changing voltage differences and electron streams on a fluorescent monitor. Improved types of cathode ray tubes are used in the TV monitors and computer displays. In these applications, however, the cathode ray tube is increasingly being replaced with plasma, TFT or LCD technology.

Cut and paste

Process of removing (or cutting) a text or an image and inserting (or pasting) it elsewhere; a function in graphic software programs for making the layout or layout changes in parts of pages or graphic elements.

Cut size paper

Paper cut, in contrast to roll paper and as the name would suggest, to a certain format.

Cutting die

Form used to slice articles from or pierce sheets of paper, board, film, foil, etc.

Cutting height

See "stack height".

Cutting marks

Marks on the printed sheet that indicate the net size of a page.

Cyan

Specific shade of blue used in four-color printing; one of the four process colors.

Cyan overhang

The additional quantity of cyan required to create a neutral gray. In theory equal measures of cyan, magenta and yellow are needed to produce neutral gray, but in practice this additional cyan is necessary.

Cyrillic alphabet

Script created by the brothers Saint Cyril and Methodius in the ninth century using letters from the Byzantine, Greek and Glagolitic alphabets. Variations of the alphabet are used today for several Slavic languages, including Russian, Ukrainian and Bulgarian.

D

Dampening system

The part of an offset press that draws a thin film of dampening solution—water with isopropyl alcohol and other additives—over the non-printing areas of the form. In vibrator-type dampening systems there is direct contact between the dampening solution container and a vibrator cylinder. In centrifugal, turbo or brush-type dampening systems there is no such direct contact.

Data compression

Term used in information technology for the reduction of memory space required for data by optimizing the binary notation of the information. Depending on the nature of the original data and their coding, compression ratios of 1:100 and higher can be achieved. A distinction is made between compression methods that involve loss of information and "non-lossy" or lossless methods. Typical "lossy" methods include the JPEG format for images or the MP3 format for music clips. Methods for compressing numerical data, such as MNP5 and V.42bis for data transmission, and compression methods for files (zip, lha, rar, etc.), are of the lossless variety.

Data mining

Term encompassing a range of processes used to glean information from databases. Data mining involves statistical and artificial intelligence methods and can reveal information about the typical behavior of groups of people. Data mining is a tool used, for example, by banks, insurance and other companies that collect large amounts of data on their customers.

Database

An electronic filing system or organized system of information characterized by the use of data fields; can provide a foundation for procedures such as retrieving information, drawing conclusions, and making decisions. Traditional, computerized databases are organized by fields, records, and files. A field is a single piece of information; a record is a complete set of fields; and a file is a collection of records.

Deep shadow

An area of an image not directly lit. There are two categories of shadows: umbra and penumbra. Umbra denotes completely shadowed areas and is formed when there is only one pointed light source, as a result of which the area behind the object is completely unlit. Penumbra refers to partially lit areas, when the light source is not pointed or when there is more than light source.

Default

A computer software setting that states what will automatically happen in the event that the user does not state a preference.

Deinking

A treatment to remove the printing ink from wastepaper so that the secondary fibers can be reprocessed. The deinking process makes it possible for higher-grade stocks to be manufactured from recycled content. The reprocessed pulp that results is known as DIP, or deinked pulp.

Densitometer

An instrument used to measure the ink density of printed products and the degree of blackening of negative or positive films and bromides in photography. A densitometer can also be used to determine the density of profiles. Densitometers measure a color sample three times using three different color filters (red, green and blue filters), which are equivalent to the sensitivity of the three types of cones in the human eye, and densitometers are thus also referred to as three-filter reading devices.

Densitometry

Densitometry is the quantitative measurement of ink density or the amount of ink per unit of area. It is used to determine tonal values, but not color hues. Densitometry can be used in photography and in reproduction for quality assurance purposes.

Descender

Term used for the elements of a character that extend from the baseline (typeline) downwards to the p-line. In typography, descender denotes the extension of the characters g, q, p, y or j, which all contain lines that fall below the baseline.

Design grid

An arrangement system consisting of horizontal and vertical lines in which all text blocks, images and pictures are contained, it is used to prevent the disorganized presentation of images, tables and other design elements. The definition of a design grid is part of the field of macrotypography.

Device-independent color space

A reference color standard. Most color management systems use the LAB color histogram of the CIE (Commission Internationale d'Eclairage) as the international color standard, independent of all devices.

DFTA (Deutschsprachige Flexodruck Fachgruppe e.V.)

Created in the fall of 1979 and modeled after the FTA (Flexographic Technical Association), this association is based in Stuttgart and has over 400 members from the flexographic industry and scientific establishments. The association's goals include the technical advancement of flexographic printing, basic and advanced training, and the exchange of expertise and experience. The DFTA has a technology center at the Media College of Stuttgart Technical University.

Dialog marketing

Refers to all company activities intended to directly address potential customers and elicit a response. Examples of dialog marketing include mailshots (personalized communications) containing various response options. The Internet is an ideal medium for dialog marketing.

Didot point (dd)

Defined by the French printer François Ambroise Didot as exactly 0.376065 millimeters; the smallest unit of measure in the Didot measurement system. In 1879 the Didot point was rounded down to 0.376 millimeters, and in 1973 it was further rounded to 0.375 millimeters to facilitate conversions.

Digital camera

A photographic camera that uses highly-integrated components (CCD chips) to convert the image captured by the lens into digital data, thus circumventing the need for film imaging, film development and scanning.

Digital forme proofing

A hardcopy of computer data used to check for mistakes in text, layout, etc.

Digital holography (synthetic holography)

Term used for the generation of images or illustrations in the form of interference patterns through computer calculations. Future applications for digital holography include high-capacity, long-term data storage devices based on plastic foil and ultra-small, forgery-proof markings for packaging, etc.

Digital photography

Alternative to conventional photography, involves use of cameras that capture images directly in digital form. The image data is transferred by means of special storage media or a data interface to a computer for further processing.

Digital printing

Refers to printing processes in which the information is transferred from the computer directly onto the paper, without the use of film or printing plates. Color printing technology is linked to the printing press' mechanical system. Though digital printing cannot deliver the same level of quality as conventional printing processes, it is faster and more cost-effective for small print runs and allows special techniques such as personalized printing and print-on-demand.

Digital signatures

A type of "seal" created using a chip card and based on encryption software. Digital signatures are used in electronic communication to provide a legal alternative to the handwritten signature. These are ideal, for example, for electronic tax returns, home banking and electronic transactions.

Digitization

The process of converting values into digital codes; the optical division of any original image into single pixels; the processing of data in a digitized electronic form of encoding.

Dimensional stability

Measures how much a paper's dimensions change when its moisture is altered. This is a key criterion affecting a stock's suitability for multicolor offset printing.

DIN (Deutsche Industrie Norm)

A system that defines concepts, measurements and application in the industrial sector. Certain DIN norms have been developed for offset print.

DIN sizes

Standard metric sheet sizes widely used outside the United States. The most important ones belong to the A series, in which the next-smaller size has a length corresponding to half that of the next-larger size. They include A4 (210 x 297 mm) and A3 (297 x 410 mm).

Direct imaging

Refers to a new technology which uses PostScript data from the prepress stage to simultaneously image all the printing forms of a printing press with complete register accuracy. To do this the screen data supplied by a RIP (raster image processor) controls 64 infrared laser diodes, creating small recesses on a special printing foil with an ink-repellent surface, thus revealing an inking layer. The result is a printing foil which can be used for water-free offset printing.

Discretionary hyphen (soft hyphen)

A hyphen placed within a word in order to divide it at the end of a line. The hyphen disappears if due to a change in the text flow, the word no longer falls at the end of a line.

Dispersion coating

See "water-based coating".

Display type

Type sizes used for titles, approximately 16 point or higher.

Document management

Rules and measures applied to the creation, administration, distribution and archiving of documents.

Document paper

Document paper is one of the highest grades of paper and bears a real watermark. The grade is generally used for official documents and certificates, and features special properties.

Dot drop out

Refers to tonal values and the point up to which highlight dots are burnt out or are just available, expressed as a percentage of area coverage. The drop-out point of tone values can be determined by printing the related test wedges.

Dot gain (dot growth, dot spread, press gain)

Term used in reproduction technology for the deviation in size of a previously calculated theoretical screen from the dot and screen actually printed, a phenomenon to be considered in order to ensure the quality of a printed product. This variation in dot size depends on several factors, including the printing method, substrate, printing ink, printing conditions and total ink limit.

Dot matrix

A screen output device which make up character/images from a matrix of dots. The starting point for creating a raster is a dot matrix, which in newer RIP implementations consists of 128 x 128 elements. In this matrix, the dot shape is stored as a 12-bit gray tone.

Dot spread (mechanical and optical)

See "dot gain".

Dot touch

Contact made between two dots in the simulation of gray levels presented in halftone cells. With a square dot, dot touch will occur at a gray value of about 40 percent, with a round dot it will only occur at about 60 percent, and with an elliptical dot it will occur at 50 and 75 percent. With coarser screens, such as in laser printers, dot touch is less visible.

Double

Term given to a word that has erroneously been typeset twice in a text.

Double-sided printing

Printing of the front and back sides of a page with two different printing plates.

Download

The process of transferring data from one computer or server to another; the transfer from one device to another in general; the specific process of loading fonts from a layout or graphical software program into the printer.

Downstream

A kind of transmission by which information or data flows from a server to an end user. See “upstream”.

Drag and drop

The process of moving text or images within a file or from one file to another.

Drum scanner

A scanner that functions by mounting the original on a rotating cylinder, through or onto which a point-light is then transmitted. The scanning unit moves parallel to the cylinder's axis of rotation, directing the light of the original via optical and color filters towards photo-multipliers. As photo multipliers only give analog signals, an electronic unit is required to convert them into digital signals.

DTP (desktop publishing)

Refers to the combined processes of text creation, page makeup and image assembly as an integrated activity performed on the computer. DTP delivers data in the form of pages which are then further processed at the sheet assembly stage – either in the form of films or in electronic form (computer-to-film / computer-to-plate). DTP data uses the PostScript page description language. In electronic printing this data is used directly to produce print copies or for printing.

Ductus

A typographic term used to describe the various elements of a character, such as the line, weight and direction in which each line is drawn. The term is derived from the Latin verb “ducere” (to lead), and was borrowed from calligraphy, where it is used to describe how the pen is held.

Dummy

Sample of a print product which is designed to demonstrate such production features as format, page count, paper grade, finishing and binding.

Dummy text

Term used for sample text, the purpose of which is to communicate the intended typographic impression of layout pages or to reserve a space. Dummy text should be instantly recognizable as such - otherwise, as occasionally happens, it may erroneously be printed.

Duplex board

A multi-layer carton with a gray intermediate ply, gray back and wood-free or almost wood-free coat on one side.

Duplex images

Images used to enlarge the tonal value range of a grayscale image in print. A black/white reproduction, for example, can contain up to 256 grayscales.

E

E-book

Refers to both the electronic version of a text that can be purchased as a CD or downloaded from the Internet and the electronic device that can be used to display such texts. The latter is, however, properly called an "e-book reader".

E-commerce

Describes business processes or transactions carried out over the Internet.

E-payment system

A system in which purchases and payments are processed electronically using the Internet. Such systems often employ trust centers and digital signatures in order to prevent theft and misuse of data and information. E-payment systems generally require a complex IT infrastructure.

E-procurement

The business-to-business purchase and sale of supplies and services over the Internet. Also referred to as web-enabled electronic purchasing. It automates the traditional manual and paper-based procurement process, thus resulting in reduced maverick buying, lower transaction costs, lower cycle times, and increased efficiency.

EAN code (European Article Numbering code)

Code defined to assist in the universal identification of all types of goods by means of an internationally-standardized article number. Two different versions of this code exist, one containing 13 figures and the other eight (EAN-13 and EAN-8). An EAN code generally includes the country of origin, the manufacturer and the product's article number.

EB ink (electron beam color)

A printing ink that is dried with the use of electron beams. Similar to UV inks, which are cured by ultraviolet light, EB inks are cured by means of polymerization, which is made possible by the direct effect of the electrons on polymerizable substances. Unlike UV inks, special initiators are not required for EB inks and as a result EB inks are easier to store. The special advantage of EB inks is, however, the thickness of the layers that can be applied, as the electron beams penetrate deeply.

Editor

A software program used to write and edit HTML code.

Effect coating

Coatings used to lend a printed product a unique appearance or quality; usually refers to pigmented coatings, which vary greatly according to the pigments in the ink and the size and shape of the particles.

Electronic paper

In an attempt to combine the electronic activation of a monitor with the superior legibility of printed paper, Massachusetts Institute of Technology (MIT) and various manufacturers are working on what is known as electronic paper. In one version, the paper contains tiny spheres with different colors on different sides, which rotate when exposed to electric fields and thus present different colors. Another type of electronic paper contains small, transparent capsules filled with dye and white particles. When an electrical field is applied, these particles float to the top, making the surface of the paper look white. Otherwise, the effect of the dye is dominant.

Electronic signature

See digital signature.

Em dash

The longest form of the dash, the length of which is equivalent to the width of the letter "M"; used in English to denote a break in sentence structure.

En dash

Shorter than the em dash (its length is equivalent to the width of the letter "N"), it is used to replace the word "through" when listing inclusive numerals or dates.

Enlargement scale

See "reproduction scale".

EPS (encapsulated postscript)

A standard file format used to transfer a graphic from one application or platform to another. Pure EPS can not be displayed on the monitor and therefore a preview must be created in TIFF or another format. EPS graphics can be enlarged without loss of quality.

ERA (European Rotogravure Association)

Headquartered in Munich, the association was founded in 1956 by European gravure print shops; manufacturers from the industry are associate members.

Esthetic program

Feature of a layout program that ensures that the text flows with visual appeal, in accordance with typographic rules. The features of such a program include the individual adjustment of the spaces between certain letter combinations (known as "kerning"), and corrections to the positions of line starts (for example a line beginning with "A" must be moved slightly outwards).

Esparto paper

A soft, bulky printing paper made from esparto grass, the stock of which is extremely opaque and, due to its low moisture pickup, features relatively high dimensional stability.

EUPRIMA (European Print Management System Association)

An association for suppliers of management information systems established in 2000, the primary task of which is to promote the electronic exchange of data between manufacturers, customers and suppliers in the print industry using the Job Definition Format (JDF). EUPRIMA works closely with CIP4 in advancing development work.

Euro scale

A color scale for the CMYK four-color model standardized in Europe in DIN 16 539 for offset printing and DIN 16 538 for letterpress printing. This defines the printing colors yellow, magenta, cyan and black according to hue, saturation and print sequence and enables them to be controlled under standard conditions.

External drum exposure

Refers to a writing head that is placed outside the drum. The film or printing plate is clamped onto the outside of the drum and fixed via a vacuum. When the drum rotates, the writing head traverses the material to be imaged line for line.

F

Faber und Faber Verlag

A publishing house founded in 1990 in Leipzig; has, according to information from the company, produced the world's smallest book ever to have been manufactured in a production run. Measuring just 2.4 x 2.9 mm, the copies were bound in leather by hand. The volume is entitled "Bilder ABC" ("Picture ABC") and contains images of letters by Josua Reichert.

Facsimile

Term derived from the Latin generally used to describe the most natural possible reproduction of an original (image, handwriting, book) complete with all its characteristics including dirty marks, damage or traces of use. This is the highest degree of similarity which a reproduction can achieve in comparison to the original, whereby nothing is added, omitted or improved. Copyists in the Middle Ages were already trying to achieve reproductions of texts and books which were true to the originals by writing them out and illustrating them by hand. The first full facsimiles date from the early 17th century, and were engraved in copper. Facsimiles were also produced using the wood engraving method. The invention of lithography in the late 18th century and collotype in the mid 19th century made facsimiles as we understand them today possible.

Felt side

The side of the paper not in contact with wire from the paper machine. Especially in lower-quality grades, this side offers much better performance characteristics than the reverse, or wire side.

Ferro-gallic ink

A very durable ink that consists of gallic acid, iron sulfate and in some cases a binder (gum arabic) and that has been known for several centuries. The ink was used for documents of all kinds until the advent of chemical dyes in the recent past. When first applied, pure ferro-gallic ink has a pale color; only when exposed to atmospheric oxygen does it form a distinctly black pigment. It is insoluble in water and thus very difficult to remove. After extended periods of

time, ferro-gallic ink decomposes paper and parchment, causing what is known as ink corrosion.

FGD (Forschungsgesellschaft Druckmaschinen)

An association for printing press research founded in 1955 by leading German printing press manufacturers as a non-profit organization. Headquartered in Frankfurt, the association works to coordinate the printing press industry and research activities in the field of printing presses and processes; also works in close collaboration with the Institut für Druckmaschinen und Druckverfahren (Institute for Printing Presses and Printing Processes) in Darmstadt.

Fillers

Additives used in paper manufacturing process to fill gaps between paper fibers in order to enhance opacity, whiteness, and smoothness. Generally added to the liquid pulp mass, the most common fillers are mineral compounds such as kaolin or calcium carbonate. In finished papers, the filler content can be as high as 35 percent.

Fine paper

The general term used to describe paper of superior quality. Particular features of such papers are stability of the surface; good, even transparency (even with watermarks); and good printability.

Finishing

The term used to describe various processes or operations performed on a printed product after the print run itself. Depending on the type of product, these processes can include folding, collating or trimming of the printed sheets, as well as binding or packing.

FireWire

Refers to a serial interface with a high transfer rate in compliance with US standard IEEE 1394. This standard specifies transfer rates up to a maximum of 400 Mbit per second, though higher rates have been proposed for standardization. FireWire interfaces are often used for connecting video cameras and similar products to computers, and increasingly for mass storage devices, scanners and other peripherals.

Flash

An application developed by Macromedia Inc. for binding graphic animations into Internet pages. Macromedia offers various software tools for creating Flash animations. To view these animations, the Flash Player plug-in is required, which is available free of charge.

Flatbed scanner

A scanner that works by projecting reflected light onto a CCD chip by means of an optical system. This light is then separated into the primary colors, which are in turn brought together by the scanner to form a digital image. The advantage of this type of scanner is its use of a constant light source. As it can only be used for photographic materials, prints or drawings, the color space of an image can be precisely defined.

Flatness (flat lying properties)

Refers to the extent to which paper lies horizontally.

Flexographic printing

A printing process that involves the use of photopolymer wash-off printing (letterpress) or similar printing plates. Using low-viscosity ink it is possible to print on diverse materials with

screen rulings of up to 54 l/cm. Flexographic printing is a very fast, uncomplicated printing process suitable for package printing and multi-color newspaper printing.

Fluorescent printing inks

Printing inks that shine or change color when exposed to ultraviolet (UV) light of various wavelengths; used for protection and to identify the authenticity of documents.

FM screening (frequency modulated screening)

Screening method for the simulation of continuous tones involving the arrangement of same-size dots at varying distances. The number of dots in a defined area determines the color tone. Though the quality of this kind of simulation is high and no moiré patterns are created, it requires somewhat better accuracy and care in platemaking and printing as well as different work methods. In addition, color areas sometimes appear grainy.

FOGRA (Forschungsgesellschaft Druck)

Established in Munich to promote printing technology, the association has its own institute with over 50 employees. Its responsibilities include research and development of quality control tools, knowledge exchange through printed materials, lectures, seminars, symposia and a literature database; collaborates in setting industry standards and provides assistance in the case of conflicts.

Fold

In bookbinding a sharp break or bend in the papers, generally performed by special machines. A distinction is made between right angle and parallel folds. In right angle folding the next fold is always at a right angle to the previous one. In parallel folding, the first is always parallel to the second.

Fold lay

A kind of lay employed in bookbinding; the angle at which printed sheets are fed by the bookbinder in order to ensure positioning and register accuracy when folding.

Folding machines

Special machines used to fold printed materials. Knife folders employ a blunt edged knife to press the paper between two continuously moving rollers. The paper is caught between the rollers and carried away, a fold being made where the knife makes contact. The buckle or plate folder feeds the paper end first between a pair of continuously revolving rollers. Both methods of folding can be combined in one machine – the combination folder.

Folding marks

Marks made to ensure register-true folding.

Folding scheme (or folding layout)

Specification of the number, direction and sequence of folds for an individual production job.

Folio

Term for the page number in books, magazines, etc.

Font

A type face. A font usually has several styles in various weights and versions.

Font family

All variants of a specific font, including those with varying weights and styles.

Foot trim

The area at the bottom portion of a page to be trimmed off.

Four-em quad

A typographical unit of measurement corresponding to 36 points.

Fraktur

A black-letter typeface created in 1517; the most common typeface in Germany until the 20th century though also widespread in countries neighboring Germany to the east and southeast. Its name (Latin for "broken") was derived from the broken strokes made when the font was handwritten. Precursors to Fraktur are the Gothic and Schwabacher typefaces.

Frame

A rectangular area absolutely positioned on the display screen; also refers to a single section of a Web page specially coded.

Front matter

All pages and material that appear before the text of a book, including the bastard title, full title, imprint, dedication, table of contents, foreword, unprinted pages, etc.

Front trim

The trim employed for magazines and booklets with multiple folded, inserted signatures in order to create an even edge; must be taken into consideration in the design stage.

Full ink coverage

The smallest quantity of ink that can completely cover the surface of a particular printing stock with no visible gaps. In offset printing full ink coverage for smooth coated art papers is 1.5 to 2 gsm, and for uncoated papers it is around 3 gsm.

G

Gamma value (gradation)

The gradient or angle of slope of the straight section of a blackening curve, calculated according to the tangent formed by the angle of the curve in relation to the straight line. The gamma curve describes the relationship between the tone values in an image file at input and the tonal response of the output device (monitor). The greater the gamma value, the steeper the curve. In color management the gamma value indicates how the exposure range is produced in density values (the density range).

Gamut

The range of colors that can be produced by a color system; tonal value and color range that can be produced or reproduced by a system or process depending on the color space and colorants used. See also "color space".

GATF (Graphic Arts Technical Foundation)

A technical association based in Sewickley, Pennsylvania and active in the printing industry. In 1999 the organization merged with the Printing Industries of America (PIA) and now has some 14,000 members in 60 different countries.

Gatherer-stitcher (gang-stitcher)

A device for stitching printed products and creating magazines, brochures, etc. from printed and folded sheets. The print sheets and jacket are collated in the correct order, aligned and then stitched using wire staples. Finally, the volume is cut on three sides. This separates the sheet folds that do not lie on the spine edge, and thus the booklet takes on its familiar shape.

Gaussian blur

A tool used to give images, graphics and photos a “blurred” or “softened” look. It is often used in the design of background graphics, which seem to be “cushioned” into the background.

GCA (Graphic Communications Association)

Former name of the International Digital Enterprise Alliance (IDE Alliance).

GCR (gray component replacement, achromatic color removal)

The process by which gray tones are proportionally removed from the exact amounts of cyan, magenta and yellow that make up gray and replaced by the corresponding quantity of black ink. This is primarily performed for neutral color tones and in the gray components of unsaturated colors. The process allows for ink reduction and reduces the effects of color shifts.

Ghosting

An error that can occur in such indirect printing processes as offset when screen dots have double or multiple contours. It can be observed in single-color printing, but more often in multi-color printing. Faulty printing of this type increases the screen tonal value and leads to dot gain. This slight shift in the position of the printing elements is caused by register fluctuations during printing, which may themselves be caused by the paper or the press.

GIF (Graphics Interchange Format)

A storage format for images and graphics involving lossy compression and that allows 256 colors to be displayed from any pallet. The data format was introduced by the CompuServe online service in 1987, which makes it one of the oldest of its kind. GIF remains one of the most widely-used formats for online publication, and also allows for image animations.

Gigabyte

A unit of measurement abbreviated as “G” or “GB” that approximately corresponds to one billion bytes. It is used to quantify memory or disk capacity.

Glassine

A highly greaseproof, but not wet-resistant paper grade made of finely ground pulp. It is highly supercalendered and therefore relatively transparent.

Glyph

A symbol carved in stone; in typography a letter with more than one variant in an alphabet, such as “s” in German as well as Greek.

Goffering

A process for shaping the surface of paper into a pattern, usually with fine grooves.

Gradation

See "gamma value".

Grain direction

The direction in which the pulp fibers of a sheet of paper are aligned as a result of the papermaking process.

Grain long, grain short

Terms used to indicate whether the paper web should travel through the paper machine lengthwise or widthwise, which in turn is generally indicated by marking whether the width or length of the paper should correspond with the machine's reel width. The fibers (and thus the grain) lie parallel to the edge not indicated.

Grammage

The standard international unit of measurement for paper weight, expressed in grams per square meter, or gsm. Grammages range from 7 to approx. 225 g/m² for paper, and approx. 150 to 600 gsm for board. The system differs in the U.S., where the term "basis weight" is used, which is the weight in pounds of a ream (500 sheets) in the standard size for a grade of paper.

Gravure printing

A printing process used in high-output rotary presses, in which the printing elements take the form of small cells on the surface of the gravure form cylinder. The print image is generally transferred onto the cylinder by means of electromechanical engraving using a diamond stylus. During the course of the printing process, the printing cylinder is entirely coated in ink. A doctor blade then removes the excess ink from the surface and the only ink remaining is the ink in the cells. A rubber roller then presses the paper web against the printing cylinder and the ink remaining in the cells is applied to the paper.

Gravure printing paper

An especially soft, absorbent grade of paper, such as handmade papers from Japan with silky fibers especially suited to capture the nuances of hand-pressed copperplate prints.

Gray board

Flat substrate made of mostly uniform fiber layers over 225 g/m² and colored gray.

Grid cells (screen cells)

The combination of recorder elements (REs) into a visual (halftone) dot. The physical size of the grid cell remains constant, and a computer program then defines the filling of the cell with picture elements or a pixel pattern in accordance with the color or gray value to be reproduced.

Griffo, Francesco (1450-1518)

The Venetian die-cutter known as the inventor of italic type. In February 1496, the letterpress printer Aldus Manutius published an essay by the Italian scholar Pietro Bembo. The italic type "Bembo", which was developed by Griffo from an official papal font, quickly gained in popularity and would later play an influential role in font design.

Gripper

The mechanical clamps used to transport the sheets in a sheetfed press. Grippers seize the individual sheets and feed them into the printing unit. The printing unit's rollers are equipped

with additional grippers, which fix the sheets in place for various stages of the print process. The printed sheets are output in a similar way at the end of the printing process.

Gripper fold

The protruding part of a folded signature, which can easily be gripped for production with inserts. The width of the gripper fold is in most cases approximately 8 millimeters, but must be accurately specified in accordance with postpress processes.

Gripper margin

The unprintable area of the page where the printing press grippers come in contact with the paper.

Grotesque face

Refers to fonts, the letters of which have a constant weight and are free of serifs. Examples of sans-serif fonts of this kind are Futura, Helvetica, Arial, Optima, Univers, Franklin Gothic and Frutiger. Grotesque faces are generally regarded as functional and modern, and are generally used for aesthetic reasons. From the point of view of legibility, they are less suitable for running text than serif typefaces.

Guilloches

Derived from the French guilloche (graver), term used for fine, interwoven geometric patterns of lines often printed on banknotes, certificates, etc., to make forgery more difficult.

Guilloches are also often used as screen lines for illustrations, and works of art made of metal are not seldom decorated with guilloches engraved either by hand or machine.

Guillotine

Generic term for cutters designed for cutting sheets, stacks or blocks of paper in different shapes. A term mostly used in papermaking factories to describe the difference between this type of cutter and reel slitters.

Gutenberg (1397-1468)

Born Johann Gensfleisch, son of Mainz patrician Friele Gensfleisch zur Laden, inventor of “printing with moving letters” or letterpress printing in either Mainz or Strasbourg. His invention was based on cast type, a corresponding manual casting instrument, a suitable metal alloy and a printing press. Gutenberg’s invention, which is today considered the trigger for one of the greatest revolutions in human history, spread throughout the world within a matter of years.

H

Hairline

The thinnest line that can be produced.

Half duplex

The transmission of data between two terminals in only one direction at any given time. (Transmission may be in both directions but not at the same time.)

Halftone

Term used to designate a contone image which has been prepared for printing using screening technology. This is a pure black/white or full-tone original which uses screening to simulate contones. Georg Meisenbach (1841-1912) is considered the inventor of halftone technology.

Halftone color synthesis

Refers to the way in which a color impression is generated when printing screened color images. The individual screen dots – in the CMYK basic colors when using four-color printing – are printed either next to or on top of each other. Both additive and subtractive color synthesis is possible. Even unprinted portions of an image, which are generally white, contribute to the color impression.

Halftone wedge

A control patch on the Ugra/FOGRA digital plate wedge, required for the determination of the printing characteristics of a printing press. It consists of (nine) patches increasing in most cases in increments of 10 percent from an area coverage of 0 to 100 percent (solid patch) for the densitometric control of tone values and dot gain during printing.

Handfolding

Sheet folding performed by hand typically using a folder – a flat, smooth piece of plastic about 15 centimeters long. Only limited edition books are still folded by hand.

Hard proof

The processes for simulating or checking printed results leading up to production of a hardcopy. Depending on the characteristics to be checked, a distinction can be made between blueprint, imposition proof (layout proof), color proof, screen proof and press proof (or machine proof).

Harmonica fold

See "zig-zag fold".

Header

Key data for a data set or file that enables user software to interpret and process data correctly. In relation to a file, the header provides such information as number of pages, date and time and the size of the file. For the processor, the header is particularly important in relation to programs, as it contains information that specifies the programs in the RAM.

Heat-set ink

A printing ink dried after the printing process by blowing air between 120 and 150° Celsius onto it. Heat-set inks are used in rotary offset printing.

Helio engraving (photo engraving)

Photochemical process for creating gravure plates introduced by the Czech painter and graphic artist Karel Václav Klíč in 1878. Helio engraving was particularly popular between 1890 and 1910 for creating monochrome illustrations in high-quality books.

Hermann, Caspar (1871-1934)

A pioneer in offset printing. After Ira Washington Rubel came out with the first offset printing press in 1904, Hermann converted book printing rotary presses into offset printing presses, beginning with the one he produced for the Harris Automation Press Company in Niles, Ohio. The first German offset printing presses were manufactured in the same manner

starting in 1907. Hermann also designed the world's first rotary offset printing press, which was patented in Germany the same year, and the so-called satellite printing system in 1922.

High-gloss paper

Paper that is cast-coated on one side and not calendered.

Highlights

The brightest areas of an image.

HKS inks

A hybrid system for inks which comprises 84 different color tones. It is jointly offered by three ink manufacturers: Horstmann-Steinberg, Kast + Ehinger and H. Schminke & Co. It is structured on nine basic colors plus black and white. Ink series are available for sheetfed offset on coated and uncoated papers, newsprint and continuous paper.

Hologram

A three-dimensional image created by the interference image which results from interaction between light reflected from the object to be imaged with a reference beam from the light source. This method requires extremely coherent light (synchronously oscillating light), such as that generated by a laser.

Host

A computer that functions as the start and end point for data transfer, and thought of as the place where a Web site resides. An Internet host has a unique IP address and a unique domain or host name. A host can also refer to a Web hosting company.

House typeface

The typeface employed by a company for most or all of its communications. Some publishing houses also use a standard typeface for their publications in order to make these products more identifiable.

HPGL (Hewlett-Packard Graphic Language)

A command language for driving plotters developed by the American company Hewlett-Packard.

HSB

A color model that describes colors in the same way as the human eye perceives them, using hue, saturation (or chroma) and brightness (or luminance). The hue is defined by its position in a color circle and is specified by an angle lying between 0 and 360 degrees. The saturation corresponds to the amount of gray in the color mixture and has a value between 0 percent for gray and 100 percent for pure color. The values for brightness also range from 0 percent for black and 100 percent for white.

HTML (Hypertext Markup Language)

A page description language used for formatting documents for the Internet. HTML makes it possible to create links between different Web sites and to present multimedia material. With the help of a web browser, HTML documents can be read by any computer with a standard operating system. A distinctive feature of these pages is that they do not have a fixed typography. The reader determines the typeface and font size, with which they will appear.

HTTP (Hypertext Transfer Protocol)

A data request protocol used for the Internet and based on the TCP/IP network protocol, HTTP is used to organize communication between an Internet server and the user's browser. HTTP sets up a new connection to the server every time a browser requests data.

Hue

A term used in the context of a color space to identify the exact shade of a piece of paper. Not to be confused with whiteness, which is a different property of paper.

HWC, LWC, MFC, MWC, SC, ULWC

Standard international acronyms for weights and grades of papers used in rotary offset and letterpress printing. Coated stock can be identified HWC (heavy-weight coated), MWC (medium-weight coated), LWC (lightweight coated), or ULWC (ultra-lightweight coated). All are wood pulp-based, but available in many varieties. MFC (machine-finished coated) paper is made primarily from ground wood pulp, has a grammage of 48 to 80 gsm, and may be high volume. LWC paper is particularly lightweight stock for use on rotary offset machines. SC (supercalendered) paper is an uncoated wood pulp stock based mainly on ground wood and recycled content. It features an additional finish applied by a separate supercalender.

Hyperlink

A text or graphic on a Web site which is linked to another page.

Hypertext

A function used to connect Internet documents by means of links, which can be added to any object of a document.

I

I code

A label technology sold by Philips for the identification of objects using transponders that respond to radio waves. These transponders are less than 0.5 millimeters thick, can be applied in stickers measuring up to 2 by 2 centimeters, can store up to 512 bits of data, and use the scanner's radio waves to obtain the energy they need to function.

ICC (International Color Consortium)

An association of manufacturers of prepress products dedicated to promoting color management or device-independent color processing. Fogra oversees the organization.

IDE Alliance (International Digital Enterprise Alliance)

Founded in 1966 as the Graphic Communications Association (GCA), this non-profit organization promotes the development of IT standards in the publishing industry and currently has over 300 members.

Ifra

An international association based in Darmstadt with over 3000 members from the publishing industry, the primary objective of which is to promote the exchange of technical information and experience. Ifra coordinates research projects, workgroups, symposia and seminars. The Ifra Expo exhibition devoted to newspaper production is held in October each year.

Illustration printing paper (magazine paper)

Paper made from chemical pulp and, in some cases, a minimal amount of wood pulp. This is a coated stock that is often calendered. It offers opacity similar to that of wood pulp paper, features excellent non-aging properties and does not yellow.

Illustrator

A graphic design and drawing program designed and manufactured by Adobe.

Image area (layout area)

Refers to the area of a page to be filled with text and/or images. The image area is determined according to aesthetic criteria and the nature of the printed material. The layout of an image area is part of the field of macrotypography.

Image Control

A component of the Prinect workflow concept designed by Heidelberger Druckmaschinen AG, which is the world's only quality assurance system in the print process that measures complete print sheets using spectrophotometric technology. After comparing the results with the values of the OK sheet, the color deviations that have been identified are fed online to the press in order to adjust the ink zone settings. This method processes a thousand times more information than is possible using print control strips.

Image cut out

An image with the background removed.

Image processing software

Software for editing the content of images that are digitally encoded, that is created using graphics software or read by a scanner). A distinction is made between the processing or editing of layout features (size, location, etc.) and of intrinsic features (color scheme, gray levels, etc.).

Imposition form

The layout sheet comprising all pages on the press sheet. The number of pages on the individual imposition forms varies according to the total number of pages of the printed product.

Imposition proof (layout proof)

Proof used to review the content and completeness of the various elements of a printing copy. In contrast to a blueprint, this proof is in color, although the colors are not binding. Large-format inkjet printers are mainly used for printing imposition proofs of this kind.

Imposition sheet

Determines the position of the pages on the printed sheet.

Imprimatur

The official approval by the client that printing of the product can begin. The phrases "good to print" or "ready for press" are also used.

Imprint

The information required by law regarding the publisher and printer of printed products or Internet publications. As a rule, the imprint also contains additional details, such as the name of the editor, the editorial address and a copyright notice.

Incubator

The term used to describe various methods of support for new companies to enable them to establish themselves in the marketplace. Professionals providing these services are usually paid in the form of shares in the new company.

Incunabulum (plural form: incunabula)

Term derived from Latin for works made using a movable letter technique prior to the 16th century. It is estimated that between 27,000 and 40,000 works were produced with this method in the 15th century. Incunabula usually have no title page, and there is often no reference to the printer, or year. Since it is assumed that early printers also produced their own type, the origin of incunabula can be determined by comparing the type used.

InDesign

Software package from Adobe for computer layout and typesetting comparable to QuarkXPress.

Initial

A letter placed at the beginning of a text, which appears larger and/or in a different font. In old handwritten material, initials are characterized by special colors and decorative elements. The first initial can be found in Greek and Copt scripts from the fourth century.

Ink acceptance

The amount of printing ink absorbed by the paper during printing. It may have an effect on the print quality and must be taken into consideration during preparations for the print run.

Ink density

A value measured by densitometers at the point in the spectral range where the ink is primarily absorbed. It is the reflection factor of a sample expressed as a logarithm, and directly related to the film thickness of the ink. See "densitometry".

Inkfountain

The device in a printing machine that supplies the block with the printing ink.

Inkjet printing

A printing process in which minute drops of ink are applied to the surface to be printed by means of a jet that operates with piezoelectric or thermal technology. Color inkjet printers now work with up to six colors and well over a hundred individual jets. Nowadays, depending on the process, they are capable of achieving the same results as high-quality four-color printing.

Inkjet paper

A surface-finished grade of paper designed to quickly absorb the tiny droplets of ink that an inkjet printer sprays in quick succession. It includes properties that prevent ink from running or smearing – brown-colored paper (also called sulfate paper) consisting at least 90% of virgin, generally unbleached sulfate pulp and known for its outstanding strength and durability.

Inline processing

The term used for print processes that take place directly on the press or the modules required for that particular stage of production. Inline processing can include coating, folding, stitching or quality control.

Intaglio process

Print process that involves the use of plates into which the print motif is engraved in the form of lines and dots and generally used for high-quality publications, securities and banknotes. It allows ink to be applied in thicknesses of up to 0.1 mm, so that the print can be felt in relief form, which in banknotes can help protect against counterfeiting.

Intaglio rainbow printing

A kind of artistic engraving; a general term for the drawing techniques that result in gravure plates: copperplate engraving, steel-plate engraving, engraving, etc. Rainbow or iris printing – a form of multicolor printing from a single printing plate that is inked in different colors in different areas for this purpose – originates from art printing, where it was developed and applied in conjunction with intaglio techniques.

Integrated publishing

The digital linking of all production stages in the print process, including electronic job input, prepress, press, postpress and preparation for dispatch. The International Cooperation for Integration of Processes in Prepress, Press and Postpress (CIP4), with over 100 member companies, strives to promote the integration of such computer-assisted processes within the graphic arts industry.

Integration

Refers to the free flow of data from one corporate division to another without having to pass through time-consuming and trouble-prone interfaces. Integration also permits companies to keep the same data available from various locations.

Interface

Noun: the connection between two applications or hardware devices, which facilitates data exchange. An interface can include hardware, software and can take place using similar or different categories of data. Verb: to make an appropriate physical connection between two pieces of hardware so that the equipment can communicate or work together effectively. This can be the plug or cable that links the PC to the modem, or software that connects text with tables, or even the keyboard, which acts as an interface between computer and user.

Intermediate cut

A stage in the postpress process, in which the signatures are divided into parts and a strip of material is cut out. This step is necessary with bled-off printed areas or images.

Internal drum exposure

A process by which the media to be exposed is drawn completely into a drum and fixed by a vacuum. The format is defined by the size of the drum and the writing head on the exposing laser which is centered on a spindle located in the drum. This laser exposes by constantly rotating and traversing the film or plate line by line.

Interpreter

A device usually referred to as an RIP that converts page description into a raster or vector output format. Other functions include assisting in printer to computer communications and driver and print management functions. The interpreter enables all input and output functions that are necessary for output on the printer.

Interpolation

A mathematical process to determine intermediate values within regularly structured series of numbers. Various methods are used for this purpose, depending on the nature of the series. In image editing, pixels can be “interpolated” in order to increase the resolution beyond the physical capacity of an input device.

IQ paper

A kind of sticker used to identify products and manufactured by X-ident GmbH of Düren. The labels are made of paper or plastic foil and, depending on the type, contain a transponder from the Philips’ I-code series or the Tag-It series from Texas Instruments. The size of the labels varies from between 5.5 by 10.5 centimeters to 10 by 15 centimeters. The stickers are available on rolls and can be printed using a special printer, which can also apply data for their application.

Iron gallnut ink

A very stable ink made from gallnut acid (also called tannin) and known since antiquity. Its name comes from the oak apple, which served as a source of tannin, and was used up until the dawn of chemical pigments in the recent past for all kinds of printed materials.

Irrational screening

Method of generating the optimum angles of screens for 4-color printing.

Irrational screening noise

Refers to randomly arranged, incorrectly read pixel values that usually result from electrical interference or device instability.

ISBN

An international , ten-digit standard numerical code for books that indicates language, publisher, internal publishing title number as well as a check digit. The ISBN system was launched in England in the mid Sixties. It was adopted in Germany in 1969.

ISDN (Integrated Services Digital Network)

A method for the uniform digital transmission of voice and data in local telephone networks, supplying users with more functions than a conventional, analog connection offers. In Europe, a normal ISDN connection has two data channels with a transmission capacity of 64 kbit/s each and a control channel with 16 kbit/s. If required, more channels can be connected and also bundled to obtain higher transmission capacities.

ISO (International Standardization Organization)

Organization headquartered in Geneva responsible for developing and synthesizing standards in all areas of technology except electronics. Germany is represented by the Deutsches Institut für Normung.

J

Japanese papers

Papers made in Japan using the fibers of native plants. Authentic Japanese paper, known in Japanese as washi (wa = Japan and shi = paper), is made from kozo, mitsumata, gampi or

kuwakawa (mulberry tree). Manual production involves dipping the sieve, which is usually made of bamboo, several times into the paper pulp using a particular rhythm.

Java

An object-oriented programming language developed by computer manufacturer Sun Microsystems specifically for Internet applications. Programs written in Java are not translated into “machine language” but into a computer-independent code so that they can be executed on any computer. During execution, Java is converted into a code that the computer “understands.”

JavaScript

A so-called script language for Internet sites or, to be more precise, a language for programs directly integrated into Internet sites and executed by the browser. It can be used to trigger processes that are impossible with the HTML formatting language. JavaScript was developed by software producer Netscape and features elements similar to the Java programming language.

JDF (Job Definition Format)

A format that grew out of an initiative by Heidelberger Druckmaschinen AG, Adobe Systems, MAN Roland and Agfa and now supported by CIP4. It forms the basis for the non-proprietary integration of print processes, is based on the XML formatting language and embraces a definition for describing print jobs, a message format and an associated transfer protocol.

Job printing

Term used to describe lower volume or short-run printing assignments, for example for individuals or small businesses. Probably the oldest example of job printing is the letter of indulgence from the Roman Church which dates back to the 15th century.

Job ticket

A digital “job folder” at the prepress stage of the production process where instructions for imposition operations, trapping and OPI are stored, as well as output parameters and printing and finishing information.

JPEG

A common format developed by the Joint Photographic Experts Group for compressing image files in RGB mode, using which file sizes of images can be reduced by up to 95 percent. Though it involves a loss of image information, the degree of compression can be selected so that the losses remain within acceptable limits. JPEG requires no license and is internationally standardized (ISO 10918). It uses the “Discrete Cosine Transformation” (DCT) method, where image sections of 64 pixels each are processed. A new compression method, known as JPEG 2000, is currently being developed, which uses what are known as “wavelets” and is said to be able to compress images by 20 percent more than JPEG with better image quality. JPEG 2000 will support non-lossy compression, as well as other color modes (such as CMYK) and color management.

JPG

Customary file extension for images compressed using the JPEG method.

Just-in-time

Term used in industrial production to describe a process where suppliers deliver their goods at the precise moment they are required in the production flow, thus eliminating any need for

storage at the production location. Just-in-time production requires efficient management, an effective logistics system, and a data link between suppliers and the manufacturer.

K

Kerning

In typography, the reduction in spacing between two letters (uppercase and lowercase letters) for aesthetic reasons so that the squares they occupy overlap. Letter combinations for which kerning is used include “To” or “Va”.

Keyword

The term or phrase used with search engines or data bases to define a search.

Klíc, Karel (1841–1926)

The Czech painter and graphic artist who invented helio engraving and copper gravure or rotogravure. After years of developing the technique, Klíc unveiled helio engraving in 1878 in Vienna, where it was adopted as a method for photochemically producing etched copper printing plates based on photographs.

Knockout

The section of an image that has been removed. When two colors overlap, they usually do not print on top of each other. The bottom color is “knocked out of” or removed from the area where the overlapping occurs. Knockout type is usually text that is knocked out of a dark background so that the type appears in the same color as the paper. See also "trapping".

Koenig, Johann Friedrich Gottlob (1774-1833)

The inventor of the flatbed cylinder press, the first major development in printing technology since Gutenberg. At the end of 1806, Koenig moved to London where five years later he would develop the flatbed cylinder press. By 1913 he had substantially increased press speed by using two impression cylinders, which meant that the carriage holding the printing form could be used in both directions.

Kurzweil, Raymond

Born in New York in 1948, an inventor, scientist and entrepreneur whose theories and creations have had far reaching impact. Kurzweil studied computer engineering and literature at the Massachusetts Institute of Technology (MIT). His work has given rise to a range of inventions, including electronic musical instruments (synthesizers), reading machines for the blind, voice-recognition systems and a machine that instantly translates from English into German. In the 90s Kurzweil published controversial books that often focused on the evolution of technology and the implications for humanity in the future.

L

Laminating

The general process of covering or coating one type of material with another, creating a bond

between the two materials. In the postpress stage, laminating is one of the methods used to

give the product protection or a more attractive appearance. To do this, films containing photographic or other print motifs are applied under pressure to the material being finished. If a transparent polyester film is applied, this is known as film laminating. Laminated materials are often found on drinks and food menus. For packaging liquids, the industry generally uses films that also protect the product's aroma.

LAN (local area network)

A computer network that usually spans an area of no more than 10 kilometers.

Laser diode (injection laser, diode laser)

A point light source or light emission aperture driven by laser beams.

Laser imagesetter

Output device in which a light beam emitted by a laser light source is directed onto a photo-sensitive material via optics and/or mirrors. Single dots (spots) are produced by means of upstream on/off switches that are synchronized with the deflecting unit, the correlation of the spots is driven by a software program or a page description language as well as the laser imagesetter's driver.

Laser printer

A standard printer with a rotating drum, the surface of which conducts electricity when it comes into contact with light. The surface of the drum is first electrically charged, a beam of laser light then records the printing information on the drum line by line by means of a rotating mirror wheel. When light comes into contact with the surface of the drum, it is discharged. The toner which is then applied only adheres to the places that are not illuminated. When transferred onto the paper and fixed in place using heat, the toner produces the print image required.

LCD (liquid crystal display)

Technology employed in flat screen displays, in which liquid crystals are used in the individual pixels of the monitor. See "TFT".

LDAP (lightweight directory access protocol)

A protocol for the querying of address directories on the Internet.

Leading (line spacing)

The space between the lines of characters, measured in millimeters or DTP points.

Leporello fold

See "harmonica fold".

Letter fold (business letter fold, brochure fold, spiral fold, barrel fold)

Folding pattern in which the folds are parallel and in the same direction, so that a kind of spiral is produced. The letter fold is a parallel fold. Two or more panels of the same width of the folded signature are folded around one panel. When the signature is folded twice, there are three panels on each side (six pages); with a tri-fold, the result is four panels on each side (eight pages).

Letter spacing

See "spacing".

Letterset

The term for indirect letterpress printing, in which the ink is transferred from the printing form onto the printing stock via a blanket cylinder without dampening. It is also erroneously referred to as dry offset, which causes confusion with waterless offset printing. Applications of the letterset process include continuous forms and package printing.

Letterpress printing

Printing process in which the elevated sections of a printing form are inked up and deposit some of the ink on the material to be printed. There are three forms of letterpress printing – in platen printing one surface presses against another; a cylinder press involves a cylinder pressing against a surface; and in rotary printing two cylinders roll against one another. Letterpress printing, the oldest industrial printing process, is used in sheetfed printing for small print runs and special assignments (punching, stamping, perforating, numbering, etc.) and for newspaper printing, though this is now becoming less common. Letterpress printing, in the form of flexographic printing, has been able to hold its own against offset and gravure printing in the area of package printing.

Ligature

Identical letters written together, such as “ff” or “tt”, or letter combinations such as “fl” or “ft” that are treated as a single letter.

Light gathering

See "dot gain".

Light-fastness

Refers to the resistance of inks to the spectrum of natural light. According to the German standard DI 54003/4, the “wool scale” defines eight levels from “very low” to “excellent”. Level three – moderately light-fast – indicates that the ink can be exposed to sunlight for 4 to 8 days in summer and 2 to 4 weeks in winter without any noticeable fading. At the highest level of light-fastness, the ink can withstand exposure to summer sun for more than 18 months.

Line engraving

Refers to a printing plate (generally for letterpress printing) which is created by etching on the basis of a line original.

Line original

Single or multi-colored original in which each color is present in a single tonal value. Generally speaking, line originals are used for black/white illustrations, such as drawings.

Line spacing

See "leading".

Link

In hypertext systems, especially on the World Wide Web, a listing of another internet page. Text segments, or also images and other graphic elements, can be linked. In texts, links are generally indicated by a special type format. Otherwise, a link can be recognized by the fact that the cursor changes (usually into a pointing hand) when positioned over it. In modern word processing programs, it is also possible to define links that refer to other, locally available files or Internet sites.

Linotype

The machine patented by Ottmar Mergenthaler in 1882, which was the first fully functional line composing machine and revolutionized the entire printing industry, in particular newspaper production. Used for the first time by the New York Tribune newspaper in 1886, the Linotype remained basically unchanged in its basic functions – despite numerous improvements – until it was replaced by electronic typesetting procedures. Using a keyboard similar to a typewriter, it assembles the metal matrices of letters and other characters and the interlaying spaces to form lines of print which are automatically cast using a lead alloy. Lines of print created in this way can then be compiled into text columns. One of the Linotype's major innovations was the fact that the matrices could be reused, the machine automatically sorting and assigning these to their stock positions using a mechanical coding system.

Linux

Open source operating system based on UNIX System V and BSD UNIX.

Lithography

Invented by Alois Senefelder in 1789, a method for producing printing forms for stone printing. Using special ink or chalk, the printing copy is transferred directly onto a smooth-ground block of carbonate of lime (calcium carbonate – CaCO₃). The stone block is moistened before being inked up with oil-based printing ink. The printing areas then take up the oil-based ink, while the unchanged limestone repels it. The word lithographs (“lithos” for short) is also used colloquially for copy for offset printing (screened images, line engravings).

Lithographic printing

Refers to all printing processes in which the printing areas of the printing plate lie on the same or virtually the same plane as the non-printing parts. This technology takes advantage of the fact that it is possible to create both oleophilic (oil-friendly) and hydrophilic (water-friendly) areas on the printing surface. When the plate is inked, only the oleophilic areas retain the ink. The first lithographic process was stone printing, invented by Aloys Senefelder in 1796. Offset printing is based on this technology.

Long grain

See "grain long, grain short".

Logging

Recording of computer activity used for statistical purposes as well as for backup and recovery. Log files are created for such purposes as storing incoming text dialog, error and status messages and transaction details.

Lumbeck system

Polyvinyl acetate adhesive binding system used for brochures, books and other printing materials, in which the ends of a pile of sheets are fanned out. After clamping, the leaves are fanned out in one direction and coated with glue. This process is then repeated on the other side. The process is named after the bookbinder Emil Lumbeck (1886-1979).

Lumen

One lumen is the amount of light emitted by a light source with a luminous intensity of one candela (cd) into the spheridian unit of one steradian (sr – quotient of the superficial content of a segment of a spherical surface and the square of the associated radius of the sphere). The lumen unit is now mainly used in a form defined by the American National Standards Institute (called the “ANSI lumen”). To this end, the average of the brightness values measured at nine

points on an illuminated surface is taken and the luminous flux determined on the basis of a table published by the Institute.

LWC

See "HWC".

M

Machine-finished paper

Paper stock that is given its surface gloss while still inside the paper machine, a process known as calendering. Additional smoothness is sometimes achieved with supercalendering.

Machine proof (press proof)

A proof used to check the result of the entire printing process. It is the most complex control tool in the printing process; its greatest advantage is that it provides a realistic impression of the final product, independent of the preprint process. Machine proofs come closest to the printed result when produced on the paper to be used for the print run.

Macro

A series of commands performed by a single keystroke or function call that facilitates the input of complex commands.

Magazine paper

See "illustration printing paper".

Magnapak

The term given by Heidelberger Druckmaschinen AG to a device used for inserting supplements into newspapers and magazines. The unit can process up to 30,000 copies an hour and can insert up to 80 different products. The Magnapak can insert and sort either in sequence or simultaneously, and has been designed without shafts for simple operation and minimal maintenance.

Magnetic printing inks

Inks that react to magnetic fields and thus, with the help of suitable sensors, can be used for machine-based identification of labels and other similar applications.

Majuscule

The historical terms for capital or upper-case letters.

Manutius, Aldus (1449-1515)

One of the most prominent letterpress printers of the Italian Renaissance. In 1493, Manutius founded a print shop in Venice and subsequently published a series of compact and inexpensive but nevertheless highly scientific works from classical Greek, Latin and Italian authors. Around 1,000 copies of these "Aldines," as they were known, were produced.

Map paper

Paper with particularly good dimensional stability.

Margins

The free areas on a printed page between the edges of the text and the page edges. According to the position on the page, it is possible to distinguish between head, foot and side margins and the central gutter. When measuring the margin widths, ratios are often used. The gutter has a value of two and the other margin widths in the sequence head-side-foot are assigned values in relation to this.

Master page

Template on which the elements (such as headers, footers, page numbers, etc.) to appear on every page of a document are represented.

McLuhan, Marshall (1911-1980)

The Canadian literary scholar and communications theorist, whose work focuses on changes elicited in society by mass media. McLuhan achieved fame with his book "Understanding Media: The Extensions of Man" (1964), in which he argues that modern electronic media will eventually turn human awareness and knowledge into an entity shared by all of society, just as electrotechnology has turned the human nervous system into a global network. McLuhan taught at various universities throughout Canada and the USA. He coined the term "the global village", which refers to the way the entire global community can be brought together by means of electronic communication.

Media mix

Term used to describe combinations of different media such as television, radio, Internet, newspapers and magazines for marketing and promotional purposes. The right mix is the one which best reaches the target audience.

Megabyte

A unit of measurement equal to 1,024 kilobytes, or 1,048,576 bytes.

Mergenthaler (1854-1899)

Inventor of the "Linotype" mechanical composition machine, which supplied complete lines of text cast in lead for letterpress printing. Following an apprenticeship as a watchmaker, Mergenthaler emigrated to the U.S. in 1872 where, following many years of experimentation, he patented the Linotype as the first fully functional line composition machine, which would soon replace slow and laborious hand composition.

Metamerism

Phenomenon by which color samples with different spectra appear to match under a particular type of illuminant, although under other illuminants they show a color mismatch.

MFC

See "HWC".

Microprint

Extremely small print that is only legible when highly magnified. It is used as a security element on banknotes and other documents at risk of being forged. The image resolution of color copiers and other similar machines is insufficient to reproduce microprint.

Mini-book

A term for books with covers no higher and wider than 7.6 centimeters (three inches). One of the earliest known printed mini-books of the post-incunabula era is the book of hours

produced by Lucantonio Giunta on May 4, 1506 in Venice. The book was titled “Officium Beatae Mariae Virginis secundum consuetudine romane curie.” It measures just 7.2 x 5.1 cm, was printed on parchment and contains illuminated, full-page woodcuts.

Minuscule

The historical term for small or lower-case letters.

Mullen tester

A device invented by the American engineer John Mullen to test the bursting strength of paper.

Multimedia

Term used for media products and services which are saved, transmitted and depicted electronically. Important features of multimedia include the combination of static (text and image) and dynamic (audio, animation and video) elements and the interactivity of its content. In order to use multimedia, it must be possible to transmit data between the content location and the user in both directions. Video components involve large quantities of data which require correspondingly high transmission rates.

Murray-Davies formula

Equation to calculate the optical area coverage or the total reflection factor from the combined values of printed and non-printed areas. The tone values in a densitometer are defined in accordance with this equation.

MWC

See "HWC".

N

Network

A collection of two or more computers and associated devices that are linked together with communications equipment. Once connected, each part of the network can share software, hardware, and information contained in other parts.

Newsprint

Paper with a high woodpulp content, sometimes calendered for web-fed printing (letterpress or offset). Its grammage generally ranges from 40 to 57 gsm. The primary raw materials are wastepaper and wood fibers as well as chemical pulp. Newsprint is extremely opaque, but yellows relatively quickly.

Non-impact printer

Refers to printers that do not exert pressure on the material to be printed. Typical non-impact printers are laser, inkjet and thermal printers.

O

Oblique

Term used for typefaces that slope forwards. Such fonts usually serve as a substitute for a non-existent italic version of the typeface in question.

OEB (Open E-Book)

A group that aims to promote electronic books (e-books) by defining a standard for their format. Under the name Open E-Book Publication Structure, the group of manufacturers known as the Open E-Book Authoring Group published the first standard of this kind in September 1999. It is designed to allow publishers to release their publications in a format that can be displayed by all e-book readers. The HTML and XML formatting languages are the technical basis for this specification.

Offset gravure conversion

A process using screened offset films as originals for the production of gravure printing forms. The particular advantage of this method is that proofs can be made using offset films rather than employing a high-outlay preparation process on a gravure printing press. This is possible because the tonal value reproduction of the offset originals corresponds with that of the gravure product.

Offset paper

A general term for stock suited for offset printing, including both uncoated wood-free and wood pulp papers as well as uncoated recycled papers that have been calendered or machine-finished.

Offset printing

A lithographic printing process based on the different wetting characteristics of the printing and non-printing areas of the printing form. When printing, the lipophile or “oil-friendly” image areas absorb the oil-like printing ink and the blank hydrophile areas repel it. Offset printing works is an indirect printing procedure in that the printing form transfers the printing image onto a blanket cylinder, which in turn prints the paper or other material. There is a distinction between sheetfed offset and web (or rotary) offset printing. The former prints on paper sheets and the latter on a paper web.

Ogilvy, David (1911-1999)

British entrepreneur who was known in his later years as the “Great Old Man” of advertising, and was often referred to as one of the geniuses of the industry. His book “Confessions of an Advertising Man” (1963) is an industry classic and was called the “Advertiser’s Bible.” In 1938, Ogilvy came to the U.S., founding ten years later the Hewitt, Ogilvy, Benson & Mather (HOB&M) advertising agency in New York. The company – now called Ogilvy & Mather – is presently represented in over 70 countries.

One-directional fold

A fold in which the untrimmed sheet is only creased once.

One-to-one marketing

A term for market research, advertising and sales which are directed at individual customers and take account of their individual wishes and preferences. Internet technology, which

allows direct interaction with consumers, has made one-to-one marketing possible in markets

with large numbers of customers who in the past could only be contacted through mass communication. Online dealers can use software which automatically evaluates the behavior of visitors to their web site, and then respond with targeted individual offers.

Onionskin paper

A glazed, wood-free, show-through paper with a grammage of 30 to 39 gsm. White or colored stocks with grammages of 25.30 or 40 gsm are erroneously termed onionskin.

Opacity

The degree of a paper's resistance to light. Paper printed on both sides must have optimum opacity, a property enhanced by a higher wood content as well as fillers such as kaolin, talcum and titanium dioxide.

Open source software

Software available free of charge as an alternative to conventional commercial models. Open source software can be used and disseminated at will, and the source code is open and can be changed as required. The only condition is that the user make such changes known and pass this information on to others. Open source software is the shared intellectual property of all developers and users and, thanks to the collaboration, achieves a higher level of quality than software produced using conventional means. The best known example of open source software is the Linux operating system.

Operating software

Software for the organization of data input and output, the administration and use of storage space, and the operation of application software. It forms the basis of additional programs and creates an interface between software and the computer.

Output frequency (output resolution)

Measurement that indicates how many pixels were digitized per unit of length and corresponds to the resolution of the image data. For multi-color offset printing with a resolution of 60 dots per centimeter (equivalent to 150 dots per inch), the output frequency should be in the range of 300 dots per inch so that four pixels (two in each direction) are provided for the rendition of the dot. In black and white images, the output frequencies are up to 2400 dots per inch, as all details must be produced. Depending on the necessary scale-ups and scale-downs of the original to be reproduced, the necessary resolutions in the scanner are substantially higher or lower.

Overlap printing

A previously printed color area that is still present behind another object or area. See “knock-out”.

Ozolid copy (dyeline paper, blueprint)

Paper used as proofs for checking the completeness, position and content of printing copy. The basis for this was the diazotype process patented in 1917 by the Benedictine father Gustav Kögel.

P

Pad printing

An indirect gravure process in which a flexible (often semi-spherical) pad of silicon rubber is used as a medium for transferring the ink from the plate to the surface to be printed. This method can be used to print a great diversity of irregularly shaped objects.

Page description language

A code or programming language used to specify all elements of the layout of a printed page including fonts, graphic elements and images, in such a way that an interpreter can carry out the necessary printer and control commands in an output device.

Page assembly

The positioning of the finished pages on the imposition sheet as determined using imposition software.

Page view (page impression, page request)

The number of times a Web page is requested from a server. This is the preferred counting method for traffic measurement (instead of hits) because it only counts documents, not individual files. A single HTML page is counted as one page impression.

Pagination

The assigning of numbers to the pages in a document; the division of a document into pages

Pantone colors

Colors based on a system used worldwide that the Pantone print shop (New Jersey) introduced for the graphic arts industry in 1963. The system is based on 512 reference color tones which are mixed from eight basic colors, black and white and are printed on coated and uncoated paper. Today, there are over 1,100 Pantone colors available on a broad range of papers. Pantone has also published color systems for textiles, plastics, paints, film and video.

Paperboard (cover paper)

A paper product with a grammage that is higher than paper, but lower than cardboard. A distinction is made between single-layer and multilayer board. In the U.S., paperboard is often called “cover paper”.

Papyrus

A durable writing material in roll, sheet or book form made from a giant sedge, Cyperus papyrus. To produce papyrus, the pith of the plant is sliced into strips that are laid out in a row with the edges slightly overlapping. Another row is then laid crosswise on top of the first. Next, the two layers are moistened with water and pounded into a sheet of writing material, smoothed and then dried. Papyrus was used as a writing material by the Egyptians since the beginning of the third century B.C. Beginning in the second century A.D. It was produced in Egypt in large quantities and transported throughout the ancient world. In time papyrus was replaced by parchment, which was in turn was replaced by paper.

Paragraph format

Layout instruction and print command that determines text alignment, margin width and spacing.

Parallel center fold

A folding technique in which the product is creased in the middle in order to halve the respective length in every pocket of the buckle folder. The page is folded in half and then folded in half again in the same direction.

Parallel cut

A cut performed by setting the saddle (material stop) parallel to the cutting line.

PARC (Palo Alto Research Center)

Organization established in 1970 by the Xerox Corporation that has had a decisive influence on the development of computer technology through the present. Among other achievements, the research institute developed the graphic user interface used on Macintosh and Windows computers, the first commercially available computer mouse, Ethernet network technology, client server architecture, object-oriented programming and the laser printer.

Parchment

Specially treated animal skin for writing or printing.

PCL (printer command language)

The language used to control computer printers. Introduced in the 1980s by computer manufacturers Hewlett-Packard and under constant development ever since, PCL allows application programs to control the functions of different printers in a standardized, efficient manner.

PDF (portable document format)

Data format developed by Adobe Systems Inc. and used for exchanging and processing electronically stored, formatted documents with text and images, independent of hardware or software. One of the special features of the format is that texts and graphics are stored in vector form, meaning that the resolution of their representation is dependently solely on the output device (monitor, printer).

Penumbra

See "deep shadow".

Perceptual rendering

A rendering method used to preserve the visual color relationship as it is perceived by the human eye, and in which, thus, the color values themselves may change. The perception-oriented (perceptual) rendering intent reproduces the image taking into consideration paper, dynamic range and color characteristics of the output system, so that that the human eye perceives the image in the destination system (CMYK) true to the original. In color space conversions, one can choose from perceptual, absolute colorimetric and relative colorimetric. With perceptual all colors are shifted and compressed until the colors of the source color space fit into the destination color space.

Perfecting machine

Usually a sheetfed press that prints on both sides of the paper in a single run.

Periodical

Refers to a typesetting and printing job performed under a specific title on a regular basis with a similar layout.

Personalized printing

Refers to print runs in which the individual copies have distinctive imprints. A minimum requirement for personalized printing is a digital printing process, which allows printing data to vary from copy to copy.

Photocomposition

The first fundamentally new typesetting technology since the invention of letterpress printing by Johannes Gutenberg, photocomposition does not use solid forms for depicting the characters. Instead, the set text is created on photographic film. Older machines performed this function by imaging the characters with a flashlight from a negative original or from a very bright screen (cathode ray tube) onto the film. The move to computer setting is marked by the laser setter which, like the laser printer, uses a laser beam to write text, images and other design elements directly onto film or a printing plate.

Photopolymer plate

A kind of plate with a flexible base material, excellently suited for use on rotary printing presses. Photopolymer plates have widely replaced stereotype plates.

Photoshop

A software package for digital image manipulation in DTP applications designed and manufactured by Adobe.

Pica

A type size used in the Anglo-Saxon world, corresponding to 12 points.

Picking resistance (sizing strength)

Refers to the amount of force necessary to separate particles from the surface of the paper as it moves vertically. Picking resistance is a key criterion for offset-printing applications.

Pigment color

A coloring element that is formed when white light strikes an object that reflects part of the spectrum while absorbing other regions and the remitted light has a different spectral distribution than the original light. Pigment colors are non-luminous, and can only be created through absorption or reflection of light.

Pixel (picture element)

The smallest unit of a digitally displayed image. The memory required by an image consisting of pixels is determined by the size of the image, its resolution, the number of pixels per unit of area, and the number of colors to be displayed.

Pixel format

A format for storing image data in which, for a given resolution every pixel in the image is represented by the corresponding data. Image processing programs such as Photoshop use the pixel format, the most common being TIFF (Tagged Image File Format). The pixel format is most suitable for real images, but, depending on the quality of the image, it requires large amounts of memory.

Pixel graphic (bitmapped graphic)

A graphic or image represented as a matrix of picture elements or pixels.

Plate characteristics

A representation of data and factors required for digital platesetters to control the output quality during production and defined using a control wedge. These characteristics must be checked regularly.

Polarization filter (polfilter)

A transparent optical medium which only allows electromagnetic waves of one polarization to penetrate. Of the light waves normally moving in all directions, polarization filters only allow to pass those components of an oscillation that come from a certain direction. These directed light beams hit the measured object and are then reflected partly in a mirror-like way. Unlike diffuse reflection, direct reflection does not alter the oscillation direction of light. These components can be eliminated with a second polarization filter positioned at 90 degrees. Densitometers with polarization filters show identical values for wet and dry prints which are, however, slightly higher than on devices without polfilters.

Polaroid

A process in which finished photographs are produced within the camera device itself; the first major development in photography since the genre was invented. The process works on the basis of developer substances in paste form, which are distributed over the imaged film after a photograph has been taken and act on the film by diffusion. This method was invented by Edwin Herbert Land (1909-1991), who founded the Polaroid Corporation in 1937, and launched the first Polaroid Land camera in 1947. This camera produced a black-and-white paper image one minute after the photograph had been taken. The millionth instant camera was sold in 1956. The first Polaroid color camera was launched in 1963. Polaroid declared bankruptcy at the end of 2001, as the technology has become obsolete, in large part due to the popularity of digital photography.

Pop-up advertising

A method of advertising on the Internet, in which windows open automatically when a web page is accessed, usually partially hiding the content of the relevant page.

Poster paper

Paper grade for large-format posters, mainly highly mechanical and heavily sized.

Postpress

A general term for all processing operations performed on the printed product after the printing process itself is concluded. Examples of postpress procedures include folding, binding, trimming and packaging.

Postprint

See "finishing".

PostScript

A page description language developed by Adobe which has become a standard in the digital prepress stage. It describes documents largely independently of the device used, so that, for example, the resolution of an image is not defined until the output device has been determined. PostScript 2 offers improved colorimetric facilities, since the reference color space is integrated in accordance with the CIE standard. PostScript 3 also improves the way in which colors and three-dimensional objects are displayed and supports the trapping of graphic objects.

Ppi (pixels per square inch)

Specifies the resolution of an image, as it appears on a monitor.

Preflight check

The test or assessment made in the prepress process in which output is simulated and files are reviewed for the existence of all required fonts and graphics. This kind of check can also indicate whether image resolution is too low or too high, whether spot colors are improperly defined and can reveal other potential errors as well.

Press characteristics

See "printing characteristics".

Press proof

See "machine proof".

Primary color (basic color)

One of the three colors that cannot be attained by mixing. When equal amounts of two primary colors are mixed, a first-order secondary color is produced. Every color model is comprised of three primary colors. The additive primary colors are red, green and blue (RGB). The subtractive primary colors are cyan, magenta and yellow (CMYK – K stands for key and refers to black for contrast). Each secondary color of the one color model is a primary color in the other. A second-order secondary color is produced by mixing different amounts of two primary colors. Tertiary colors are a combination of different amounts of all three primary colors.

Primary pulps

The raw materials for paper manufacturing removed from virgin forest products by mechanical means (woodpulp) or by a chemical process (chemical pulp).

Print and turn

See "work and turn".

Printability

Refers to a range of paper properties that influence print results, including gloss, smoothness, whiteness and opacity.

Printing characteristics (characteristic curve, press characteristics)

A diagram which shows the extent of dot gain occurring in the printing process, and is the graphic representation of the relationship between the tone values of the prepress product, the film or the printing plate and the corresponding tone values in printing. Printing characteristics describe the extent to which a halftone image will get darker during printing due to dot gain. The curve is applicable to one press and depends on different parameters. The curve is determined by means of a stepped gray wedge, and much attention must be paid to such factors as paper grade, screen, printing ink, printing press, ink filling, dampening, and even room temperature and air humidity.

Printing on demand

A process in which a few copies of a document are printed as needed, instead of a pre-defined, larger production run. Print on demand has been made possible by digital printing technology, which allows direct printing from prepress data, without having to produce printing forms or set up presses.

Prism

In geometry a body with two parallel planes; in optics a body used to reflect light and generate a light spectrum. A prism is made of material that has a greater angle of refraction than its surrounding, which means that beams of light striking the short side of the prism vertically are totally reflected from the inside at the long side and exit at the second short side.

Process calibration

See "standardization".

Process color ink

One of the standard colors in four-color printing: cyan, magenta, yellow, black.

Process fluctuation

Errors or instabilities in the CtP exposure unit or printing press that can result in unsightly mottling or striping. In the event that the optical density varies from copy to copy, such a fluctuation can immediately be seen when directly comparing printed products.

Program paper

A flabby, generally woodfree paper made from chemical pulp derived from the soft leaves of hardwood trees. Allows noiseless page-turning.

Progressive proofs

Proofs used to assess the colors on the printing stock. In four color printing, the four process colors cyan, magenta, yellow and black are printed both alone and in various combinations over a small area.

Proof

A single print of a document which serves as a means of verifying proper text and layout. In analog proof procedures such as Dry-Match and Press-Match, the proof is created from ready imaged films, which accurately show the subsequent print product. In digital proofing, the page composed on the computer is output on a color printer. This proof is more cost-effective, as it does not require the use of film, though imaging procedures remain untested.

Pulp

Cellulose fibers extracted from organic materials and used for the production of paper.

PUR binding

A method of binding books and brochures using polyurethane adhesive, which is applied at a high temperature and hardens as it cools. PUR binding is a high-quality binding method, ideal for high-use products such as trade show catalogs and for difficult types of paper.

Pure color

See "spectral color".

Q

Quark Xpress

Computer software for page layout widely used in the commercial print industry.

Quickmaster DI 46-4

A machine manufactured by Heidelberger Druckmaschinen AG for printing four-color, short job runs in formats of up to 34 x 46 centimeters. The press uses the Direct Imaging principle, where the print form is created and the printing plate is imaged directly in the press. The machine has a maximum printing speed of 10,000 sheets per hour, and can support up to 35 successive print jobs. Compact operation is ensured thanks to the Quickmaster's satellite construction with central impression cylinder and four inking units, which use conventional waterless offset inks.

R

Rag

Fiber from cotton material.

Rag paper

Paper with a rag content of at least 10 percent primarily used for banknotes and documents.

RAL colors

Standard colors based on a series of color collections for industry published by the Deutsches Institut für Gütesicherung und Kennzeichnung, Sankt Augustin. There are over 2,000 RAL colors, and the RAL Design System, a color system which takes in the entire color space, contains 1688 color tones. All RAL colors in the RAL Design System and the RAL 840-HR classical color collection are also defined digitally. They can be used with all standard graphic arts programs and can be used with more than 20 output variants, that is with different screens and printers.

RAM (random access memory)

The memory a computer utilizes when in operation and that is lost when the machine is switched off.

RAMDAC (random access memory digital-to-analog converter)

A direct access storage or memory used to convert digitally encoded data into analog signals performed by specific chips.

Rasterizer

A software program that converts font data for output as raster graphics, that is, into bitmaps. This step must be performed before characters can be displayed on the monitor or printed as a hardcopy. Unlike vector graphics, a raster graphic consists of pixels arranged in a fixed grid.

Raw text

Raw text is a type of text design in which the lines are not made to be of uniform length by correspondingly enlarging the spaces between words. Deliberately varying line lengths as a creative technique is referred to as ragged setting.

Ream

A unit of measurement for sheets of paper. Though formerly defined as a 480 sheets, in the U.S. the term now refers to 500 sheets or, in the case of a so-called printer's ream, 516 sheets. The German "new" ream refers to 1,000 sheets of paper.

Recycled paper

Paper produced from 100 percent used paper. Used paper fibers (also known as secondary fibers) can be used three to five times in this manner. If the recycled paper needs to be pure white, de-inking chemicals have to be used to remove the inks from the used paper, and the fibers also have to undergo a bleaching process.

Redigitization

Process by which print originals in the form of film material are converted back into digital data using scanners and software. The data can be stored in common file formats and then undergo further processing with the appropriate applications, thus allowing a print shop or prepress company to use the scanned films in a digital workflow.

Reduction factor

See "reproduction scale".

Reel spool

The take-up roll around which the paper web is wound after reaching the end of its journey through the paper machine.

Rendering

The accurate representation of three-dimensional models by a computer, whereby the object is given the most realistic surface possible, illuminated by an artificial light source and embedded in an equally three-dimensional environment with light, shadows, reflections, etc.

Reproduction scale (enlargement factor, reduction factor, reproduction ratio)

Ratio of the size of the reproduction to the original size of the object.

Resolution

In an optical context, a measure of the ability of input and output devices or of photographic films to visualize two adjacent dots independent of one another. The resolution depends on the physical properties of the visualizing or recording device or material and is usually limited by the wavelength of the light source. Resolution is usually given in dots per inch (dpi) or in lines per millimeter.

RFID (Radio Frequency Identification)

Labels used to identify objects that work with radio signals for data transmission in the production, transportation and storage sectors. Instead of barcodes and optical scanning devices, RFID systems use transponders as markers on the objects to be monitored. These units receive radio signals from the relevant interrogation devices and transmit their information back. Some of the key advantages of this technology include the fact that larger volumes of data can be stored in the transponders, the link between the transponder and the interrogation device is reliable without a direct line of sight, the data is interrogated more quickly and the data can be changed.

RGB

The standard additive color model for the primary colors red, green and blue, is used for self-illuminating output devices such as monitors, but also for electronic recording equipment such as scanners and video cameras.

RIP (raster image processor)

A processor that prepares data from the prepress stage for the production of printing plates. Its most important function is to create screens for printing images and other graphic elements. As a rule, an RIP is a separate computer, but it can also come in the form of software.

Rollover

A graphic or image that changes when the cursor is moved over it.

Roman face

The term used for fonts whose letters have small end-strokes (serifs) at the ends. The basic form of Roman face stems directly from the antique Capitalis style of the Romans. The upper-case letters are borrowed from the Roman script, while the lower-case letters come from the Caroline minuscule. Varying weights are another common feature of Roman faces. They are especially easy to read in running texts, and include Times, Bodoni and Garamond.

RTF (Rich Text Format)

A data format for texts that contains information on font, font size and formatting. The Rich Text Format was specified by Microsoft as a software-independent format for formatted texts.

Rub-off

The phenomenon by which pressure on stacked sheets causes ink on one surface to be smeared on to the next. This “carbon-copy effect” can occur due to the pressure of the clamp in trimming machines.

Rubber blanket

The blanket wrapped around the cylinder that is essential to the offset printing process. It transfers the printed image from the forme onto the paper. The term “offset” is derived from the process by which color is displaced onto the rubber blanket. Printing over a blanket provides an even print surface which makes it possible to work with coarse and granular papers.

Rubel, Ira Washington

Considered the inventor of the offset printing process. The owner of a small print shop in New Jersey, in 1903 Rubel accidentally discovered that he could obtain better results with indirect printing using a blanket cylinder than with direct printing. He covered the impression cylinder of a printing press with a rubber blanket and paper sheets were then fed incorrectly several times during a printing run. The impression from the printing forme ended up on the rubber blanket and from there was passed on to the back of the sheet. Rubel discovered that these misprints were of a better quality than the regular prints, and consequently went on to develop the first offset printing press.

Running directions

The direction through which paper is passed through the paper machine, generally the same as the grain direction. The running direction is often indicated by an arrow on sheet packages. See also “grain direction”.

S

Sans serif

One of a number of typefaces without serifs.

Satellite principle

The principle by which offset printing works. Several complete units, including plate cylinder, blanket, inking unit and damping unit, are arranged around a central impression cylinder. In this way, all the colors are printed in a single, wet-on-wet process.

SC

See "HWC".

Scanner

A device for capturing image data which works by optically reading or "scanning" the original. Light-sensitive sensors convert information regarding image brightness and colors into electrical values. The two major types of scanners are the drum and the flatbed. See also "drum scanner" and "flatbed scanner".

Screen

In image reproduction terminology, an area made up of small geometric forms of either regular or random arrangement, for example round, square or other shaped dots and lines. The screen is used to convert contone images into a black/white or full-color representation suitable for printing. This is done by varying either the size or the frequency of the elements to reflect the brightness of the image.

Screen angle

With regular screens the angle of the screen from the vertical. When single colors are used, the screen is generally positioned diagonally (45 or 135 degrees). In multicolor printing, different screen angles should be used for different colors in order to prevent overlay effects (moiré). DIN 16547 prescribes angles of 0, 15, 75 and 45 degrees for the colors yellow, magenta, cyan and black.

Screen dot

An element of an image based on a complex mathematical structure, according to which an area is defined and a gray value is determined. The more exact the rendering of black is, the more accurate the gray values must be in the use of inks, toners or other chemicals.

Screen dot distribution

The manner in which the individual dots are arranged within a defined area of a screen. There are two screening techniques, amplitude modulation (AM) and frequency modulation (FM).

Screen element

A part or fragment of an image as seen on a computer monitor. The smallest screen element is the dot, and several dots make up a pixel.

Screen model

Model generated by geometric modeling or computer simulation techniques and used for an optical comparison of different screening systems. The process enables manufacturers of CtP

imagesetters to develop new optimized screening systems.

Screen proof

Proof used for layout and color information control, and to check the screen structures of a print. Screen proofs are intended to eliminate moiré, rosette and other undesired effects. As the printing data contain no screen information before screening of the images in the RIP (raster image processor), screening must be performed before a screen proof is printed.

Screen resolution

The number of pixels displayed on a screen; at present, high-resolution screens are capable of displaying 1024 x 768 pixels and more.

Screen ruling

The number of dots per unit length that a screen contains. Common specifications are l/cm (lines per cm) and lpi (lines per inch). “60 screen” means 60 l/cm and corresponds to approximately 150 lpi.

Secondary pulp

Pulp consisting of raw materials reclaimed from wastepaper. The term can refer to chemical pulp, wood pulp or a mixture of the two.

See-through register

A print element on banknotes used to protect against counterfeiting. Parts of a character or symbol are printed on both sides of the note and only appear as a complete character when the note is held up to light.

Selective binding

The personalized production of bound print products from a selection of components. Selective binding can be used to produce different versions of catalogs tailored to specific customer groups or when various advertising motifs are required for different issues of a magazine.

Semi-fine

Paper stock with a mechanical wood pulp content of more than five percent. The term is usually reserved for uncoated papers, as coated stock is usually referred to as “slightly mechanical”.

Senefelder, Alois (1771-1834)

The inventor of lithography and stone printing. In 1796, Senefelder discovered that by using a greasy substance to write on polished Solnhofen limestone and then lightly etching it with an acidic gum Arabic solution, ink would only adhere to the areas which had been written on. In 1818, Senefelder published his “Vollständiges Lehrbuch der Steindruckerei” (The Complete Textbook of Stone Printing), in which he outlined how the discovery came about.

Separation

The decomposition of the color data of an image into separate colors (in accordance with the CMYK color model) for the individual passes of the four-color printing procedure; also denotes means the conversion of RGB colors in to CMYK colors.

Separation algorithm

One of the formulas or procedures performed for color space transformation.

Serif

A small stroke at the end of the lines of a letter. This design feature is typical of so-called Roman faces. Serifs cater to the perception mechanism of the human eye and thus make type faces easier to read.

Serigraphy

Silk screen printing.

Set form

A text layout in which the length of the lines varies according to the placement of optional images or graphic elements.

SGML (standardized generalized mark-up language)

A standardized language (ISO 8879) used to depict structured texts. SGML is very versatile, but is difficult to use due to its size. Of greater significance is XML, a reduced version of SGML designed specifically for exchanging structured data in the Internet.

Sheet feeder

The component of a sheetfed offset printing press or a print finisher in which the sheet is aligned to front and side lays. The function of the feeder is to align the sheets arriving in shingles or as separate sheets and to position them before they are transferred to the gripper systems.

Sheetfed offset press

The most popular form of lithographic printing used today, of which there are two variations, sheetfed offset and web offset. Sheetfed offset presses print individual, cut sheets. These presses are subdivided into the following format classes, indicating the maximum format of sheet that can be used: 0 500 mm x 700 mm I 560 mm x 830 mm II 610 mm x 860 mm III 650 mm x 965 mm III b 720 mm x 1020 mm IV 780 mm x 1120 mm V 890 mm x 1260 mm VI 1000 mm x 1400 mm VII 1100 mm x 1600 mm X 1400 mm x 2000 mm

Signature

Markings made on a book block to ensure the correct sequence of sheets, sheet parts and sections when bound.

Silver halide

The material most commonly used for printing plates, the characteristics of which include high light sensitivity and a wide exposure range. The disadvantages of silver halide plates include the impossibility of daylight processing, high variations between batches and high contamination of the plate developer.

Simultaneous contrast

The ability of the eye to process hues depending on the surrounding colors. The phenomenon of simultaneous contrast results from the fact that the human eye does not reproduce colors as accurately as possible in accordance with their physical values, but tries to emphasize differences. This also means that the change of a color tone in a color design may fundamentally change the character of the design.

.sit

A compression format and the corresponding file extension used primarily with Apple computers.

Sizing

The process by which certain materials such as glue, rosin or starch are added to the furnish or pulp mass of a paper before processing. Sizing increases the ink receptivity of a paper and gives it other special characteristics. Special grades may be subsequently surfaced-sized on the dry end of the paper machine.

Sizing strength

See "picking resistance".

Slab serif font

A font type with slab-like or serifs, originally called "Egyptienne".

Small caps

The term used for upper-case letters with a size equal to the basic height of lower-case letters. Small caps are used to emphasize individual words in a text.

Smart labels

Labels that are used for the identification of objects and that contain transponders as components of radio-based wireless identification systems. These devices can be designed so small and light that they can be easily incorporated in to standard adhesive labels. See also "RFID".

Soft proof

A proof that is seen on a color video monitor, as opposed to a hard proof on paper.

Spacing (letter spacing, text spacing)

The adjustment of the space between letters in a text.

Special color

See "spot color".

Spectral color

Light of a single wavelength. When white light is separated by means of a prism, a continuum of the spectral colors red, orange, yellow, green, blue and violet is produced. A spectral color cannot be further separated.

Spectrophotometer

An instrument that attains color measurements for the subjective perception of colors and presents them in a simple, practical manner. A spectrophotometer usually measures the ratio of incident light and reflected light of a color sample in exactly defined wavelength steps and distances over the total visible range.

Speedmaster CD 102 Duo

A press from Heidelberger Druckmaschinen AG designed for offset and flexographic printing and high-quality inline production. The machine can perform such special functions as applying opaque white onto metallic foils, or the use of high-quality gold or silver inks that can be overprinted inline with offset inks. Flexographic units can be used upstream or downstream of the press's six offset printing units, and printers can combine conventional inks, water-based coatings, UV inks and UV coatings at will. A special chambered blade system known as the FlexoKit is available for gold and silver coatings, which consist of large, ultra-thin aluminum pigments.

Spot color (special color)

A color that cannot be created with the standard methods of the CMYK color scale. Examples are fluorescent colors, gold and silver.

Spreading

See "trapping".

Stack

Paper fed into a cutting machine for cutting.

Stack height

The maximum height of a stack accepted by the cutting machine.

Standard color space

A mathematical model for determining the chromes and lightness of the respective parts of the spectral range in an objective manner.

Standard tristimulus values

The standard values determined based on the manner in which the three types of receptors on the human retina process orange red (x), green (y) and blue (z). These standard values form the basis of the CIELAB color system.

Standardization (process calibration)

A process by which production conditions and color standards are specified, which includes the determination of required colorimetric and densitometric values as well as of dot gain for the CMYK process colors. As far as ink and paper, the standards can be identified in tests and documented. In order to optimize the prepress stage, all necessary output devices are calibrated at the beginning so that they always deliver identical, repeatable results. In a further step, the imagesetters are adjusted so that the desired dot gain in printing is ensured. Once standardization has been carried out, the color space of the printing press and upstream output systems is measured. The data determined is then used to define ICC profiles, which are fed into the workflow to ensure true color through all stages – from the calibrated monitor to the proof and the printing press.

Stitcher

A device used for stitching printed products with wire staples. The term is more generally applied to gatherer-stitchers, which perform all processes involved in the manufacture of wire-stitched magazines and brochures. Heidelberger Druckmaschinen AG markets stitchers under the brand name Stitchmaster.

Stochastic screening

A screening procedure in which a printable continuous tone structure is produced by varying the dot frequency depending on the tonal values. The dot size remains the same (in contrast to halftone screening). The irregular arrangement of the dots creates a moiré effect.

Stone printing

A form of lithographic printing that involves the use of Solnhofen limestone from the Franconia region of Germany for the printing forme. Invented by Alois Senefelder in 1796, the technology was particularly popular in the nineteenth and early twentieth centuries, though today stone printing is generally only used for graphics work.

Subtractive color synthesis

The process by which a color impression is created by filtering out individual frequency ranges from the overall spectrum of visible light. In color printing this is done by overprinting the inks.

T

TAGA (Technical Association of the Graphic Arts)

An international technical association for professionals in the graphic arts industry founded in 1948. Its some 900 members include scientists and engineers from publishing houses, print shops and other graphic arts businesses and suppliers.

Tamper-evident adhesive labels

A kind of adhesive labels that make any attempts to open or manipulate the product visible. Special tamper-evident labels are used, for example, to protect the integrity of packaging.

Template

A guide for positioning pages or parts of pages consisting of a series of lines to indicate final trim size, bleed, head margin, back margin, type page size and other elements.

Terahertz waves

The electromagnetic waves found in the spectrum between microwaves and infra-red light with a frequency of approximately 300 GHz to 10 Terahertz (wavelengths of 1 mm to 30 μm). In addition to fast data communication and measuring applications in atmospheric research and astrophysics, new imaging methods are just one of the future areas of application for this segment of the spectrum. Scientists are working on a method of making the content of books visible without having to open them. This work is intended to make it possible to look at manuscripts that are already so damaged that opening them would destroy them completely.

Tertiary color

A color rendered from the mixing of three primary colors. Examples include brown, olive and ochre.

TeX

Pronounced "tech"; a typesetting program developed by the American computer scientist Donald E. Knuth in the late 1970s specifically for scientific texts. Unlike today's standard layout software, such as Quark Xpress or InDesign, TeX is not based on a graphic user interface, but processes texts containing formatting instructions. The software is available for numerous computer types and uses its own fonts that are developed using the Metafont program.

Text spacing

See "spacing".

Textured inks

Inks with special structures that create their color impression in part or whole by their physical structure and not by their dyes or pigments. Such inks can contain elements that selectively reflect light of a certain wavelength with the aid of interference effects. Textured

inks create shimmering color effects that can vary, depending on the viewing angle. This kind

of color generation has its model in nature, where it is found in insects and some species of birds. It cannot be reproduced by conventional means, which is why textured inks are often used for documents where forgery protection is desired.

TFT (thin film transistor; liquid crystal display [LCD])

Refers to technology employed in flat screen monitors, in which minute transistor elements control the alignment of liquid crystals in such a way that light is allowed to pass through or is blocked. Within the TFT element, the total brightness and color reproduction are simultaneously controlled. The light for every pixel passes through a color cell consisting of three color filters (red, green, blue), and every filter is equipped with a transistor that can be driven separately and controls the transmittance of light of every color element. See also “LCD”.

Thermochromic printing inks

Inks that change color or disappear completely as the temperature changes, including as a result of brief exposure to body heat. Such inks are used to protect documents against forgery, and as temperature indicators for drinks and medicines, as well as for the monitoring of heating and cooling units. Another application is the indication of potential damage to heat-sensitive products, since certain thermochromic printing inks change color permanently at certain temperatures.

Thixotropy

The characteristic of certain viscous substances to become less viscous through mechanical action (stirring). Thixotropic materials are used in offset printing inks to enhance the quality of multi-color printing. The lower viscosity inks in the inking unit solidify to a certain degree on the printing stock before drying, and additional printing processes are thus optimized.

Three-blade automatic cutting machine

A cutting machine equipped with three blades for cutting products on three different sides. Such machines typically operate in two stages. First top and bottom edges are trimmed, and the third blade then trims the front edge.

Thumb test

Test used to determine the grain direction of paper.

TIFF (tagged image file format)

A file format used for images and defined by a computer industry committee in 1986. It is a so-called screen format that contains information on the brightness and hue of every pixel. The TIFF format supports various color systems, from black-and-white to full-color RGB images. TIFF files can be compressed by a variety of methods.

Tissue paper

The term used for various paper grades with a grammage of up to 30 gsm.

Tonal jump

The sudden increase in dot gain that results from color bridges that form between dots. In a tonal gradation from white to black, there is always a specific gray value at which two adjacent dots come into slight contact and join, a phenomenon called touching. The result is that a smooth tonal gradation is destroyed by a visible, harsh transition or “jump”.

Tonal range

Contrast ratio in continuous-tone pictures from the lightest to the darkest tonal values.

Tonal value increase (TVI)

The percent increase in the apparent darkness of an image in the mid-tone range during the production run. Example: with 15 percent dot gain, a 55 percent halftone will increase to 70 percent. This increase is compensated for in reproduction by making the image lighter in the color separations. See also "dot gain".

Tone value (tonal value)

A term used in photography and printing for the share of an area that is covered or the effective optical area coverage.

Total ink limit (TIL; total ink coverage [TIC]; total area coverage [TAC])

Value indicating the maximum amount of printing ink needed for the production of colors in four-color and offset printing. Normally the higher the total ink limit, the darker the color to be reproduced.

Tracking

The extension of the character spacing of a font by adjusting the distance between letters.

Tracking system

A system that provides information on the current status of a query or order or determines the location of a product in the manufacturing or delivery process. These systems often form part of an electronic trading system that involves e-commerce. A tracking system can allow print shop customers to follow the progress of their print job over the Internet.

Trapping (spreading)

The creation of an overlapping area where two colors adjoin in order to make up for imprecisions in the printing process. See also "knockout".

Trim

The edge of the page of a printed product that actually extends beyond the planned dimensions of the final product. This trim enables all the pages of a book or magazine to be cut to the same size in the final processing stages.

Trimming

The process by which the pages of a book, brochure or magazine are smoothed or evened out. The three unbound sides of a publication are usually trimmed, though in the adhesive binding process, all four sides are trimmed. Trimming also separates the individual pages, so that the book or brochure can be opened.

Trust Centers

An organization which creates digital certificates and serves as a neutral, trustworthy authority to verify the identity of users or clients. The correct allocation of a digital certificate to an individual is guaranteed via a certification server, a type of registration authority, which is part of the trust center.

Type 1 and TrueType

Terminology used to define technologies for displaying fonts on monitors and other output devices. Developed by Adobe, Type 1 defines character shapes mathematically irrespective of

size as curves using cubic Bezier polynomials. A program known as a rasterizer generates the characters as screen images in the required size and suitable for the resolution of the output device. The system also forms part of the Postscript system for defining the graphical form of documents and is therefore prevalent in the prepress industry. TrueType is a similar process that is used for Macintosh computers and the Windows operating system. This technology uses simpler quadratic B-splines for defining the characters. There have been attempts to converge Type 1 and TrueType, and as a result Version 3 of the Postscript system now also supports TrueType technology.

Type size

The vertical dimensions of a letter, measured in point or millimeter.

Typesetting

The process by which characters are assembled into formatted text for the purpose of producing print originals. Before typesetting machines were invented, text was set by hand using individual letters of type. The first major revolution in the typesetting world came in 1882 when Ottmar Mergenthaler patented the Linotype line composing machine. In the second half of the 20th Century, typesetting moved increasingly towards photocomposition. Today, typesetting and page make-up are largely computerized in the form of “desktop publishing.”

Typographical system of units

A measurement system originally developed by the Parisian typesetter Pierre Simon Fournier in 1737. The basic unit is the typographical point (abbreviated p), where 1 meter = 2660 points or 1 point = 0.3759 millimeters. Other units are the nonpareil (6 points), brevier (8 points), cicero (c) (12 points) and canon (48 points). These designations stem from type sizes which originally had their own names. The restructuring of the measurement system in Germany in 1977 brought an end to this system, though it continues to be used in a modified form. The units have been rounded to 5/100 millimeters.

Typography

The study of the design and use of type, the objective of which is to make text as legible and visually attractive as possible, by choosing appropriate typefaces, font sizes and attributes, but also by means of page layout. The rules of typography for paper are so well developed that further improvements scarcely seem likely, though this is not yet the case for other media such as computer monitors and electronic displays.

U

ULWC

See "HWC".

Umbra

See "deep shadow".

Uncoated paper (untreated paper)

Paper with no additional protective layer.

Under color addition (UCA)

A method of darkening areas of a printed image by adding colored inks, used when making color separations from RGB to CMYK data. The process works as follows: cyan, magenta and yellow portions are added in shadows and black is accordingly removed. Not all achromatic portions, however, are replaced with black, rather a portion of black is generated according to the principle of chromatic composition from the primary colors cyan, magenta and yellow. The aim is to enhance neutral image depths (gray tones) where the density of black is insufficient.

Under color removal (under color reduction, UCR)

A technique for reducing the amount of magenta, cyan, and yellow in dark and neutral areas and replacing the amounts of CMY with black. The technique works in the following way: colored ink is used up to a certain value, after which black is added in order to improve the dark areas of an image, so that total ink coverage (TIC) is not exceeded. Cyan, magenta and yellow are removed as far as they are identical and replaced with the equivalent amount of black. The depth of colors is thus improved and the total amount of printing ink reduced.

Unicode

A standard method of coding characters for electronic processing using 16-digit binary (16-bit) numbers. Unlike ASCII and other codes, which work with eight-bit numbers, Unicode is capable of representing 65,536 different characters. This covers all characters and commonly used scripts in the world.

Upstream

A kind of transmission in which information or data is fed from an end user to a server. See “downstream”.

UV (ultra-violet) coating

Coating systems based on unsaturated polyesters or polyacrylates, or a combination of the two, in which ultra-violet light triggers the drying process. This high-energy light breaks chemical bonds in the coating material's molecules, which then link up to form long, highly-branched chains, causing the material to solidify. The drying process takes only seconds, which means that UV coatings can be worked quickly. These coatings contain no volatile substances, making the layer thickness of the liquid and dry coating similar. UV coatings can be applied inline in very high layer thicknesses (up to 8 μm), have excellent gloss and can be barely distinguished from laminated products (film-lamination), though they do emit a odor.

UV (ultra-violet) inks

Printing inks cured with ultraviolet light. These inks contain no volatile substances, but instead, in addition to color pigments, individual molecules and short molecular chains that can link to form polymers and so-called photo-initiators. The latter decompose when exposed to UV light and form highly reactive fragments. These radicals trigger a polymerization process in which stable, three-dimensional network structures are formed. UV inks are primarily used to print non-absorbent materials, such as metal (sheet metal) and plastic, but also high-quality paper boards and labels.

V

Varnish (print varnish)

A clear coating that can be processed like an ink in offset and other presses. It has a similar composition to ink, but lacks color pigment.

Vector graphic

A graphic consisting of lines and curves (called vectors), the direction and length of which describe an image. Vectors depict an image on the basis of its geometric properties.

W

WAN (wide area network)

A computer network that spans a larger area. See “LAN”.

Waste

Incorrectly printed pages and other paper generated in print shops such as damaged paper, trial runs when setting up presses, packaging materials and various other print products and book returns.

Waste paper

Paper and paperboard disposed of as industrial, commercial and household waste, and sent back to the papermaking company for recycling.

Water-based coating (dispersion coating)

Coatings manufactured on the basis of water that dry relatively quickly, are odor-free and do not yellow. Water-based coatings are mainly applied using coating units, though in some cases they are also applied using a press inking unit. The layer thickness of the coating can reach 3 µm. Water-based coatings are not as glossy as UV coatings.

Watermark

Designs on sheets of paper created by varying paper thickness. A real watermark occurs when the dandy roll displaces (light watermark) or concentrates (shaded watermark) the pulp mass in the wire section of the paper machine. Facsimile, or impressed, watermarks are made in the paper web after it has left the wire section. Imitation watermarks are added off machine by means of a transparent varnish or embossing process.

WebDAV (web-based distributed authoring and versioning)

Draft standard RFC 2518, "HTTP Extensions for Distributed Authoring", produced by the IETF (Internet Engineering Task Force). WebDAV extends the HTTP (Hypertext Transfer Protocol) Internet protocol in such a way that the content of documents can be accessed directly via the Internet to allow a team to work on the content and structure of a document. For example, the WebDAV technique allows partners in the printing and media industry to access a PDF document simultaneously and apply correction instructions to it.

Wet-on-dry printing

Multi-color print process, in which the first color is allowed to dry before the next is printed; used for color printing on a single color press.

Wet-on-wet printing

Multi-color printing-press, in which subsequent colors are printed before the previous have dried.

White point

The brightest neutral area of an image, according to which all other areas are adjusted.

Whiteness

The intensity of white of a paper stock.

Wood-free paper

A somewhat misleading term for paper free of mechanical pulp with a woody fiber content of five percent (by weight) or less.

Woodcut

The oldest method of producing printing forms. The base material is a block of hard wood. Various cutting tools are used to cut out the parts of a pre-sketched image which are to appear clear or uninked. The parts which remain produce the image. The earliest known woodcuts for reproduction on paper date from the sixth century AD in China. The Buxheim Christopherus of 1423 is the oldest dated woodcut in Europe. It is believed that playing cards were printed using woodcuts in the 14th century in Europe.

Work and tumble

A procedure, similar to work and turn, by which a printing plate can be printed on both sides. While after turning, the side guide remains at the same paper edge, the front guides are exchanged, so that the second long side of the sheet is fed in to the front of the press, thus allowing for two lay angles. See "work and turn".

Work and turn

The procedure by which a printing plate can be printed on both sides. After one side is printed, the plate is turned and the side guide (pull lay) exchanged, while the front guides remain where they are. See "work and tumble".

Workflow

A computer-aided process for organizing work sequences by systematically moving documents from one stage of the operation to the next; requires transport of data and files within a network.

Workflow management

Control of work processes in computer networks and those of other functional devices; all activities necessary to run and manage computer and network-based production units within a graphic arts production environment.

Writing papers

White or color paper stocks that can either be wood based or wood-free, and that may contain wastepaper and include a surface-sizing treatment.

Wysiwyg

Abbreviation for "What you see is what you get", a word processing functionality necessary for working with desktop-publishing systems that allows the user to produce text as it will be printed or displayed.

X**Xerography**

A printing method invented in 1937 by the American patent lawyer Chester F. Carlson that functions in the following manner: a drum coated with a photo semiconductor is charged up and then partially discharged by a motif projected onto it. Dark areas retain their charge and toner applied to these areas remains in place. The image created in this way is then transferred to paper and fixed with heat. Originally designed for copiers, the technology is now also used for laser printers and digital printing systems.

XML (extensible markup language)

A symbol language used to describe the structure of documents. XML is superficially similar to HTML, the primary difference being that the symbols ("tags") used in XML can be selected with a larger degree of freedom, while they are fixed in HTML. This feature allows special forms of XML to be generated for virtually any type of application. XML is essentially a slimmed-down form of the SGML (Standard Generalized Markup Language) document description language defined in ISO 8879 and was created for transmitting richly structured documents via the World Wide Web. The International World Wide Web Consortium is responsible for the standardization of XML.

Z**Zig-zag fold**

See "concertina fold".