ヘルの会社での写真植字開発の概要

Typesetting with Linotype typesetting machine: (from 1886)

- The text is typed in line by line using the keyboard on a Linotype line-compositing machine. The typesetter (compositor) has to master spelling and hyphenation. When setting justification, the lines are excluded with the space wedges of the typesetting machine. The space wedges are located between the word spaces and drive the line apart so that the lines are flush on the left and right. Each line of text is cast in lead, a necessary correction requires re-entry and a new line cast.

Text entry and calculation in the sentence calculator: from 1958 (e.g. Linofilm System)

- The text is written using a ***Perforato***r and output on punched tape. This is read into a typesetting computer, which takes over the calculation of the line exclusion and the hyphenation. The result is output on a punched tape, which is used to control typesetting machines (lead typesetting and also **photo**typesetting, such as Linofilm). Corrections are now possible by recreating punched tape before lead casting or exposure. In photo-typesetting, an electronic flash tube exposes the desired character **through a mask with negative characters** onto a light-sensitive film or photographic paper.

Light typesetting development at Hell

Digiset (from 1964)

- All ***Digiset imagesetters*** are based on the Hell principle of breaking down image and text information into points. In Digiset, the characters to be typed are broken down into points using an electronic matrix and then exposed point by point to photographic paper **using a cathode ray tube** (hence the term "**light typesetting**" is coined by Dr. Hell). Only from the Digiset ***LS 210*** on exposure is done by a laser beam. The matrices of the characters to be exposed are in the core memory - later in semiconductor memories. Initially, six different character sets can be stored in the Digiset. The text data is fed in from punched tape, later from upstream typesetting computers equipped with magnetic disks/magnetic tapes.

Typesetting computer and typesetting programs

- In the transition period (from 1964) from punched tape-controlled lead typesetting to **light typesetting**, the "***Hell Typesetting Computer HELL COM***" was used to calculate data sets for lead typesetting machines and for the Hell "Digiset" light typesetting system. The core memory (the main memory) has a size of 16,384 bytes (16 **K**bytes). For comparison: the main memory of today's laptops is 8 to 64 **G**bytes)

- This is followed by the Siemens process computers "***Siemens System 3003 and 4004***" (1965 and 330. These are replaced by the Siemens computers R30, with 128 KB of RAM (until 1985) then by the ***SICOMP M family*** M70, M56 and M26 (from 1988) This requires the conversion of the programs to the new computers of the R and M computer series.

- In the initial cooperation with Hell, the Siemens Company developed the typesetting program COZY, and in parallel, the Hell company developed the ***DOSY*** program with input / output functions, hyphenation and exclusion calculation. As of 1982, DOSY, as a complete full-page output and editorial system, contains program modules for input/output, exclusion calculation with hyphenation, data storage, font management, special, ready-made blocks for page design of classified ads, sports tables, stock market tables, etc. Images can also be integrated and output on the Digiset image setters .

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Fonts, drawings and logos

- In cooperation with various font developers, Hell is making many **different fonts** available with the introduction of light typesetting. Examples include the fonts developed by Prof. Zapf exclusively for Hell, such as: "Marconi"; Called "Edison" and "Vario". In addition to other classic Latin fonts (e.g. the in-house development "Holsatia" as a Helvetika counterpart), Hell also provides Greek and Cyrillic fonts.
- The characters are initially displayed as a dot matrix (bitmap). From 1985, these were gradually replaced by "outline fonts" - also known as vector fonts - in cooperation with URW in Hamburg and used for the first time in the Digiset LS 210 at Hell.
  The ***Digigraph*** is used to record drawings, logos and lettering. At the same time, Adobe started the triumph of this font technology with the introduction of “PostScript 1”.

The text entry:

- As already written above, the perforators were initially (from 1964) the text input devices offered by Hell and Siemens. Only in 1973 does the transition to screen-based text entry take place. The data display devices required for this are developed and produced by external companies according to Hell specifications.
  The first device "***DS 2032***" (from Xenotron, in the UK) can record and display 13 lines of 80 characters each. The characters are in a 15 x 16 matrix, so they cannot represent the type-face of a selected font.
- As the latest development in text input devices, the "***DS 2069***" (SKS, Karlsruhe) offers, in addition to other important functional extensions, with 16 x 16 picture elements a higher resolution, thus better legibility, 24 lines enable a better text overview.

- The device "***Digicomp 2062***" (1980) supports the design of a text **block** - but not the design of a page. Parts of the text can be enlarged, reduced or moved under visual control. Design elements are saved and can therefore be used again at any time.