Development trends of luminous advertisement and signage – a progress report

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1. History of luminous advertisement

1.1 From outdoor advertisement to luminous advertisement

The beginning of outdoor advertisement can be sourced to the ancient world. Excavations in Pompeii unsheathe hoardings which were used for public communication. In the course of time the primary use of outdoor advertisement was focused on the identification of trade and services (fig.1.1).

Fig.1.1: Wrought-iron shop sign for labelling trade and craft;

In the 15th century it started to turn into luminous advertisement. By using a piece of kindling either the surround of a billboard was illuminated or a painted piece of oiled paper was backlit. One century later the billboard hits its peak. Beyond its strong presence people set great store by the design. Those who were able to afford it had professionally manufactured billboards by famous artists. Especially taverns and guild houses represent their business by high-value labelling. By and by the construction and design of billboards became more sophisticated with diversified applications.

The crucial change to luminous advertisement came with the invention and the commercial success of the electric light bulb (fig.1.2). In the year 1898 in Berlin an advertising message was mediated by luminous caption for the first time. An installation made of lots of light bulbs displayed a circle with the writing “Leibniz Cakes”. The first dynamic light installation was also assembled in Berlin (1912). It showed the words “Kupferberg Gold”, a champagne bottle and a glass. By the help of a programmed circuit with 2500 bulbs the champagne and the writing seem to sparkle (fig1.3). Thus the luminous advertisement got a special dynamic.

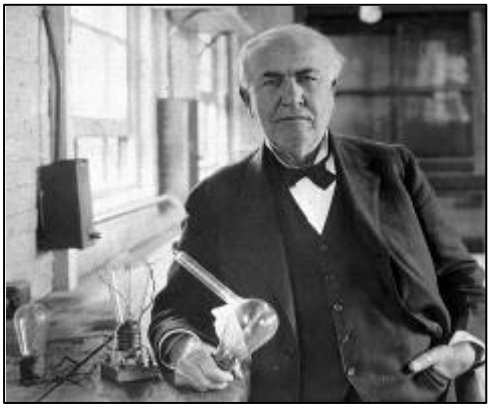

Fig.1.2: T. A. Edison (Developed the commercial type of the light bulb);

Fig.1.3: First dynamic installation of a luminous advertisement (constructed in 1912);

1.2 More colour and shape with gas discharge

Simultaneous to the development of light bulbs the first gas discharge tubes were built. At first these tubes were filled with air. So the discharge was caused by the nitrogen. But the rapid exhaustion of the nitrogen and the resulting loss of pressure extremely reduce the durability of the tubes.
The in 1896 developed Moore Tubes were provided with a feeding valve which countered the pressure decrease (fig.1.4). At the beginning of the 20th century gas discharge tubes were filled with rare gas for the first time. By the chemical inertance of these gases the exhaustion and the resulting feeding became redundant. Firstly only clear and uncoloured tubes were filled with red glowing neon. Shortly after that was followed by a neon-argon mixture with a hint of mercury. This combination emitted a bluish light colour. By the use of coloured glass the elementary colour of the respective gas discharge could be amplified. Beyond this the application of opal glass excited a diffuse dispersing light which masked the gas discharge. Thus the luminance dispersed constantly across the whole tube.
By the addition of mercury ultra violet radiation was emitted. That featured the potential to be combined with fluorescent substances which leads to an increase of light efficiency. These substances were enhanced and became the precondition for today's versatilely used fluorescent lamps.

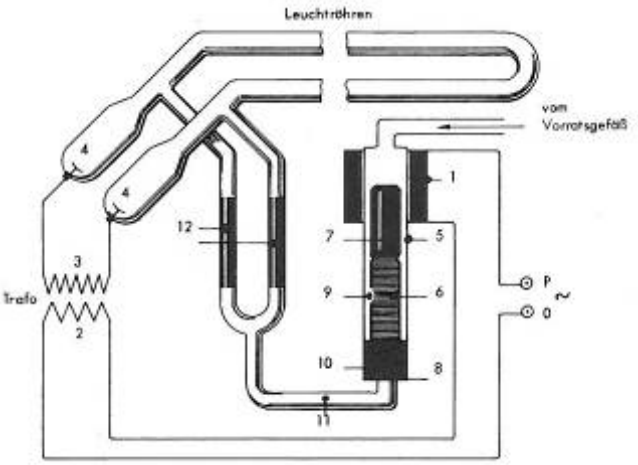

Fig.1.4: Moore Tube with feeding valve;

1.3 Luminous advertisement from the post-war period till today

During World War II the development was interrupted. With the end of war and in the course of rebuilding, the construction of luminous advertisement escalated and peaked out in the 60s (fig.1.5). At this time luminous advertisement was not only used for commercial labelling and promotion but also to provide public information.
By and by other advertising media like newspaper and broadcasting became more important. That implicated a shift of advertising spending towards other media. Though in its application range luminous advertisement was well accepted. In order luminous advertisement system became in spite of or because of their selective demand more sophisticated and bigger.


Fig.1.5: Luminous installation from the 60s (Leipzig);

The application of acryl glass decreased the amount of produced discharge tubes. But that was compensated by the advantages of this material anyway. Now it was possible to realise systems with an attractive look at any time. The outcome of this was an arbitrary choice of colours and shapes which leaded to more individuality. Furthermore these systems caused a lower priced acquisition and an uncomplicated maintenance. The combination of gas discharge lamps and acryl glass increasingly were applied in the form of translucents and light boxes. By an exchange of high voltage discharge lamps with customary fluorescent lamps (low pressure discharge lamps) this combination was qualified for serial production and entered the mass market.
Due to the commercial development of the LED a new light source came up, that increasingly gained on importance and extended the spectrum of possibilities. Conditional on the LED proportions a flatter construction and thinner contour could be realised.

Fig.1.6: Variety of modern luminous advertisement installations (Leipzig);

Nowadays luminous advertisement can’t be separated clearly from other types of media. For instance light elements are combined with flat screens or touch screens and represent visually dynamic, audio-visual and interactive units.

2. Luminous Advertisement by NEL (Neontechnik Elektroanlagen Leipzig limited company)

Fig.2.1: The Producer's cooperative of crafts „Neontechnik und Anlagenbau" (Leipzig);

NEL is a medium-sized enterprise in Leipzig which is rooted in the early 60s. It was established as "PGH Neontechnik und Anlagenbau" (PGH = Producer's cooperative of crafts) (fig.2.1). During the fall of the Berlin wall and the German Unity the company persisted. In 1991 it changed into the limited company "NEL" and went on producing luminous advertisement. Prior to the German unification this PGH conformed to any typical handicraft enterprise of the GDR with special regional projects. Some of these projects are still impressive and became a part of Leipzig's heritage site. The most famous installations are the "Spoon Family" of Feinkost Leipzig, the Sample Fair Logo on the top of the high-riser "Wintergarten" and the "Isolator" Ignition Plug which is now exposed in Leipzig's Museum of Fine Arts (fig.2.2). By the establishment of the limited company the firm was divided in NAL and NEL. While NAL acts as a management company NEL executes the commercial operations. Meanwhile NEL features subsidiaries in Poland, Czech Republic, Hungary and China. To achieve a better workflow the company is organized in several divisions.

Fig.2.2: The „Spoon Family" (l.) and the "Ignition Plug" (r.) are under a preservation order (Leipzig);

2.1 Division: Neon and Display Systems

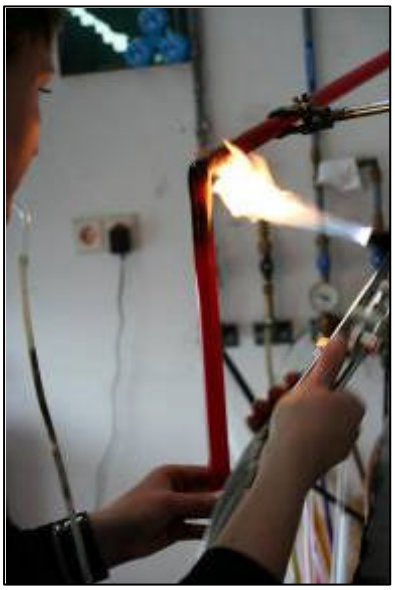

Fig.2.3: In-house production of discharge tubes in arbitrary geometries;

This division deals with the conception, construction and sale of neon majuscules, contours and installations. These can be applied in several fields like advertisement, architecture and art. The used high voltage tubes are manufactured by specialized staff of the in-house glassblowing (fig.2.3). Additionally the subdivision “Display Systems” expands the product line-up. Furthermore many kinds of display systems are combined with “Neon” products and create new and sometimes multimedia-based systems.
Beyond that another subdivision deals with research and development activities. Besides the recording of photometrical and elektrotechnical data to inspect the quality of the produced tubes this subdivision searches for new solutions in terms of applicable new light sources and light transporting or dispersing materials. A large part of the research work is focused on the enhancement of energy efficiency and light output of luminous surfaces.

2.2 Division: Major Customers

By the work of this division the extensive service claims of several major customers are realized. That includes the parallel and concluded management of different tasks. The line of action ranges from drafts and designs over production and assembling to maintenance and repair. Thus different campaigns are supervised intensely with respect to all technical and logistical businesses.
Some special major customers are Philip Morris, Allianz AG and Dresdner Bank. The business connection with the Allianz AG started in the year 2000. The change-over to a new appearance led to a production and assembling of approximately 6000 signboards for avocational insurance agents and 7000 installations of luminous advertisement (fig.2.4). A volume like this in average generates 50 orders per week.

Fig.2.4: Luminous advertisement for „Allianz“;

2.3 Division: Electrical Installation

The in-house electrical engineering master technicians and electricians completely support electrical installations of every description. This scope of duties includes specialist counselling as well as all kinds of assembling, disassembling and maintenance of the produced luminous devices. Some of the most outstanding references are Leipzig’s main station and trade fair.

3. NEL Projects

3.1 The “Spoon Family” of Feinkost Leipzig

The “Spoon Family” of Leipzig is a luminous installation which is under a preservation order by now. It is a typical unique and crafted fabrication for a customer. This installation is designed in a so called “Open Neon”, which means the high voltage discharge tubes are exposed. By a dynamic switching of these tubes a motion sequence is simulated (fig.3.1).

Fig.3.1: „Spoon Family“ by day (l.) and night (r.) (Leipzig);

3.2 Logo of the Leipzig Sample Fair

Even the Sample Fair Logo on the top of the “Wintergarten” High-Riser in Leipzig is under a preservation order. Due to its eye-catching appearance it characterises the cityscape (fig.3.2). NEL was confronted with the problem to changeover this installation and equip it with LEDs. But the necessary calculations, referring to the distant effect, result in an extremely high packing density of blue LEDs. This is caused by the restricted perception of the blue spectral range on the one hand and by the low energy efficiency of blue LEDs on the other hand. These circumstances were already noticed during the installation of discharge tubes. At the time this project is cancelled by reasons of economy. It is worth to be mentioned that the main cost fraction would be caused by the lift of the installation. Instead of that kind of changeover the logo was equipped with revised discharge tubes.

Fig.3.2: Sample Fair Logo on the top of the high-riser “Wintergarten” (Leipzig);

3.3 “Grassimuseum” Leipzig

In the course of the modification and reconstruction of the Leipzig Grassimuseum also the writing above the entrance portal was exchanged and modernised. The letters of the new writing consist of a gold plated copper casing with inlaid LEDs. These LEDs backlit the letters and generate a halo (fig.3.3).
The manufactures of such letters not only went out of fashion but also less firms are proficient in it.

3.4 “Jenapharm” Jena

This paragraph is about another typical kind of luminous advertisement installation and allows a look on the possible dimensions and the necessary technical tools and devices. For such an implementation it is indispensable that our technicians are capable of working at heights (fig.3.4).
Another outstanding installation by our company is the “Intershop” logotype on the top of the high-riser in Jena city. Especially in this case the general structural analysis must be considered. That also includes the effects of the load distribution on the substructure and the building during wind loads.

3.5 “Nova Eventis” Günthersdorf

This example shows especially the facets of our subdivision “Display Systems” with its signage and guidance systems. Starting with direction signs in the outskirt area of the mall the product line-up ranges over car park signage and indoor guidance systems (fig.3.5) to the advertisement of different shops. Beside these quite technically appearing systems there is a variety of aesthetically designed luminous installations to increase the attractiveness of those malls.

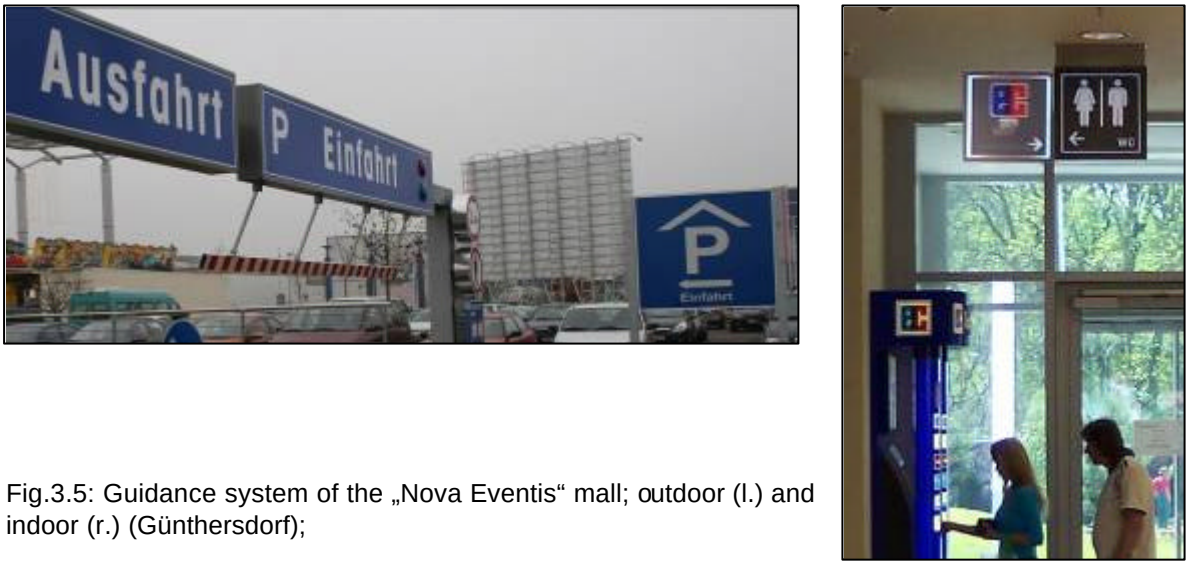

Fig.3.5: Guidance system of the „Nova Eventis“ mall; outdoor (l.) and indoor (r.) (Günthersdorf);

3.6 “Elbe Center” Magdeburg

After an operation time of 10 years many companies, malls and shops are thinking about exchanging the common discharge tubes for new power-saving lamps. That concerns the scope of lighting as well as indoor and outdoor advertisement.
In this case the low voltage tubes of a circular light belt inside the mall shall be exchanged as soon as possible (fig.3.6). For this purpose not only economical considerations matter, but the quality of maintenance and service as well as the homogeneity and colouring of luminous elements. In combination with very different customer preferences that leads to protracted decision processes.

Fig.3.6: Circular light belt inside the „Elbe Center“ mall (Magdeburg);

3.7 International Airport Budapest

Fig.3.7: Duty free shop with red edge lighting (Budapest);

Within the security area there is a duty free shop between customs and waiting lounge. To direct the customer's attention to the shop, its architecture was provided with coloured and glowing edges and according information signs (fig.3.7). For this purpose special LEDs with a lateral radiation were applied. This radiation character generates a very homogeneous light effect. The corresponding billboards were equipped with ELS (Edge Light System) technology which allows a spatially flat construction. Furthermore the exceptional colouring should be mentioned: For the edge lighting an aggressive red was chosen, which corresponds to the Hungarian national colour. Probably it is due to the culturally influenced colour perception.

3.8 "MALTA Galeria" Poznan

In the Poznan mall a guidance system was realised that captivates with its weightlessly appearing design on the one hand but mediates a certain spatiality on the other. This implementation arises from the already mentioned ELS technology. In this case not only white but coloured LEDs were attached which leads to a remarkable colour saturation (fig.3.8).

Fig.3.8: Guidance System of „Galleria MALTA" mall (Poznan);

3.9 “Schloss Arkaden” Braunschweig

In the scopes of guidance systems and luminous advertisement the “Schloss Arkaden” in Braunschweig can be regarded as a standard project which was realised during the last years. In the course of a later inspection the colour of the advertisement installations were criticised by the city council. This criticism was justified by environmental protection. Consequently the corresponding installations had to be changed over from the owners CI red to the required white (fig.3.9).
Since this incident our company has to deal with questions of environmental protection and glare.

Fig.3.9: Changed luminous advertisement installation at „Schloss Arkaden“ mall (Braunschweig);

4. Conclusion

This branch as well as other ones will be involved with new influencing factors. That concerns not only energy efficiency but also the effect and handling of complex light bodies caused by city centres or buildings for instance.