Innovations from the Black Forest: Kienzle and medium data technology

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1. Introduction

Kienzle Apparate GmbH was one of the leading manufacturers in West Germany, with a strong presence in other European and international markets, during the boom period of medium data technology in the 1970s. The company's roots lay in the precision engineering industry, which had formed a strong cluster region with the watch industry in south-west Germany for decades. Kienzle Apparate GmbH was founded as an independent company in 1929 in Villingen (Black Forest) as a developer and producer of measuring and control devices for the automotive industry.

Kienzle Apparate built up a second major division by entering the business machine industry in the 1950s and 60s, and recognized the new possibilities of electronic components at the right time. This led to the successful transformation of the company into one of the major German computer manufacturers in the segment of medium data technology. The following article describes this development up to the final demise of the Kienzle computer division in the 1990s.[1]

2. Roots and beginnings

The roots of Kienzle Apparate GmbH lie in the precision engineering and watchmaking industry of south-west Germany (Black Forest region). The Kienzle watch factories in the industrial town of Schwenningen had been established in the 19th century and were able to position themselves as an internationally recognized brand on the watch market until the years of

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1 The business history of Kienzle Apparate GmbH was compiled as part of a research project at the University of Konstanz (Economic and Social History, Prof. Dr. Clemens Wischermann) and published as book: Müller: Kienzle.

crisis in the industry from the 1970s onwards.[2] However, the measuring and counting equipment business was spun off as an independent company, Kienzle Apparate, based in the neighbouring town of Villingen, during the Weimar Republic and went its own way from then on. The founder and driving force behind the company was the engineer Dr. Herbert Kienzle (1887–1954), who left his father's watch factory in 1929 and put all his energy into building up the new company.

Kienzle Apparate developed and produced equipment for the automotive industry, particularly for commercial vehicles. The company began by manufacturing and selling taximeters and equipment for recording operating data. The key innovation for the subsequent boom was the tachograph in the late 1920s, a calibratable device that could measure and record vehicle speed as well as driving and stopping times. The number of trucks in Germany increased after the Great Depression. The transition of Nazi Germany to a wartime economy provided the company with an ideal market environment. The Kienzle tachograph was a control instrument that gave haulage companies, car manufacturers and state institutions the opportunity to oblige their drivers to drive economically.

Kienzle Apparate was a typical German industrial company during the war years, whose production was of great importance to Nazi Germany and its war effort. Entrepreneurs and managers at Kienzle were closely associated with the Nazi regime. In addition to the tachograph business, the company became a supplier to the German aviation industry, particularly developing and producing regulators for aircraft engines.[3]

3. Entering the business machine industry

At the end of the war in 1945 and the beginning of the Allied occupation, Kienzle Apparate had to reorganize and overcome several years of crisis. The company's situation stabilized again with the formation of the Federal Republic of Germany and the normalization of the economy following monetary union and market liberalization, Business with equipment for the automotive sector was resumed and developed into an unprecedented volume of production and sales as a result of the general breakthrough of automobilization ("*Automobilisierung*") in Germany and throughout

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2 Schmid: Lexikon Uhrenindustrie, p. 478f.
3 Müller: Kienzle, p. 42–58.

Europe. The main external driver was the legal requirement to install tachographs in commercial vehicles, first in Western Germany and later throughout the European Community.[4]

In the post-war years The company also succeeded in entering an entirely new field of business in the post-war years: the manufacture and sale of business machines. The technological skills acquired in precision engineering certainly helped, but other factors were crucial to success. Up to that point, significant parts of the German business machine industry had been concentrated in Saxony and Thuringia. However, the division of Germany and the resulting economic restructuring of the country meant that the industry had to be completely reorganized.[5] Saxony and Thuringia were part of the Soviet occupation zone, therefore, companies there were confronted with a policy of expropriation and socialization. Despite the major upheavals, the business machine industry continued to establish itself as an important and efficient sector in the GDR. However, there was also a considerable exodus of skilled workers and managers to the West, where the industry was rebuilt.

The flight of two people from the industrial centre of Chemnitz[6] (Saxonia) to the south-west of Germany was particularly significant for Kienzle Apparate. They were Lorenz Maier, until then a designer of business machines at Astra-Werke,[7] and Karl Hueg, sales manager at Wanderer Continental.[8] Maier had been in West Germany since 1945 and was looking for new customers for his designs for adding and booking machines. Contact was made with the management of Kienzle Apparate in Villingen in 1948. The company was still suffering from the general effects of the war, with orders from the defence industry having been lost and business in commercial vehicle equipment not yet resumed. The management was, therefore, looking for new product ideas. Maier and Kienzle came to an agreement, resulting in the first generation of Kienzle business machines.[9] At the same time, Hueg left Chemnitz and signed a contract as sales manager for the new Kienzle division. Maier's technological expertise and Hueg's marketing knowledge and contacts enabled Kienzle Apparate to successfully enter the West German business machine market. More skilled

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4 Müller: Stiller Wächter.
5 Bauer: Büromaschinen-Industrie.
6 Jornitz/Naumann, p. 110–119; Schneider: Unternehmensstrategien, p. 160–187.
7 Reese: Lorenz Maier, p. 16–20.
8 Anonymous: Karl Hueg.
9 Polzin: Der Blick in die Vergangenheit, p. 8–11.

workers were added. It was no coincidence that Kienzle set up a subsidiary in Oberndorf am Neckar. Many employees were taken over from Mauser-Werke AG, a former producer of business machines and weapons, which was a victim of extensive expropriation and dismantling by the French occupying forces.

The 1950s and 60s were the heyday of mechanical business machines.[10] Kienzle developed, produced and marketed a modular system for adding and accounting machines.[11] The most important customers at that time were large administrative organizations, such as the German Post Office, many banks and administrations. The second division quickly established itself as an independent and equally essential part of Kienzle Apparate GmbH. Both divisions benefited from the general economic situation during the economic miracle, the very positive development of the automotive industry and the trend towards automation in administration. As early as 1952, the turnover and the number of employees exceeded the previous wartime peak and continued to grow steadily.

Therefore, Kienzle's entry into the business machine industry took place under favourable conditions due to the reorganization of the industry and the post-war boom years that followed. But it was also the result of proactive management preparing for a second line of business. These included the recruitment of experienced managers for the technical and commercial management of the new mainstay.

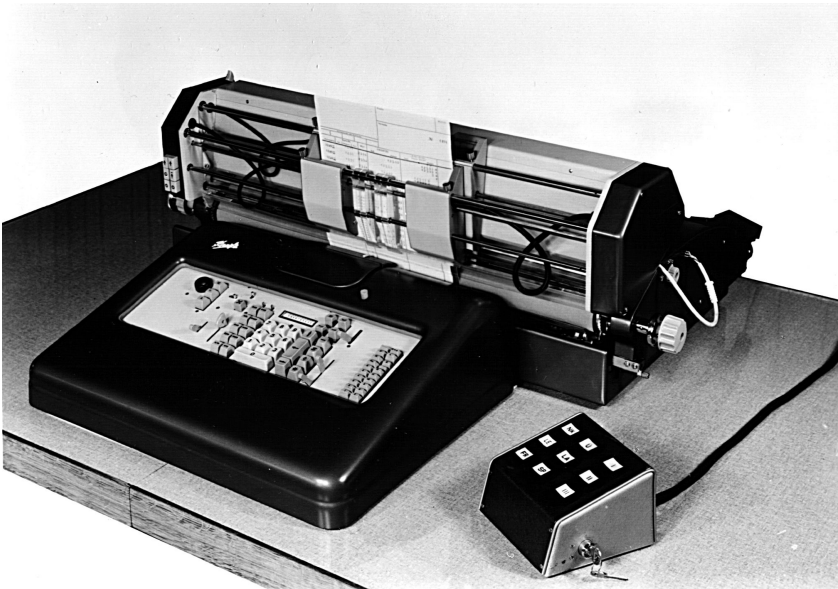### 4. On the way to the first Kienzle computer

Kienzle Apparate GmbH established itself from the 1950s to the late 1960s as a major supplier of mechanical adding and accounting machines. Together with the existing automotive division, the company had grown to a size of over 3,000 employees. This period saw the transition to semi and fully electronic systems. Despite several crises and many operational problems, this far-reaching technological change was completed successfully.

Kienzle's first steps in the direction of electronics began in 1954, when Gerwalt Polzin, the commercial director at the time, brought back his first impressions of commercial applications for computers from a study trip to the USA. The company set up its own engineering office, firstly, in Berlin, and

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10 Schierz: Die westdeutsche Büromaschinenindustrie, p. 105–126.
11 Hueg: Unser Büromaschinenprogramm, p. 6–7.

then moved to Munich. Around 20 employees carried out basic development work on electronic applications.[12] The initial results were electronic counting devices and an electronic printing unit. Important intermediate steps apart from the mechanical calculator were devices with an electronic "*Multiplikationskörper*" (Kienzle Class 300) and models with an electronic "*Saldovortrag*", i.e. a memory periphery (Kienzle Class 2000). These models were launched between 1959 and 1962. During these years, Kienzle also developed its own partially electronic invoicing machine (Kienzle Class FM 36).

Picture 1: The Kienzle Class 2000 was the first partially electronic accounting machine

In addition to its own developments, the company collaborated with other innovative companies, such as Standard Elektronik Lorenz in Stuttgart and the laboratory for pulse technology (Labor für Impulstechnik) of computer pioneer Heinz Nixdorf in Paderborn.[13]

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12 Maier: Die Geschichte der Kienzle, p. 28; Ernst: Entwicklung der Fa. Kienzle Apparate, p. 9–10.
13 Berg in this volume.

This period of technological change at Kienzle lasted a full decade. It was accompanied by a generational change in key management positions and an adjustment of central company processes. At the personnel level, there was a conflict with the previous chief designer, Lorenz Maier, who was very sceptical of electronic innovations. A new technical manager for business machines was appointed in 1957. The company had two competing research and development departments for several years.[14]

In 1962, there was a serious development crisis at Kienzle Apparate, which led to the dismissal of a managing director and the previous technical managers. In addition, cooperation between the sales, customer service, design, production preparation and assembly departments were reorganized and medium-term product planning was put on a new footing. The creation of a new Development Committee ("*Entwicklungsausschuss B*"), which brought together engineering, development and sales on an equal footing, was essential. This brought together different perspectives and reconciled customer views with technical planning in the spirit of modern innovation management.[15] This was the most important measure within the company for the imminent introduction of their own fully electronic computer systems. In 1964, the Development Committee met for the first time and set the course for the construction of the first independent Kienzle computer system. The future Class 6000 was prepared based on fundamental decisions in the management and Supervisory Board of Kienzle, and a first prototype of the computer could be demonstrated towards the end of 1964.

Finally, between 1962 and 1964, Kienzle was able to undergo the necessary learning process for the new computer age and emerge from this internal crisis stronger as a company.

5. Close cooperation with Nixdorf

This internal process of change coincided with an important collaboration:[16] The first contact between Kienzle and Heinz Nixdorf took place at the Hannover Messe in 1963. Nixdorf was to become a key figure in the German computer industry. At the time, however, he was only the head of his laboratory for pulse technology in Paderborn, which employed no more than

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14 Müller: Kienzle, p. 82.

15 Ackermann: Zehn Jahre EAB, p. 2–4; Müller: Innovation, p. 258–272.

16 Müller: Kienzle versus Nixdorf, p. 305–327.

100 people and worked mainly on development contracts for other companies in the business machine industry. There were several negotiations between Kienzle and Nixdorf from 1963 to 1965. At the level of technical cooperation, it was agreed that Nixdorf would supply the electronic memory system for the planned Kienzle Class 800 magnetic account computer. In this form, the cooperation was successful, despite delays and setbacks. The new Class 800 was launched in 1966. Visually, it was still modelled predominantly on the traditional mechanical and partially electronic Kienzle accounting machines. In essence, however, it was Kienzle's first freely programmable small computer with magnetic accounting technology.[17] Although similar systems from other manufacturers were being launched at the same time, Kienzle enjoyed high demand, selling around 1,500 units by 1969 and a total of 2,800 by the time the system was discontinued in 1972.[18]

However, the cooperation between Kienzle and Nixdorf was to fail on a commercial level. There were various attempts at a (partial) merger, but none of them came to fruition, mainly for two reasons. Firstly, the different business interests of Kienzle and Nixdorf were too far apart. Secondly, their corporate cultures were not compatible: Heinz Nixdorf was an ambitious founder and entrepreneur looking for the best future option for his comparatively small but innovative Labor für Impulstechnik. Kienzle Apparate was, by contrast, a more traditional, family-run company with two large divisions, one for automotive supplies and the other for business machines. Around 100 Nixdorf employees worked for Kienzle in 1963/64, which had around 3,500 employees of its own. Nevertheless, Nixdorf considered himself to be on an equal footing with the Kienzle management. He was perceived by the Kienzle management as unreliable and very changeable regarding his promises. Overall, the negotiations between Kienzle and Nixdorf were unsuccessful. Cooperation between the two companies was limited to individual projects. The crisis at Wanderer-Werke, the large Cologne-based manufacturer of business machines, which got into financial difficulties in 1968, was an opportunity for Heinz Nixdorf. In April 1968, Nixdorf bought the entire Wanderer company and merged it with his laboratory for pulse technology to form the new Nixdorf Computer AG.

The years between 1964 and 1968 were crucial for Kienzle concerning breaking into the markets for medium data technology.[19] Although the

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17 Heinrich: Mittlere Datentechnik, p. 48–50.
18 Ernst: Entwicklung der Fa. Kienzle Apparate, p. 96.
19 Ackermann: Mittleren Datentechnik, p. 588–592.

company was somewhat overshadowed by Nixdorf, the new market leader in Germany, it was able to offer attractive solutions for small and medium-sized businesses introducing new all-electronic systems, such as the 800 and 6000 series. The new models made it easier for many customers of previously mechanical business machines to move into electronic data processing. Large numbers of units were quickly sold, especially of the magnetic ledger accounting machines. The customers were industrial and commercial companies, especially banks and financial institutions, which rationalized and automated their administrative and organizational processes with medium data systems. Comparatively, inexpensive computers from Nixdorf and Kienzle also enabled medium-sized companies to enter the world of electronic data processing.

Picture 2: With the Class 6000 magnetic accounting computer, Kienzle achieved a breakthrough in the market for smaller computer systems.

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Kienzle entered the new market with great publicity at the Hanover Messe in 1968, where the Kienzle 6000 was presented to the professional world for the first time. Visually, the computer had a completely new design. Technologically, it combined a freely programmable central computer with a magnetic account processing system and various peripheral devices. The system became a cash cow for Kienzle in the years to come. By 1974, a total of around 55,000 medium data systems had been installed in West Germany. Of these, 25 per cent came from the market leader, Nixdorf, and as much as 15 per cent from Kienzle in second place,[20] mainly systems of the Kienzle 6000 class and the more advanced 6100 class.

6. In the boom and crisis years of medium data technology

The final breakthrough of the German computer industry led to golden years for Kienzle Apparate in the first half of the 1970s. In addition, the company's second line of business, automotive equipment (especially tachographs), was also booming because of the expansion of the single European market. By the middle of the decade, dark clouds of crisis were already gathering, caused by increasing international competition and the changing economic situation in Europe. In 1974, Kienzle experienced its first decline in sales and profits in the office machine and computer sector.

Despite the unfavourable conditions, Kienzle was able to launch a completely new model in 1975. The EFAS 2000 series was aimed at the lower end of the medium data technology market.[21] The strategy was to offer the machines as a replacement for the mechanical accounting machines that were now being phased out. The good performance figures and the positive response from the trade confirmed the company's strategy of filling the gap in the market between automatic accounting machines and small computers.

The high pressure of competition and innovation in the industry put a particular strain on medium-sized companies in Germany. Some competitors had to leave the computer business or went bankrupt. The general technological buzzword was the switch to modular computer systems. This term represented the increasing ability to communicate and combine with

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20 Rösner, Wettbewerbsverhältnisse, p. 64.
21 EFAS stands for Electronic Billing and Invoicing System ("*Elektronisches Abrechnungs- und Fakturiersystem*").

other information and technology systems and the transition to systems with screens and magnetic disc storage. For Kienzle, this meant launching a complete successor system to the previous 6000 generation and incurring considerable development costs. The delayed entry into modular computer systems was also reflected in a declining market share in Germany. By the second half of the 1970s, Kienzle had slipped from 15 to less than 10 per cent in the medium-data technology segment, from second to fourth place. Nixdorf remained the market leader, but was now followed by Italian company Olivetti and Triumph-Adler.[22]

Kienzle's entry into the modular computer systems generation became successful with the new 9000 generation. The first model was the 9055 single-user system. However, its launch in 1980 flopped due to technical defects and a lack of compatibility with other systems. As a result, the company made a loss of DM 80 million in 1980/81, which could no longer be offset by the profits of the other division.

This pressure forced the former family business to sell the entire company to the industrial group Mannesmann AG in 1981/82.[23] Mannesmann was prepared to invest the necessary financial resources to accelerate the introduction of the 9000 family of systems. In addition, Mannesmann ordered a change of management and a restructuring programme with savings in development and sales.

The new subsidiary, Mannesmann Kienzle GmbH (the name was changed in 1984), succeeded in consolidating its market position in the computer sector. Kienzle continued to focus on target market strategies in sales. The most important customer groups continued to be banks, public administrations and medium-sized companies. A new segment was that of large customers, where important orders were won against competitors. In the low-cost computer systems segment (less than Mark 100,000 per system), Mannesmann Kienzle was able to maintain second place behind Olivetti, on a par with Nixdorf. In the medium data segment (up to Mark 250,000), Mannesmann Kienzle took third place behind IBM and Nixdorf.[24] These figures reflect the situation on the German market in the mid-1980s.

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22 Müller: Kienzle, p. 108.
23 Ibid., p. 232–240.
24 Hillebrand: Schwarzwald-Klinik.

7. The end of the Kienzle computer business

The situation changed again in 1989/90 when the Mannesmann AG was awarded the contract to build the first German private mobile phone network, D2.[25] Priority was now on the telecommunications sector, whereas the computer business became uninteresting. Subsequently, the Mannesmann AG began looking for an investor for the Kienzle computer business.

This search ended in December 1990 when the Mannesmann management decided in favour of the US computer manufacturer DEC. The new company Digital-Kienzle GmbH & Co. KG was founded on 1 January 1991. The new company had a turnover of around one billion marks, 2,500 employees in the core company (formerly Mannesmann Kienzle) and a total of almost 4,000 employees including other Mannesmann companies and sales companies, which also became part of the new corporation. At a strategic level, the new partners hoped to achieve synergies in the German and European markets. DEC had previously concentrated on business with large customers in the manufacturing, scientific and research sectors, while Kienzle's computer business had traditionally focused on small to medium-sized enterprises, banks and public administrations.

However, there was no time to seriously explore the potential of this strategy. Instead, Digital-Kienzle fell victim to a serious crisis at its parent company, DEC. In the few years between 1991 and 1994, DEC's German operations went through one wave of restructuring after another. Only a rump business remained in Villingen. In-house hardware production was discontinued in 1994. A small successor company was run for a few years, mainly continuing the previous software business. The last light went out at the Kienzle computer factory in 2001 at the latest. This marked the end of a 50-year history of office machines and computers in Villingen.

8. Bibliography

Ackermann, Herbert: "Standort der Mittleren Datentechnik", in: *Bürotechnik + Organisation* 7 (1967), p. 588–592.

Ackermann, Herbert: "Zehn Jahre EAB – erfolgreiche Zukunftsplanung", in: *Kienzle Blätter* 1 (1973), p. 2–4.

Anonymous: "Karl Hueg trat in den Ruhestand", in: *Burghagens Zeitschrift für Bürobedarf*, 27.11.1961.

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25   Päch: D2-Story.

Bauer, Heinz: *Die Entwicklung der deutschen Büromaschinen-Industrie seit 1945*, Dissertation, Nürnberg 1951.

Ernst, Richard: *Die Entwicklung der Fa. Kienzle Apparate GmbH in den Jahren 1957 bis 1969 aus Sicht des Technischen Geschäftsführers*, Manuscript December 1970 (archive of the author).

Heinrich, Lutz: *Mittlere Datentechnik. Datenverarbeitung zwischen Büromaschine und Computer*, Köln 1968.

Hillebrand, Walter: "Operation in der Schwarzwald-Klinik", in: *Manager Magazin* 9 (1987).

Hueg, Karl: "Unser Büromaschinenprogramm", in: *Kienzle Blätter* 3 (1955), p. 6–7.

Jornitz, Günther / Naumann, Friedrich: "Über ein halbes Jahrhundert Continental-Büromaschinen", in: Feldkamp, Jörg / Dresler, Achim (Eds): *120 Jahre Wanderer 1885–2005. Ein Unternehmen aus Chemnitz und seine Geschichte in der aktuellen Forschung*, Chemnitz 2004, p. 110–119.

Maier, Lorenz: *Die Geschichte der Kienzle Addier- und Buchungsmaschinen*, Manuskript 1971 (Ackermann private archive).

Müller, Armin: *Kienzle. Ein deutsches Industrieunternehmen im 20. Jahrhundert*, Stuttgart 2011.

Müller, Armin: "Kienzle versus Nixdorf. Kooperation und Konkurrenz zweier großer deutscher Computerhersteller", in: *Westfälische Zeitschrift* 162 (2012), p. 305–327.

Müller, Armin: "Stiller Wächter", in: *Last & Kraft* 22/3 (2013), p. 64–70.

Müller, Armin: "Innovation: Wissensmanagement in den Aufbruchsjahren der deutschen Computerindustrie", in: Wischermann, Clemens / Patzel-Mattern, Katja / Lutz, Martin / Jungkind, Thilo (Eds): *Studienbuch institutionelle Wirtschafts- und Unternehmensgeschichte*, Stuttgart 2015, p. 258–272.

Päch, Susanne: *Die D2-Story: Mobilkommunikation. Aufbruch in den Wettbewerb*, Düsseldorf 1994.

Polzin, Gerwalt: "Der Blick in die Vergangenheit", in: *Kienzle Blätter* 5 (1960), p. 8–11.

Reese, Martin: "Lorenz Maier (1906–1977) – erfolgreicher Rechenmaschinenentwickler", in: *Historische Bürowelt* 75 (2007), p. 16–20.

Rösner, Andreas: *Die Wettbewerbsverhältnisse auf dem Markt für elektronische Datenverarbeitungsanlagen in der Bundesrepublik Deutschland*, Berlin 1978.

Schierz, J.: "Die westdeutsche Büromaschinenindustrie – Dynamik und strukturelle Wandlung", in: *Mitteilungen des Rheinisch-Westfälischen Instituts für Wirtschaftsforschung* 9/6 (1958), p. 105–126.

Schmid, Hans-Henrich: *Lexikon der Deutschen Uhrenindustrie 1850–1980*, Villingen-Schwenningen 2005.

Schneider, Michael C.: *Unternehmensstrategien zwischen Weltwirtschaftskrise und Kriegswirtschaft. Chemnitzer Maschinenbauindustrie in der NS-Zeit 1933–1945*, Essen 2005.