

Thinking Ahead.

Lenze 60 Years On, 1947 – 2007



1951

60
YEARS

Lenze

1947

Dear Reader,



Sixty years ago Hans Lenze founded the company “Stahlkontor Weser GmbH”. It was only later that his companies bore the name “Lenze”. Courage and entrepreneurial vision characterised him and his family in the midst of the rubble of post-war Germany. “Though there is gold to be had in trade, one should also make an effort in industry. But only if one produces an article that promises success from the very beginning and for which there is a genuine market demand,” wrote Hans Lenze at the time.

In 1948 he discovered the product for which he had been searching: the Alquist winder. Lenze acquired the exclusive licence for production of this innovative three-phase AC motor. In February 1950, the first Alquists left the temporary plant in Hamelin. Today, 60 years on, we can present our first PC-based automation system including control, visualisation and our own drive technology. “A logical development”, as it is put in this brochure. It is shown here how our enterprise has developed since 1947, and what the driving and stabilising forces were and are. “People make history”: We can look at our history and at the people who have shaped it with pride. Several generations of employees have played a part in it, as have the generations of the founding family. We sincerely thank all employees for the contributions that they have made, and the Belling family for their support and trust.

A successful, lasting company history needs people who think ahead. With their accumulated entrepreneurial experience, family companies provide an excellent basis for such people. Our “thinking ahead” presents you with an impression of the reciprocal relationship between family and enterprise through 60 years.

We are an innovative company, and as such we also need to recall our achievements and strengths. In this respect, our company history will activate the energy needed for a vision for the future. With our products and services, we want to shape the future successfully for our customers, business partners and staff. In so doing, we have one goal:

The best machines and production facilities around the world use Lenze.

We hope you enjoy the trip through the history of our family company.

Elisabeth Belling

Dr. Erhard Tellbüscher

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Group 47 of German Industry

In December 1967, the prominent German newspaper *Frankfurter Allgemeine Zeitung* published an article entitled “Twenty Years Afterwards”. It dealt with companies that had been founded in 1947 and were now celebrating their twentieth anniversaries. To this end, the paper had written all 181 companies listed in the handbook of major enterprises which had been established in 1947. Of these companies, 61, including Lenze, provided more detailed information about their history since 1947.

The article treated the question as to whether the common initial situation – establishment shortly after “zero hour” in Germany, in the face of absolute defeat – had been followed by a common history: was there a pronounced pioneering spirit, a specific resourcefulness that distinguished companies founded in 1947 from others? The author of the article, Peter Hort, did not leave the question unanswered very long. In his opinion, there was a “Group 1947 of German Industry” across the limits of the various business sectors, and its members,

after a “tempestuous youth”, had secured their standing and livelihood within German industry.

The echo of the name “Group 47” in German literature was not a matter of chance, and it also conveyed a sceptical note. The writers and critics who had started meeting in 1947 at the invitation of Hans Werner Richter constituted the elite of German literature in 1967. Having started with the aim of healing the destruction of the language by National Socialism by promoting simpler, more matter-of-fact literary forms, from the beginning of the sixties the members of Group 47 attracted increasing, ultimately biting criticism. After the successes of Heinrich Böll, Günter Grass, Martin Walser and other members of the group, they were accused of having made themselves comfortable in post-war society instead of continuing to strive for change to society. Since this dispute was also waged internally and not resolved, Group 47 came to a sudden end. In October 1967 the last meeting took place, darkened by fierce quarrels.

1947



Hans Lenze takes over the Mannesmann Group's domestic trading firm, the **Stahlkontor Weser GmbH**, in Hamelin. It is the origin of today's Lenze Group. The company has 20 employees.

1948

The development of a diversified array of products in the field of **mechanical drive systems** begins. Initially, products are manufactured under licence, but own developments soon follow.

The breakdown of Group 47 formed the background for the label “Group 47 of German Industry” in the article in the *Frankfurter Allgemeine*. In some respects, similar tendencies could be discerned in this “Group” to those in its namesake. Not only did the first economic downturn in 1966-67 give rise to some frenetic reactions in economic policy, it also confronted the industrialists with the question as to whether they had not rested on the laurels that they had won thanks to the German economic miracle after the arduous reconstruction. There were even some who saw the waning of entrepreneurial initiative as the cause of the slump in growth.

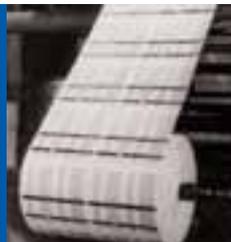
The article in the *Frankfurter Allgemeine* left the question of the diminishing initiative open, indeed it had to leave it open. Rather, the author placed greater emphasis on the point that the enterprises that had been founded in 1947 did indeed have much in common, and not only in the initial phase of development.

Representative of other enterprises that were also founded in the years immediately following the Second World War, they had instilled a new spirit into the German economy, the spirit that sustained the German economic miracle. Due to their common ground, they had had similar problems to struggle with, although in the course of time the distinctive features of the various business sectors increasingly came to the fore.

What was this common ground, and what was the nature of the problems that Group 47 was confronted with? How were they solved? Now that not only twenty, but three times twenty years have passed, it is interesting to look at them again. After that – as a prelude to the appreciation of Lenze on the sixtieth anniversary of its establishment – we will look into the question as to whether the common ground is still significant, or has now completely vanished. What has become of Group 47 of German Industry in 2007?

1949

Exclusive production of the **Alquist winder** begins. A special electric motor that for the first time makes it possible to wind fabric or paper webs, wires or sheeting at the outlet of a production machine.



Group 47 of German Industry

Even if the exact date of establishment is what is usually celebrated, it is not really decisive for the development of an enterprise. This is different in the case of companies founded in 1947. They arose two years after the absolute defeat of National Socialist Germany, and for at least the first decade, their development was determined by the consequences of the war and of defeat. Material destruction as well as the controls imposed by the occupying powers minimised the latitude open to entrepreneurs to such an extent that even two years after the end of the war it was audacious to found a business.

The adversities immediately after the war also determined the selection of the sector for newly established companies: 18 of the new enterprises were textile, shoe and clothing manufacturers. The destruction of cities severely limited the selection of locations for the enterprises. All major cities had suffered 80 to 90 percent destruction, and due to the lack of housing they impeded any influx in

population until well into the fifties, even resisting the return of their own evacuees. The only feasible sites were towns and localities that had not suffered very much from the war or where armament factories subject to liquidation were located. Hamelin was a place that fulfilled both conditions: in contrast to the larger cities in the region, Paderborn, Hildesheim and, in particular, Hanover, it had suffered hardly any damage, and the properties of the few armourers were cleared for use one after the other; at the beginning of the fifties, Lenze moved into the “armament plants” of Franz Kaminski’s waggon construction firm.

Most of the entrepreneurs in Group 47 thus played a pioneering role in two senses. They founded a new enterprise, and they were directed by the authorities into towns and communities that had previously been of a rural character. Lampertheim, Sylbach, Fröndenberg, Sande, Borghorst, Beverungen, Weissenhorn, Lerbeck, St. Ingbert, Wanfried, Wemding, Gefrees and, of course, Hamelin – these were

1951

The Simplabelt gear is incorporated into the range of products; it is a continuously adjustable wide v-belt variable speed drive, and is still in use worldwide in machine and tool making.



1952

The Simplabelt gear is presented for the first time at the German Industrial Exhibition in Hanover, where it roused considerable interest. The subsequent orders made a new production site necessary.

the addresses of the newly established production plants; classical industrial cities such as Gelsenkirchen, Mannheim, Ulm and Hanover were much rarer. Group 47 was thus the pioneer of the industrialisation of the provincial parts of western Germany. The pioneering role was forced upon them by the destruction of the major cities, but it remained a characteristic feature of these enterprises. Not only did they have to set up operations, they also had to create regional networks in which they coordinated their interests with other businesses and established supply contacts. Marked visibility in regional and national associations was a characteristic common to the enterprises of Group 47. Furthermore, they were not in a position to avail themselves of the industrial tradition of major cities with a reservoir of skilled workers, but rather were constrained to create a basis for industrial activity outside of their premises. Vocational training and in general the enhancement of the quality of life in the newly established industry locations were in the vital interest of the enterprises that were founded on the peripheries of the

old industrial regions after the Second World War.

In the search for qualified employees, one of the most bitter consequences of the war had a positive aspect for all enterprises in Germany. The expulsion of the German population from the Prussian provinces east of the rivers Oder and Neisse and from east and south-east European countries brought a large number of well trained, and above all highly motivated people into the western occupation zones. Due to the destruction of the major cities, they, too, were directed to smaller towns and communities where they encountered the new industries, which thus gained a certain advantage over their more established competitors in the old industrial cities.

Moreover, it often happened that entrepreneurs who had suffered expulsion searched, together with a core team of their old workforce, for a site to restart operations. Since the allies otherwise dispersed all concentrations of refugees of the same origin, establishing a

1953

Hans Lenze receives the Order of Merit of the Federal Republic of Germany for his entrepreneurial activities.



Group 47 of German Industry

business was often the only way to maintain social structures. The greater part of the textile and clothing companies founded in 1947 were the successors to companies in the traditional industrial regions in Silesia and Bohemia. Above all, the economy of the city of Gelsenkirchen, where numerous clothing manufacturers set up operations, was advanced by businesses established by expelled persons. However, growth was not restricted to industries from the east: Lenze emerged from the transfer of the company Mannesmann Export GmbH, which had already come to Hamelin from Düsseldorf in 1943.

In 1947 there was, however, a second influx of entrepreneurs in addition to refugees' factories. The expropriations in the Soviet occupation zone impelled numerous entrepreneurs to flee. Thus, among the companies set up in 1947 there were a number of factories in the tradition of the Saxon metal-working industry. The expansion of the companies established in 1947 and of the West German economy in

general was based on a constant influx of well qualified expelled persons and refugees.

Whereas well qualified skilled workers were available for relatively low wages until well into the sixties, capital and equipment remained the Achilles heel of the companies established in 1947. Machines had to be financed and the rent for buildings had to be earned. The most critical point was the procurement of raw materials. Regardless of the sector in which they ultimately established operations, almost all of the companies of 1947 originally used what was left over from the war. Hans Lenze's business idea was to trade in roller bearings, instruments, motors and drives acquired from the warehouses of old armament plants or recovered from bombed factories. Most other machine builders started as repair shops, and achieved by this means the basis for their own production.

1957

The machine-building factory **Maschinenfabrik Hans Lenze KG** is established in Bösingfeld/Extertal. An administration building and the first factory building for gears are erected. 200 employees work for Lenze.

1959

Hans Lenze in conversation with Ludwig Erhard, then minister for economics, at the Hanover trade fair.

Electromagnetic clutches and brakes are incorporated into the product range; they later achieve success under the name **Simplatroll**.



But even after the first successes had been achieved, the companies that had begun with at best makeshift production facilities still lagged behind the older firms: in the fifties and sixties they typically went through two major waves of investment. The first brought the move from provisional quarters into buildings making a transition to genuinely industrial production possible – this step was generally taken shortly after the currency reform; the second involved the purchase of land where buildings were erected that were suitable for the specific needs of the sector concerned. With the move from the premises in the Wesertal electricity plant in Hamelin to the leased production facilities on Werkstrasse in 1950, and then to the new factories in Bösingfeld and Gross Berkel in 1959 and 1962, Lenze matched this pattern quite closely.

However, the move to new plants and often to a more favourable location limited the latitude for investment in machines and the development of new products. Low capital remained a

characteristic of the companies of Group 47. When brand new facilities and plants were erected everywhere in the sixties, in some cases it turned out in retrospect to be a harbinger of major crises resulting in the bankruptcy of some of these newly established companies.

Lack of capital together with the desire not to place the young company at the mercy of anonymous investors too early is a feature of these companies that has survived to this day: the bond to the founding family. Certainly, the founding of any company involves an additional strain on the founders and their families; but the extent to which the assets of the families of Group 47 were dedicated to the companies is conspicuous. To acquire capital, family jewels, furniture and other articles of value – in the case of Lenze, the family residence in Düsseldorf – were sold. The family bond was not, however, restricted to using the family assets to provide the owners' equity for the companies. The lack of capital also meant that henceforth family members worked in the

1960

Commencement of production of the electromagnetic speed transformer **Elcotron**; in terms of turnover, it was the most significant of the new products in the early sixties. With this product, Lenze entered the market for **controller technology**.



Group 47 of German Industry

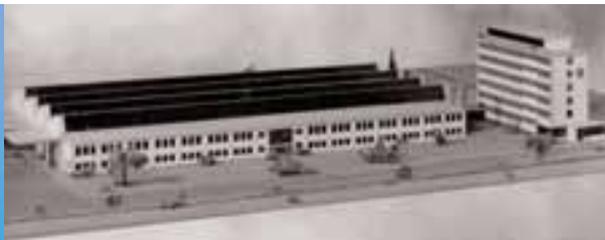
company. This applied in particular to the wives – quite apart from the fact that in Group 47 there are some companies that were founded and controlled by women.

The attention of the founding family to the company was no guarantee that it would survive the economic vicissitudes after 1947. In this group, too, there were patriarchs who did not want to deviate from the strategy that they had selected and strained the companies with a certain obstinacy. Nonetheless, the family bond was an asset that helped to survive the economic fluctuations after 1947. Family cohesion made it possible to overcome difficult situations, and helped find new paths for the companies by accepting radical solutions. Though not all of the family companies of 1947 have survived to this day, it is conspicuous that in five of the six largest (in terms of today's size), the founding family is still the major shareholder and in some cases – in the second or third generation – manages the operational business: in addition to Lenze, this

applies to the clothing manufacturer F.W. Brinkmann GmbH, the wood wholesaler Carl Götz GmbH, Helsa Werke Helmut Sandler GmbH & Co KG, Bernstein AG, and the heating and refrigeration company Dr. Starck & Co. Gesellschaft für Wärme- und Kältetechnik mbH. In total, of the 23 companies of Group 47 that are listed in the handbook of major enterprises or in the handbook of medium-sized enterprises for 2006, 16 can be regarded as family businesses in the strict sense.

But the most conspicuous tendency in the development in the forty years since the *Frankfurter Allgemeine* invented “Group 47 of German Industry” is the enormous increase in productivity in all companies. Whereas the *Frankfurter Allgemeine* reported on a total of 67,000 people who generated a turnover of 3.2 thousand million DM in 1966, the “surviving” firms for which data are available had a turnover of more than 2.2 thousand million Euro with 7,300 employees in 2003-2004. Even if only the firms that have remained successful

1962



The order books are full. A new plant with an initial production space of 5,000 sq.m and an administration building are erected in Gross Berkel near Hamelin, where the headquarters is located today. The additional capacity makes it possible to increase the number of employees by a third.

Development of an electronic **controller** (model VT) with thyristors as high-performance semiconductors to control eddy current clutches.

until today are considered and distortion due to inflation is factored out, there has been nearly a three-fold increase in productivity per person in the past forty years.

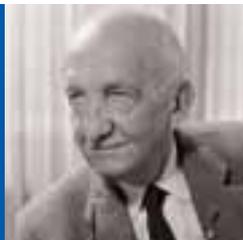
The role of Lenze in the concert of the firms established in 1947 can be clearly identified: in 1966, the Lenze Group had 800 employees and a turnover of 40 million DM, placing it in the upper third of the Group 47, but far behind the major clothing firms and Nordmende. In the following years, Lenze proved to be more successful than all others in taking advantage of the chances open to the German economy. Lenze AG is today by a wide margin the most sizeable company of Group 47 and has the largest turnover.

If we ask why precisely this firm stands out in this group, it seems that it is above all the tenacious adherence to the idea of the family business together with constant modernisation of the firm in terms of technology, business practices and organisation. The structure of the firm, its ability to adapt its organisation and management to its size and the changing tasks, shall therefore be examined below in greater detail.

1963

On 14 June, Hans Lenze dies at the age of 73. His daughter Elisabeth Belling and her husband Alfred succeed him as individually liable shareholders. Lenze remains a family company.

Lenze begins to develop **spring-operated brakes**.



In Germany and in other European countries, **distribution contacts** are established and sales agents commissioned to market Lenze products.

There are also business contacts to India, Israel, Japan, Canada, Mexico, Peru, the Philippines, South Africa, Uruguay, USA and Venezuela.



The Spirit of the Family Business

In its history since 1947, six men have left their mark on Lenze. Hans Lenze founded the firm and directed it until his death in 1963. He was followed by Alfred Belling, who headed the company until his death in 1981; starting in the sixties he shared the burden with Heinz Maroldt, the director of the plant in Bösingfeld/Extertal. Rolf Herbert was chairman of the managing board of Lenze between 1986 and 1996, followed by Peter Lohse, the first non-member of the family to head the business. Finally, since 2002 Erhard Tellbüscher has been the chairman of the board of the Lenze Holding, which in 2001 was transformed into an Aktiengesellschaft, a joint-stock company under German law. Each of these men had or has a decisive influence on the strategy of the firm in his own way, but only for certain phases of its history. They all stood or stand face-to-face with Elisabeth Belling, who personifies the sixty-year history of Lenze. Hans Lenze's daughter, Alfred Belling's wife and Rolf Herbert's mother-in-law, owner of the com-

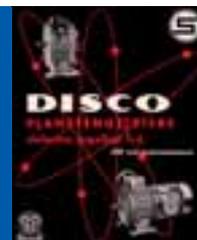
pany since her father's death, herself director of the management board from 1981 to 1986: Elisabeth Belling has borne responsibility through all the ups and downs in the company's history. She was the model of the family businesswoman in the best sense of the word, placing the interests of the firm at the centre of her thinking and acting. Without the stamina that Elisabeth Belling has demonstrated for sixty years, firms would not be able to survive for more than a generation. The roles of the six men and of Elisabeth Belling in shaping Lenze as a family business shall therefore be discussed here.

The most important role was naturally played by Hans Lenze. Born in 1890, he had already had a long and successful career as a businessman when on 5 November 1947 he established the Stahlkontor Weser GmbH, the company from which today's Lenze AG emerged. Lenze took commercial training in his home city, Dortmund, and had his first experience on the

1964

Lenze introduces another successful product:
the DISCO variable speed drive.

Development of
1-quadrant DC speed controllers.



job in the Spanish cork industry before taking part in the First World War as an officer from 1914 on. He held senior management positions in various firms in the Ruhr area in the twenties, and set up his own commercial business for the first time in 1931, before he was appointed in 1936 to head the newly founded Mannesmann Export GmbH (Mannex). Lenze remained with Mannesmann as director until he established his own firm.

With a view to his long experience as a businessman, Lenze's entrepreneurial strategy is easy to understand: The headquarters of Mannex had been transferred to Hamelin in 1943 due to the war, and three weeks after the end of the war Lenze started to sell off the inventory from arms production that had accumulated in the Hamelin warehouse. The turnover was huge, and at the same time Lenze discovered that several other companies had stores that could hardly be used due to the destruction of their organisation as a result of

the war. Lenze's business idea was to make use of the business contacts that he had established domestically and abroad in the course of almost forty years, and to this end to acquire the Stahlkontor (roughly "steel bureau"), a Mannex subsidiary through which inventory business was transacted.

Initially, Lenze did not have industrial production in mind. However, after the currency reform it was the obvious thing to do. Now newly manufactured goods flooded onto the market, undermining trade with used motors, containers, gearboxes and ball bearings since in view of the sudden limitation of the money supply the new products were clearly preferable. At the same time, Mannesmann AG regarded the business of their former export director as annoying competition which they attempted to deal with by threatening to revoke the 1947 sales contract. In this critical situation, Lenze was able on business trips to Switzerland in 1948 and 1950 to acquire

1966

Construction of Plant II in Bösingfeld.



1967

With 850 employees, the Lenze Group makes an annualised turnover of about 40 million DM.

The Spirit of the Family Business

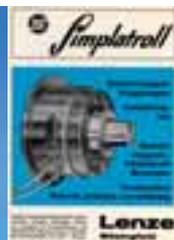
licences for two inventions which were both innovations of the continuously variable drive: the Alquist winder, an electric motor with automatic adjustment of the speed to torque in winding and unwinding by means of a special armature structure, and an expansion pulley gear, the Simplabelt gear, by means of which the speed transmission of electric motors could be regulated. The two inventions were so promising that they provided Lenze with a solution to his predicament.

When production of the Alquist winder and the Simplabelt gear was set up in the leased plant on Werftstrasse in Hamelin, Hans Lenze was sixty years old. By contrast, most other entrepreneurs – including those in Group 47 – founded their businesses at a young age and passed them on their sons or daughters after a relatively long time. Lenze's age was quite in keeping with the original idea of establishing a trading company on the basis of his years of experience as a businessman, but not with the

initiation of industrial production with which he had no experience. Moreover, the family could only be mobilised to a limited extent for the reorientation of Stahlkontor Weser as an industrial enterprise. Lenze had married in 1917 and had had three children with his wife Clara, née Leder: Wilfried, Lore and Elisabeth Lenze. Wilfried Lenze, born in 1918, was killed in action in 1943 as an officer in the war against the Soviet Union. Lore, the elder of the daughters, was born in 1919 and married at the age of 18; at first she moved with her husband and children to Poznań, and spent some time in Hamelin after the end of the war, then to move with her family to a place near Bonn when her husband was appointed to the new federal administration as a ministerial official.

In establishing the enterprise Lenze was backed by his wife and the family of his younger daughter Elisabeth. Clara Lenze herself stemmed from an industrialist family, and with the sale of the family's residence in Düsseldorf in

1968



The development and production of **electronic drive controllers** is started up.

135,000 orders for Simplatroll electromagnetic clutches and brakes.

1969



The **Wesercont** digital meter for measuring the length of material cuts on the Wesercont winding machine is introduced.

1947 she contributed her provisions for old age for the purchase of Stahlkontor; later she became a dormant partner of the factory in Bösingfeld, thus bearing a full share of the risk of establishing business. Ultimately, however, the burden of restructuring Stahlkontor Weser as an industrial enterprise was borne by Elisabeth and Alfred Belling. Alfred Belling, born in 1918 to a Stettin business family, had married Elisabeth Lenze in 1944, and after being released from confinement as a prisoner of war in 1946 he took commercial training. From 1952 on, he was the deputy managing director of Stahlkontor Weser under Hans Lenze.

Alfred and Elisabeth Belling were more in keeping with the model of the typical founder of a company: a young couple whose children were born – Babette in 1947 and Hans in 1952 – at a time when the company was also beginning to flourish. Alfred Belling managed daily business in the up-and-coming industrial enterprise, whereas Hans Lenze, who still regard-

ed himself primarily as a merchant, acted as the agent of the Hüttenwerke Oberhausen and traded with machines made by various manufacturers. “The boss is not often present,” reported a mock newspaper printed for a festivity in the fifties. However, Lenze continued to insist on stipulating the basic principles of management in Stahlkontor Weser alone, something that could not be done without building up tension. Though there are only a few clues that Alfred Belling’s latitude for action had to be repeatedly redefined in the course of the fifties, the evidence that we have is tangible. The establishment of the trading company Lenze & Co., a subsidiary company of Stahlkontor, in 1955 is one such piece of evidence. The fact that the plant in Bösingfeld was originally supposed to be established with the name Belling & Co., but was then called Maschinenfabrik Hans Lenze is a second clue.

1971

The 70s are decisive for the **internationalisation of the Lenze Group**. In 1971, the foundation stone for Lenze drive technology in Austria is laid with the establishment of Simplana Antriebe GmbH. In the same year, Lenze Holland and the French company Lenze S.A. start up operations.



Commencement of development of **stepping motor controllers** at Lenze in Alverdisen.

Lenze introduces a **drive controller for central winders**.

The Spirit of the Family Business

Between the father-in-law and the son-in-law stood Elisabeth Belling. During the Second World War, she was conscripted to work as a nurse. After her sister had left the family home at an early age and her brother had died, she took it upon herself to help her parents, but insisted on leaving the Lenze household with her own family. It was she who, together with her mother, mediated between her father and her husband, and beyond that, ensured that at Lenze a productive division of labour between young and old was developed, one that left its mark on the family character of the company and how it was perceived.

Lenze had two images to present itself with internally and externally. Photographs of exhibition stalls in the fifties always show the same image: Elisabeth and Alfred Belling – a young and attractive couple, cheerful and concentrated, in conversation with customers or demonstrating products: the model of a young and vigorous enterprise with a future. Hans

Lenze provided the other image: an experienced businessman, unwavering in his values, radiating reliability from every fibre. A customer could decide for himself what perception of Lenze he responded to: he was equally well served with either of them – but if vitality was misunderstood as impetuosity, solidity as immobility, then the images of old and young were there as mutual correctives.

The same perception took effect internally. Hans Lenze was disposed to formality, and was the undisputed father figure in the company, the one who represented principles of conduct and behaviour, demanded self-reliance and placed trust in people, and precisely for these reasons kept a certain distance. Alfred and Elisabeth Belling, by contrast, were close to the staff, knew about their weaknesses and strengths, motivated them in everyday work, spurred the company on. This allocation of roles, which promoted loyalty and creativity in equal measure, gave rise to a collective ethos

1972



Together with their staff, the Belling family celebrates the 25th anniversary of Stahlkontor.



A joint venture with the Japanese Miki company gives Lenze contact to semiconductor manufacturers in Japan and southeast Asia. With thyristors (semiconductor gates), the electronic control devices can be made smaller, more reliable and more efficient.

Development of multi-quadrant controllers (model GSR).

that was responsible for the staff's exceptionally great motivation. From the middle of the fifties, Lenze could advertise for itself as a family company not only because there was a family behind it, but also because, as it was put in one advertisement, the employees "work with each other as in a family."

Hans Lenze set the generally conservative growth strategy in the fifties. On founding the company, he had included a business partner of many years standing as a dormant partner; his capital contribution remained until 1968. Despite the upswing for Stahlkontor products, Lenze only decided to build a second plant in Bösingfeld in 1958. He reluctantly accepted the loans with a reduced interest rate which were offered for establishing premises in Lippe; he attended to enhancing the own equity base, and cultivated contacts to private banking institutions inasmuch as a personal bond with the provider of capital seemed to him to be indispensable. Moreover, Lenze saw to it that

the company was firmly anchored in the region. He was co-founder of the employers' association of companies in the Weser mountains region, and also established close contact to the companies that were established in Hamelin after the war, in particular to the AEG meter factory. Similarly, he established ties to the Polytechnical College in Lage, which was a reservoir of well trained engineers in the region until the seventies. However, the clearest expression of his goal of embedding his company in a network of relationships to manifest the respectability of the enterprise and its anchoring in the region and to demonstrate the reliability and solidity of his strategy consisted in the voluntary establishment of a company advisory board: Hans Lenze appointed his most important partners, the managing director of the Lampe Bank in Bielefeld, Hans Heuer, and the director of the AEG meter factory, Wilhelm Ziegenbein, to the board.

1973

With the consolidation of the two electronics divisions, Stahlkontor und Lenze, in the company "Lenze Elektronische Antriebstechnik", **electronic development** is concentrated in Gross Berkel. Automation of production is initiated.



1974

Simplana-Bachofen AG is founded in Zürich (in 1984 renamed Lenze-Bachofen AG); it belongs to Bachofen Holding and Lenze.

Launch of a **single-quadrant DC speed controller with a capacity of up to 7.5 kW** for straight-line drives and central winders.

The Spirit of the Family Business

In retrospect, with his cautious strategy aiming at stabilisation of what had been attained, Lenze built the basis for the dynamic expansion of the company in the sixties and seventies. In comparison with other companies in Group 47, the Lenze Group was still quite small at the turn of the decade to the sixties. In 1962, the year before Hans Lenze's death, almost 480 people were working in the two plants in Bösingfeld and Hamelin/Gross Berkel, making a turnover of about 20 million DM. And this growth was not financed from outside, rather the resources for new construction were primarily derived from retained profits. Lenze started the expansion phase with a secure basis in equity capital, and had enough latitude to make the adjustments that proved necessary despite the economic upswing in the sixties and seventies. However, at the end of his life, Hans Lenze was reluctant to recognise that he had in fact only created the basis for what was yet to come. In keeping with his self-image as the company patriarch, he held the

view that the enterprise was so closely linked to him that it would have to pass over to other owners on his death. This is how his intention of selling the company to the Quandt Group has to be interpreted. Many an other company founder also contemplated such a measure even though there was no economic necessity. However, his daughter Elisabeth succeeded in convincing him of a better course. This was the moment at which the family business was emancipated from the person of its founder.

After the death of Hans Lenze, the destiny of the family business lay in the hands of Alfred and Elisabeth Belling, who in 1961 had their second son, Kurt Nikolaus. Elisabeth Belling, the proprietor of the company, and Alfred Belling, its managing director, also introduced a division of labour in various respects. Alfred Belling was responsible for daily business, whereas Elisabeth Belling took care of the spirit of the family enterprise, ensured good conduct and represented the company to business

1976

Production of **worm gears** starts.



1977

The first frequency inverter for **controlling three-phase AC motors** comes on the market; it makes a simple speed adjustment in machine building possible.

With 1,100 employees, Lenze makes a turnover of 120 million DM.



partners and customers. Together they decided on the company's strategic orientation.

Whereas Hans Lenze had abstained from contact with major banks, the Stahlkontor's move to Gross Berkel and the extension to the plants in Bösingfeld and Gross Berkel in the sixties and seventies were financed with borrowed capital which it was possible to mobilise due to the company's increased significance beyond the confines of its region. The cooperation with the Deutsche Bank was reflected in the fact that in 1980 Heyko Linnemann, the director of the Deutsche Bank in Hanover, succeeded Hans Heuer, who had been appointed chairman of the advisory board by Hans Lenze; since this time, there has always been a representative of the Deutsche Bank on the advisory board or supervisory board, the position also having been held by Hans Detlev von Garnier and Jürgen Krumnow. The Belling family displayed the company's strength as an innovative enterprise with good earnings, and opened

the company to the outside world. Starting at the beginning of the sixties, Elisabeth and Alfred Belling established a network of sales companies with which the domestic and foreign markets were developed.

At the same time, they accelerated the construction of production facilities beyond the area served by the plants in Gross Berkel und Bösingfeld, which from the seventies on belonged to the newly established district municipal council Extertal. The cause in this case was the economic upswing in the seventies. The labour market was so depleted that Lenze had to establish operations in regions with free manpower potential. A machine factory was acquired in Gamsen in what was called the "[Soviet] zone periphery", the economically disadvantaged area near the border of the German Democratic Republic, and the firm Mönninghoff in the Ruhr area was taken over. Lenze's first foreign location followed when it took over a manufacturer of electric motors in

1978



Third phase of construction of the plant in Gross Berkel.

1979



Alfred Belling receives the Order of Merit of the Federal Republic of Germany for his entrepreneurial achievements.

The Spirit of the Family Business

Switzerland. All three plants had to be sold in the economically difficult phase in the eighties – both the electric motor production in Switzerland and the worm-shaft production in Gamsen were transferred to Extertal, while the plant in the Ruhr area was sold to Babette Belling's first husband. However, for Lenze this was a valuable experience that made itself felt when in the nineties the establishment of a national and international marketing and production network was accelerated. Whereas his father-in-law was active on the regional level, Alfred Belling also represented the company in the national trade association, the association of German manufacturers of machinery and industrial equipment (VDMA). By the turn of the decade to the eighties, he had risen to the inner circle of the management team of this association – just as much a sign of Lenze's expansion of activities beyond the regional level as was the establishment of the sales companies.

Nonetheless, Alfred and Elisabeth Belling were no less interested than Hans Lenze in the entrenchment of the company in the region, and had already made a contribution to this in a less formal manner in the fifties. Lenze maintained supply contacts to numerous friendly companies in Hamelin; its strong regional roots gave it a considerable advantage in the choice of employees and managers. In the sixties and seventies, Lenze was able to gain several talented engineers, especially for the plant in Bösingfeld, who did not want to leave the region.

In this connection, the first form of employee participation at Lenze was developed. The establishment of the sales companies only had a prospect of success if the employees received further incentives for their gruelling work: for this reason, the engineers and commercial managers who were engaged in the sales companies often had a share in them.

1980

The Group also gains a foothold in the USA with **Lenze Corporation**, founded in Fairfield/New Jersey in 1980.

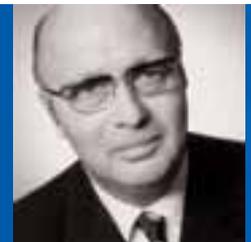
Extension of the buildings in Bösingfeld/Extertal to Plant III. **Gearboxes** are produced here.



1981

Alfred Belling dies, Elisabeth Belling assumes general management.

The further development of the **Lenze DC speed controller** makes progress.



However, the history of the group of companies between the sixties and the eighties cannot be described in full without taking another man into consideration. Heinz Maroldt was the first to play a central role in the company without belonging to the family. He was born in 1923 in Thuringia, and came to Lenze in 1952. He had trained in engineering at a technical college, and was of great service to the company in the technical improvement of its main product, the Simplabelt gear, as well as Simplatroll, the single-disc clutch and brake produced under licence since the end of the fifties. Due to his commitment, he grew into a vacancy that for the time being no family member could occupy. Under his technical leadership, the plant in Bösingfeld came to be the economic centre of the Lenze Group with the production of Simplabelt, Simplatroll and another product licence that was acquired at the beginning of the sixties, the Disco drive.

When Maroldt was appointed director of the Bösingfeld plant, Hans Lenze explicitly declared that he had a special relationship of trust and loyalty with him. Maroldt used this declaration of loyalty until his retirement in 1988 as the justification for his pre-eminent status in the enterprise as a whole: ultimately, this was based on the fact that he saw himself in the service of a company that worked together as a family does. Despite his long service with the company, Walther Schmitt, the technical director of Alquist production in the Gross Berkel plant, was never able to rise to such a position.

Maroldt insisted on the closest possible teamwork among members of management, a high degree of individual responsibility and great personal commitment, even though this was to the detriment of employee representation: reorganising Lenze as a joint-stock company foundered on Maroldt's resistance to workers' representative participation, which would then have been required. However, the recruitment

1983

Under Elisabeth Belling's leadership, the restructuring of the company is completed in 1983.



The first hybrid circuitry for frequency inverters is developed, leading to reduced unit sizes.

The Spirit of the Family Business

of management personnel in Bösingfeld/ Extertal, where he took his own case as the model, the increasing dominance of Lenze in the district municipality and the successes of the Bösingfeld employees further deepened the cultural difference between the Lenze plants: starting in the sixties, competition developed between the original plant in Gross Berkel and the spin-off plant in Bösingfeld, which had only been established in 1958; and the competition was not always fruitful.

Lenze's sales companies were also developed with Heinz Maroldt's participation, and for this reason he was among the first members of staff to be offered a share. In Maroldt's holdings, however, the limits of mobilisation of a non-member of the family for the family business become manifest. He had a share in some foreign and all domestic sales companies, and in one of them, Südtechnik Maroldt & Co., he even had a majority share. When, on reaching the age of retirement, he was pen-

sioned, the latter and the Lenze sales company in Great Britain withdrew from the Lenze group of companies as compensation for Maroldt's other holdings.

After the solid build-up in the fifties, the sixties were a time of dynamic upswing. At the climax in 1968, the Lenze Group reached a turnover of 46 million DM and a net operating margin of 21.4 percent with a total of almost 1000 employees. The team Alfred and Elisabeth Belling together with Heinz Maroldt benefited in equal measure from highly motivated employees and the economic upswing. But at the end of this rush forward which, despite some setbacks, lasted until Alfred Belling's early death in 1981, there was not enough energy left to consolidate the company so that new goals could be pursued. Though the construction of the "company of the future" was a concern of Belling's in the last years of his life, the statement of a long-term strategy, which was a palpable need from the beginning of the

1984

The name Lenze becomes the **company trademark**.

From now on all companies in the Group have the uniform identifier "Lenze" in their names.



seventies on, did not come to be because capital reserves were continually invested in innumerable projects with decreasing coordination.

Soon after Belling's death, Lenze met with a serious crisis that was only rectified in the middle of the nineties. Elisabeth Belling assumed general management. Under her leadership, difficult obstacles were overcome in the eighties: the sale of the plants in Switzerland, in Bochum in the Ruhr area, and in Gamsen, together with the transfer of production to new operations in Bösingfeld/Extetal. The electronic drives division overcame initial technical difficulties, whereas the unprofitable machine building operations in Gross Berkel were sold off. In 1984, the companies in the group were given a uniform company name referring to the founder, and a uniform appearance, the basic features of which have been preserved up to today.

The directors that were engaged for day-to-day business, however, proved not to be equal to

the demands. Coming from outside, they created rigid hierarchies where previously self-reliant, responsible action had been the rule, centralised management where creative collaboration was necessary, and established a lord-of-the-manor mentality. Above all, they saw it as their task to eliminate Lenze's seeming provincialism as a necessary preliminary to a comeback, although they thus applied the axe to a central element of the company's self-image. The climate in the company became manifestly worse.

In 1986-87 the crisis reached its climax: Lenze's celebration of the fortieth anniversary of its establishment was restrained – as was the case in many other companies in Group 47. Despite a considerable effort with huge investments, Lenze fell far short of the expected turnover. In numerous meetings, some of them quite dramatic, Elisabeth Belling was nonetheless able to convince the advisory board and the family to weather out the crisis and not to give up. The hope for an improvement of the

1986



Elisabeth Belling ends her operative activities, her son-in-law Dr. Rolf Herbert succeeds her as the chairman of management.

1987

At Lenze, the logical follow-up on frequency inverters is developed, ushering in the **age of servo technology** (servo controllers and servo motors).

Frequency inverters are equipped with **microprocessors** for the first time.

Lenze has 1,600 employees and makes a turnover of 250 million DM.

The Spirit of the Family Business

situation was enhanced inasmuch as in the midst of the crisis the opportunity came up to appoint a director of management who could revive the spirit of the family enterprise and at the same time prepare it for the step towards new growth.

Babette Belling's second marriage was to Rolf Herbert. Born in 1931, he regrettably died in 2007; after a doctorate in chemistry, he had had a long and successful career with Sachtleben AG. He already joined the company advisory council in 1983, and at the family's unanimous wish, he became director of management in 1986.

Herbert's strength resulted from the fact that he belonged to the family and at the same time was an experienced manager with considerable vision. Starting at the end of the eighties, work methods and production processes were systematically scrutinised. In several steps, Herbert eliminated the precarious

managerial situation into which Lenze had fallen, and in a tour de force introduced object-oriented production based on semi-autonomous team production to replace the job-shop manufacturing that had been the rule at Lenze Extetal. His primary achievement in restructuring the company, however, consisted in the fact that he set strategic goals to guide Lenze on its path into the future: Platform 1996, developed at the beginning of the nineties as an objective, consolidated the core elements of the reform: pruning back the uncontrolled, rank growth of the diversity of products, leaving only a few main branches with pre-designed variations, industrial serial production, a clear internal company structure and orientation on the broader market – with the goal of making ten percent more turnover with only two percent more employees year for year until 1996.

1989

The first issue of "transmission", the Lenze staff newspaper, is published.



1990



HANS-LENZE-STIFTUNG

On Hans Lenze's 100th birthday, his daughter, Elisabeth Belling, establishes the Hans Lenze Foundation to promote talented young people.

It was thanks to Herbert's personal qualities and his pronounced skills in leadership that this goal was reached and thus the foundation stone for Lenze's current success laid. As Elisabeth Belling's son-in-law, Herbert was in a position to realise his visions for Lenze inasmuch as the shareholders – Elisabeth Belling and her three children, who from 1994 on held shares by gift – together with the advisory board displayed great confidence in supporting the not inconsiderable expenditures required for the radical restructuring of the company and the construction of a new factory for serial industrial production of inverters. At the same time, Herbert was able to renew the employees' loyalty on the basis of the company's tradition, and to enhance trust and the sense of responsibility. His virtuosity consisted in the fact that he did not tie this revived tradition to his own person, but rather, together with Elisabeth Belling, integrated it into institutions to guarantee that it would remain even after his retirement from company management.

The introduction of employee profit-sharing, calculated with transparent quotas, was an additional performance incentive. The establishment of an open educational programme for Lenze's staff members and the establishment of the Hans Lenze Foundation in 1990 followed up on the view that Lenze must also make a contribution to the region. The 1992 company principles codified the ideas on conduct towards each other within the company and towards customers and partners, points which had always been a special feature of the family business.

The strategic consolidation created the basis on which, after Herbert's retirement in 1996, a second restructuring phase was initiated, the development of a major enterprise which, though firmly rooted in its tradition and its region, was globally active. This task was undertaken by Herbert's two successors, Peter Lohse and Erhard Tellbüscher. They had joined Lenze one shortly after the other, experienced

1992



The **Lenze Group's company principles** are published; they are intended as guidelines for corporate culture.

1993

"**Platform 96**" is implemented as the basis for the company's further development. It involves a focus on fewer product variations, reduced parts diversity, industrial production with shortened delivery times and absolute delivery reliability, effective business processes and penetration of a broader market.

Furthermore, a quality management system certified according to DIN EN ISO 9001 is instituted.

The Spirit of the Family Business

the company's crisis firsthand in various situations, and for both the first encounter with the reform process in the company was in promoting it together with Herbert. Lohse, who was born in 1938, had a doctorate in economics; after an impressive career as a manager in various major companies, he came to Lenze at Herbert's request and created, among other things, the managerial basis for Platform 96. Tellbüscher, who was born in 1949, had a doctorate in engineering, and had started work with the company in Bösingfeld/Extetal in 1986. Object-oriented production was his idea; it was a central means to increase production from the beginning of the nineties.

Lohse was designated in 1989 to be Herbert's successor; between 1996 and 2002 he picked up the threads of the marketing system to continue development where it had been broken off around 1980. Numerous new sales companies were established, and some partners that

already had close links to Lenze were taken over. At the same time, Lohse loosened the bond to the production locations in Lippe and in the Weser mountains region. The acquisition of AC Tech in the United States, and the establishment of assembly plants and parts production facilities abroad opened the company to the world market. The most important of Lohse's projects, the consolidation of Lenze AG, also pursued this idea. Regarded superficially, the establishment of a joint-stock company signified a departure from the family business, and as such it was hotly debated. However, it was ultimately recognised that the establishment of a stock company with the employee participation that it involves would create the organisational basis for the further opening of the company to the world market without undermining the family connection. In certain respects, what had already been observed at the beginning of the sixties was now repeated: after consolidation and reflection on the in-

1994

Establishment of Lenze Holding GmbH & Co KG.
In its first business year it makes a turnover of
410 million DM.

The **frequency inverters of the 8200 series** come on the market. Manufactured on the first automated production line, the product becomes a great success.



tangible foundations, the company could embark upon new tasks and at the same time continue to stake out its market.

The historical analogy to the dynamic sixties, when Lenze experienced its first major upswing, is also apt with regard to the period since 2002. Erhard Tellbüscher, like Lohse before him, was long the designated successor and had had a say in the decisions made in the nineties; he has continued the strategy of opening the company to the larger market. However, he places the accent on the renewed enhancement of the technical basis of Lenze products and the expansion of sales and logistics. The background was a revolutionary enhancement of the status of automation technology, something that could not have been foretold in 2000. The link between automation technology and drive technology now constitutes the company's strategic basis in the form of L-force. The goal is to bind the customer more closely with modules for motion

functions, to increase productivity by means of modularisation of drive solutions and to create a basis on which very large customers can also be served with the greatest possible reliability. Tellbüscher has continued the expansion of the network of sales locations which Lohse had initiated, but flanked by enhanced cross linking and a focus on logistics. But today one thing is missing, something that bore the seed of crisis in the sixties, leading to the long downswing: at that time, the company dissipated its energies in too many loosely coordinated activities, something that for its part could be attributed to a surfeit of self-confidence and an underestimation of strategic planning. The activities initiated in 2002 are also based on long-term planning – planning oriented on the idea of Platform 96.

Today, there is no longer any member of the family involved in operative functions in this company, a worldwide enterprise with German roots; but this is not a statement about the

1995

A new, coherent series of integrated geared motors – the “gears of the new generation” (GNG) – marks the initiation of production of standardised industrial gears.



The Spirit of the Family Business

future. In 2006, shortly before Rolf Herbert's death, the first members of the fifth generation since Hans Lenze were born. Moreover, the family is still present in the company. All significant strategy and investment proposals are intensively discussed in the family council and the shareholders' meeting until a unanimous decision supported by all shareholders is reached. The willingness to enhance the family company's financial capacity by moderating cash withdrawals is supported by all family shareholders. Elisabeth Belling, now eighty-five but not at all tired, still provides the decisive

impulses for developing strategy, but also for the statement of codes of conduct within the company and for its presentation to the outside world.

1996



One Lenze innovation sets a new trend: **Drives become intelligent**. Thanks to integrated technology and control functionality, the 9300 servo inverter is able to implement complete processes or parts of them.

Electronics production begins operations in the new plant in Gross Berkel.



Dr. Rolf Herbert retires as chairman of management and is appointed the new chairman of the Lenze advisory board.

He is succeeded by Dr. Peter Lohse.

Pioneers: Technology and Structure at Lenze

Writing the history of technology at Lenze as the history of the products manufactured in the past sixty years would lead into dead ends: even though winder drives are one of the motion functions in Lenze's drive and automation concept, this concept cannot be traced directly back to the electric motor for which Hans Lenze acquired the licence in 1949. The same applies to the gears that Lenze has produced in the past sixty years: It is not possible to trace an unbroken line of technical development marking, say, a continuous improvement of the functions.

It is, however, possible to trace a line over sixty years if instead of the drive technology itself, the handling of it is taken into consideration. At the Hanover Trade Fair in 2005, Lenze presented the 9400 servo inverter, L-force engineering and runtime software as the first components of L-force, a modularised set of hardware and software components with a

comprehensive engineering concept which has since been further developed. L-force is based in part on the production of programmable drives, which had been initiated just under ten years previously and found expression in Lenze's global drive system ("Drive meets Automation").

With its uniform components and accessories, Global Drive was the umbrella system covering the inverter and servo inverter series 8200 and 9300. Thanks to its uniformity, the programme furthered the industrial series production that was implemented in Gross Berkel in the middle of the nineties; but it also facilitated application and reduced the need for technical support in the installation of inverters. However, despite the automation option, Global Drive could not be modularly linked with the new geared motors (gears of a new generation, GnG) that were developed at the same time at Lenze in Extertal. A first step in this direction

1997

At the Hanover Industrial Exhibition, "**Lenze – The Drive System!**" is presented, a system bus-compatible umbrella concept. The Lenze Group supplies everything: drive controllers, optimised motors and gears of the new generation with the basic technologies DC, inverter and servo inverter drives.



The first **Lenze website** in the World Wide Web.

Now, the Lenze Group holds **13 associated companies** abroad (Austria, Belgium, the Netherlands, France, Sweden, Denmark, Spain, Poland, USA, Switzerland, Japan, Norway and India). Worldwide, more than 40 agencies ensure full coverage with Lenze products and the required customer service.

Pioneers: Technology and Structure at Lenze

was only taken in 1998 when G-motion was developed: the 8200 inverter motec was specifically designed for mounting on GnG geared motors. G-motion was thus the first construction set consisting of electronics and mechanics with an automation option to be developed at Lenze, but it was still “drive based”: The integrated inverter made motor automation possible, whereas the architecture of complex drive solutions still had to be individually designed.

Thus, in technical terms L-force can be traced back to the development of automation at Lenze which was initiated in the nineties; and as far as frequency inverters are concerned it is indirectly a product of Lenze’s electronic drive technology, whose roots can be found in the seventies. Nonetheless, L-force initiated a paradigm shift in the handling of drive technology at Lenze inasmuch as it is oriented on the production of drive solutions. Lenze was always

fixated on individual products: The company thought in terms of inverter series, gears and brakes, and the development cycles of these series determined the company’s business strategy and structure. The internal competition between the production locations in Gross Berkel and Bösingfeld/Extertal had to do with the fact that, among other things, in Gross Berkel Alquist winders were produced at first and later electronic drives and motors, whereas in Bösingfeld mechanical gears, brakes and clutches were manufactured. The decisive problem in the perception of Lenze always consisted in the fact that the company was known as a reputable manufacturer of both gears and inverters, but that the relationship between the two fields was rarely perceived.

The idea that the production of gears, frequency inverters and accessories only results in modules that in a second step, together with software developed in house, have to be

1998



In mechanical production, **teamwork** has been fully implemented. This results in a decisive improvement to work organisation: lower costs, high quality and delivery reliability ensure a competitive position.



Lenze presents the **8200 motec inverter**, a further development of the 8200 model; for the first time, it can be mounted directly on the motor instead of central control cabinets.

The first management buyout, giving the compact clutch sector off to the company Magneta GmbH & Co KG, initiates the concentration on **Lenze’s core business**.

assembled to yield the actual product – the drive solution – marks a decisive break with Lenze’s product-fixated self-perception and presentation in the past decades. However, the paradigm shift implicit in L-force requires adjustments. The replacement of product-fixated thought is accompanied by an emphasis on planning. Drive solutions that can be implemented by the customer and are easy to handle have to be pre-planned for the simple reason that the production of solutions for future applications has to be standardised. Today, Lenze provides standardised configurations for a dozen applications – from conveyor technology to the winder drives mentioned above; they are differentiated according to requirement classes, and can be assembled together with Lenze’s software to yield complex drive-based or controller-based equipment. It is then logical that Lenze’s production basis has also been expanded. Lenze DETO Drive Systems in Kufstein, Austria, which has been a member of the Lenze Group since 2003, is specialised in

decentralised drive solutions for conveyor technology, whereas Lenze Digitec Controls in Meerbusch, which has been part of Lenze AG since May 2005, develops industrial PCs and automation systems, clearing the way for Lenze into PC-based automation. Moreover, since 2005 there has been a technology laboratory in Extertal to test automation solutions on models.

Orientation on a modular range of different components has also changed the view of the further technical development of these products. Taken in and of itself, the development of individual systems only admits of the goal of technical optimisation. If, however, interaction with other components has a greater priority, then the aim should be a uniform medium level for all units, instead of accepting a performance gap between the components. Thus, the establishment of L-force also led to the insight that at Lenze gears would have to be supported more vigorously in the next years

1998

Lenze’s product range supports drive technology in all its facets.

In the spirit of the motto “Drive meets Automation”, Lenze, with its intelligent drives, is positioned as a **supplier of integrated solutions for automation.**



1999

Worldwide growth: in order to improve the market position in North America, the drive technology manufacturer AC Tech in Uxbridge, USA, is taken over by the Lenze Group. Simplatroll Ltd. in Bedford, U.K., becomes a Lenze company. Takeover of the majority share in Rotiw in Katowice, Poland.

Worldwide 2,000 employees. Annual turnover 555 million DM.

Pioneers: Technology and Structure at Lenze

in order to catch up with inverter technology, which already had the lead. Moreover, a uniform medium level without technical sophistication has three advantages: first, enhanced reliability of the overall drive solution, second larger production quantities – with an effect on price – and correspondingly increased productivity, third, and with a similar effect, more favourable prices with a better selection of parts. In this respect, L-force is also connected to the goal of achieving greater growth with a greater share of the world market. This can also be seen in the name of the programme: in the eighties, “Lenze” was introduced as the name of all companies in order to make a trademark of this five-letter-word, which is easy to pronounce in most languages. Now it is the letter L that is being established as the mark of Lenze’s automation and drive solutions.

The paradigm shift represented by L-force will become all the clearer when the range of view is extended to cover not only the last ten, but

the last sixty years of technical development at Lenze. It has always been the core of Lenze’s business not just to sell motors and gears, but to provide the customer with technical advice on the use of these units: in the notice on the takeover of Stahlkontor Weser – two years before industrial production was initiated – Hans Lenze pointed out that the new company had “capable engineers” who regarded it as their task “to harmonise our suppliers’ and our customers’ wishes. We want to be more than just dealers.” And actually, this is the essential feature of the company that has been retained until today: to plan solutions, not just to produce drive technology, but also to prepare the application. “Lenze has more to offer” is how it was put in an advertising slogan in the eighties.

2000

Lenze develops KUKA, a servo inverter based on the 9300 series and **designed especially for the specific needs of robotics**. In 2002, this equipment even plays a part in a James Bond film: *Die Another Day*.

In Bremen, the Lenze subsidiary **encoway** is established; it is specialised in the development of configuration software.



The Lenze FORUM is dedicated as a place of education and encounter for customers and staff.



The paradigm shift brought about by L-force consists in the fact that this planning is perfected by modularisation of components and by the enhancement of control capacity, extending it to a greater number of applications and ultimately making it reproducible. Thus, on the one hand, L-force is at the centre of the Lenze tradition. On the other hand, this programme reduces the potential for conflict that can be repeatedly detected since 1947 in the technical development and the consequent company structure: the tension between optimal fulfilment of the customers' wishes and series production, which is necessary for the self-preservation of an industrial enterprise. In the organisation of the company, this was reflected in the question as to what weight was to be given to sales and what weight to production.

The Alquist winder is thus not the beginning of the line that can be drawn from 1947 to the present, but it is an example that can be used to demonstrate the dilemma into which Lenze

repeatedly fell in the course of its history: in 1952, Lenze already produced not only these special motors, but also the systems in which the winders were used. The basis was a licence for winder systems that Lenze had acquired in 1952 from a company in the United States. Using third-party motors and rollers, Lenze produced calenders and extruders on the basis of the Alquist winder. From the beginning of the sixties, turnover with these systems outweighed turnover with simple winder motors. The units grew larger due to the specialisation of the applications, but conversely fewer could be produced. The proportion of pure handcrafting increased, but with worsening exchange rates it became progressively less profitable: in two decades, the leading force became a drag on industrial production at Lenze. Starting at the beginning of the sixties, Alfred and Elisabeth Belling tried to compensate the overcapacity in Gross Berkel with other products that had to be produced in series, sometimes products from other technical branches such as

2001

More international growth: acquisition of the majority share in the Italian company Gerit Trasmissioni S.p.A. in Milan. Lenze Mechatronic Co. Ltd. gives Lenze a secure footing on the Chinese market.

In Villafontana, Italy, and Tarnow, southeast Poland, Lenze sets up its own feeder plants for motors and parts.



Lenze is transformed into an **Aktiengesellschaft, a joint-share company:** Lenze Holding GmbH & Co KG becomes Lenze AG, the roof of the group of companies.

Lenze's image as a family enterprise nonetheless remains intact.

Pioneers: Technology and Structure at Lenze

plastic centrifuges and stackers. However, this only became a success when Lenze took on the production of a part of a product competing with the winder motor. It was only thanks to series production of the control unit of the so-called hyperbolic winder for which Lenze had been the distributor since the end of the fifties that the losses resulting from construction of Alquist equipment could be absorbed. At the same time, this production marked the initiation to electronic drive technology.

The development in Bösingfeld/Extertal was characterised still more clearly by the dilemma resulting from the contradiction between the best possible customer support and the maintenance of series production. The great success of the plant in Bösingfeld in the sixties and seventies resulted from series production of Simplabelt, Disco and Simplatroll. Hans Lenze had already purchased the licence for the production of the Disco drive from its inventor,

Gerhard Kirschey, in 1962. It was accepted almost unchanged for production in Bösingfeld. Simplabelt and Simplatroll were also originally licensed products, but they had been improved by Maroldt and various engineers at Lenze to such an extent that they could be readily sold simply due to their considerable technical quality. However, Maroldt always urged that the products of the Bösingfeld factory should be sold as drive solutions. Lenze's marketing system emerged from the interest in bringing the Bösingfeld engineers as close as possible to the users' needs in order to develop drive systems together with the customer instead of simply selling gears and brakes.

To develop these drive solutions, Lenze distributed motors and other gears from the middle of the fifties on, but always worked on the completion of the range of products from its own production. Until well into the eighties, more licences were taken up for production

2002

Dr. Erhard Tellbüscher succeeds Dr. Peter Lohse as Chief Executive Officer of the Lenze AG.



2003

A joint venture with **DETO**, an Austrian drive technology company specialised in the automotive industry, is initiated.

and new gears and brakes developed, but without the spectacular successes gained with Simplabelt, Simplatroll and Disco. Until product designations were made uniform with the name Lenze in the middle of the seventies, the designation of all of these units always included the prefix “Simpla” – provided the licence rights permitted. In the fifties, it was already said in jest at Lenze that soon there would be no gears without this prefix. The message conveyed by this name – to which the company emblem “S”, which was used until 1984, referred – was clear: “Simpla” stood for rugged construction and simple application, user friendliness, reliability and low wear.

With this assembly consisting of various drives and motors, brakes and gears, Lenze followed a very German strategy in machine building, one that was already adopted before the First World War. There was no domestic market with sufficient demand for series-produced

special machines, while the world market had not been adequately accessed to sell these series beyond the country’s borders. The Alquist systems were the best example for these difficulties. Since German machine production was always in danger of going back to handcrafted job production, German tool makers – in contrast to those in North America – already switched to the development of modular construction systems before the First World War with series produced components and standardised machine parts which could be assembled to yield special machines: this way, a bridge could be built between the limits of the market and series production. Whole generations of engineers grew up in this construction-set mentality, which was systematised in the twenties by, among others, Georg Schlesinger and Otto Kienzle with their classifications of machine tools. However, strictly speaking, the assembly of components at Lenze did not yield a construction set. Lenze’s

2004



The novel SEpT design for synchronised servo motors ensures high efficiency.



L-force, the new generation of drive and automation technology, is launched.

The new electronics production in Ruiz in north France starts operation.

Worldwide, about 3,000 employees work for Lenze.

Pioneers: Technology and Structure at Lenze

drive solution always presupposed the intervention of an engineer in the sales companies who with great dedication developed a specific solution for the goals of a potential customer. It was only at the end of the eighties that Lenze introduced catalogue configurations with pricelists and fixed rates for special models.

In this respect, “Lenze has more to offer” was an Achilles heel of the strategy introduced at the beginning of the sixties, a strategy which, after the rise of electronic drive technology in Gross Berkel, also spread to cover this. Since there were no pre-planned solutions, but rather the solutions were always conceived afresh in contact with the customer, Lenze always had the tendency to introduce new items to its production range to ensure smooth service for the user, and to differentiate the existing products to broaden its range. The result was sinking lot quantities for series production and increasing

delivery times since production organisation was obviously overstrained. In retrospect, even the technical difficulties in the new inverter technology emerged from the fact that marketing activities were not sufficiently linked to the economic efficiency of the company as a whole: pressure from marketing to differentiate the product range resulted in innumerable models for which quality control, due to time pressure, had to be improvised.

The dynamism of the radical change that took hold of Lenze in 1986 – nearly forty years after its establishment – becomes all the more understandable in view of these difficulties. The trenchant reduction of the product range initiated by Herbert reinforced series production as well as the transition to “semi-autonomous team production”. The reorganisation of the company according to business segments, which was introduced in the main product series from 1991 on, overcame the divide

2005

The market launch of the 9400 L-force servo drives is started.



Digitec, the specialist for industrial PCs and PC-based automation systems, is integrated into the Lenze Group.

encoway and Microsoft cooperate within the framework of the programme for business start-ups “*unternehm was*” (undertake something).



between the production locations in Bösingfeld/Extertal and Gross Berkel, promoted the employees' self-reliance and sense of responsibility, and also provided an opportunity to recollect the excellence of the various product segments. This could then be taken as the basis on which the company could be re-networked and the relationship between marketing and production balanced. The counterpart to the introduction of series production of inverters was the opening of the company to the world market under Peter Lohse's leadership. The broadening of the network of sales companies, the introduction of modern International Accounting Standards, of quality certification, and above all the establishment of the stock company made the company more attractive for customers, leading to greater demand. At the same time, distribution was enhanced by establishing assembly plants, thus making greater delivery reliability and more precise adjustment to country-specific

specifications possible. The entry to the North American market, which, despite twenty years of effort, Lenze only succeeded in by acquiring AC Tech in 1999, supported the insight that punctual delivery and responsiveness to national characteristics must not stop short of opening plants in the most important markets. The construction of the plant in Ruitz, France, to which some of the production from Gross Berkel was transferred in 2005, and the expansion of the plant in Asten, Austria, are in keeping with this idea, especially considering that the establishment of logistic hubs in Europe is a determining factor in the structural change that Lenze is undergoing.

The dynamism of change has by necessity not left the array of products manufactured by Lenze untouched: Lenze's system technology division, which was only established in 1995, and coupling technology, which was founded in 1999 on the model of Lenze Austria, are

2006

The **two millionth** frequency inverter of the 8200 series is produced.

Lenze makes a turnover of 529 million Euro.



Acquisition of the majority share of the long-term partner **Schmidhauser AG** in Romanshorn, Switzerland, a specialist for control and drive technology.

With the introduction of **Drive-based safety**, functional safety is integrated into the drive.

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focal points in the new programme of development of complex drive solutions; by contrast, the construction of brakes and clutches, which had been highly successful over decades, was hived off in 1998 and 2005 by way of management buyouts. Whereas the technological development at Lenze in the past six decades has yielded innumerable products, abandoning some, passing some to other manufacturers, the relationship to technology – in great measure due to the continuity of the family

business personified by Elisabeth Belling – through all the cycles of progress has remained astonishingly stable: “We think ahead.”

2007

Lenze fulfils the **Mercedes Car Group's standard IntegraDCX**, and within the framework of a product partnership with DaimlerChrysler it delivers the drive technology for all processes in the construction plants for the new C-class.



Lenze expands its automation portfolio, and at the Hanover Industrial Exhibition it now presents **PC-based automation systems** in addition to drive-based systems. This is a decisive and logical step on the way from a specialist for drive solutions to a **specialist for drive technology solutions and automation technology solutions**.

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