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J.D. Neuhaus
Hoists and Cranes Engineered for Extremes over Seven Generations

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Introduction

The oldest German mechanical engineering business, J.D. Neuhaus GmbH & Co. KG (hereafter shortened to JDN), has been family-owned for six generations. JDN started out as a winch blacksmith for wooden shaft winches[1] and today is a leading manufacturer of pneumatic and hydraulic hoists[2] and crane systems. It was a long journey from producer of wooden shaft winches, which, considering the state of the roads in 1745, were a vital necessity for carriage drivers as vehicle jacks, to the industrial business of today. It all started over 270 years ago with the winch maker Johann Diederich Conrad Neuhaus's registration in the "Sprockhövelsche Fabrickenbuch", or factory register. The founder's descendants continued to produce winches. All the way into the 20th century, they were handmade and delivered, largely to mines, carters and small-scale operations. The hand-made winches could move up to 7,500 kg by 1880. With the increasing quality of the components, JDN hoists became ever more compact. The business also started to produce winches made from high-performance materials that could be employed in the most varied conditions. As JDN hoists could be used by a wide range of customers, sales increased in this niche domestic market. In 1952, JDN introduced an innovation that is still considered decisive for the business' success today: a hoist with a compressed-air driven vane motor. This allowed the hoists to be deployed in challenging areas.

Today, as a manufacturer of pneumatically and hydraulically driven hoists and cranes, JDN employs 160 people at its Witten-Heven headquarters and a further 40 at locations worldwide. In 2018 the business recorded consolidated sales of 36 million euro, although turnover has since dropped by more than a third due to a crisis in one of its core markets, the oil industry. JDN now earns more than 90% of its revenue in overseas markets. Selling around 8,000 hoists a year, JDN has developed a market position in 90 countries and 70 different branches of industry, including oil and gas transportation, raw materials processing, mining, chemicals and large-scale plant construction. JDN has subsidiaries in France, the United Kingdom, Singapore and the USA.[3]

This case study shows, in particular, the development of a small artisanal operation into a global player. To prepare this case study, the following questions were posed, forming the

[1] A winch is a lifting or pulling mechanism consisting of a chain or rope that wraps round a horizontally rotating drum driven by a crank or motor.
[2] A hoist is a mechanical device with hooks and chains to lift and carry heavy loads.
[3] cf. JDN Group.

basis of the interview with the managing partner Wilfried Neuhaus-Galladé and of the literature evaluated:

- For what reasons was it possible to retain ownership in the hands of the Neuhaus business family for so long?
- How was the transformation (from domestic mining to world market leader in hydraulic and pneumatic hoists and crane systems) achieved and what precautionary measures must be taken to mitigate the imminent crisis (oil)?
- What measures must be taken to ensure the future viability of the business?

The authors and the Hénokiens hope that this case study will help successors and researchers of the family business to identify the success pattern of long-lived family businesses. We hope that the following lives up to this aim.

Witten, May 2019

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1. Founding situation: how JDN rose out of the blacksmiths' guild

In Hattingen, the closest town to Sprockhövel and Heven, a blacksmiths' guild had formed as early as in the 16th century. Until 1732, the government in Berlin enforced a basic mediaeval principle that, south of the Ruhr, industry was carried out in cities, while villages remained unindustrialised. Typical rural manufacture such as forging was, however, always allowed in the countryside. Before 1735, the artisan smiths in the hilly country south of Hattingen had not yet formed an association. But the relaxation of the late medieval structures since 1732 fostered a common organisation of the rural blacksmiths, which was also desired in the sense of Prussian export policy to the Netherlands and France. In any case, the "Sprockhövelsche Metallwaren Fabrick" (Sprockhövel Metal Goods Factory) certainly existed in 1745; it was probably founded between 1735 and 1740.

The historical sources allow us to determine that the freeholding family Neuhaus, from Herbede, became residents of Heven in 1606. It is assumed that men in the family were already pursuing forging as a profession by 1700, first as village blacksmiths, then as farriers. The production of winches and screws shows that the family did not stop at the level of village blacksmiths (shoeing horses, making tools for farmers), but began to specialise in technical devices. This development occurred with the rise of the horse-drawn carriage, which had to be jacked up for loading, unloading and repairs. The smiths' location, directly alongside the most frequented east-west connection (the Westphalian Hellweg) also favoured the development of the business. One of the most important buyers of their products must have been the mining industry, which intensified in the 17th century in the Ruhr area, and the transportation industry that was dependant on it and suffered under the dreadful state of rural roads. Axle and cargo container breakages were part of daily life for the coal carts; this made winches very much in demand. The acceptance, around 1745, into the Sprockhövel Metal and Iron Factory appears to be the first decisive step from village artisans to specialised entrepreneurs. Specialisations of this nature were themselves only possible if people were able to work collaboratively in a larger-scale association.

The rise of the Neuhaus family was favoured by reconstruction after the Thirty Years' War (1618–1648). The initial impetus came when Brandenburg politics began to support the iron industry, and with it the blacksmiths' trade. This development, and the continuous rise in demand for smiths' products in Heven, Herbede and Witten due to the constant growth of the local coal mines, must be seen as the starting position for the foundation of the business.

These general developments offered opportunities that the members of the Neuhaus family were able to take advantage of. This was aided by the family's marital policy, which was in accordance with the customary practices of the blacksmiths' guild: it was usual for sons and daughters to marry the heirs of other families from the same guild. This ensured that they kept their position in the same social class as before and also allowed them to pass on and further perfect the technical knowledge of forging.

This is what Wilfried Neuhaus-Galladé has to say in this regard: "Through this marital policy, the smiths had access to the then modern forging techniques. This exchange of information yielded improvements. A further factor for the interdependence of the artisan smiths was their exemption from military service as soon as they became active as master blacksmiths. Real family teamwork was achieved by my ancestors at that time, which helped to maintain the business."

Around 1700, two brothers (Diederich and Heinrich) took the opportunity to specialise in screw and winch manufacture. Both had married into smiths' families. A daughter of one of the brothers (Catharina) was married at 21 to the son of the smith of Mengelinghausen, Heinrich Jörgen Schmid, who immediately took the name Neuhaus zu Heven. He was a master blacksmith when the "Sprockhövel Metal Goods Factory" was founded. The term "Factory" cannot be understood in today's terms; rather, it was a guild-like association of independent master blacksmiths. The masters at that time were known as "Fabrikanten" ("fabricators").

The "Sprockhövel Metal Goods Factory" can therefore be seen as representing all those active in a particular industrial sector (in this case, smiths) and within a certain area, who were obliged to maintain cooperatively agreed, state-sanctioned and controlled standards.

This kind of cooperative served to sell the members' forge products domestically and abroad, and accept new orders. The registration of the business on 09/09/1745 can be seen as the start of the business history of JDN.

It is clear that forging represented a key part of the Neuhaus family existence when the business was founded. Embedded in the blacksmiths' guild and furnished with the technological expertise of its members, the family began a new stage in its entrepreneurial development with the registration of the winch smithy by Johann Diederich Conrad Neuhaus. The skills of this founding entrepreneur can be traced back to the family skills of his predecessors, who had probably already been active in artisanal forging for more than a century.

2. The founding generation (1745–1800)

When Johann Diederich Neuhaus built his first wooden shaft winches in 1745, he had no idea how decisive this achievement would be for the effortless movement of heavy loads. With this masterpiece, he was accepted onto the masters' roll of the "Sprockhövel Metal Goods Factory". This first product, laid the foundation stone for the future business. Winches were produced for the locks on the river Ruhr and horse-drawn vehicles; later, they were used to lift railway waggons onto rails and load goods. Their use in coal mines also gained in importance and by 1800, the winches could already move loads of 7,500 kg. The better the available material, the more compact and powerful the products became.

Today, hoisting loads is still the central focus of the business' activities, even if the demands made of the product have changed dramatically over the last 200 years. Quality control in the 18th century, for example, had very little to do with what the term means today. If a smith wanted to check whether the teeth on a rack were within the tolerance limits, he would place a finger between two teeth and run the other hand over it. The business remained dedicated to winches, but these had to meet ever increasing demands. Their load-bearing capacities, which suddenly rose to 20 t, made huge demands on the materials and the many parts, which were still hand made. It was in this period that the close connection was formed between the business and the mining industry, which was becoming ever more important as a customer. Winches from this smithy were used in many of the coal mines in the region.

The early history of the Neuhaus family in Heven proves the importance of the smithy as a locational factor for further development of the business. Essential milestones in the business' development were reached at this site.

With the acceptance of J.D. Neuhaus into the Sprockhövel Metal and Iron Factory, a guild-like association of master artisanal blacksmiths in the hilly country of Hattingen, the business' rise began. As a master craftsman and member of the association, Johann Diederich could henceforth describe himself as a "fabricator". Ordinarily, masters employed journeymen and apprentices. Around 1800, the Sprockhövel association had 184 masters, 112 journeymen and 92 apprentices. Journeymen and apprentices were often the sons of the masters. Since 1746, all three groups had been exempt from Prussian military service, an important privilege. This exemption also shows how important the work of small-scale blacksmiths was to Brandenburg/Prussia in the essential war industry, weapon production. Every year, assemblies were held in the blacksmiths' factory in Sprockhövel at which the masters (fabricators)

appeared. This was an opportunity to choose the board of the factory, discuss wages and prices and regulate makers' marks. Masterpieces were also presented at these assemblies and applicants for the status of master craftsman were accepted or denied. While the factory thus controlled education and prices, it was itself subject to the control of a state commissar. It can be categorised as an intermediate stage between the cooperative guilds, the domestic system and a state inspection body. These kinds of factories can therefore be defined as the sum of all those industrially active in a sector, here forging, in a particular area, who were obliged to keep to cooperatively agreed, state-sanctioned and controlled standards. The distribution of their products depended on merchants who would settle where a large number of the masters of the trade were resident. For the Sprockhövel factory, this was Nieder-Sprockhövel, where between 1729 and 1785 alone, 63 masters had settled.

3. Development up to the First World War

The second to fourth generations (1800–1952)

At the start of the 19th century, Napoleon Bonaparte was waging war in Europe. The Prussian armies suffered major defeats at the battles of Jena and Auerstedt (1806) and the Prussian King fled to East Prussia. In 1807, Napoleon signed the Treaties of Tilsit, dividing Europe into French and Russian spheres and reducing Prussia (and the rest of Europe) to insignificance. The business J.D. Neuhaus, named with the initials of the founder Johann Diederich Neuhaus, therefore had to restructure itself strategically from 1807. The Peace of Tilsit meant the end of the association of local smiths in "factories". Now, production and local sales had to be organised independently and viability proven. In 1809, the founder of the winch factory, Johann Diederich Conrad Neuhaus, died at the age of 83. His eldest son Heinrich Wilhelm (1764–1831) inherited the business at the age of 45. The start of large-scale industry and small-scale blacksmithing industry both fall under Heinrich Wilhelm's time. Before his death in 1831, Heinrich Wilhelm Neuhaus developed the business into a flourishing business. In that year, his son, Johann Diederich II, took the winch smithy in its third generation.

German industrialisation began in the 1830s. In 1835, for example, the first railway line was opened between Nuremberg and Fürth, increasing demand for steel and steel products for the nascent railway industry. Coal and iron ore mining blossomed in this period. In this period, JDN produced winches for locks in the Ruhr region, an important transport artery in the Rhine

network. Simultaneously, railway operators became important new customers for the winches. Using the winches JDN produced, wagons could be lifted, rails laid and goods transferred. The third large customer group were the coal mines, whose demand rose year after year. The demands made of the products also increased. The winches had to lift ever heavier loads, up to 20 tons by the end of the period.

J. Diederich II had three sons, of which two died relatively young in the Franco-Prussian War of 1870, before they could take the examination to become master smiths. The third son, Louis (1848–1905) became the fourth-generation successor and concentrated the business on the mining industry, which boomed in the second German industrial revolution from 1870 onwards.

Figure 1: Louis Neuhaus (1848–1905)

Like his predecessors, he produced winches for collieries, locks and vehicles. Under Louis Neuhaus, operations became increasingly specialised, the principal customer for the winches being the mining industry. JDN soon held a strong position as a supplier of auxiliary tools. Although at that time, JDN still had not expanded its operations beyond a traditional blacksmith's shop manufacturing winches, Louis was very successful in expanding the business. He had the old smithy torn down and erected a new and more spacious one next to his residence, in which the first muscle-powered machines were deployed.

Louis Neuhaus died at the age of only 57 years. Now, his wife Emma (née Brinckhoff) (1859–1932) had to lead the business.

Figure 2: Emma Neuhaus (née Brinckhoff, 1859–1932)

Louis and Emma Neuhaus had seven children together. Following the death of her husband, she was responsible as the head of the house, family and business, but was unable to master the physical work of forging herself. In 1907, two years after the death of her husband, Emma Neuhaus married the master blacksmith Wilhelm Müller (1875–1951), a former apprentice of Louis Neuhaus, who worked in the business as a machine expert. This demonstrates the unbending staying power of the Neuhaus family. Other businesses in similar situations would probably have been sold off or liquidated. Because of the untiring work of Emma Neuhaus, the business could be managed until its handover to the next generation.

After 15 years of co-management by Emma Neuhaus and Wilhelm Müller, the business was finally handed over to Max Neuhaus (1900–1984) in 1922, in the fifth generation.

Figure 3: Max Neuhaus (1900–1984)

He was the seventh child of Louis and Emma and had completed a business apprenticeship and worked in numerous firms. In 1919, he entered his father's business. The First World War had almost brought the production of winches to a standstill; at this time, only the repair of used winches was carried out. Through the realignment of the business and the resumption of

winch production, the business was able to stand on its own two feet again. A large order from the Central Office of the "Reichsbahn" was the turning point in its economic development. In this period, JDN focused on the railway industry as its central target sector. In the mid-twenties, JDN was already able to employ 25 people again.

Max was granted commercial power of representation on his entry into the business and soon started trading hoists and winches. His determination and drive as an entrepreneur and the business successes he achieved caused his mother, in agreement with all other living siblings, to transfer the entire estate to him in 1922 through a deed of donation. Thus, he became, aged only 22, the sole proprietor and managing director of JDN. The ever-increasing upwards trend required new investment, such as the expansion of the machine inventory, the extension of production areas and goods warehouses and the modernisation of the workshop.

In the early 30s, the Great Depression shook the entire German economy. Many Ruhr companies, including numerous collieries, had to close. The crisis also left its mark on JDN, but Max succeeded in steering the business through these difficult economic times, as one of the few companies that was able to hold its ground.

After the Second World War, the coal and steel industries were one of the main motors of German reconstruction. The demand for winches to be used in mining grew accordingly. Due to high demand, JDN built a second production facility in Witten in 1952.

4. Post-war development and fraternal strife

The fifth and sixth generations (from 1952 to 1995)

In the same year that the new workshop was erected, J. Diederich Neuhaus (1925–2010), Max Neuhaus' eldest son, entered the business, representing the sixth generation.

Figure 4: J. Diederich Neuhaus (1925–2010)

He had studied mechanical engineering and gained his first professional experience outside the business. Shortly after his entry into the business in 1952, J. Diederich came up with the idea of drive the winches with motors powered by pressurised air. This innovative product was in high demand in the mining industry as the motor created no sparks. The new product made the laborious manual work easier for the miners and made work processes more efficient and safer by replacing the hoists' traditional manual drive with a pressurised air motor. It was now possible to use the hoist everywhere where there was a risk of explosion. The basis for the success of JDN products can be dated back to this innovation in the sixth generation. At first the innovation revolutionised the application possibilities in the mining industry and simultaneously triggered the business' economic upturn.

While JDN owed its growth to the mining industry, it would also have to deal with the industry's economic crises. Structural change was achieved through the reorientation to new areas of business for pressurised air driven hoists beyond the domestic coal mining industry and the expansion of exports.

Over time, through its unique specialisation and expertise in pressurised air as a driving medium, JDN became a recognised expert worldwide. The advantage of this technology over electrically operated hoists was and is its usability as standard in potentially explosive atmospheres, because air does not create sparks. The technology also distinguishes itself through precise control, a number of other drive-related advantages and the patented rotary-vane motor, which enjoys a legendary status with customers because of its long life and high load-bearing capacity.

In 1966, the first JDN pressurised air hoists for applications outside the field of subterranean mining with load-bearing capacities of 250 to 1000 kg came onto the market. The chemical industry was an obvious choice in the search for further areas of application, as there, as in underground mining, there was a risk of explosion in many areas. In the years that followed, with a family member at its head who was a passionate engineer, J.D. Neuhaus brought ever more powerful pressurised air hoists onto the market. One highlight was the 1979 Profi 100 TI, the first pressurised air hoist in the world with a load-bearing capacity of 100 t. In the same year, JDN introduced the monorail hoist. It was developed specially for the offshore oil industry for BOP (blow-out preventer) handling. BOP handling refers to special valves that are installed on the borehole. They are designed to ensure that when drilling an oil field, the raw materials that shoot upward from the earth's crust under elemental pressure are kept under control. The valves can weigh up to 200 tons, comparable to the weight of a jumbo

jet. These heavy weights can only be transported to their place of deployment above the borehole with special hoists. What makes these constructions special is that, despite their high load-bearing capacity, monorail hoists have an extremely low overall height, an important requirement for drilling rigs.

Max Neuhaus was active in the business until the end of the 1960s. While his father, a down-to-earth man with deep local roots, was responsible for the financial side of the business, Johann Diederich was responsible for products, production and overall business strategy.
The entry of the second son of Max Rötger Neuhaus (*1926) into the business marked an historical first break in the business' pattern. In the five preceding generations only one son had stepped up as the successor to his father, now two sons were actively involved in operations. Rötger worked closely with his father and was above all occupied with financial and administrative tasks in the business.
Max Neuhaus was managing director of the company until his death in 1984. Both sons (J. Diederich and Rötger) had corresponding shares and Max acted as regulator between the two brothers. He mediated in all discrepancies. With his death, this regulation between the brothers ceased to apply. Even the majority of J. Diederich's votes inherited at that time did not bring peace within the company. Only the self-selected resignation of the younger brother Rötger eased the situation within the company, as 100% of the shares were in the hands of J. Diederich Neuhaus.

At first, the relationship between J. Diederich and Rötger was described as intimate. Over time, however, it deteriorated and in the last few years of their collaboration their relationship was marked by a long-term, destructive conflict. The two brothers grew apart over time and were unable to agree on a common approach to the management of the business.
The different positions of the two brothers were probably never discussed by the father in the context of succession. On one side was the Managing Partner, on the other a subordinate who acted as an individually authorised signatory. In terms of ownership, there was a majority shareholder on one side and a minority shareholder on the other. On the family level, they were older and younger brothers.
Research into family businesses has shown that unresolved relationships between siblings or cousins are highly conflict-prone, if different hierarchical relationships exist in different areas of the relationship. In the case of the two brothers there was a disparity in the logic of the

formal hierarchy in the business and shareholdings; it seems likely, that this inequality in the family relationship was never fully resolved and that a mutually acceptable approach was never found.

In addition to this, the majority shareholder J. Diederich remained childless, while the minority shareholder Rötger had four children. There was, therefore, also a disparity regarding the next generation – in the exact opposite direction. The Managing Director and majority shareholder was unable to pass the business to his own descendants. To fulfil the transgenerational task as a family entrepreneur, he had to rely on the cooperation of his brother, his subordinate, individually authorised signatory and minority shareholder.

At first, an attempt was made to introduce a successor from Rötger's family into the business, but the attempt remained unsuccessful. We can be sure that this failed attempt to find a successor left new, deep wounds on the two brothers that had a destructive effect on cooperation in the management of the business and between shareholders.

With the death of the father in 1984, J. Diederich began the search for his own successor in his extended family circle. This led to talks with his nephew Wilfried Galladé (*1957), the son of his sister Ursula. J. Diederich was also his godfather and the two had a close personal relationship.

Following Wilfried's entry into the business (see next section), J. Diederich and Rötger agreed on a separation. The shared leadership of the business would not be continued in the next generation. Rötger was bought out, which placed a severe financial burden on the business, but made necessary restructuring and repositioning possible.

Despite all the discord between the two brothers over several decades, they succeeded where many family businesses fail: they achieved an agreement and separation to preserve the business. In contrast to many other cases, the fraternal conflict was not perpetuated to the point where the well-established business was destroyed. A further example of the Neuhaus family finding a way to deal with the typical existential challenges that multi-generational family businesses face and implementing a solution to ensure its survival.

5. Entry and adoption of Wilfried (his transformation of the business away from mining)

The seventh generation (1987–today)

Figure 5: Wilfried Neuhaus-Galladé (*1957)

Wilfried Galladé was 27 years old when he was invited to enter the family business by his godfather and uncle. He was the scion of a business family on his father's side too, one which was active in the metal processing sector. He successfully studied economics and worked in commerce as a management consultant in a large business, as his elder brother was the successor to his father's business. Wilfried agreed to enter his uncle's business and, on 1 April 1986, started work in the USA at two associated firms. Before entering the family business, it was important to him to gain experience in the sector and abroad, outside the existing structures. On 1 October 1987, Wilfried joined JDN as head of sales with international experience.

At the same time as he joined the business, his family circumstances also changed. Wilfried was adopted by J. Diederich and his wife, Anke Neuhaus, making him a legal heir to the J. Diederich Neuhaus family. He took the Neuhaus name to ensure family continuity. For J. Diederich, this step guaranteed the handover to the next generation. After decades of childlessness, he now had a son to whom he could pass on the family business. The continuity and life purpose of J. Diederich could now be fulfilled after all.

Tax reasons doubtless also played a role in this context, as transfers of shares to sons are subject to a significantly lower tax rate than transfers to more distant relatives.

Wilfried entered the business at a critical time. From the mid-80s, the mining industry in Germany declined due to cheap imported coal, which was up to 30 percent cheaper than domestic coal. JDN's revenue dropped accordingly from 1985 to 1990, the height of the crisis,

by about 50 percent. At the same time, the business was weakened by the continuing conflict between the brothers J. Diederich and Rötger, which prevented the necessary repositioning and alleviation of structural weaknesses. The business' equity capital had been seriously stretched by the buy-out of Rötger, substantial resources had been drained and loans had been taken out.

The successor's starting situation was, as for many of his predecessors, unassuming. But the newly arrived successor, Wilfried Neuhaus-Galladé, made a virtue of necessity and thoroughly reorganised the business. In addition to realigning sales to sectors outside mining and shifting from domestic sales to exports, he changed internal processes. To maintain the business, he was forced to carry out a reduction of personnel: he halved the number of employees by 50%, to 110. The financing banks provided the necessary liquid funds to cope with the crisis and buy out the minority shareholder, largely because the restructuring concept and the successor himself were highly trusted.

Wilfried had two main goals: the generation of growth in international markets and in other new branches of industry beyond the crisis-ridden domestic mining industry, and the rigorous development of new products for new customer segments.

In the course of the internationalisation strategy, he opened a distribution business in the USA in 1989, with a second following in France in 1990.

Then, further distribution companies were founded in England (1999), Singapore (2002) and China (2009). JDN's export turnover rose accordingly. In 2011, exports accounted for about 80 percent of sales. JDN also grew further in new market areas and sectors. As a result of the transformation of the business, the customer segments shifted. In the 1980s, before the crisis, 85 percent of sales were generated in mining and only 15 percent in the industrial sector; in 2006 that ratio was almost exactly inverted: 10 percent of sales went to mining and 90 percent to the industrial sector. The main reason for this was the rigorous marketing of the product portfolio in new sectors.

A complete relaunch of the JDN product palette up to 20 t load-bearing capacity was conducted from 2003 to 2005. In 2010, hoists with capacities from 25 t to 50 t followed and, finally, in 2014 hoists with load-bearing capacities up to 100 t. The entire series was optimised and set new standards in the field of pneumatic hoists. Parallel to these developments, the plant construction department was founded in 2011. Here, JDN specialised itself in the construction of customer-specific crane systems, overwhelmingly for use on

drilling rigs. As an alternative to pressurised air, J.D. Neuhaus also offers its entire product palette with hydraulic drives. The fields of application range from the automotive to the cement industry. The focus is on oil and gas exploration and processing, mining, the chemical industry and heavy plant construction. In accordance with the slogan, "engineered for extremes", JDN states that usage in Siberia at minus 45°C or 70 m below the surface of the sea are not uncommon. Digitalisation will fundamentally influence the further development of the sector. A particular challenge in this regard is presented by the drive media air and hydraulics (oil). One question for the future would be how the digital transformation can be managed without electricity. It is clear at this point that digitalisation will bring about considerable changes.

In the course of realignment, a strategic guideline was defined: sector independence as far as possible. Consequently, one of the business' goals is never to have more than 30% of turnover in any one sector.

This goal can be understood as a strategic formula to guarantee survival, which Wilfried made on the basis of his dramatic experiences when he entered the family business. At that point, the business made around 90% of its sales in the mining industry. High sales in one sector, however, create a simultaneous dependence on the customers and their development. If the sector takes a downturn, the supplier who generates 90% of turnover in this sector is usually caught in a strategic trap. Slumps in sales, a massive "colliery die-off" like the one the German mining industry experienced in the 80s, led many mining suppliers into insolvency. JDN was able, by enormous force of will, to escape this destructive sectoral dynamic and adjust its business concept to enter new and international markets. The lesson from over 100 years as a mining supplier is to set up the business in an independent, cross-sectoral way. For example, the crisis in the oil industry, which also hit JDN hard, has now been overcome and was offset by sales gains in other business areas.

Wilfried took a further lesson from the experiences gained on his entry: dismantling inflexible organisational structures. Shortly after his entry into the business, he had to carry out massive cuts to personnel. Undoubtedly a measure that was very difficult for him as a person with deep roots in the region, as some employees were already employed in the business in the 2nd and 3rd generations. Once he had got JDN's market realignment under way, in the early 2000s, he began questioning all the internal structures and processes in the business. The Kaizen

philosophy and Kanban production system were introduced as the business' underlying philosophy and are used to this day as the basis for every operational control consideration. As a result, all the processes and procedures in all areas of the business, in production, in sales as well as in administration are systematically and critically questioned on a regular basis.

After a successful reorganisation and transformation of the business, Wilfried was named Managing Director in 1995. At the end of the year, J. Diederich Neuhaus stepped down as Managing Director, staying as a member of the advisory board on until 2000. After buying out his brother Rötger in 1989, J. Diederich immediately began the gradual transfer of shares to his adopted son Wilfried. He became sole proprietor of JDN in 2007. After a long, and in parts unhappy, phase of shared ownership, a single family member was once again responsible for the business.

6. Agenda for the future (realignment of the business through Kaizen and family governance)

Preparation for the eighth generation

The following section aims to cast some light on the future. What are the characteristics that distinguish JDN as a business and the Neuhaus-Galladé business family?

Kaizen philosophy as core strand of business DNA

The decisive process innovation for JDN in the last few years was to adjust production from "pulling" to "pushing", in accordance with the Kanban principle. Part of the new production process is the already outlined Kaizen philosophy of continuous improvement, which aims at incremental process innovation. The aim of these procedures is precision, reliability, rapidity and optimisation. Kaizen is a Japanese life and work philosophy the guiding principle of which is the quest for constant improvement. It does not consider improvement by leaps and bounds the path to success, but gradual, continuous amelioration. Today, a functioning Kanban system is being put in place. All the work processes in the business are subject to this process. Since 2015, regular workshops and processes have also been held at the business to focus on optimising the business by making use of digital opportunities. Step by step, digital technologies are tested and reflected in products and workflows. As a result, the business is undergoing a continuous digital transformation.

JDN's orientation in global competition

JDN is in a niche market for hoists and winches for use in extreme conditions (e.g. in environments where there is a risk of explosion, underwater operations, extreme heat and cold etc.). Its specialisation is focused on pneumatic and hydraulic hoists. The business takes particular care to maintain the quality of the products. These are distinguished by their long working lives and ability to be deployed in high-stress, aggressive environments. JDN products can also bear heavy loads of up to 100 tons. For several decades, the basic philosophy regarding products has been to "engineer for extremes". All product development and production considerations are rigorously oriented to this demand.

JDN's main competitor today is Ingersoll Rand (IR), which offers a similar range of products. In 1905 IR was converted into a stock company and is listed on the New York Stock Exchange. IR is globally active and highly diversified. Its main activities include climate control solutions (heating, ventilation, air conditioning, refrigeration), industrial technologies, residential solutions (mechanical and electronic locks, air conditioning) and security technology. The "Industrial Technologies" department includes four brands, of which one is the original "Ingersoll Rand" brand, which deals with five different activities, one of which is "Material Handling", i.e. hoists and winches. The net turnover of the entire Ingersoll Rand business is around 13.3 billion USD (2015). The "Industrial Solutions" department, in which Material Handling is integrated, contributes 19 percent of IR's net turnover. Sales figures and key figures for the individual divisions are not available. It can be assumed that the Material Handling division of IR is many times larger than that of JDN.

The technological progress of the business goes back to 1871 when Simon Ingersoll patented his steam-powered rock drill. Shortly after that, in 1905, the stone boring companies Ingersoll-Sargent and Rand merged. Ingersoll Rand employs around 45,000 employees in over 60 countries with a net turnover of around 13.3 billion euro (in 2015). Since 1924, Ingersoll Rand has built robust and reliable hoists, winches and ergonomic systems. The products in the hoist range include hoists, winches, BOP handling systems, spring balancers, handling rigs and support constructions. IR's advantage over JDN probably lies in the fact that IR is much broader in terms of sales. IR has a much higher level of recognition in various industrial areas than JDN.

There is a difference in the technological dimension of the products on offer. Wilfried Neuhaus-Galladé on this: "And that [full concentration on technological perfection – authors' note] is what drives us; some of them are 20, 30 years old in terms of development. This is our

chance to enter the market with technologies using sustainable products. That is why we are very, very successful in the USA in particular, the home of Ingersoll Rand."

The export share has risen from 5% in 1980 to 70% today, making JDN a globally active provider. The business thus set itself apart at an early stage from many competitors who pursued regional strategies. Through its strong global presence, with foreign subsidiaries in the USA, the UK, France, Singapore and China, and with an entry into Brazil, Russia and India, it is possible to serve all markets. JDN hoists are used in over 70 different sectors. They are currently particularly sought after in oil and gas exploration and processing, in mining, chemicals and heavy plant construction.

With regard to their deployment and quality, JDN products are best suited to difficult environmental conditions. As a necessary tool for production in "heavy" industries, everywhere where heavy loads must be lifted, the demand for JDN products will continue in the foreseeable future and could even increase if industrialisation continues to grow in emerging markets.

Orientation of the family

In 2015, Wilfried transferred 3 percent of the shares to each of his three children, commencing the transfer to the eighth generation. Before the transfer, an almost 3-year family strategy development process took place. In the course of this, Wilfried and his wife considered the shared life and cohesion of the family, the transfer of shares and the leadership of the business. In this, they followed the Witten Model for the development of a family strategy.

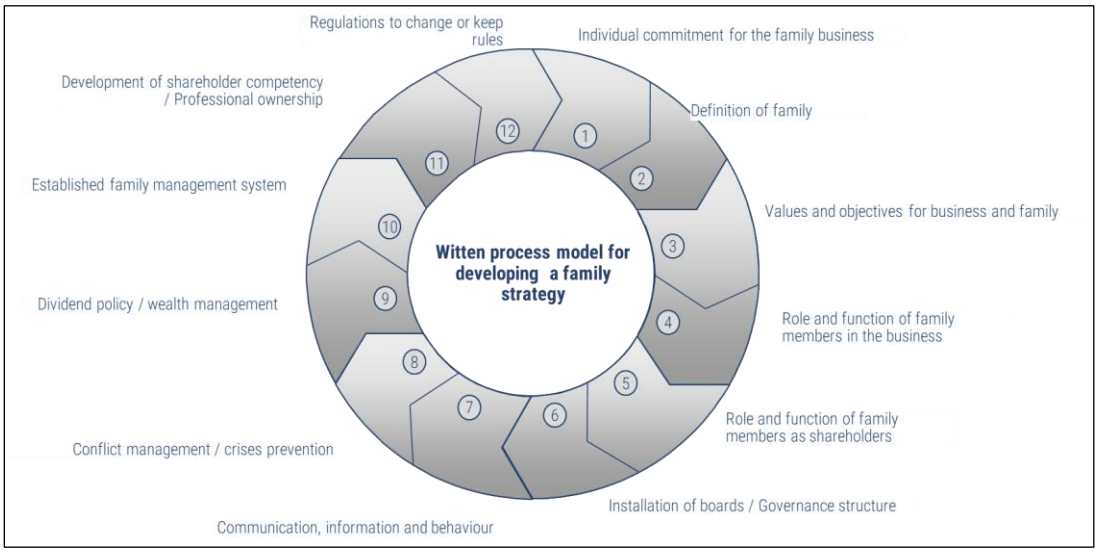

Figure 6: Witten Model for a family strategy[4]

[4] cf. Schlippe et al. (2017).

In the context of the development of a business family strategy for the Neuhaus-Galladés, the couple discussed twelve thematic areas and developed solutions for them. In the second stage, the solutions were discussed with the three children or representatives of the eighth generation. At the end of the process, the family agreed on shared values, processes and basic attitudes for the future development of succession, share transfers, treatment of each other and the family business. At the same time, family governance institutions were established. These include, *inter alia*, an annual family day, regular shareholder meetings, inheritance management sessions and shared family trips. Since 2018, the family has worked on the further development of their family strategy or Family Governance System at regular intervals. They apply the Kaizen philosophy to family management.

The representatives of the 8th generation are preparing themselves rigorously for potential roles in the business, on the board of shareholders and in the family office. There are defined processes through which decisions on the entry of family representatives into the business can be made by nonfamily members of the supervisory board. If the interests of the eighth generation are maintained and the necessary competences achieved, nothing stands in the way of keeping JDN in the hands of the business family.

7. Summary, why we believe JDN has grown so old and what others could learn from this

The case study highlights essential core issues for a successful multi-generational family business. Overall, this case presents a successful example of the transformation from domestic mining to a world market leader in hydraulic and pneumatic hoists and crane systems. It was possible to manage the transformation successfully because JDN understood how to react to environmental conditions and adjust production accordingly, while sectoral development also favoured the business' development.

All in all, several turning points can be determined in the business' history that contributed decisively to its development.

In particular, these are the rise from village blacksmiths to a specialised artisanal operation up to about 1880/90, the Neuhaus winch smiths during the economic cycles from 1885 to the First World War and the alternating sequence of good and bad economic conditions for the small-scale winch factory between 1920 and 1950.

A further turning point can be seen after the Second World War, when orders began to slow down. JDN understood how to react flexibly to the needs and demands of the market, in order to survive the war years and the period of reconstruction in Germany. The German reconstruction essentially favoured the business' development, as Neuhaus winches were essential to mining for the reconstruction of the destroyed railways. Coal mining was, between 1946 and 1948, at the heart of all economic and political interventions by the occupying forces. Coal was essential both as reparations and as an energy source for reconstruction and heating. The transport routes, in particular the tracks of the "Deutsche Reichsbahn", had to be reconstructed as quickly as possible after being crippled by aerial bombardment and dynamiting towards the end of the war. The coal and steel industries were also the main motors of German economic reconstruction. Accordingly, the demand for winches to be used in mining rose. An innovative technology replaced the manual operation that was standard for JDN hoists up to 1952 with a pressurised air motor. This was a decisive milestone in the business' development. The air hoist innovation was a decisive step forward for mining and at the same time offered an entry into the worldwide market in the field of pneumatic hoists and crane systems. This was the decisive technological breakthrough for JDN's expansion. This innovation replaced manual operation and avoided electric operation. With regard to the former, the pressurised air motor relieved heavy physical work, while with regard to the latter, pressurised air guaranteed explosion prevention as no sparks are created, an inestimable advantage when using the hoists in mining. The next structural crisis came in the 80s, when domestic mining declined. JDN's 90% revenue share in the sector was massively affected by this. A restructuring programme, required by structural problems, began in the business, rethinking nearly every structure and process at JDN. Subsequently, the entire production system was realigned.

A further reason why the business remained under the ownership of the Neuhaus family was the specialisation that evidently took place early on in the business' history, first of family members then of the business itself. Therefore, the case study especially illustrates the development of the family and the early history of the Neuhaus smiths as an operation in the so-called Sprockhövel Factory in the 18th century.

Early in the history of the first generations of the Neuhaus family, generational thinking and strong family cohesion are evident. Family continuity was marked among other things by a clear marriage policy, where smiths married among each other ensuring the continuation of

the business in family hands. Documentary evidence shows that in a kind of targeted regional marriage policy, people married as far as possible in blacksmith families and rooting themselves in the region. The regional consideration not only allows observations of marriage policy but also shows the importance of location for the business' development.

It is also crucial for the business' development that all the business' fundamental innovations come from people who explicitly broke out of the immediate circle. Max Neuhaus had a commercial background which led to the industrialisation of his own products. J. Diederich Neuhaus was an engineer and invented the pneumatic winch in 1952. Wilfried Neuhaus-Galladé was the first successor with international experience. Here, it is evident that this background led to the internationalisation of the business and a diversification strategy. The personal stamp of the leading family members was an essential reason for the transformation and further development of the business over generations, into one fitting the market and environmental conditions then in force.

Business progress arises from tradition: the movement of loads is still in the foreground today. At the same time, the ability of the family business to be both tradition-driven and highly innovative is evident. Specialisation continues to this day. In particular, the business distinguishes itself from its competitors through its technological leadership on the market. This characteristic is important in regard to the business' future viability. From over 40 years of experience in the mining industry, the business has learnt never to be dependent on a single sector again. For Herr Neuhaus-Galladé, one requirement for the future viability of the business is that the members of the family agree on topics that will drive the business forward in the future, such as questions of succession. This also means that the products that are made are future-proof. The movement of loads should be continued in the coming generations. Future-proof also means being independent of financial investment and also with regard to the relationships with customers and suppliers. The business family talks about the expectations the business has of the next generation in particular. Future-proofing also means that every generation has to leave behind its mark. Today, the age of digitalisation is heralding dramatic change, which the new generation can see as the starting point for developing the business. The fact that the representatives of the eighth generation have already finished internships in the business, getting to know its internal structures, regularly take part in digitalisation workshops within the business and are able to network systematically with other representatives of business families should be understood as a positive sign of things to come.

A further reason for the survival of the family business over seven generations is, ultimately, the absolute will of family members in the Neuhaus/Neuhaus-Galladé family to transfer the business to the next generation. There were often moments in the history of the business where the situation, war, deaths, quarrels, sectoral upheaval, could have led to the relinquishing of the business. The family managed, in every generation, to overcome these challenges and find solutions to deal with them. The fact that, in every generation, a creative spirit in the family drove the business forward, in combination with the family members' absolute willingness to work, can be described as the core of this business family's DNA for over 270 years. It is to be hoped that this strength will guide the representatives of the family in future generations.

Bibliography

Barthel, M. (1995): Die Enkel des Archimedes: eine etwas andere Kulturgeschichte der Hebezeuge, Schlütersche Verlagsanstalt und Druckerei GmbH & Co. Hannover, Witten 1995.

Interview of 21 January 2019 with Wilfried Neuhaus-Galladé in Witten.

Rüsen, T. & Löhde, A. S. (2019): Die Unternehmerfamilie und ihre Familienstrategie. Einblicke in die gelebte Praxis von Family Governance. Study of the Witten Institute for Family Business (WIFU).

Rüsen, T.; Heider, A. K., Hülsbeck, M. & Bretschneider, U. (2019): Die digitalisierte Unternehmerfamilie. Spezifische Einflüsse und Herausforderungen für Digitalisierungsdynamiken in Familienunternehmen, in: FuS 03/2019, S. 88-93.

Schlippe, A. v.; Groth, T. & Rüsen, T. (2017): Die beiden Seiten der Unternehmerfamilie. Familienstrategien über Generationen. Auf dem Weg zu einer Theorie der Unternehmerfamilie. Vandenhoeck & Ruprecht: Göttingen.

Schoppmeyer, H. (Hrsg.) (1995): Jahrbuch des Vereins für Orts- und Heimatkunde in der Grafschaft Mark Witten, Vol 93/94, Dortmund 1995.

Schoppmeyer H. (2012): Witten: Geschichte von Dorf, Stadt und Vororten, Von der Frühzeit in der Agrargesellschaft bis zur zweiten Industrialisierungsphase, Vol 1, Witten 2012.

Schoppmeyer, H. (2018): Kleine Studien zur Geschichte Wittens, in: Beiträge zur Geschichte der Stadt Witten, Vol 7, Verein für Orts- und Heimatkunde in der Grafschaft Mark zu Witten.

Sobotka, B. J. (1995): Fortschritt aus Tradition – 250 Jahre J.D. Neuhaus Hebezeuge in Witten-Heven, C.L. Krüger Verlag, Witten 1995.