Industry Case Study Series on IP-Management

Schneider GmbH & Co. KG
Freeform technology for manufacturing optical lenses

By Alexander J. Wurzer & Gunter Schneider

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Gunter Schneider

Gunter Schneider is the president of the SCHNEIDER GmbH & Co. KG which he founded in 1986. The company is one of the world's leading manufacturers for the development and production of machines in the fields of ophthalmics, precision optics and ultra-precision optics. Finding its origin in the development and manufacture of optical precision machinery the company creates innovative CNC-driven manufacturing technology for grinding, polishing, measuring and centering of spheres and aspheres. Today, SCHNEIDER is a full solution provider offering comprehensive solutions ranging from small individual machines to complete fully-automated production lines for small, medium and large lens producing labs. The independent, family-owned holding has 13 subsidiaries and employs more than 400 employees worldwide.
Gunter Schneider is a member of the executive board of the German Competence Center for Ultra Precise Surface Processing. Furthermore, he is engaged in various social initiatives and is politically active in the supervisory board of the district president.

PART I

About Schneider

Schneider GmbH & Co. KG from Fronhausen/Hessen in Germany is one of the world's leading manufacturers of processing machinery for optical lenses and precision optics. The technological field of optical processing machines is characterized by highly dynamic innovative activity. Schneider is one of the companies which drive this innovation, both in the freeform processing of optical lenses, the cutting and polishing of aspheres, and process measuring technology. An aspheric lens has at least one non-spherical or non-planar refractive surface. Freely formed, i.e. neither spherical nor planar, refractive surfaces can prevent aberrations.

SCHNEIDER GmbH & Co. KG has evolved from a pioneer in freeform technology to a worldwide market leader in machines for manufacturing individualized freeform lenses. Since the inception of the optical engineering company by Gunter Schneider in 1986, SCHNEIDER GmbH & Co. KG has focused its activities on technological innovation, a strategy which has allowed the company to advance to a leading position in the world market. The first optical processing machine was launched in 1987. Schneider continually managed to offer customers from around the globe new and more productive solutions by repeatedly setting new technological standards in subsequent product generations. After just one year, the company had to expand its premises. In 1990, Schneider launched its first CNC-controlled machine. The company's market success grew steadily. The next expansion of the company building was due in 1991/92. Its step across the pond to the USA in 1996 marked the beginning of Schneider's global expansion. In 1998, the company launched a technological revolution with its freeform technology. This was followed by the next expansion of the company premises where in multiple steps the whole freeform process chain was developed. In 2004, Schneider reached 150 employees. Its role as a constant driver of innovation in the industry not only resulted in continuous growth but also in several prizes and awards such as the Innovation Prize of the German state of Hesse in 2004 and 2006, as well as the title of Hessian Champion in the same year and the nomination as a finalist for the German Innovation Award. In the meantime, the company's internationalization continued. Offices were opened in Bangkok in 2007, in Rio de Janeiro in 2009, in Dallas, Texas, in 2010, and in Hong Kong in 2011. Also in 2011, the company's own production facilities were inaugurated in China.

Figure 1. Processing steps of a lens on the workpiece carrier

In addition to sales and service subsidiaries in the USA and Singapore, the central location in Fronhausen with 270 employees representing all business units enables the company to act dynamically and maintain a strong connection with the region.

The freeform process introduced by Schneider is one of two general methods of manufacturing lenses for spectacles. Opticians typically use so-called stock lenses for simple and low-cost glasses such as single-vision or reading glasses. These are lenses which are pre-manufactured in a casting process and which the optician can simply pick based on the spectacle wearer's vision profile. The second variant are customized lenses which are manufactured to the exact specifications of the prescription. This requires the optician to measure the spectacle wearer's exact vision profile and visual acuity in order to then determine the specifications for the production of the individually adapted lenses.

The production of customized spectacle lenses using a freeform process begins with the selection of a so-called semi-finished product.

The first step of the manufacturing process is the so called blocking process which utilizes a low melting alloy to attach a workpiece holder onto the blank. During this process step fundamental alignments and lens positioning's are performed to ensure correct basic optical properties of the final spectacle lens.

After blocking, the desired lens product is achieved by milling and freeform lathe turning as well as a subsequent polishing process. These processes allow geometrical accuracies in the µm range and surface roughness values in the nm range while spending usually less than one minute of time.

Within a subsequent laser marking process adjustment marks and producer logos are induced into the lens. The surfacing process is finished by a lens quality monitoring control step.

After surfacing, the lenses are cleaned and coated. A first hard coating step increases the lens ability to withstand environmental influences. A subsequent vacuum coating applies additional features like anti-reflex and mirror coatings.

Finally, the lens is edged in order to fit into the lens frame.

Customized freeform lenses continue to pose a technological challenge. The aim of these specialized optical systems is to seamlessly grant wearers precise vision at a close range, at a distance, and in between. This means that two visual impairments, that is short-sightedness and long-sightedness, are corrected with a single lens according to the wearer's specific needs, giving wearers the opportunity to see clearly regardless of range in everyday life. More specifically, this means that the upper part of the lenses which is responsible for distance vision is less curved than the lower part which is used for reading. In the transition corridor between the upper and lower parts, the radius of the curvature is adapted to provide seamless vision. This zone has an important function of its own, e.g. when working in front of a screen. The physiological design defines the extent of the different areas far field, near field and corridor as well as their transition gradients. These lens shape developments have to take medical and engineering aspects into account in order to create high vision acuity and can be adapted to the wearers needs as individual as a finger print. This is the main impact the freeform technology had. Freeform machining processes are the precondition for any lens individualization approaches.

Revenues from spectacle sales in Germany have seen a continuous annual increase from EUR 3.7 billion in 2007 to nearly 4.5 billion in 2014. In Germany alone, more than 40 million people suffer from defective vision. In 2014, a total of 11.5 million pairs of glasses were sold and the market continues to grow by 1.7% per annum. The optical industry expects a growth of 3.3% for 2016 and a growth in export sales of about 3.9%.

The trend towards organic plastic lenses continues, with units sold in 2014 accounting for 93.5% and the share of mineral lenses down to just 6.8%. Sales of multifocal lenses grow continuously, with an overall market share of 36.1% in 2014. Sales of multifocal lenses account for a lion's share of 68% in the revenue structure of the spectacle lens market. 59% of German men and 67% of German women are spectacle wearers. 73% of the age group from 45 to 59 and 92% of more senior age groups wear spectacles. On average, spectacle users own two pairs of prescription glasses. The number of pairs of prescription glasses per spectacle wearer is continuously increasing. Almost 60% of all spectacle users own several pairs of glasses.

The Western European spectacle market was worth some US$ 30.5 billion in 2011 and is growing continuously by about 1.5% per annum. The spectacle market in the US was worth EUR 27.8 billion in 2011 and is growing slightly faster at approx. 1.8% per annum.

The challenge

Industrie 4.0 – intelligent networking of machines

Industrie 4.0, a keyword which most generally speaking refers to a fourth wave of the Industrial Revolution, is primarily a political term. It was coined within the scope of the high-tech strategy of the German federal government in order to cover the trend towards an increasing digitization and networking of products, value chains, and business models. The term includes the Internet of Things as well as all cyber-physical systems enabled by the IoT. The political connotation of this term in Germany is strongly associated with the production of industrial goods, which is not surprising given the political agenda for Germany as an industrial location and the country's role as the world's largest producer of manufacturing equipment. In an international context, the content and meaning of this trend is interpreted differently: i.e., it mainly refers to the Internet of Things and digitization.

The dominant economic objective of Industrie 4.0 is to increase resource efficiency and make production more flexible. The technological basis for reconfiguring value chain architectures is a synergistic integration of various technological domains: automation technology, mechatronics, information and communication technology, as well as production technology. Industrie 4.0 therefore not only represents a technology trend but rather a comprehensive development which has been made possible by various expected technological developments.

The changes brought about by the Fourth Industrial Revolution – after the introduction of mechanical production plants powered by water or steam in the First Industrial Revolution, the introduction of mass production and work sharing aided by electrical power in the Second Industrial Revolution, and the use of electronics and IT in order to further automate production in the Third Industrial Revolution – affects virtually all industries. It is not just about industrial Smart Factories but also relevant to the energy sector with Smart Grids, mobility with Smart Mobility, healthcare with Smart Health, and households with Smart Home. The political agenda includes preserving and strengthening the German industry's competitiveness. Germany is known as a leader in production technology, embedded electronic systems, and advanced robotics. In other important areas related to Industrie 4.0, including mobile Internet, big data, cloud computing, and cyber security, the German industry is currently not among the world leaders. In the light of this favorable starting situation, the future international market position of German companies is therefore yet to be determined.

Mechanical and plant engineering play a key role in the implementation of Industrie 4.0 in Germany. This sector is seen as an enabler as this is where new technology is integrated into products and processes. Far-reaching customization, e.g. in the manufacture of customized spectacle lenses, poses a particularly significant challenge as batch sizes equal 1 but manufacturing costs must be kept similar to a mass production environment. This calls for a highly integrated value chain and skillful production management. Schneider has successfully confronted the challenges related to growing productivity requirements, increasingly complex processes, and intelligent, transparent, and controllable production processes. With the Modulo concept, Schneider has introduced an Industry 4.0 logic to the production of freeform spectacle lenses. Modulo represents a shift away from connected individual machines to intelligent networking in order to create a higher-level production system with an integrated automated production flow management. Modulo has triggered a fundamental paradigm change towards fully automated production in this respect.

Modulo reaches an unprecedented level of utilization and a revolutionary throughput in production. This means the system not only sets new benchmarks but it also opens up whole new possibilities. As soon as the machines are connected to the LMS Modulo production management system and the management cockpit, they operate as an integral part of this unique system solution and are monitored by a Control Center.

There is also a direct connection between the mastery and implementation of the related technologies, and the competitive positions secured by means of patents. From an international perspective, patent activity within the scope of Industrie 4.0 is thus of critical importance for any industrial location and is closely monitored.

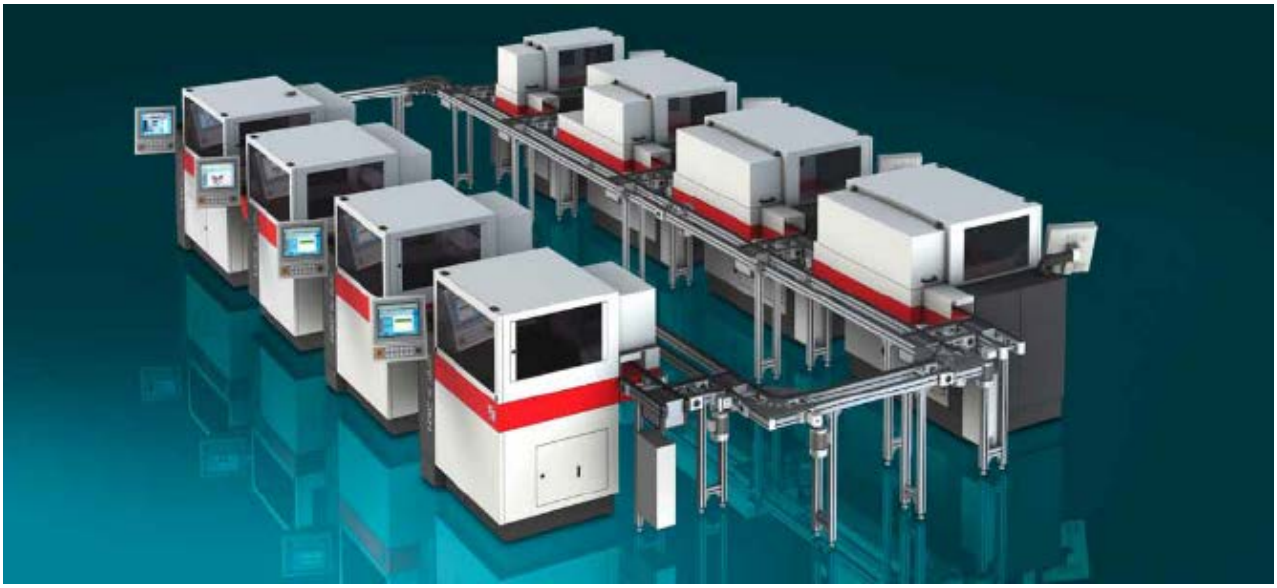

Figure 2: Modulo: An intelligent and fully automated production system

PART II

IP strategy and implementation for Modulo Line

SCHNEIDER had the vision to manufacture individual lenses based on freely definable mathematical descriptions. HSC (High-Speed Cutting) generators and CCP (Computer Controlled Polishers) have become the tools of choice in developing the freeform idea in the ophthalmic industry. Individual freeform lenses are now the top product in the market and SCHNEIDER has grown to be the premier manufacturer of freeform equipment worldwide.

The next logical step is a highly integrated system solution: SCHNEIDER's Modulo Line. Following an entirely new organizational philosophy, the production flow is managed by the system and its intelligent modules. The result is an unprecedented level of equipment utilization in lens production and unmatched throughput. Designed for utmost flexibility, the arrangement and connection possibilities allow for the addition of new modules with minimal disruption. Central customer benefits of the Modulo Line are:

- **Plug-and-play value**
  The machines are easily integrated into the system with plug-and-play simplicity. The system thus reduces the cost and complexity of traditional lab planning, and the time to market. Ultimately, the system permits multiple ways of integrating and growing production lines – easily expanding production capability according to individual needs.
- **Controlling the flow**
  The system intelligently controls the production flow. Once a module is linked in, the system ensures optimal utilization of the machine in a perfectly balanced production flow. Now, integration of full production lines becomes as easy as can be.
- **Handling all situations**
  The Modulo Line is a very compact and smart processing platform. Its intelligent cross-linking of machines guarantees that your production keeps going in case of an unintended stop of a single processing unit. This reduces the need for maintenance capacity and keeps the yield up.

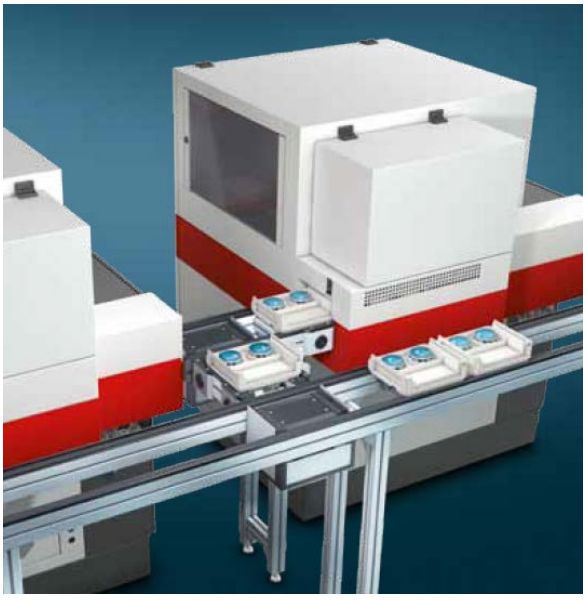

Figure 3: The Modulo machines manage the production flow all by themselves, thus maximizing the yield

- **Managing the lab**

  Production is managed by the Modulo LMS (Lab Managing Software), which is more than a traditional lab management system. The new LMS seamlessly interacts with cognitive machines and offers sophisticated new functions. The lab manager gets valuable feedback – higher uptimes and increased yields are assured.

- **Modulo growth roadmap**

  Plug-and-play simplicity provides value to all Modulo customers. The portfolio of Modulo machines will expand in the range of processing steps and performance data with the mission to meet upcoming demands. Every Modulo machine is a ticket to the future.

- **Benefits of the Modulo Line:**
  - Highly integrated system solution
  - New organizational philosophy
  - Cognitive machines
  - Easy lab layout with plug-and-play simplicity
  - New extension possibilities with minimal downtime/disruption
  - Unique arrangement
  - Unprecedented equipment utilization
  - Unmatched throughput
  - Reduced cost per lens ratio
  - Automated quality management
  - Future-proof, upgradeable system
  - Small footprint

The objective of realigning Schneider's IP strategy was to achieve an alignment with customer benefits on the one hand, and to activate and focus the company's creative forces in order to create effective prohibitive rights on the other. The objective of the IP strategy for the Modulo concept was primarily to achieve a sustainable, profitable, and enforceable unique selling point in international markets. Schneider's original patent strategy was primarily focused on the inventive activities of R&D and based on technological functionalities. The company's IP strategy did not provide for the requirement that IP should protect actual USPs (Unique Selling Propositions) in order to create a UCP (Unique Communication Position) and achieve premium prices by means of the IP position. Prohibitive rights had not been derived from customer benefits in a methodically structured manner in the past.

The customer focus of the new IP strategy helps to steer the creative effort involved in designing prohibitive rights in a meaningful direction when looking at the company's competitive environment. The winning formula is very simple and can be summarized by the 4P concept. The 4P concept is derived from incorporating IP into market-oriented corporate governance. The starting point is a unique selling point (USP), which is also communicated to the customer (UCP) and benefits from legally enforceable exclusivity due to IP. This combination results in opportunities for achieving premium prices with the customer:

USP + UCP + IP = achievement of premium prices

IP thus becomes a success factor in increasing competitiveness through consistent customer focus in innovation management. The 4P concept is visualized in the figure below.

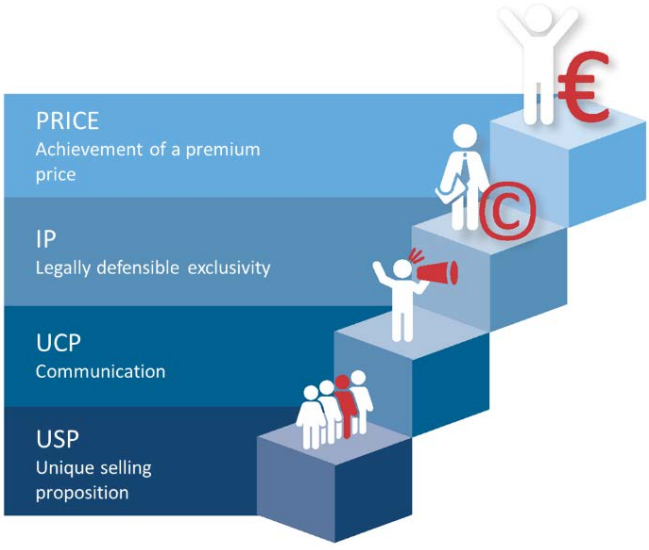

Figure 4: A customer-focused approach to IP based on the 4P concept

The IP strategy for innovation leader Schneider is derived from its superior market and brand position. The company sees itself as a global manufacturer of system solutions for ophthalmics and precision optics. It understands itself as an independent, owner-managed company with German headquarters. The creativity, commitment and enthusiasm of its employees is considered the basis for success. Schneider is therefore part of the knowledge economy and the company value is to a great extent based on intangible assets. With high-quality machines, innovative technologies, and networked manufacturing solutions, Schneider's core mission is to ensure the long-term success of its customers. This requires continuously setting new standards through innovation and defending the technological top spot.

Marketing is responsible for developing competitive customer benefits for Schneider's offerings, matching these customer benefits with the target groups' willingness to pay a certain price, ensuring communication with customers, and making the offerings available to the customer. In the context of market-oriented corporate governance, the marketing function is not just limited to designing and selling marketable products and services. Schneider adopts a customer-focus and analyzes its customers' emotional loyalty on a regular basis. This makes the marketing function a management task.

Looking at IP from this perspective, it becomes one of the available marketing tools to be used as part of the marketing mix. The marketing mix is a set of marketing tools aimed at achieving relevant marketing and business objectives such as market share, premium prices, sales volume, image, or reputation. The marketing strategy shows how the company can achieve its marketing goals by means of the marketing mix and its marketing tools. When taking a customer-focused approach to IP and a company's offerings, IP becomes a marketing tool which needs to be incorporated and taken into account in the marketing mix. What is special about intellectual property rights is that this marketing tool creates legally enforceable positions against the competition. Traditional marketing tools are divided into four

categories: product, price, communication, and distribution.

The 4P concept illustrated in the figure above describes an inner logic which reflects how IP is applied to competitive differentiation at Schneider in order to successfully achieve premium prices. The USP is the critical factor for success in this respect. It is expressed in the UCP as communication measures which are perceived as unique by the customer. The USP provides a customer benefit aimed at the customer's willingness to pay a premium price. This customer benefit is legally protected by means of IP.

The hierarchy of objectives for the integration of IP in the marketing function within the context of market-oriented corporate governance is illustrated in the figure below. When taking a consistent approach to IP based on customer decision-making criteria, IP goals within the scope of a business model are derived from business objectives. IP goals are desired and expected effects in the market and must be integrated with the marketing strategy. The ultimate goal of IP is to achieve an exclusive, sustainable, and legally enforceable market position.

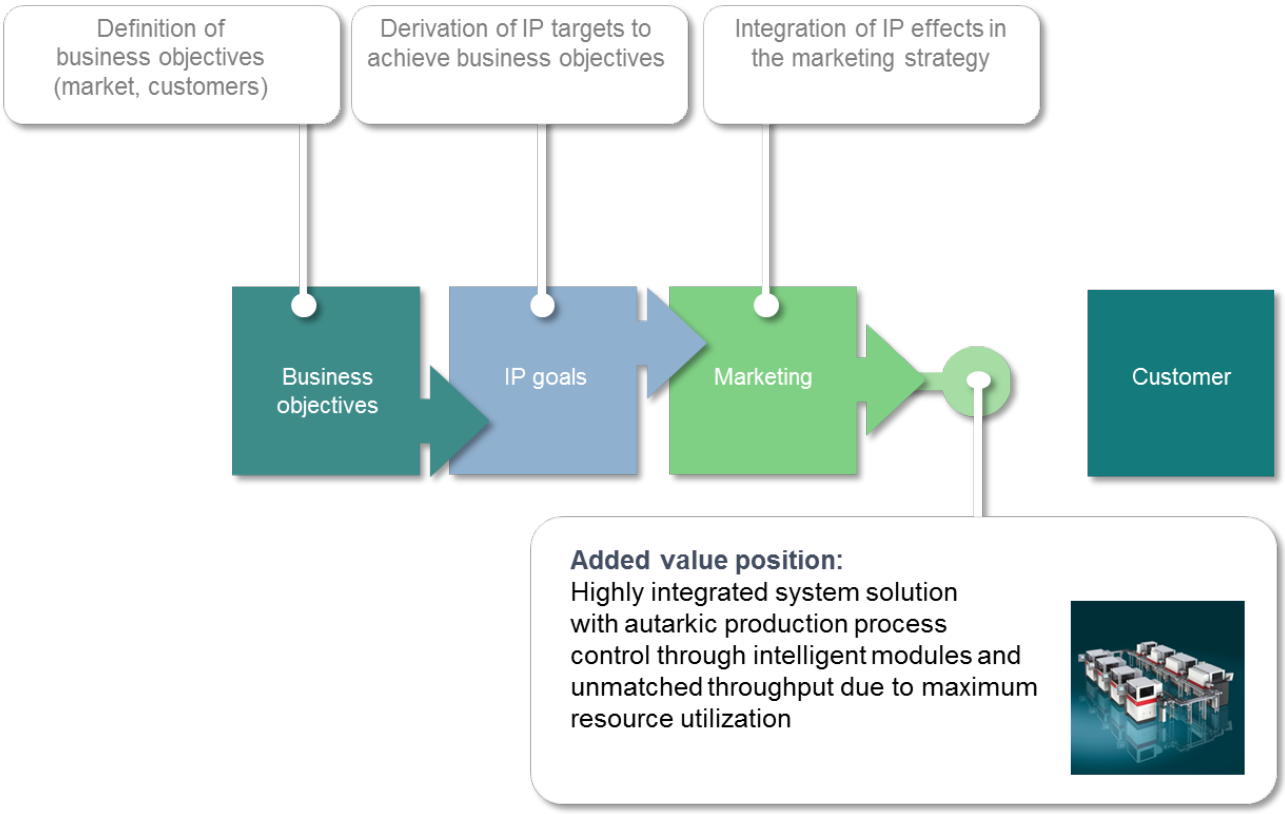

Figure 5: Hierarchy of objectives in the integration of IP in the marketing function at Schneider

To integrate the IP strategy in the marketing function, the main lines of argumentation for convincing customers and influencing their decision-making had to be analyzed. The key criteria in the eyes of the customer can be summarized as follows: quality, total cost of ownership, low market entry barriers and image. The aim related to image is to communicate the technological superiority and reliability of the product from commissioning through to ongoing operation. Quality must be communicated by focusing on the adherence to pre-defined quality levels in order to meet the required quality standards and to minimize reject costs. The line of argumentation for total cost of ownership is based on communicating the lowest associated costs across the entire lifespan of the machine in comparison to the competition. The communication related to low market entry barriers relies on the fact that investors and companies benefit from a simplified planning and development of production capacities, which in turn facilitates their entry in the lens manufacturing market. To ensure that these arguments are covered by the brand personality, the brand personality was analyzed and its overlap with the lines of argumentation used was studied. The results are presented in the figures below.

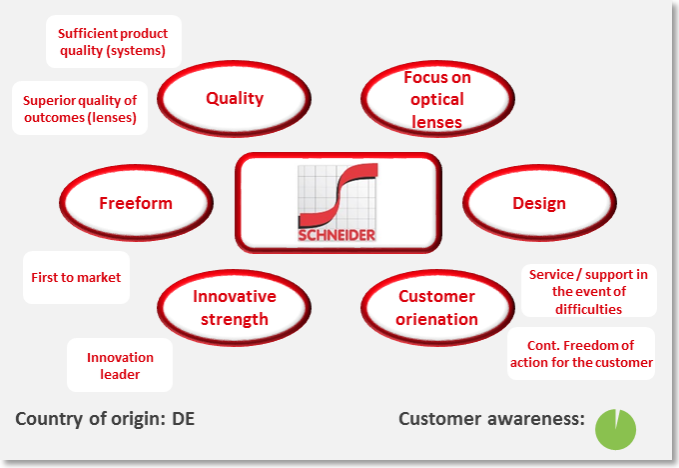

Figure 6: Analysis of product argumentation in conjunction with Schneider's brand personality

The IP strategy ensures strategic superiority over the competition but relies on adequate implementation first. Managers know how important it is to implement strategies in a consistent and disciplined manner. Simply acknowledging a need to act and the strategy derived from it is not enough in order to bring about real change. It also requires the subsequent implementation of that strategy, and that often constitutes a significant challenge in the light of day-to-day operative business. But no matter how brilliant a strategy may be, it becomes worthless unless it is put into operational practice. An additional challenge when it comes to IP is posed by the fact that stakeholders have often never been exposed to the market effects of IP when developing an IP strategy. This is why motivation can easily turn into frustration and IP often gets blamed for the deficiencies of complex and ineffective tools when an IP strategy loses momentum as a result of a lack of coordination, consistency, and speed of implementation. This often results in lost opportunities to drive profits by means of IP.

The motivation for the actual implementation of an IP strategy comes from transparency, identification, and a focus on critical measures. The strategy must come with a consistent catalog of measures derived from it, which should also include monitoring and control processes for its implementation. The figure below provides an overview of such a catalog of measures based on the measures used in implementing the IP strategy at Schneider. We are not suggesting that there will always be a successful catalog of measures for each IP strategy and every business model. Our aim is merely to demonstrate the logic successful catalogs of measures related to an IP strategy should follow.

The proposed structure for the catalog of measures includes success-critical factors.

- **Convergent**

  The involvement of all stakeholders is critical for implementation success. It requires the optimization of the ratio between the contribution made by stakeholders in order to deliver results and the support provided to stakeholders in order to perform their tasks. Contributions must be delivered in such a way that stakeholders can see the immediate benefit for their tasks. This can be achieved by using the following tools: IP-FD and IP design. These tools not only make IP strategy implementation more efficient, but they also ensure the fast delivery of a "reward" in return for the input provided by the stakeholders during strategy implementation. This ensures that the implementation does not lose its momentum, efforts are pooled

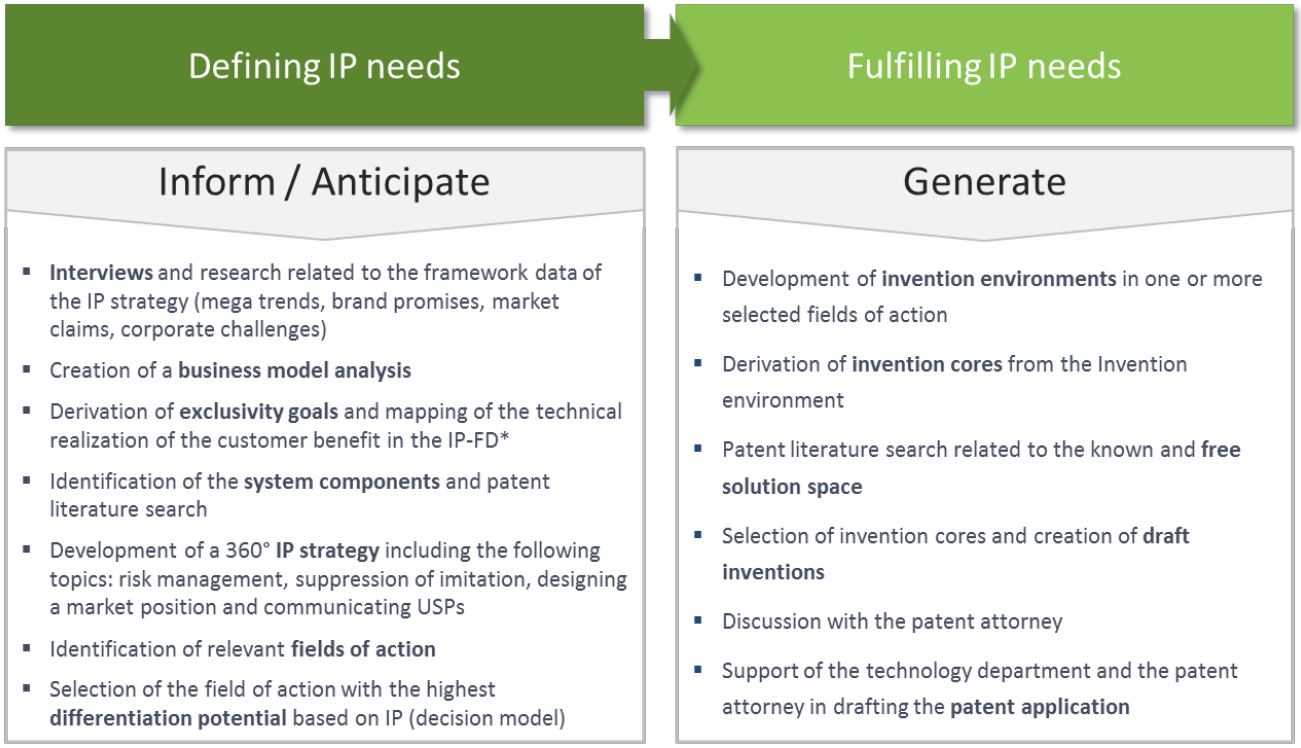

Figure 7: Catalog of measures for implementing an IP strategy

rather than diffused, and everybody involved can experience the intrinsic and extrinsic benefits of IP throughout the process. Thinking in terms of providing the greatest possible exclusive customer benefit, prohibitive rights, and IP effects within the business model is a positive experience which has an immediate effect on the realities of day-to-day business for stakeholders.

- **Holistic**

  The focus on the immediate benefit must not compromise a holistic implementation. The IP strategy helps to look at all possibilities and to evaluate them within the context of the business model. Particular consideration is required with regard to a balanced implementation of the resource-oriented part of the strategy (with a stronger focus on making one's own competencies more exclusive) and the market-oriented component of the strategy, which is aimed at greatest possible exclusivity in terms of market presence. Otherwise, competitors will find opportunities to interfere with that exclusivity and will seize these opportunities if they are deemed sufficiently economically relevant.

- **Coherent and cohesive**

  The catalog of measures must ensure that the results of the individual steps and the required inputs build on each other and operate together smoothly in terms of their effects. The individual activities must lead to a consistent portfolio which can be effectively enforced against third parties and actually leads to an exclusive position in the market. Implementing an IP strategy requires the integration of market intelligence in both the analysis and the fulfilment of market needs. It requires the involvement of stakeholders who were not traditionally involved in IP work. It is therefore particularly important to keep individual activities such as interview questions, market and product definitions, understanding of the competition, etc. consistent across the implementation of the entire strategy.

- **Controllable**

  Individual measures must be recognizable as such and be described in sufficient detail to allow for their verification and monitoring of their success. Otherwise, their implementation cannot be controlled in a systematic and transparent manner. The implementation of more comprehensive strategies may require the involvement of various teams, and various product and market segments. In this case, it is even more important to know the effect of individual measures and intervene in line with the strategy, if necessary.

- **Motivating**

  The motivation of the involved stakeholders makes a special contribution to the success of this structure of a catalog of measures. The experience of an immediate benefit, the holistic view of IP, and the transparent and adjustable project structure permit the focusing of all efforts, and the use of the initial momentum gained from the recognition and acceptance of the

IP strategy in order to transfer it into operational practice. The process introduced for this purpose is illustrated in the figure below.

As a rule, the structure of the catalog of measures consists of two separate phases. In the first phase, the requirements are defined. In the second phase, the requirements are fulfilled. This division is fundamental for the success of the implementation of the IP strategy. It is easy to fall into the trap of seeing portfolio development as such as the implementation of the strategy once it becomes obvious how powerful the tools of IP design, and in particular synthetic inventing, can be for efficient portfolio development. But this does not take into account the distinction between 'patentable' and 'worthy of patent protection', nor does it deliver any immediate benefits to the stakeholders or any sustainable motivation to face the market.

The central task in drafting the IP strategy for Schneider was to design prohibitive rights along the desired effects, which, in turn, were derived from the business model. The process introduced for this purpose is illustrated in the figure below.

Entrepreneurial thinking about IP is required in order to implement the defined IP strategy goal of an exclusive offering. The term refers to a market and innovation orientation aimed at growth and market success – a way of thinking which is typical for Schneider. Actively and purposefully influencing customer decisions is not a priority in the classic patent process. Entrepreneurial thinking is future-oriented. Senior management must

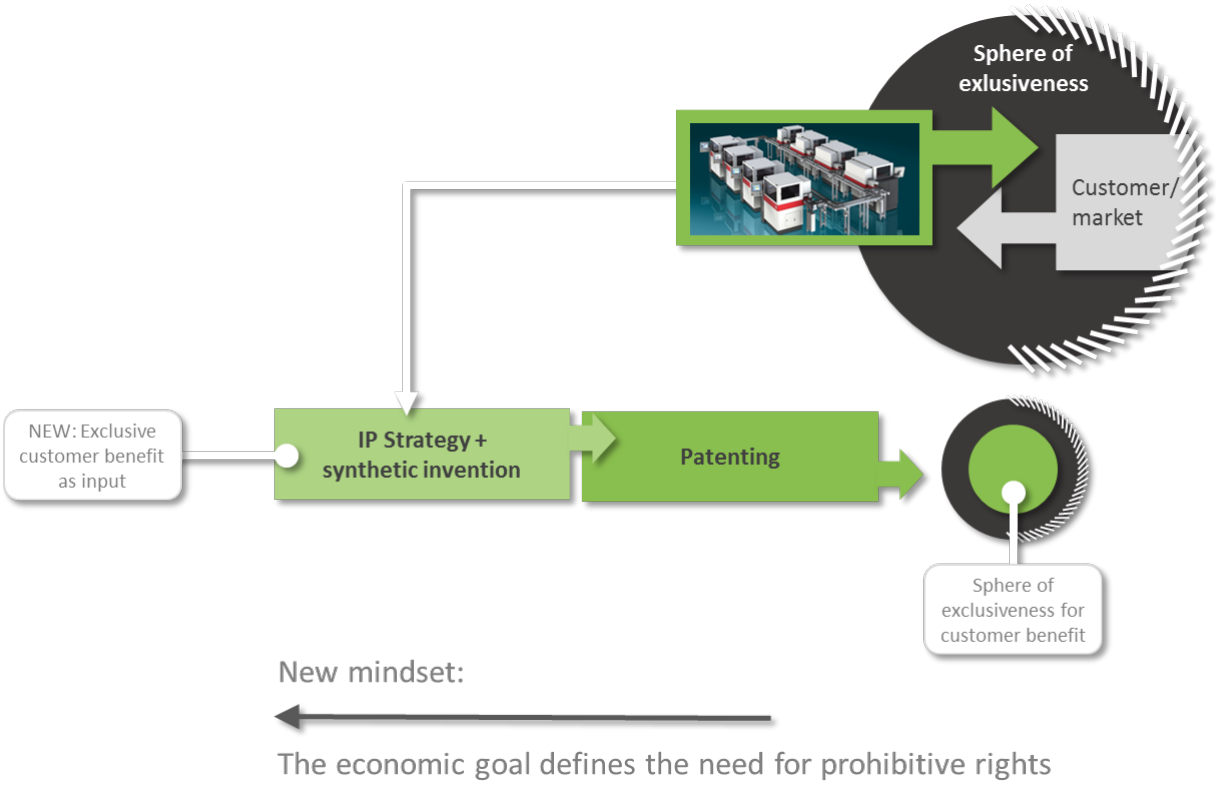

Figure 8: Reversed mindset for optimizing the design of prohibitive rights at Schneider

make decisions now in order to shape the future. The clearer the vision for the future, the better a business can develop in this direction. The decisive factors in this respect the identification of future scenarios which may become relevant for Schneider and a highly specific definition of what constitutes business success. These scenarios and definitions form the basis for strategy planning and implementation.

This type of entrepreneurial thinking must also be applied to IP and the development of an adequate IP management culture. It is expressed in an IP process which derives the need for IP from future scenarios oriented at the market and the customer. The starting point of this IP process is not an invention or an intellectual exercise requiring protection, but rather the desired future market position to be achieved by means of the business model. As is customary in management, decisions are made based on considerations related to the future market position. An example of this way of thinking is innovation management. The guiding principle of innovation management is the market success of an innovation and the business model required in order to achieve it. From these considerations related to a success scenario for the innovation and the related success factors, the necessary measures are derived and the stage gate process is executed.

This type of thinking inspired by market success and the required influencing factors is reflected in Schneider's redesigned patent process, which is illustrated in the figure above. It involves the usual retropolation in strategic entrepreneurial thinking, i.e. the exact opposite of extrapolation. Retropolative thinking starts with a desired future situation and asks what measures and interactions are required in order to make this situation become reality in the future. Essentially, this involves anticipating future effects of IP and designing appropriate IP accordingly.

A prominent example of the importance of retropolative thinking are patent applications. As soon as it is clear what customer benefits an innovation offers, these customer benefits must be made exclusive vis-à-vis the competition. To this end, the competition must be prevented from offering the same customer benefits. The fundamental question is therefore how a competitor would achieve these customer benefits. In order to answer this question, potential technical solutions must be looked at. If these potential solutions are characterized by a sufficiently high level of novelty and inventiveness, they can be used as the basis for designing prohibitive rights in line with patent law. It is obvious that this process is essentially not about a company's own R&D efforts, but rather about developing prohibitive rights with a prohibitive effect within the scope of an innovative business model. Technical know-how is needed in this process in order to design such rights. Technical know-how is therefore the source of all technical and creative efforts, but not the trigger for the development of inventions. This IP process is therefore more synthetic than the traditional IP process which starts with an invention rather than the need for prohibition. What is

more, the inventive process in the traditional approach to IP is strongly linked to a company's own technological developments while synthetic inventing is primarily about designing prohibitive rights and customer benefits, bearing in mind the competition and its resources.

PART III

Summary and benefits for Schneider

The IP strategy of innovation leader Schneider was developed with a unique market and brand positioning in mind. Modulo is an innovation which achieves revolutionary levels of machine utilization and reaches new dimensions in terms of productivity in the manufacture of freeform spectacle lenses. The aim of the new IP strategy for Schneider was to align the customer-facing communication of special customer benefits with the exclusivities created by means of IP. Schneider's unique selling point is its perceived competitive position in the eyes of the customer as a result of Modulo. In particular, this requires the design of technology-related prohibitive rights based on the desired market position, as well as on the business model and potential scenarios. An additional goal was to steer employees' technological creativity towards the targeted design of prohibitive rights by means of systematic and method-driven processes. An IP portfolio structured in this way can sustainably secure Schneider's revenue and earnings stream and contribute to growth.

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What is the MIPLM?

The 21st century marks a new era as our economies increasingly rely on knowledge-based production processes and services. Consequently, the institutions responsible for education and research in the field of intellectual property law in Europe must provide appropriate training for staff from the respective professional environments to acquire or reinforce their ability to initiate, control, protect, exploit and increase the value of intangible assets. The knowledge-based economy integrates research and development activities, innovation, industrialization and the marketing of products and services including intangible assets and completely revolutionizes enterprise management. It creates new professions specialized in dealing with intangible assets: this branch of law attracts consultants and intellectual property experts from among managers, jurists and lawyers. Indeed, every innovation process generated by new economic activities assumes the intervention of the law, the installation of tools and structures for developing or planning in order to control the intangible assets and to optimize their valorization. It has therefore been the duty of CEIPI, University of Strasbourg, as a leading center for Intellectual Property Studies in Europe, to propose a master program on "IP Law and Management" (MIPLM) since 2005, which complements the existing training course for engineers, scientists and lawyers. This "European" master program features a continuous training scheme aimed at experts in the field of intellectual property. It provides a genuine education program based on an investigation carried out in large enterprises in Europe. The teaching staff comprises academics and experts from various countries, renowned for their work and competence in dealing with the impact of intellectual property on the policy of enterprises.

M. Yann Basire
Director General of CEIPI

Intellectual property has become a crucial factor and driving force in the knowledge-based economy. The economic development and the competitiveness of companies increasingly depend on the generation and exploitation of knowledge. Intellectual property can convert investment in corporate knowledge creation into economic benefits. Thus IP-based appropriation strategies form the basis for creating wealth and competitive advantages for companies from their R&D and innovation activities. The development and implementation of sustainable strategies for IP exploitation require a concerted integration of the disciplines involved in order to achieve an interdisciplinary perspective on IP. In a knowledge-based economy, companies can only achieve a competitive edge by combining the economic, legal and technological sciences. IP management within such a holistic approach provides optimized appropriation strategies and thus essentially contributes to the creation of wealth within a company. Accordingly, IP management needs skilled managers who can combine the economics of intangible assets in an intellectualized environment with multidisciplinary knowledge in order to maximize the benefits of IP. A new type of competencies, skills and underlying knowledge enters the arena of management and management education. The increasing impact of intellectualized wealth creation by investment in knowledge, R&D and innovation followed by its exploitation and IP-based appropriation calls for seminal new education concepts. The CEIPI program "Master of IP Law and Management" offers such a new type of management education. It follows an intrinsically multidisciplinary approach to meet the challenges and requirements of the knowledge-based economy. This master program combines legal, economic and management sciences and includes lectures from leading scholars in the field of IP law and management. Its ultimate objective is to qualify experienced IP professionals for acting as practically-skilled IP managers with a sound knowledge of the principles of wealth creation in our knowledge-based economy.

Alexander J. Wurzer
Director of Studies, CEIPI | Adjunct Professor
Director of the Steinbeis Transfer Institute Intellectual Property Management

Concepts of the Studies

Intellectual property and economics in the present context are two disciplines that exist in parallel.

Experts are found in each discipline, but with a lack of mutual understanding and training. Both "worlds" are nowadays bridged by experts, called IP managers, who link both disciplines through knowledge and experience. The CEIPI studies pursue a holistic approach and engage experts for the developing market of an IP economy. They are experts for basic economic management processes with specific assets. Management is understood in the broad sense of an overall company management and accordingly divided into six general functions:

- 1. Strategy
- 2. Decision
- 3. Implementation
- 4. Organization
- 5. Leadership
- 6. Business Development

On the basis of this differentiation skills should be allocated to management functions, and relevant knowledge to the functions and skills. The teaching concept focuses on both areas, skills and knowledge, as relevant to business with intellectual property.

Skills can be allocated to the specific management functions as relevant to the practical work within IP management. The skills are thus determined by the daily challenges and tasks an IP manager encounters.

For example, the "Decision" function includes skills such as "valuation and portfolio analysis techniques", and "Organization" as a function requires skills to manage IP exploitation and licensing including economic aspects as well as contractual design and international trade regulations with IP assets.

Special knowledge of economy and law is required in order to implement and deploy these skills in business. This includes knowledge of economic basics such as function of markets and internal and external influence factors. Additional management knowledge is also included such as value-added and value-chain concepts.

The legal knowledge includes contractual and competition law, and special attention will be paid to European and international IP and trade law, e. g. litigation, licensing, dispute resolution. Following this concept, IP law and management can be combined in clusters formed of specific skills and knowledge defined within each management function.

The lectures have a high international standard; the lecturers possess a high reputation and long experience in the teaching subject with academic and practical backgrounds.

The top-level experts come from the fields of law, economics and technology. The experts and the students work closely together during the seminar periods. Exchange of experience and, as a consequence, networking are common follow-ups.

Participants & their Benefits

This European master's program was designed especially for European patent attorneys, laywers and other experienced IP professionals.

Its ultimate objective is to qualify experienced IP professionals to act as IP managers with the practical skills and knowledge to deal with the new challenges of wealth creation and profit generation. Participants acquire first and foremost a new understanding of how intellectual property works in business models and are conveyed the necessary skills to achieve the systematic alignment of IP management and business objectives.

The course provides an international networking platform for IP managers and in addition enables participants to build long-lasting relationships and to further develop relevant topics within the field of IP management. Being part of this international alumni network also offers new job opportunities and publication possibilities.

Past lecturers and academics

Prof. Jacques de Werra,
University of Geneva

Prof. Estelle Derclaye,
University of Nottingham

Prof. Christoph Geiger,
University of Strasbourg

Prof. Jonathan Griffiths,
School of Law, Queen Mary,
University of London

Dr. Henning Grosse Ruse-Kahn,
Faculty of Law, University of Cambridge

Prof. Christian Ohly,
University of Bayreuth

Prof. Christian Osterrith,
University of Constance

Prof. Yann, Ménière,
CERNA, École des mines de Paris

Prof. Cees Mulder,
University of Maastricht

Prof. Julien Penin,
University of Strasbourg, BETA

Prof. Nicolas Petit,
University of Liege

Prof. Alexander Peukert,
Goethe University,
Frankfurt/Main

Prof. Jens Schovsbo,
University of Copenhagen

Prof. Martin Senftleben,
University of Amsterdam

Prof. Bruno van Pottelsberghe,
Solvay Business School

Prof. Guido Westkamp,
Queen Mary University London

Prof. Alexander Wurzer,
Steinbeis University Berlin

Prof. Estelle Derclaye,
University of Nottingham

Prof. Ulf Petrusson,
Göteborg University

Past lecturers and speakers, practitioners and institutions

Arian Duijvestijn,
SVP BG Lighting Philips

Dr. Lorenz Kaiser,
Fraunhofer-Gesellschaft

Peter Bittner,
Peter Bittner & Partner

Kees Schüller,
Nestlé S.A.

Thierry Sueur,
Air Liquide

Heinz Polsterer,
T-Mobile International

Dr. Fabirama Niang,
Total Group

Philipp Hammans,
Jenoptik AG

Leo Longauer,
UBS AG

Nikolaus Thum,
European Patent Office

Bojan Pretnar,
World Intellectual Property Organization

Romain Girtanner,
Watson, Farley & Williams

Prof. Didier Intès,
Cabinet Beau de Loménie, Paris

Malte Köllner,
Köllner & Partner Patentanwälte

Dr. Dorit Weikert,
KPMG

Keith Bergelt,
Open Innovention Network

Selected companies

3M Europe S.A.
ABB Corporate Research Center
ABB Motors and Generators
AGC France SAS
Agfa Graphics
Air Liquide
Airbus Defence and Space
Akzo Nobel NV
BASF Construction Chemicals
Boehringer Ingelheim Pharma
British Telecom
Clyde Bergemann Power Group
Danisco/Dupont
DSM Nederland
Fresenius Medical Care
Groupe Danone
Jenoptik
Kenwood
Nestec Ltd
Novartis AG
Philips
Plinkington
PSA Peugeot Citroen
Rittal
Sanofi/Aventis
SAP SE
Schlumberger Etude&Production
ST-Ericsson
Tarkett GDL
Total S.A.
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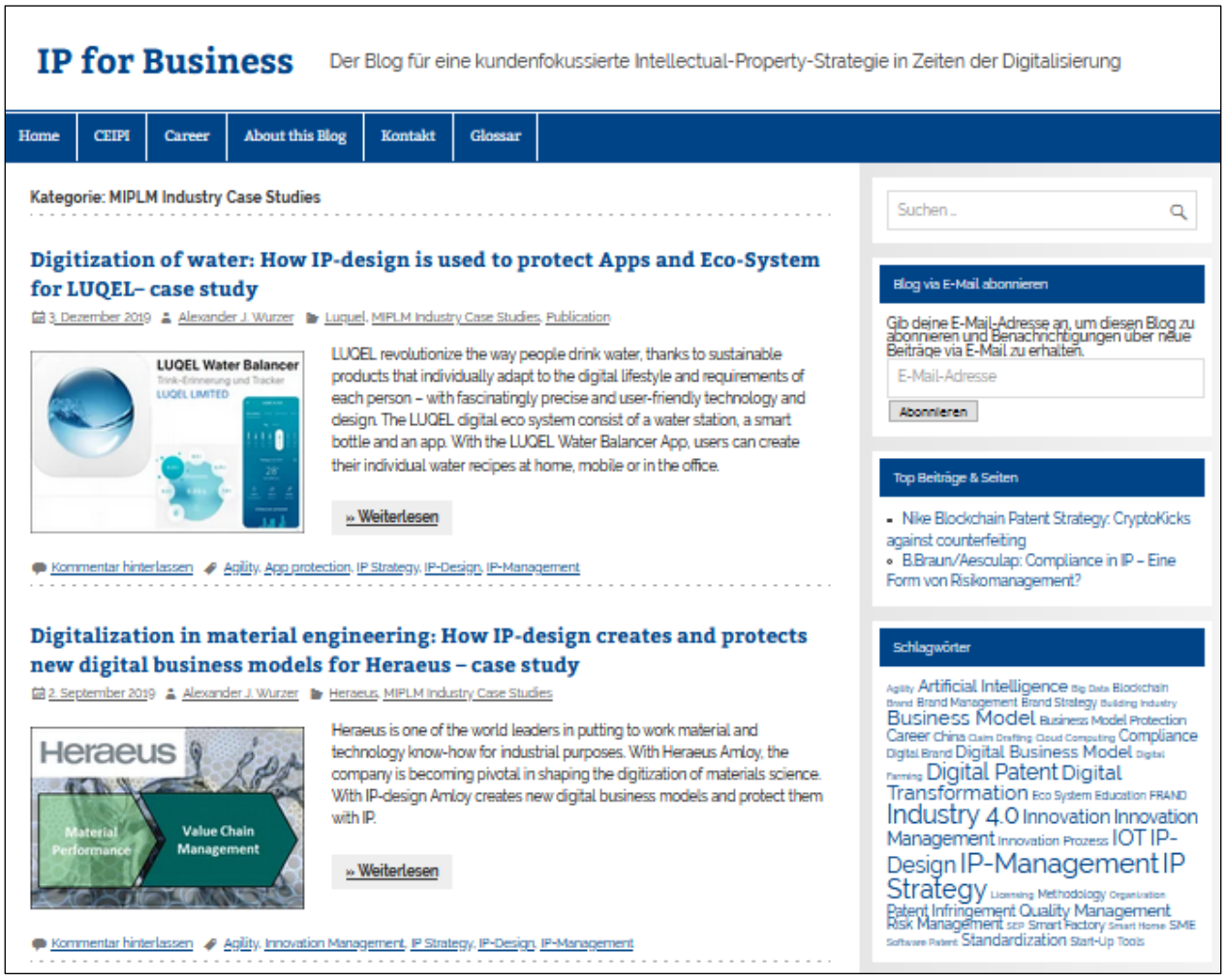

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