Industry Case Study Series on IP-Management

IFM
PMD in optical sensors

By Alexander J. Wurzer & Martin Buck

MIPLM Industry Case Study Series Nr.: ICSS2015-01-316
CEIPI, University Strasbourg in cooperation with
Steinbeis Transfer Institute for Intellectual Property Management
Steinbeis + Akademie, Thalkirchner Str. 2, 80337 Munich

GERMAN INNOVATION AWARD '19 WINNER

Center for International Intellectual Property Studies | CEIPI University of Strasbourg

CEIPI MASTER OF IP LAW AND MANAGEMENT

AUTHORS

Prof. Dr. Alexander J. Wurzer

Dr. Wurzer is Adjunct Professor for IP Management at the Center for International Intellectual Property Studies (Centre d'Etudes Internationales de la Propriété Industrielle, CEIPI) at the University of Strasbourg, where he has been Director of Studies for the Master's degree in Intellectual Property Law and Management (MIPLM) since 2007. Prof. Dr. Wurzer is Director of the Steinbeis Transfer Institute for Intellectual Property Management at Steinbeis University Berlin. He is Managing Partner at WURZER & KOLLEGEN GmbH, a consulting firm specializing in strategic IP management.

Prof. Dr. Wurzer is Chairman of DIN committees DIN 77006 for quality in IP management and DIN 77100 for patent valuation. He is a member of the Board of Directors of "Deutsches Institut für Erfindungswesen e.V." (DIE), Spokesman of the Board of Trustees awarding the Diesel Medal and Fellow at the Alta Scuola Politecnica at Milan/Turin Polytechnic. He is also a jury member for the 2018 German Innovation Award of the German Design Council and a member of the group of experts of the European Commission.

Martin Buck

Managing Director and Chairman IFM.

About IFM

IFM was founded in 1969 by Robert Buck and Gerd Marhofer to market their invention of inductive proximity sensors based on film technology. The company was originally founded to launch these sensors in the German market. Back in the day, conventional circuit boards were the most common circuit solution for sensors, but film technology offered enormous advantages in terms of installation, type, size, placement speed and quality, and therefore the reduction of faulty circuits. Since its inception, IFM has specialized in optimizing technological processes across virtually all industries from food and beverages to mechanical engineering. The acronym IFM stands for "*Ingenieursgemeinschaft für Messtechnik*" (English: Engineering Group for Measurement Technology). The company's fields of activity include position and fluid sensor technology, object recognition, diagnostic and identification systems, and communication and control systems.

The company headquarters are located in Essen, Germany, production is situated in Tettnang/Lake Constance. The company is managed by the sons of its founders, Michael Marhofer and Martin Buck. Further development and production sites are located in the U.S., Poland and Singapore. IFM operates in over 70 countries, with more than 5,000 employees serving some 115,000 customers from the mechanical engineering and manufacturing industries.

The company is generating more than €600 million and has grown by approximately 10% every year since its inception.

The continuous growth of IFM is strongly related to the ever-increasing automation in the industrial sector. Measurement technology, which includes methods and devices for determining and processing quantifiable parameters, is a key driver of automation technology. The role of sensors in this respect is to convert non-electrical technological functional variables into electrical signals.

Automation means technology which allows machines and equipment to operate without human intervention. This includes various technologies used for measuring, controlling, regulating, communication, security, and as human-machine interfaces.

Following the financial crisis, the business of automation resumed its worldwide growth by about 5% per annum. A distinction is made in automation technology between various closely related levels. Sensors for data acquisition, actuators for manipulation and bus systems for communication constitute the lowest level. The next higher level includes sensors for controlling, regulation, operation and monitoring, followed by sensors

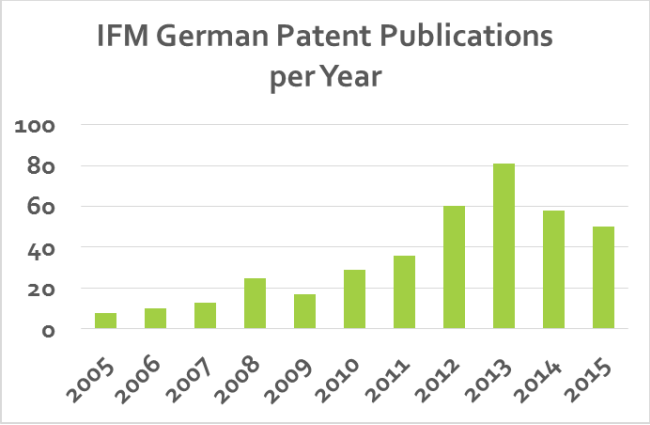
used for operating and process control, production planning and production data acquisition. IFM, with corporate rough planning and the corresponding evaluations, is at the top of the automation levels.

Due to the strong interdependence of these levels, systems availability in production is the most important customer requirement. Any stoppage or interruption leads to high consequential losses. Therefore, the exceptional quality and reliability of IFM's sensors is a key competitive advantage.

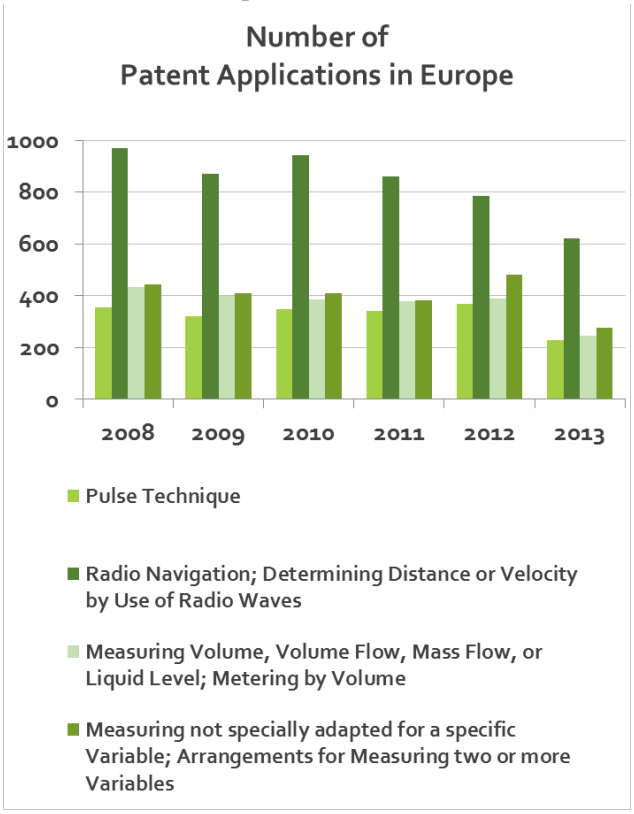
Sensor technology has been a driving force for increasing the efficiency of industrial processes since the beginning of industrial manufacturing. The first mechanical pressure sensors used for industrial purposes date back to the late 19th century. The next big step was the use of electricity in electrical machines, followed by the use of conveyor belts in production, which also led to the use of electrical sensors. Since the 1970s, electronics and information technology have been on the rise in automation and sensor technology. Sensors are also playing a key role in the next evolutionary step of the industrial revolution, Industry 4.0. One of the central challenges for IFM is to position itself within this dynamically developing and highly competitive environment.

The electronics industry is one of the most research-intensive and innovative industries in Germany. Innovation expenditure on projects dealing with the development and implementation of product or process innovations is similarly high as in the automotive industry and leads the industrial ranking with more than 9% compared to mechanical engineering, chemistry or the manufacturing sector. In the electronics industry, R&D expenditure exceeds fixed asset investments by a factor of 2.3. No industry in Germany ranks higher in this respect. These enormous future expenditures on generating expertise also exert great pressure on the use of intellectual property for the protection and creation of a competitive advantage.

This is also the case at IFM, a company with an R&D ratio of 9%. Since its inception, the company has registered more than 600 patents. In 2012, IFM even was among the 50 most active patent applicants in Germany with 113 patent pending inventions in that year alone.



A large amount of patent activity is also taking place in IFM's competitive environment. Companies such as Sick, Balluff, Pepperl & Fuchs, Leuze, and Wenglor are also trying to occupy their own competitive positions by means of an active patent policy. The different players in the sector are very much aware of the central importance of sensor technology for the next step of industrial manufacturing. Therefore, they secure themselves future potentials by means of patents in order to stay flexible and competitive for their industrial customers. As a result, innovation and patent activity are of enormous strategic importance within IFM's competitive environment.



The challenge

Hannover Messe is the world's most important industrial trade fair and has been the venue for the Hermes Award, a technological innovation prize, since 2004. The winner receives prize moneys of €100,000, making the Hermes Award one of the most generously endowed technology awards worldwide. In 2005, the Hermes Award went to IFM for the first optical distance sensor using PMD technology – one of the many awards the company has received in recent years. The assessment criteria for the award include the degree of technological innovation, economic considerations as well as a reality test in industrial use. The distance sensor provides compelling advantages in these respects and therefore constitutes another milestone in automation technology.

PMD (Photonic Mixing Device) sensors are optical sensors based on the operating principle of the time of flight method. This is why we also speak of TOF cameras. Due to their integrated PMD sensors, TOF cameras are also referred to as PMD cameras. Measurements are taken by exposing the object to be measured to light impulses and determining the time of flight based on the time of flight of the light signals being reflected between the camera and the object.

The challenge for IFM was to make this sensor for optical distance measurement inexpensive, reliable, robust and compact enough for the industrial automation market. This was achieved by means of the system-on-chip design, which combines both the sensor element and the electronics for signal evaluation on a single silicon chip, the so-called Photonic Mixer Device (PMD). The PMD sensor provides important information for further process automation for the most important trends in automation technology, including safety and efficiency.

One example is collision protection for elec-

tric overhead conveyors between two industrial goods such as car bodies, or in logistics, where the sensor detects whether high rack shelves are occupied.

An important feature of the PMD sensor is its background suppression capacity at large distances and its simultaneous ability to detect objects the size of a nut. Background suppression permits the sensor to focus on the relevant moving object only, and not on any interference from the environment. Alternative technologies for distance measurement such as ultrasonic sensors or conventional time of flight systems either have a significantly shorter range or are significantly more expensive.

The potential industrial applications of PMD sensors are virtually endless: from slack regulation in the processing of flexible materials such as fabrics, edge detection, object counting and the clearance monitoring to fill level measurement and crane collision protection.

Due to the industry's highly positive response to IFM's PMD solution, IFM was striving for further integration and miniaturization of the sensor in order to provide a fully integrated measuring system for determining distances, including, for example, digital calculation of distances, correction of systematic errors and verification of measured values.

The aim of the 2012/2013 innovation project was to become the first supplier in the market to be able to use TOF technology in optical standard sensors. Larger detection ranges as well as colour independence are both customer benefits and offer a competitive advantage. Thus, at least half of conventional systems such as push buttons, one-way and reflection light barriers can be replaced by this sensor.

The large detection range of this sensor permits its installation at a safe distance from the manufacturing process, ensuring that no sensors are in the way of production floor staff. The integrated electronics as well as the operating concept allow for the sensor to be configured prior to commissioning by using the required distance value as specified by the system designers, for example. It is even possible to simulate manufacturing processes on a computer. This permits the simulation and thorough testing of complete virtual systems.

In this innovation project, IFM implemented greater systems integration and achieved significant direct competitive advantages, customer benefits and corresponding cost advantages by means of more compact designs. The new system allows IFM to blur previous sector boundary between high-quality distance sensors and standard sensors. Due to the high strategic importance of the innovation project, the company's IP management had to be optimized in this project in order to achieve greatest possible integration of innovation management and IP management, and to support the strategic objectives of IFM.

Alignment of Innovation and IP Management

As part of the reorganization and professionalization of the company's project management, the innovation process at IFM also underwent a redesign. The aim of these restructuring measures was to support the creative process without drowning in over-regulation and formalization. With more than 100,000 customers in 70 countries and over 1,000 sales representatives visiting 2,500 customers every day, the company accumulates large amounts of market information. The IFM product range comprises more than 7,800 items. Customers' current and potential future problems and challenges are addressed periodically in sales meetings. IFM then

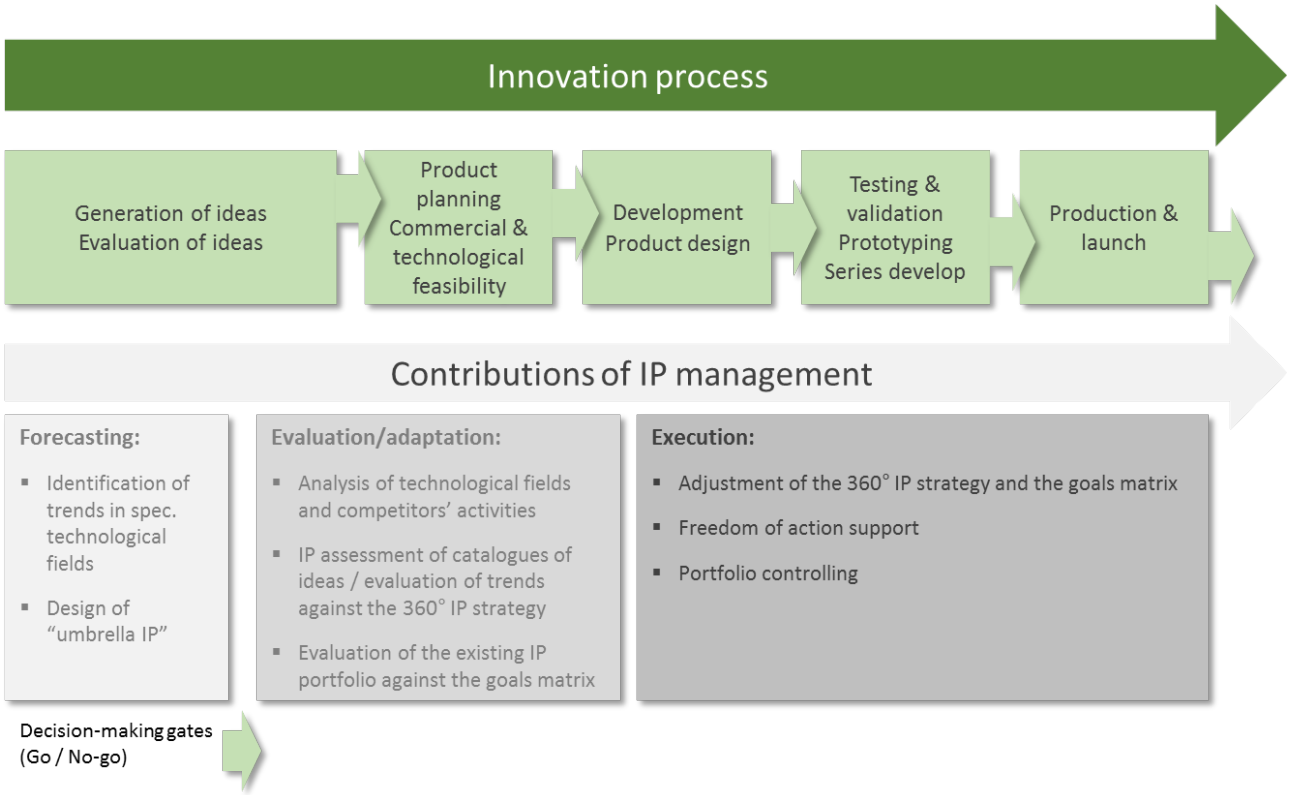
searches for a solution. In addition, there are processes which are initiated based on internal deliberations and build on fundamental technology trends or product maintenance, for example. IFM's philosophy in this respect is that good ideas are always welcome from any employee.

The creative process seeks to support this innovative climate and make it manageable while integrating IP in the most seamless and value-adding manner possible. The management of the innovation process starts with a feasibility analysis of the project and ends with getting the innovation ready for serial production. The process as such is designed as a classic stage-gate process with a database supporting the electronic workflow for project processing and documentation. The IFM innovation process is embedded in a higher-level quality management process. IFM is ISO 9001 certified for the development, production, and sale of sensors, system communication, and control technology. The process model for the innovation process includes the steps, activities, and roles of those involved across all locations and departments. It is important in this respect to distinguish between who is responsible for carrying out a specific activity and who is supervising the specialist department carrying out the task. Employees are responsible for developing solutions independently and documenting their tasks and activities. They support the project owner and the project manager. This is to ensure that employees are clear about and adhere to their roles, even in complex projects and during intense innovation phases.

The IPK Intellectual Property and Knowledge Management specialist department supports the innovation process. IPK understands its role in designing and structuring the IP portfolio required for IFM as an active one, beginning with the design of inventions. IPK responds not just to inventions but rather identifies ideas and necessary strategic dissemination areas early on in the innovation process. The integration of IPK in the process starts with the identification of customer needs and customer issues. Moreover, IPK pursues technology trends and translates them into current products in order to identify potential legal barriers introduced by third-party patents and to allow the company to occupy important competitive positions.

Depending on the temporal proximity to the SOP (start of production) of a product, we can distinguish between three phases in patent design based on the innovation process (see Fig. 1).

- Forecast



IPK analyzes technology trends and their implications for IFM, the company's competitive position, and the future of its products. If these analyses provide indications that IFM should occupy its own patent positions in order to avoid losing future proprietary developments to the competition, the company designs its own prohibitive rights. These blocking patents (including umbrella IP) give IFM freedom of action to use interesting and relevant technology trends for its own future products.

- Evaluation/adaption

  This is the area of early stimulation and evaluation of idea catalogues from and in collaboration with different sources such as marketing, sales, R&D, production and, in particular, product management. This area is also about making future proprietary developments marketable and safeguarding necessary or voluntary investments by preventing third-party imitation. The prior art created in this way seeks to suppress potential third-party patent positions on IFM inventions in individual cases. In order to evaluate these stimulated and identified inventions and ideas, IPK has developed an appraisal scheme which distinguishes between aspects of technical and economic importance, and also takes into account the influence of external and internal factors. This leads to a targeted development of the desired portfolio structure. In addition, it allows for budget security and cost forecasting.

- Implementation

  During the actual product development stage, a product strategy developed in advance is implemented, which takes into account the respective desired positions of exclusivity, both in regards to product features and customer benefits, and ensures the marketability of the product. IPK is involved in the entire development process and ensures the adaptation of strategic requirements whenever new insights regarding the feasibility of inventions come to light, for example in production.

IP strategy development for PMD in optical sensors

Due to the intensive interaction of IPK with the innovation process and the necessary integration of various functions, a uniform information base had to be created in order to derive and implement the IP strategy. From the perspective of IPK, these efforts had to be directed at stimulating ideas and inventions, prioritizing and channelling them, and operationalizing the catalogue of criteria for specific projects in order to ensure an evaluation in line with the economic and strategic goals of the PMD project. The project team put in charge of drafting the IP strategy was appointed by senior management to ensure integration of the most important areas of expertise and to anchor the strategy in the functions concerned. Head of Development Mr. Fensterle, Head of IPK Dr. Kornmeier, Project Manager Mr. Kister, and Technology Manager Mr. Musch, who was responsible for the innovation process, were involved in the project.

The strategic approach for IFM is based on fundamental considerations approved by senior management:

- IFM operates as a premium supplier within a competitive product environment based on differentiation.

- IFM is an innovative company and benefits from an excellent competitive position due to its innovative strength.
- IFM must convince its customers of the advantages over the competition it delivers in terms of product performance and customer value.
- Beyond the brand effect as such, IFM is generally well-positioned to enforce premium prices and market shares in the market by providing outstanding customer benefits.

The following questions regarding the objectives of the IP strategy can be derived from the above for the use of IP in PMD sensors and for IFM in general:

- How can IP be aligned with characteristics of relevance to the customer and therefore with concrete business objectives?
- How can IP be used in a way that allows IFM to enforce premium prices for customer benefits?
- How can IP risks for an innovation project be made as transparent as possible?
- How can IP strategy budgets be deduced which lead to a direct optimization of the cost-benefit ratio?

Based on these questions, a project was designed, which focused on the further development of the PMD sensor but can also be applied to IFM innovation projects in general. Its guiding principles were

- to reduce the risks involved in innovation activities,
- to increase the chances of market penetration and the enforcement of premium prices on the basis of customer benefits which offer greatest possible exclusivity, and
- to achieve a targeted competitive effect along the customer benefit and the customers' willingness to pay.

A distinction must be made between the following two objectives:

- Effectiveness goal of IP management: strategic excellence
- Efficiency goal of IP management: operational excellence.

Strategic superiority within IFM's differentiation-based competitive environment is essentially achieved by creating an exclusive offer with a superior customer benefit. This is the basis for enforceable premium prices. In addition, competitive activities are to be suppressed or slowed down. IP is consistently used as a prohibitive legal tool.

Operational excellence can be achieved by anchoring IP in the operational reality of IFM's process world, in particular in the innovation process. The use of tools and information sources must be so effective that it provides an actual and useful knowledge edge, especially for IP and innovation work. Essentially, what is required is an awareness within the company that IP is not only a task for the patent department. The goal is to define the role, task and benefits of IP outside the patent department, and to make all employees internalize these factors.

For this purpose, binding rules along the innovation process must be defined outside the patent department, especially for the following areas:

- Definition of IP goals
- Responsibilities
- Process quality
- Structure of the strategic levels
- Risk management
- Level of formalization
- Budgeting

At the beginning of the project, the economic levers available to IFM when using IP in PMD sensors were analyzed. Since PMD sensors are marketed in a differentiation segment and offer specific benefits for specific applications compared to alternative products, the customer benefit can be communicated argumentatively. Simultaneously, the customer benefit is based on technological product characteristics permitting the use of patents in order to make that benefit exclusive vis-à-vis the competition. The use of IP to create a legally enforceable USP (unique selling proposition) for the highly integrated PMD sensors therefore appears to be expedient from an economic point of view.

The main drivers behind the PMD project are the miniaturization and integration of sensor components, and greatest possible product simplicity from a production and customer perspective. Along these characteristics, IFM had to achieve greatest possible exclusivity and protect it by legal means.

The IP portfolio around the PMD sensor and its further development was designed around said exclusivity requirements. On the one hand, this allows IFM to offer greatest possible exclusivity in terms of customer benefits. On the other hand, it creates exclusive cost potentials and economies of scale

through the use of microelectronics and efficient production technologies.

In particular where operational excellence in IP management is concerned, this has led to greater consistency between strategic levels due to the greater integration of IP in the innovation process. In addition, the systematic use of information methods such as IP-FD (Intellectual Property Function Deployment) has led to process quality improvements. This, in turn, has led to greater transparency and uniformity of information on complex technology situations. Particular advantages were achieved by implementing a policy of "thinking in enforceable exclusivities", which has led to a stronger focus on customer benefits.

Benefit for IFM

IFM is a fast-growing company operating in a dynamic market environment. Due to the variety of products and customer requirements, IFM is confronted with a highly complex innovation and product development process. At the same time, the company is required to achieve greatest possible efficiency in order to keep up with the competition. In parallel, a comprehensive patent portfolio has emerged from the high level of innovative strength, and the close integration of IP with idea generation and the innovation process. The challenge is now to continue to grow the patent portfolio in a targeted manner whilst keeping its costs as low as possible.

This is achieved by defining precise IP strategy objectives in order to create legally enforceable USPs for products, by the support provided to inventors by IPK, and by fostering a culture which focuses on what is feasible and on what is important from a strategic point of view. The introduction of new tools has led to improved communication in project teams and an orientation at exclusivity requirements based on customer benefits. As a consequence, the budget for IP applications is being used in a targeted manner for IP which is economically relevant within a competitive environment based on differentiation.

The use of these tools has brought about a risk reduction within a competitive environment characterized by substantial patent activity as well as the integration of the FOA process in the innovation process. Insights into technology trends have led to greater responsiveness to the rapidly evolving requirements from IFM as an automation expert within the context of new challenges arising from Industry 4.0, i.e. the digitization of production processes and the Internet of Things.

Contact
Alexander Wurzer
Alexander.Wurzer@ceipi.edu

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

Kees Schüller,
Nestlé S.A.

Thierry Sueur,
Air Liquide

Heinz Polsterer,
T-Mobile International

Dr. Fabirama Niang,
Total Group

Philipp Hammans,
Jenoptik AG

Dr. Lorenz Kaiser,
Fraunhofer-Gesellschaft

Leo Longauer,
UBS AG

Nikolaus Thum,
European Patent Office

Bojan Pretnar,
World Intellectual Property
Organization

Romain Girtanner,
Watson, Farley & Williams

Peter Bittner,
Peter Bittner & Partner

Prof. Didier Intès,
Cabinet Beau de Loménie, Paris

Malte Köllner,
Köllner & Partner Patentanwälte

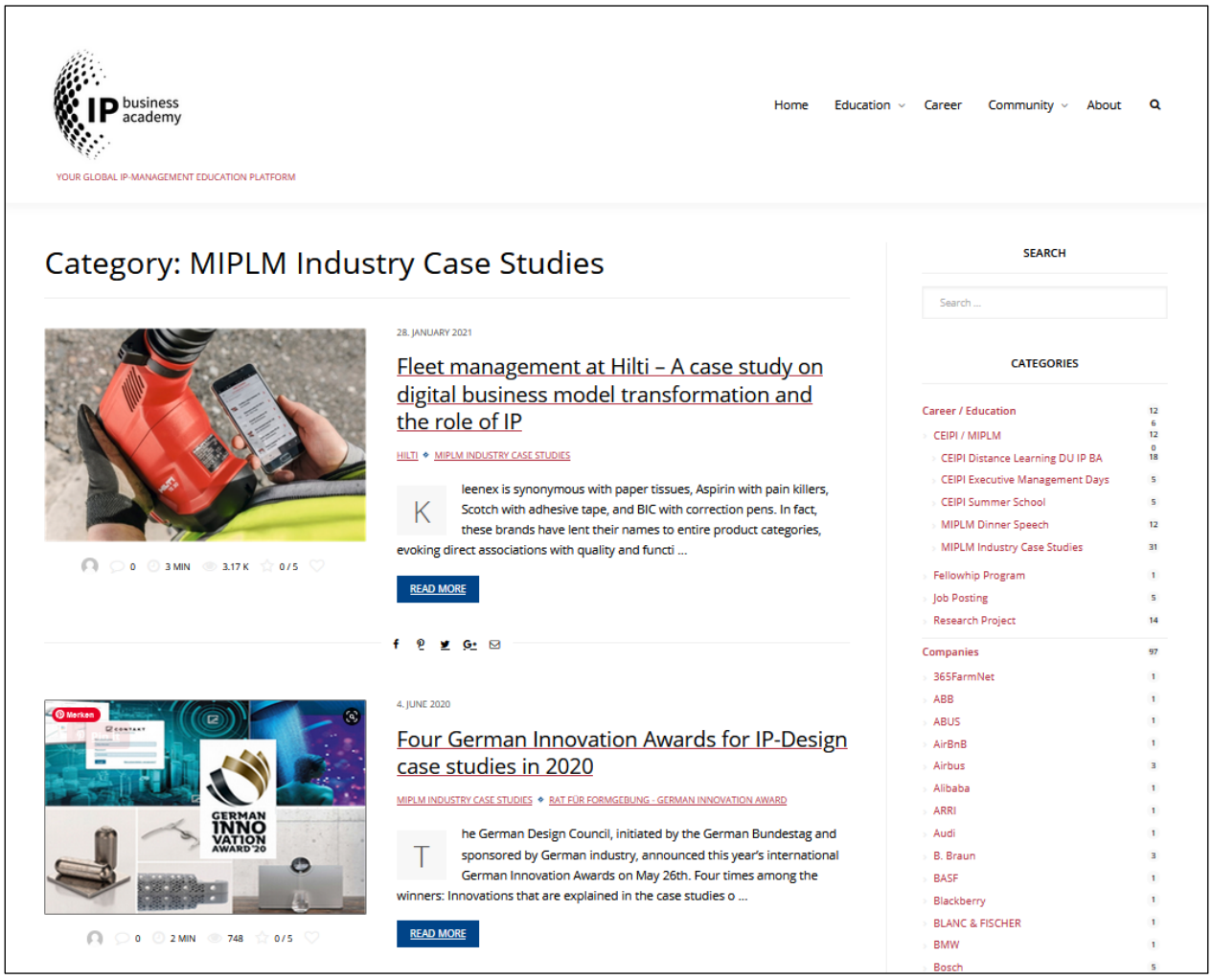
Dr. Dorit Weikert,
KPMG

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.
UBS AG
Unilever

Follow us on: http://ipbusinessacademy.org



Weitere Fallstudien finden Sie unter

www.wurzer-kollegen.de/fallstudien