

IP Design at work - IP management framework at WILO



Introduction

WILO is a German-based company specializing in manufacturing pumps and pump systems for building services, water management, and industrial applications. Founded in 1872, WILO has grown into a global leader in the industry, renowned for its innovative solutions and cutting-edge technology. The company focuses on sustainability and energy efficiency, offering a range of products that include high-efficiency pumps and smart water management systems. WILO operates worldwide, serving customers in over 60 countries, and is headquartered in Dortmund, Germany. The company's commitment to innovation is reflected in its significant investment in research and development, aiming to address the growing global demand for efficient water and energy use.



Fig. 1: The Wilopark - Combining ecological and economic sustainability as well as flexibility and space efficiency.

WILO employs around 8,000 people worldwide and generated sales of approximately €1.9 billion in recent years. The company is renowned for its significant investment in research and development, dedicating about 5% of its annual revenue, which amounts to approximately €60-70 million, to drive innovation and sustainability in its product offerings. This substantial commitment underscores WILO's focus on developing advanced technologies and sustainable solutions to meet the evolving needs of the water management and pump industry as well as solidifying its position as a leader in the industry.

WILO provides advanced pump solutions across various sectors to enhance performance, efficiency, and reliability. In building services, WILO offers high-

efficiency heating pumps for central heating systems, cooling pumps for air-conditioning systems, and pressure boosting systems to ensure reliable water supply and consistent water pressure in multi-story buildings. For water management, WILO's range includes water supply pumps for municipal and rural areas, robust sewage pumps for wastewater management in residential, commercial, and industrial settings, and flood control systems to prevent and manage flooding. In the industrial sector, WILO caters to needs with cooling and refrigeration pumps for critical settings like manufacturing facilities and data centers, high-performance boiler feed pumps for industrial boilers, and versatile process pumps for industrial applications.

WILO integrates digital technologies into its products, offering smart pumps with intelligent control systems that optimize performance and enable remote management. Their solutions seamlessly integrate with building management systems for centralized HVAC and water management control, while IoT-enabled products provide real-time data and insights to optimize system performance and maintenance.

WILO ensures comprehensive customer support with expert technical assistance for product selection, installation, and maintenance. Training and education programs keep customers and partners informed about the latest technologies and best practices. Robust after-sales service addresses any issues, ensuring the long-term reliability and efficiency of WILO products, thereby building lasting relationships and providing ongoing value.

Strategy Development at WILO

“At WILO, we see megatrends as global change processes that enable us to change our world and make life easier for people.” – Oliver Hermes, CEO WILO Group

WILO's Corporate Strategy evolves around several mega trends, each addressing significant global challenges and opportunities. One such trend is urbanization. WILO offers smart, digital products and solutions tailored for rapidly growing infrastructures, thereby contributing to the development of smart urban areas and smart cities. In response to water scarcity, WILO is committed to the principle that access to safe drinking water is a human right. The company develops solutions that ensure a reliable supply of this precious resource worldwide, aiding in the supply, treatment, and transport of water. Globalization 2.0 reflects the complexity of modern global interactions, where traditional global networks of trade,

communication, migration, and transport are increasingly experiencing decoupling processes, such as the canceling of previously secure alliances. WILO navigates these changes by adapting to new market dynamics and opportunities.

Climate change represents another critical focus area. Companies worldwide are recognizing their social responsibility to combat climate change by adopting sustainable business practices. WILO identifies and leverages these obligations as opportunities for innovation, securing long-term competitive advantages. Lastly, in addressing energy shortages, WILO emphasizes the development of energy-efficient products, smart grids, and renewable energy solutions. This includes pioneering new technological advancements such as green hydrogen, positioning WILO as a leader in sustainable energy solutions. A major role within WILO's Corporate Strategy plays its sustainability strategy which is an overarching strategy to which other functional strategies in the company are aligned:

“The Wilo Group’s business development in 2023 shows once again that the consistent implementation of a strong strategy and – now more than ever – multilateral actions are required. Those who build bridges, change perspectives and drive long-term and sustainable innovation will also be able to navigate safely through challenging times in the future.” - Oliver Hermes, CEO WILO Group

Intellectual Property Management at WILO

WILO has established a robust and globally integrated Intellectual Property (IP) management system to support its innovative endeavors and protect its technological advancements. The IP department plays a pivotal role in aligning with the company's strategic goals, ensuring that intellectual property is effectively managed and leveraged worldwide. The strategic distribution of WILO's IP department, combined with a standardized and efficient approach to IP generation, ensures that the company can effectively manage its intellectual property on a global scale. This structure supports WILO's international R&D activities, fosters innovation, and protects the company's technological advancements, aligning closely with WILO's overarching strategic goals.

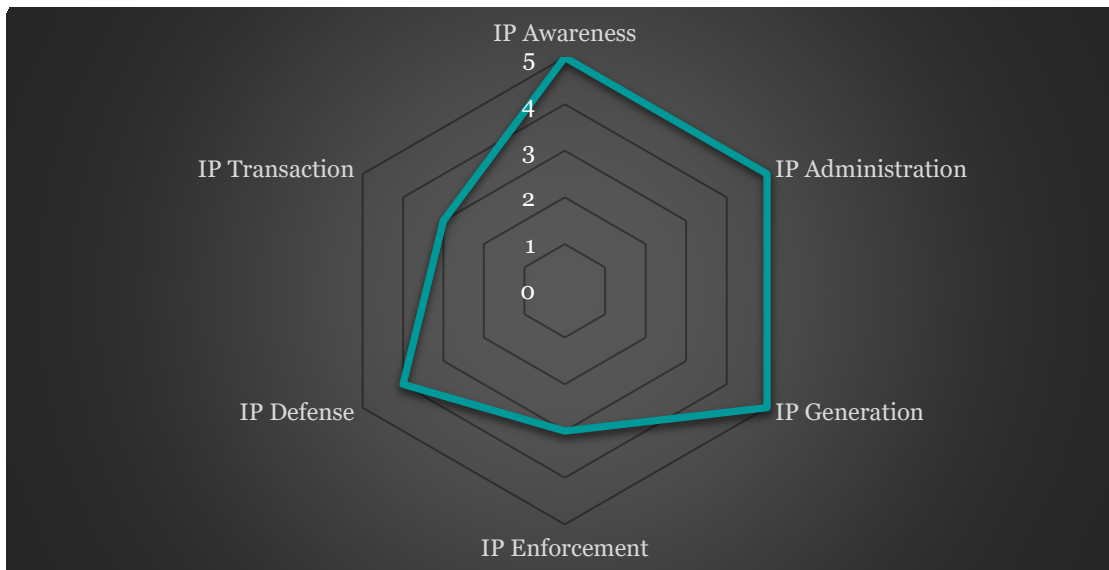


Fig. 2: Evaluation of WILO's IP Management rated from 0 (non-existent) to 5 (outstanding).

In an evaluation of the intellectual property management at WILO, the company demonstrates remarkable proficiency in several key areas. WILO has achieved perfect scores of five out of five in IP Awareness, IP Administration, and IP Generation. These scores reflect the company's strong emphasis on cultivating an innovative culture, meticulous oversight of IP assets, and active generation of valuable intellectual properties. However, the scores in IP Enforcement and IP Transactions are both at three out of five, with IP Defense slightly higher at four out of five. This scoring pattern indicates a strategic decision rather than a deficiency. Operating in a competitive environment where there is a high mutual respect for IP rights among competitors, WILO focuses on building a substantial IP portfolio in an environment. This environment allows WILO to devote fewer resources to the more contentious and less critical areas of IP enforcement and transactions. This strategic choice distinguishes WILO from companies in other sectors, such as Non-Practicing Entities (NPE), where the exploitation of IP rights may be pursued more aggressively.

Centralized Coordination and Strategic Alignment

The central IP department is located at WILO's headquarters in Dortmund, Germany. This ensures that the IP department is closely aligned with C-Level decision makers, facilitating strategic decision-making, and ensuring that IP strategies are in sync with the overall business objectives of the company. The main role of the central IP department is to deal with IP issues that require globally consistent management. The IP department is also responsible for sharing standards, processes, and best

practices with locally responsible IP specialists to maintain a high degree of local market focus while maintaining a globally coordinated approach to IP issues within the company.

Global Distribution and Local Integration

Recognizing the global nature of its business, WILO has appointed IP specialists in key regions through local divisions in France, China, Korea, India, and the USA. These IP ambassadors form a network within the organization and serve as the first point of contact for local engineers, marketing or product managers on all IP-related matters.

Role of IP Ambassadors

IP ambassadors play a pivotal role in WILO's IP management system. These experts, trained either technically or legally, serve as local IP Managers. They act as a crucial link between the local Wilo entities and the central IP department. The primary role of these ambassadors includes being the initial point of contact for local teams, aiding in various IP-related matters. Among other topics, they assist engineers in understanding and navigating the company's processes for filing invention disclosures and help local managers in identifying counterfeit products in their markets. Additionally, they can provide information about WILO's intellectual property rights to local sales teams when requested by customers.

A continuous and regular exchange between the Group IP department and IP ambassadors is vital for the ongoing improvement of the company's IP management. This exchange helps in sharing best practices across the group and adapting IP policies to meet the specific needs of local markets when necessary. Through their efforts, IP ambassadors ensure that the importance of IP is well understood across the organization and the processes are integrated smoothly into development workflows.

Standardized Processes and Tools – The WILO Patent Review Board

WILO has refined its IP generation process by adopting a standardized approach for Invention Disclosure generation and patent application selection across all its global locations. This method utilizes advanced software tools to ensure consistency and efficiency in IP documentation and generation. To enhance local IP generation activities while maintaining high quality standards, Patent Review Boards are also held in local regions, like China. This localized approach ensures

that specific regional insights and needs are integrated into the broader IP strategy without compromising the stringent quality standards WILo aims to achieve.

The composition of the Patent Review Board is a diverse group encompassing members from the IP Department, Engineering teams, and Market side, ensuring a holistic information exchange on new inventions. This diversity facilitates a broad and well-rounded view, enhancing the decision-making process regarding the patentability and strategic alignment of innovations.

Regular Patent Review Board meetings are essential to this approach. These meetings assess inventions for patentability and ensure that patent filing activities are aligned with the company's business goals. The standardized patent disclosure process established by the Patent Review Board format guarantees uniformity across the company, irrespective of departmental or national distinctions.

Key inputs into these meetings include

- Invention Reports providing an overview, benefits, and technical insights of each invention;
- Prior Art Search to analyze existing technologies and patents;
- Expert Opinions and Patentability Assessments from technical experts; and
- Business Impact evaluations to determine the potential value of the invention to the company.

During these meetings, a comprehensive evaluation framework is applied which extends beyond traditional criteria such as mere patentability. This framework includes evaluations based on claim coverage, ease of detection, technical value, and business value.

- Claim Coverage is assessed to ensure that claims are broad enough to protect against a wide range of similar technologies while being narrow enough to be officially granted, hence preventing easy circumventions by competitors.
- Ease of Detection plays a crucial role by determining how straightforward it is to identify whether a product infringes on the patent either through direct inspection or marketing tactics, enhancing the enforceability of the patent.

- Technical Value reviews the innovation and utility of the invention, with high technical value indicating significant advancements in its field, thereby strengthening the patent's defensibility.
- Business Value evaluates the commercial potential of the invention, considering market size and potential revenue opportunities, ensuring that the patent supports the company's financial objectives and justifies the investments made.

The outcomes of these Patent Review Board meetings allow WILO to make nuanced decisions on each invention, creating appropriate IP protection based on the specific circumstances and strategic value of each invention. The possible decisions include:

- File a Patent Application: Proceed with patenting the invention.
- Reject Application: Not proceed with patenting the invention.
- Trade Secret: Opt to keep the invention internal to protect its confidentiality.
- Defensive Publication: Disclose the invention publicly to prevent others from patenting it.

This meticulous and multifaceted evaluation not only streamlines WILO's patenting efforts but also tightly aligns them with strategic business objectives, optimizing the protection and exploitation of IP. Additionally, this uniform approach fosters clear and efficient communication channels, enhancing collaboration across WILO's globally dispersed IP teams.

IP Strategy – the WILO Way

“Strategy, especially IP strategy, is about doing the right things and doing them right” – Dr. Matthias Rabbe, Head of IP at WILO

WILO's IP strategy is designed to secure competitive advantages, ensure sustainable growth, and protect its innovative endeavors. The main objective of IP management is not only to act as an administrative body for WILO's intellectual property rights, but also to make a positive contribution to the company's success.

IP management at Wilo focuses on four fundamental activities: Protect, Detect, Respect and Impact. These four key areas of activity can be categorized by the manner in which IP is used (offensive or defensive) and the time horizon (present or future).

WILO IP Management

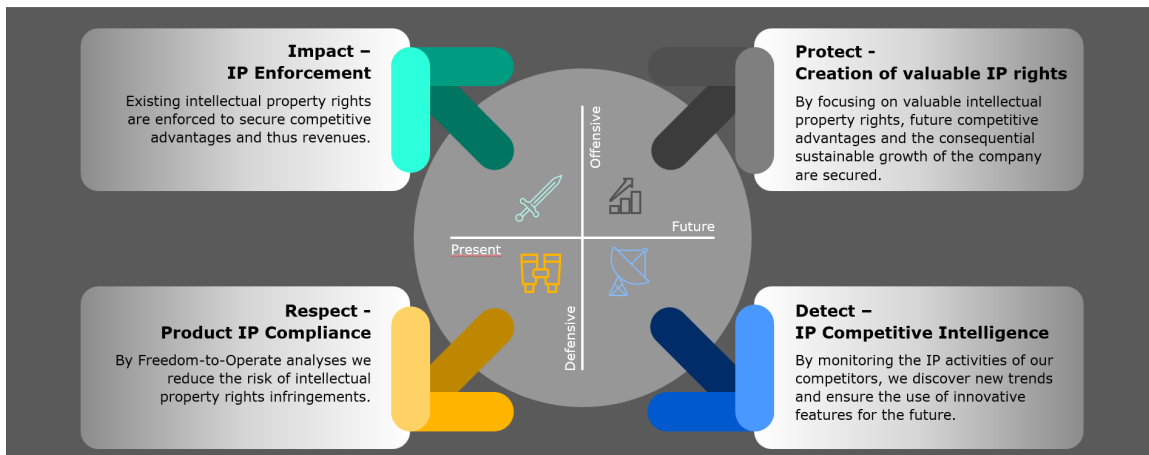


Fig. 3: The four key activity fields around which the WILO IP Strategy is built: Protect, Detect, Respect, Impact!

1. Protect: Creating Future Return on Innovation

To ensure sustainable growth and secure future competitive advantages, WILO adopts a proactive approach to generating valuable intellectual property (IP). WILO's strategy for creating new IP goes beyond the traditional way of generating IP as a by-product of our product or technology development projects. WILO also proactively generates IP with specific goals in mind to strategically position the company in the competitive landscape. This involves collaborative efforts across all company departments and encompasses various types of IP rights.

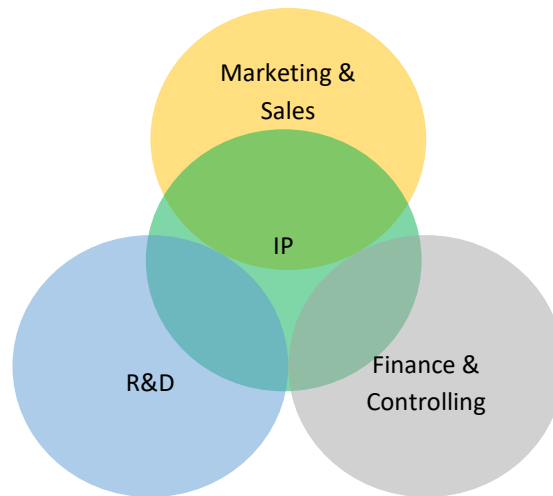


Fig. 4: IP Generation at WILO – Teamwork across all departments.

a. General Goal

With IP-Generation WILO aims at the protection of their products, components, and services, ensuring that the underlying innovations are safeguarded from their competitors. However, IP-Generation is also used to secure Freedom to Operate (FTO). To maintain open access to promising future markets, WILO also creates the state of the art by filing its own patent applications or defensive publications. The aim of this approach is to prevent competitors from securing exclusive rights in advance that could be a barrier to market entry. In this way, WILO not only protects its innovations embedded in its current or future products, but also ensures a competitive and dynamic market, fostering an environment in which innovation can flourish without undue constraints. Especially during the early stages of development when the final features of products or services are still being defined, securing FTO is crucial to not hinder the development process. Therefore, patent applications are not only filled to protect finalized products, but also to keep options open for the development process with respect to the implemented technology stack. This way, WILO can ensure innovation without infringement of existing third party IP rights.

b. Different IP rights at WILO

When it comes to the different types of IP rights, patents are a primary focus of WILO. This is due to their historical importance and the successful history of the company built on patents.

“Ever since, the WILO’s success was closely connected to its innovation and IP, in particular patents.” - Dr. Matthias Rabbe, Head of IP at WILO.

However, trademarks and design rights also play a crucial role in building WILO's brand image, product distinctiveness as well as customer relationship management. For this purpose, a close collaboration with the marketing, sales and product development departments was established to ensure that IP is integrated into the day-to-day business. This way, all distinctive features – technical features as well as visual cues – of WILO products can be protected with IP rights.

aa. Patents

WILO’s strategy involves adapting to significant trends and changes in the industry. For example, the company’s traditional focus on mechanical engineering and hardware products is shifting towards software (e.g., AI and IoT), services (e.g., SaaS) and digital concepts or business models (e.g., predictive maintenance). These additional services are even becoming mandatory for certain projects, such as large infrastructure projects, where clients expect integrated solutions (e.g., for monitoring) as part of the offered products.

Accordingly, WILO’s products and thus also its patent portfolio comprises a plurality of solutions for digital concepts and services. These solutions for example include:

- A software method for predictive maintenance of a pump unit using intelligent pattern recognition based on audio signals (cf., EP4361582 A1):

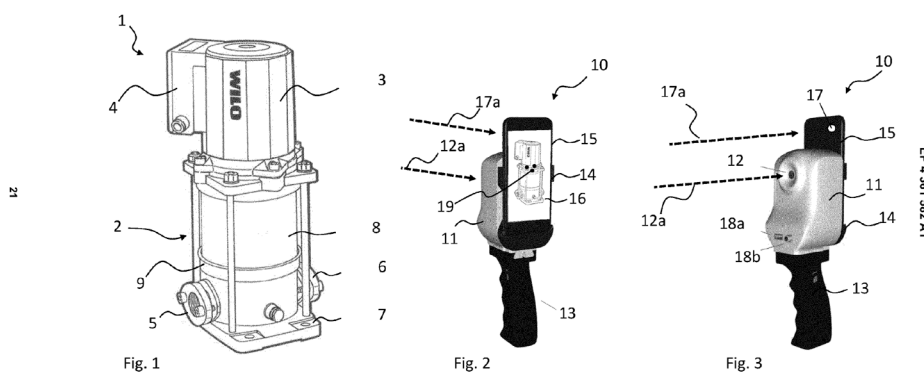


Fig. 5 Audio-based predictive maintenance solution by WILO.

- Software based methods for determining the flow rate (Q) or head (H) of a speed-controlled centrifugal pump without the need of volume flow sensors (cf., EP 4198317B1):

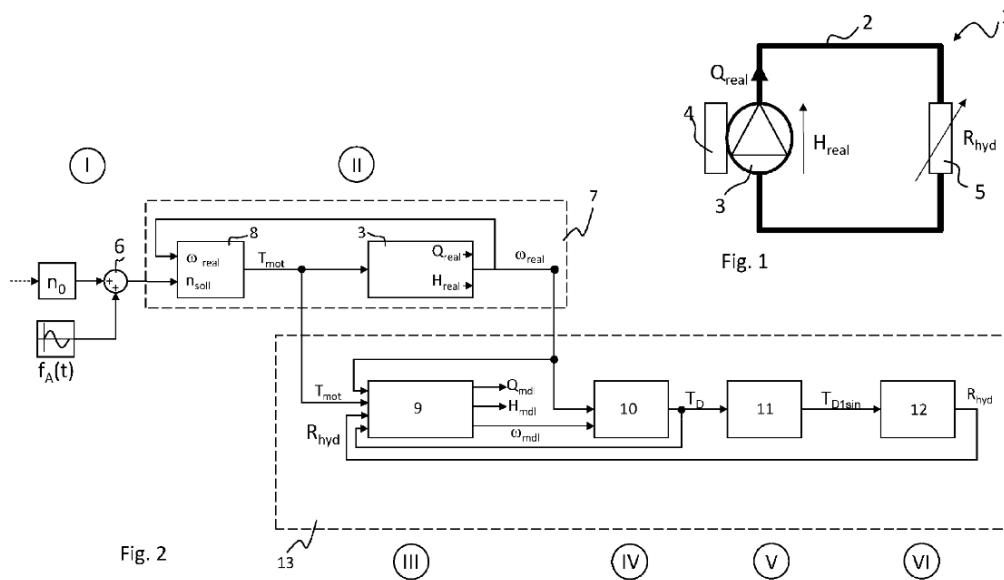


Fig. 6 Schematic diagrams for the software-implemented process for "sensorless" detection of the volume flow.

- Innovative asymmetrical pump impeller designed for optimal balance and efficiency, specifically for transporting solid-laden fluids by using an additive manufacturing process. The unique feature is that the impeller's geometry, which is not rotationally symmetrical, already takes into account the unbalance, thus eliminating the need for post-production weight adjustments (cf. EP3571411B1).

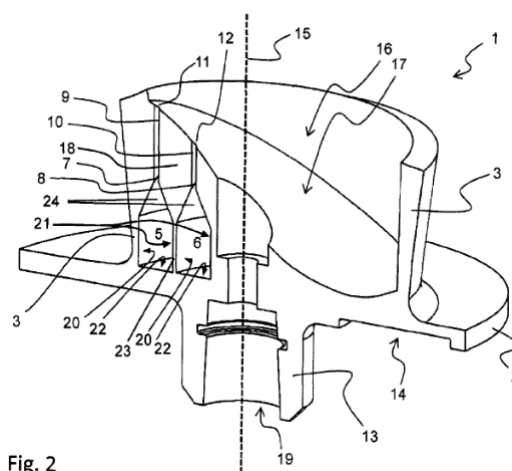


Fig. 2

Fig. 7 A perspective view of the axially cut impeller according to the invention.

- A method for improving the operation of a pressure drainage system and minimizing the risk of clogging. The method also takes into account the varying behavior of users and the distribution and quantity of wastewater inflow, resulting in a safer and more cost-effective sewage system (cf. EP3228767B1):

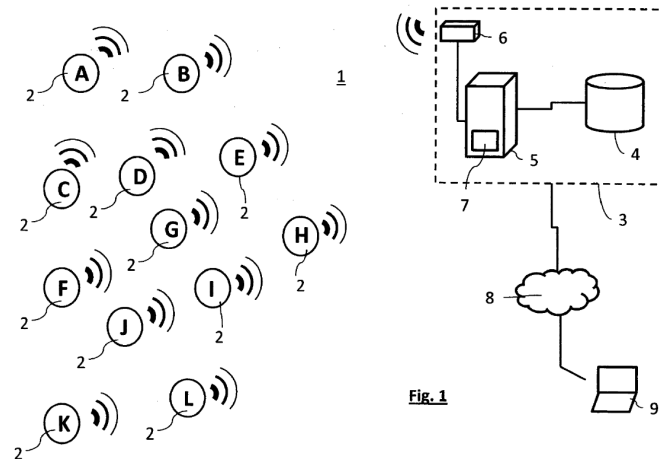
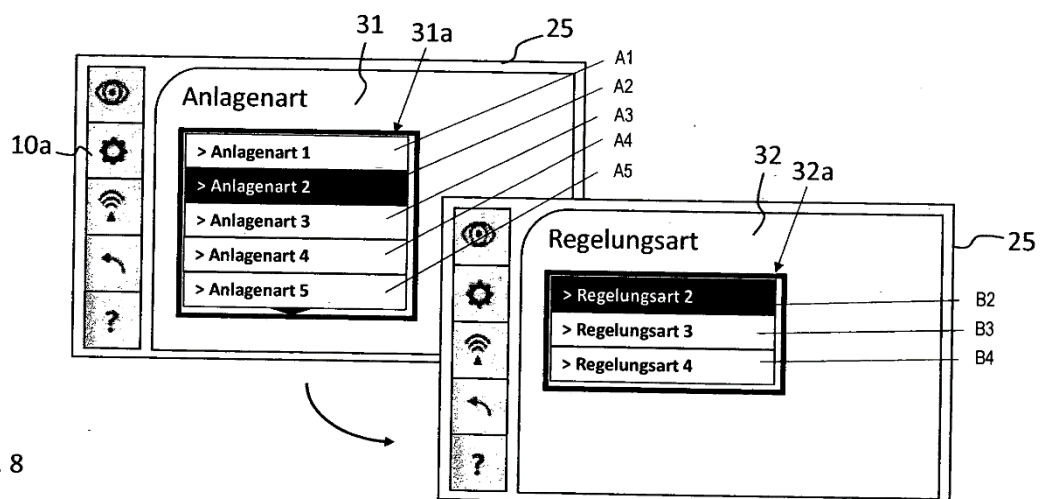


Fig. 8 Topology of an exemplary network of sewers of the pressure drainage system with 26 pumping stations, denoted by the letters A to Z.

- A Configuration Assistant covering an important Human-Machine-Interface (HMI) application for configuring a centrifugal pump (cf.,



EP3376315B1):

bb. Soft IP

Soft IP, also known as "non-technical IP," refers to intellectual property rights that are not based on technological or scientific innovations. Unlike patents, which primarily protect technological inventions, soft IP rights such as trademarks and designs safeguard elements like branding, creative works, product designs, and distinctive signs or symbols associated with goods or services. Soft IP is crucial for protecting brand identity and preventing unauthorized use or exploitation of intellectual creations.

Besides traditional trademarks, which primarily focus on words and symbols for identifying WILo as the source of the product or service, WILo also utilizes more advanced trademarks such as positioning and color trademarks.

A positioning trademark is a type of trademark that establishes and protects a specific position or placement of a feature or element within a product (cf. DE 302017019352 or EM 018142960). Accordingly, positioning trademarks may be used to emphasize the spatial arrangement or orientation of elements within a visual representation.

Color trademarks (cf. EM 016800054) on the other hand protects the use of a specific color or combination of colors as an identifier of the source of goods or services. Importantly, the color(s) must be distinctive and non-functional. In other words, the color must be unique enough to identify the source of goods or services and not primarily serve a utilitarian purpose.

The "*Green-Button-Technology*" of WILo is a beautiful example of the successful application of soft IP within WILo's product segment comprising a smart combination of positioning and color trademarks.

To trigger brand associations of customers, WILo has designed the button of their products in such a distinctive manner that looking at the button is enough for customers to identify the product as a WILo product. This is achieved by a sophisticated IP concept comprising a smart combination of positioning trademarks, which protect the specific positioning of the button on WILo products, and color trademarks, which protect the distinctive green color of WILo's buttons. According to Dr. Rabbe (Head of IP at WILo), the color was designed based on a style guide provided by WILo's marketing department. This once again shows how efficient WILo utilizes and combines the expertise across its departments to achieve the best protection possible for their products.

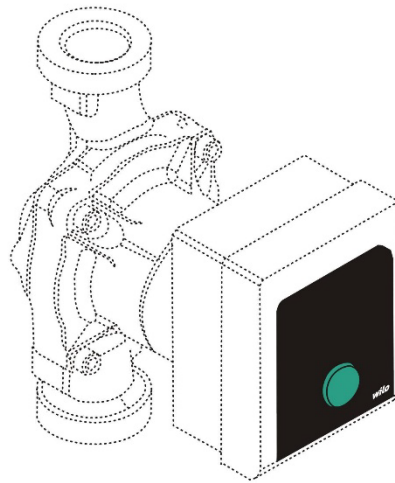


Fig. 10: WILO's distinctive "Green-Button-Technology". An example for efficient application of soft IP rights.

c.. IP Generation at WILO

aa. Classical IP Generation:

The traditional approach views IP as a by-product of the R&D process, often arising through Invention Disclosure Reports (IDRs). However, this method is unpredictable, as IP generation tends to occur spontaneously during research and development without deliberate planning. While WILO typically adopts a strategic and systematic approach to IP generation, the company also acknowledges the importance of allowing developers creative freedom to generate novel ideas, recognizing its role in fostering innovation.

bb. Goal-Oriented IP Generation:

WILO adopts a proactive approach in its IP strategy, focusing on determining the necessary protection for crucial components, products, or services during the early stages of product development. This involves identifying which parts of the product require protection and selecting the appropriate type of intellectual property, whether it be patents, designs, or trademarks. Typically applied to business-critical components or products, this approach aims to secure the company's unique selling propositions (USPs) and obtain optimal protection for them. Key questions addressed during this phase include determining the type of protection essential for a successful product launch and identifying the responsible parties for taking action. For products targeted at specific regions, local IP divisions assume

leadership roles due to their nuanced understanding of local protection requirements and methods. Conversely, for products with global significance, the central IP division spearheads the action, ensuring comprehensive protection across all relevant markets.

cc. Hybrid IP Generation:

This approach represents a combination of the classical and goal-oriented approach. This means that in this approach, project managers are tasked with collaborating closely with the corresponding IP division to develop a protection concept as part of every product development process. This ensures that IP considerations are integrated throughout the development process.

As soon as potential solutions and innovations are identified through this external monitoring process, WILO begins its own IP generation. This means filing patent applications that protect these new approaches and technologies, ensuring freedom to operate and securing a competitive edge. This proactive IP generation is essential for adapting to future market demands and maintaining WILO's position as a leader in the pump and water management industry.

dd. Focus on Sustainability

At WILO, the Intellectual Property (IP) management strategy goes beyond traditional IP generation methods to include a proactive approach to identifying Strategic Opportunity Areas (SOA). These SOAs are carefully defined segments that represent key technological advances or market sectors that align with our overarching business strategy. By identifying these areas, the IP management team focuses on driving innovation and securing IP that not only enhances our competitive advantage, but also drives sustainable growth. This focused strategy ensures that our IP generation efforts are not only prolific, but also strategically aligned to effectively support and drive the company's long-term goals.

A key strategic search area for the generation of strategically relevant intellectual property for WILO is the overarching topic of "sustainability". Traditionally, WILO's patents have been targeted at contributing to sustainable development. However, with the advent of new legislation, such as the EU taxonomy for ESG reporting, these efforts can be placed on a new systematic foundation.

WILO derives sustainability target fields from the legal requirements of the EU taxonomy and the United Nations Sustainability Goals. The patents EP3957860B1

and EP3957798B1 for Wilo-SiFresh are prime examples for such IP aiming for protection of WILO's products in line with the UN Sustainability Goals. This product not only supports the UN sustainability goal of "good health and well-being," but also "clean water and sanitation.



Fig. 11: Compact Water Circulation unit: Wilo-SiFresh

This compact drinking water drinking water circulation system is particularly in demand in hospitals and nursing homes, i.e., institutions where a lack of drinking water where a lack of drinking water hygiene has particularly consequences. Wilo-SiFresh combines drinking water hygiene and sustainability by continuously monitoring the temperature during circulation, preventing stagnation and automatic stagnation, and automatically replacing the water only, when necessary, thus reducing the waste of fresh water.

d. High-Quality Patents

WILO prioritizes maintaining high-quality patents that are either directly relevant to its products, cover future trends or ensure freedom to operate (FTO). These patents not only protect WILO's innovations but also serve as strategic assets that can be leveraged for various business advantages. Less valuable patents may be dropped or outlicensed.

For this purpose, WILO has developed an evaluation framework defining key characteristics of high-quality patents. One key factor is the detectability and

enforceability. WILO knows a patent serves as a protection mechanism and is thus only as good as they are detectable and enforceable. In other words, an unenforceable patent is like a tiger without teeth.

Other criteria based on which the value of a patent is assessed at WILO are varied and strategically significant. Product coverage is a key factor, as WILO boasts a high ratio of products-covered-by-patents. Products with at least one patented or patent-pending technical solution account for almost half of the Group's sales, not to mention the intellectual property protection of all WILO products through the globally registered WILO trademarks, which are currently registered in 132 countries around the world. This high coverage allows WILO to efficiently determine a patent's value through its inventor compensation system. Market impact is another crucial criterion. The value of a patent is measured by its impact on competitors, such as whether competitors file oppositions against it. Revenue potential, encompassing both direct and indirect revenues, is also a critical measure. Direct revenues include licensing fees, while indirect revenues arise when patents bolster WILO's reputation for innovation, improve funding options, and enable participation in innovation competitions.

For example, WILO won the “*Microsoft Intelligent Manufacturing Award (MIMA)*” in 2024 for its innovative “*Adaptive Worker Assistance*”, which underscores the significance of innovation activities in enhancing the company's market presence and reputation.



Fig. 12: WILO's MIMA 2024 winning "Adaptive Worker Assistance".

The “Adaptive Worker Assistance” is a further example of how WILO utilizes the potential of digital technology.

“Our Worker assistance shows how the digitalization in our industry can create tangible added value - without overlooking the people.” Georg Weber, CTO WILO GROUP

2. Detect: IP Competitive Intelligence

In this field of activity, WILO’s IP strategy focuses less on internal activities and more on observing external developments. This approach involves closely monitoring competitors and legislative trends to identify key technologies and emerging trends that can form WILO's IP strategy for the coming years. This proactive stance ensures that WILO can innovate continuously by incorporate innovative features, such as IoT and AI, into its products and thus stay ahead in a rapidly evolving market.

a. Identifying Trends and Key Technologies

WILO emphasizes the importance of understanding what others in the industry are doing. This involves tracking the innovations and patent activities of competitors to identify emerging trends and key technologies. By doing so, WILO can strategically position itself to leverage these innovations and integrate them into its product development processes. This approach is crucial for maintaining competitiveness and ensuring the adoption of cutting-edge technologies.

b. Increasing R&D Efficiency by Knowing Patent Landscape

In every product development process, WILO prioritizes efficient resource usage and effective protection of its innovations. A key aspect of this approach involves leveraging existing solutions, adhering to the principle of “not reinventing the wheel.” In this way, the IP department can also help to make the company's R&D processes more efficient, since no unnecessary resources will be invested in developing proprietary, supposedly new solutions when the solutions to the problems being worked on have already been published in the patent literature and these patents are already part of the free state of the art. This strategy ensures that WILO utilizes available solutions for given problems, conserving resources and accelerating the development timeline.

This approach also leads engineers to consider solutions already patented by WILO when working on their current projects. In certain cases, this can increase the

utilization rate of existing patents and make a positive contribution to the value of the IP portfolio.

c. Reducing Risks Associated with Potentially Blocking Patents

Constant monitoring of patent filing activities of competitors and within relevant technological fields is crucial for any innovation-driven organization. By staying informed about potentially blocking patent applications at an early stage, WILO can proactively address these challenges through strategies such as filing oppositions. This early intervention can mitigate risks associated with granted patents, such as the immediate threat of litigation. Additionally, understanding the patent landscape allows companies to navigate around existing patents, innovate strategically, and possibly identify opportunities for licensing or collaboration. Such vigilant oversight not only safeguards the company's own R&D efforts but also ensures a more robust competitive position in the market.

Cost based on when a patent conflict is discovered

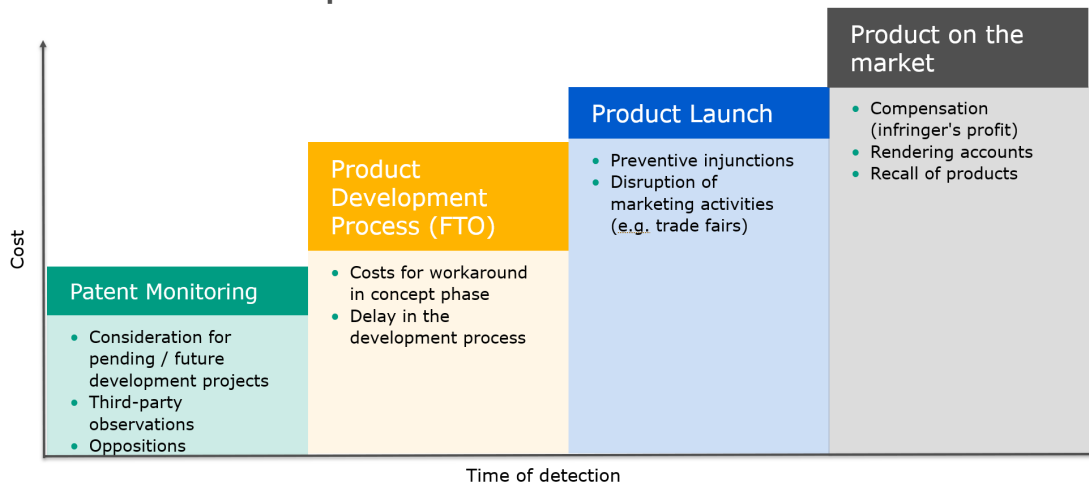


Fig. 13: Schematic visualization of the increasing costs in cases of patent infringement depending on the time at which the infringement is detected.

3. Impact: Value-oriented IP Portfolio Management and IP Enforcement

At WILO, the IP rights is not just about legal protection – it is a strategic imperative that plays a pivotal role in ensuring the company's success. By rigorously managing and enforcing its IP rights, WILO actively shapes its market presence and secures its competitive edge. This value-oriented management of IP is multifaceted, encompassing the vigilant protection of existing rights, combating counterfeiting, ensuring compliance with regulatory standards, and leveraging patents in strategic negotiations. Each of these actions is meticulously aligned with the company's

broader business objectives, illustrating how effectively enforced IP rights are crucial in driving business growth and sustaining market leadership.

a. Defending existing IP rights

WILO actively protects its brand integrity by filing oppositions against identical or confusingly similar trademark applications. This proactive measure prevents brand dilution and maintains the distinctiveness of WILO's market identity, which is critical to maintaining consumer confidence and competitive advantage.

For example, in several opposition proceedings, particularly in China, WILO has successfully challenged trademarks of other companies that could have caused confusion with the WILO trademark or diluted the protection of its corporate trademark. As a result, these competing trademarks were declared invalid either partially or entirely.

To strengthen its position under trademark law, particularly in China, WILO is also working hard to have its own brand recognized as a well-known brand in China. These activities have contributed to the brand being recognized as a well-known trademark in China by The People's Republic of China Beijing Intellectual Property Court in its ruling (2021) Beijing 73 Xingchu 13526 (decision not yet legally binding at the time of writing).

b. Addressing Product Counterfeiting

Protecting WILO's brand identity and designs is essential in the fight against product counterfeiting. Counterfeit products not only undermine WILO's brand but also fail to meet the quality standards set by governments and WILO itself, potentially harming customers and damaging the company's reputation.

Therefore, WILO employs digital solutions for online monitoring of marketplaces and domain names to identify counterfeit products. Once an identified product is confirmed as counterfeit, the product can be taken down almost immediately through close cooperation with the corresponding marketplace operations. This fully automated process ensures efficient and rapid removal of fake products, directly supporting the company's performance.

c. Enforcement of IP Rights for Energy Efficiency Compliance

WILO rigorously enforces its IP rights also to ensure compliance on the market with stringent industry regulations, particularly focusing on European energy efficiency standards:

- 640/2009 and 4/2014: Ecodesign requirements for electric motors.
- 641/2009 and 622/2012: Ecodesign requirements for glandless stand-alone circulators and glandless circulators integrated in products.
- 547/2012: Ecodesign requirements for water pumps

By issuing cease and desist orders against products that do not meet these legal requirements, WILo not only protects its market position but also supports its strategic commitment to sustainability by protecting consumers from buying illegal and energy inefficient products (cf. Regional Court Düsseldorf, decision of 1.3.2023, 38 O 44/23 or decision of 22.6.2023, 38 O 122/23). This enforcement action underscores the company's dedication to promoting environmentally responsible practices within the industry, aligning with global efforts to reduce energy consumption and minimize environmental impact.

4. Respect: Product IP Compliance

Product IP compliance is increasingly crucial as the company navigates a changing business landscape driven by its digital transformation. The integration of new technologies such as IoT, AI, and 3D printing into WILo's products means that WILo now competes not only with traditional players in the pump industry but also with new, non-traditional competitors from various technological domains.

In the competitive environment of modern industry, respecting IP rights of competitors is not only a legal obligation, but also a strategic imperative that has a direct impact on business success. At WILo, strict adherence to this principle is essential to avoid the significant risks associated with IP conflicts, such as costly litigation or substantial damages for patent infringement. By giving priority to IP compliance, WILo not only fosters a culture of respect within the industry, but also ensures its operational stability and financial health.

a. Continuous Patent Monitoring and Product IP Compliance

Wilo integrates continuous patent monitoring into its various departments, with a particular focus on research and development (R&D). This initiative ensures a

thorough understanding of the evolving patent landscape in our product areas, significantly reducing the risk of unintentional patent infringement. This proactive strategy not only protects WILO’s innovations, but also ensures compliance with existing intellectual property rights, maintaining respectful and non-contentious relationships within the industry.

b. Freedom-to-Operate (FTO) Analysis

Central to WILO’s product development process is the mandatory Freedom-to-Operate (FTO) analysis. This critical assessment focuses on the patents of key competitors to ensure that our innovations do not infringe the rights of third parties. The scope of the FTO analysis also includes non-competitor patents that are essential for compliance, such as Standard Essential Patents (SEPs) related communication standards critical to WILO’s connected products.

To manage the cost-effectiveness of these analyses, Wilo incorporates standard risk management metrics that align the investment in FTO searches with the scope of the development project. This meticulous approach not only protects WILO from potential legal challenges, but also reinforces our commitment to ethical business practices and respect for the intellectual property of others.

FTO Risk Matrix

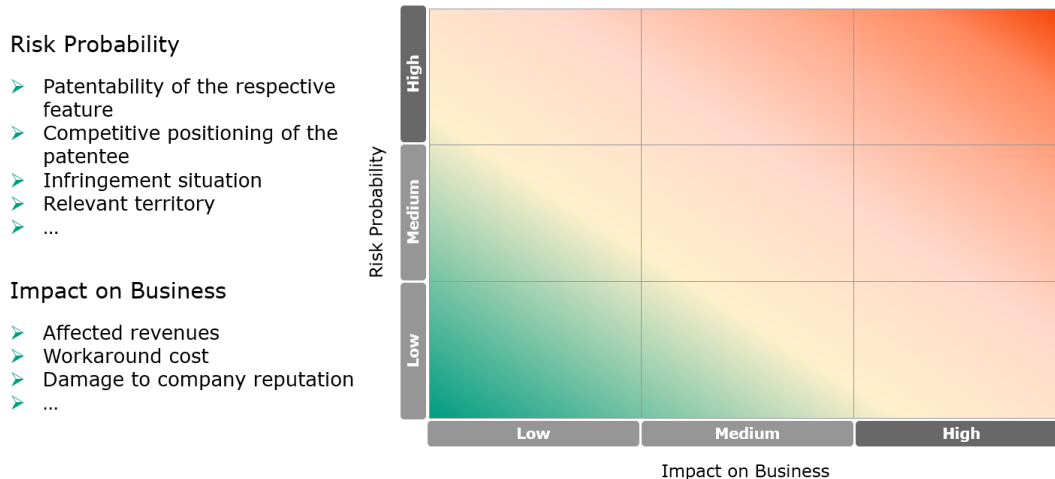


Fig. 14: Schematic visualization of an FTO risk matrix

c. Collaborative Approach to Innovation and IP Management

For product-specific digital features, such as dedicated cloud computing for pump systems or control systems for pump networks, WILO’s IP strategy involves collaborative innovation and early countermeasures. Collaborative innovation

entails close cooperation between R&D and IP departments to identify and protect potentially patentable ideas, including digital services or technical concepts that could become new business models. This constructive collaboration ensures that innovative concepts are recognized early and adequately safeguarded.

If a third-party IP right poses a potential hurdle, WILO initiates early countermeasures. These may include developing workaround solutions or conducting invalidity attacks, such as oppositions or anonymous third-party submissions, to mitigate risks and maintain the momentum of product development.

“Oftentimes, the need for finding a work around solution ends up with own, innovative ideas for which we then file patent applications.” Dr. Matthias Rabbe, Head of IP at WILO

By integrating these strategies, WILO proactively protects its innovations and navigates potential IP challenges efficiently.

Conclusion

Having learned from the past, WILO has developed a comprehensive IP strategy within the last years which closely aligns with the company’s business goals.

For this purpose, WILO has set up a framework built on the Plan-Do-Check-Act (PDCA) cycle, which is the core of IP management Standards such as ISO 56005 and DIN 77006. ISO 56005 and DIN 77006 serve as ideal tools, providing a clear roadmap for aligning the IP management system with the business strategy. Part of the ISO 5600X family, ISO 56005 ensures that products and services meet the highest standards from conception to verification, guiding the process from idea inception to the creation of intellectual property. Meanwhile, DIN 77006 seamlessly integrates the well-established ISO 9000 standards with modern IP management requirements, offering a systematic approach tailored to the specific business model, whether IP generation is done in-house or outsourced.

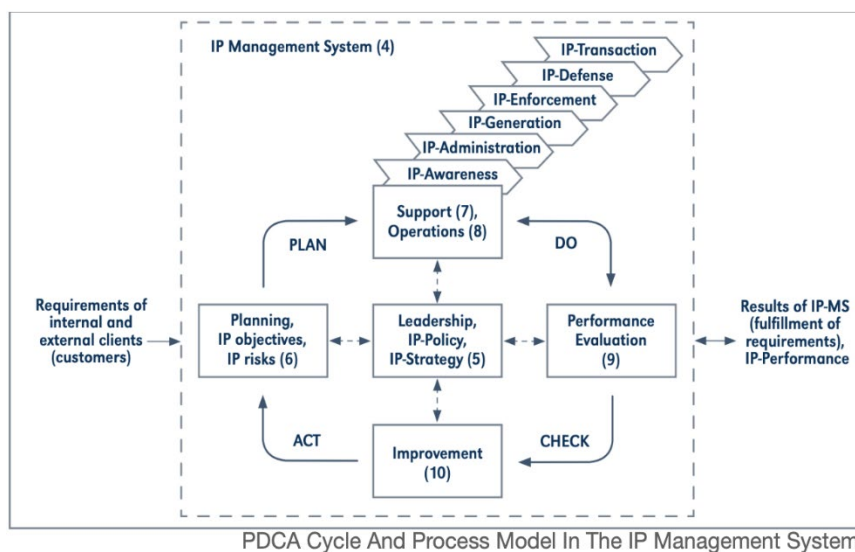


Fig. 15: the PDCA Cycle allowing for iterative and continuous organization improvements.

Guided by these principles, WILO has set up a robust IP Management Framework, in which IP related actions are thoroughly planned considering not only the underlying IP objectives and risks but also the associated business goals as well as external inputs such as customer product feedback (“*PLAN*”).

Subsequently, these actions are implemented (“*DO*”) by initiating the corresponding IP operations which — as outlined above— comprise anything ranging from setting up IP ambassadors (“*IP-Awareness*”), utilizing digital solutions for “*IP-Administration*”, developing strategic IP concepts (“*IP-Generation*”), taking measures against product counterfeiting (“*IP-Enforcement*”), oppositions (“*IP-Defense*”) as well as (out-)licensing of its own or other 3rd party IP rights (“*IP-Transactions*”).

Performance of these actions is continuously monitored and evaluated (“*CHECK*”) with respect to changes of their business goals, product developments or technological advancements. This way, WILO was able to develop sophisticated approaches (“*ACT*”) such as the above-mentioned evaluation framework for identifying high-quality patents (see section **IV.3.b**) or the strategic utilization of IP rights (see section **IV.1.c**) — just to name a few.

However, with WILO’s focus shifting more and more towards digital services associated with their products, it will be interesting to see how these approaches are further adapted to the new challenges arising. As their products tend to move away from traditional mechanical engineering and instead enter new domains at the intersection of digital technologies and mechanical engineering, WILO may step into the playgrounds of new —yet unknow— competitors. This is accompanied by a certain degree of uncertainty as to whether these new competitors will approach intellectual property from a co-operative or an exclusionary side, which may well be reflected in their behavior when it comes to the enforcement of IP rights as well as negotiations about royalty fees with respect to licensing them.

As a result, “*IP-Transactions*” as well as “*IP-Enforcement and Defense*” may become even more present for WILO (see **Fig. 2**) in the future. However, with the solid IP Management framework it has implemented, WILO appears to be well equipped for these future challenges.

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