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Presenting the (economic) value of patents nominated for the European Inventor of the Year 2012 Award

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1. The invention

1.1 Historic account

The invention is related to the improved vapour-permeable shoe. The innovative and technological idea is based on the creation of solutions that can guarantee the ability to breathe and to remain waterproof at the same time.

Mario Polegato was born in 1952 and has degrees in Wine Technology and Law. He first worked in the family three-generation wine and agricultural business. In 1992, Mario Polegato was attending a convention in Reno, in Nevada to promote the family wine business at a trade fair. He decided to go for a walk, and was bothered by his overheated feet. He instinctively punched holes in the soles to let air through. With his pocketknife he cut rough holes in the soles to provide ventilation. He was aware that an optimised method was needed and that new materials had to be experimented.

Back in Italy, Mr. Polegato started researches in the workshop of a small footwear company owned by his family. He also conducted some private research during a stay at NASA in Houston and at the universities of Padua (Italy), Tokyo and Trondheim (Norway). He finally found the solution through a lower-sole layer with small pin-sized holes that surrounded an inner breathable microfiber membrane. He discovered how to apply a membrane that is both waterproof and breathable at the same time: it has millions of small "canals", or micro pores, smaller than drops of water, so that water cannot get through, but vapour can. Fitted between the perforated soles and the foot, the membrane prevented water from entering the shoes through these holes, but allowed the vapour from perspiration to evaporate. By this way, he succeeded to create a "breathable" shoe using a perforated sole that let air in but water out.

Once the rubber-sole technology designed, he patented the system right away in order to create the first "breathable shoe"¹. The patent was filed in 1994. Insofar as none of the three biggest footwear makers expressed real interest in his idea, Mr Polegato decided in 1995 to set up his own shoemaking company named GEOX, and started with five employees.

In 1995, after a market-testing phase for a line of children's footwear, Mario Polegato decided to launch large scale production of shoes under the GEOX brand name. He chose the "GEOX" name to identify his products and registered the trademark internationally. The GEOX™ brand name is a combination of the Greek word "geo" (the earth) and "x", symbolizing technology. GEOX products combine innovation with comfort and a style in line with the latest fashion trends².

Later on, a similar solution for leather soles was also patented. At the same time, he improved the original patent and extended the product range to men and women's footwear³.

1.2 Technological features

To be comfortable, a shoe must ensure correct exchange of heat and water vapor between the microclimate inside the shoe and the external microclimate. Nevertheless,

¹ www.geox.biz

² GEOX- Breathable Shoes: Branding through Patenting (<http://ipcl2010.wikidot.com/topic-2-ip-case-studies>)

³ www.geox.biz

it is important that heat and water-vapour exchanges do not compromise in any way the non-permeability of the shoe to external moisture or water⁴.

The invention relates to an improved vapour-permeable shoe. The patent is dealing with a waterproof, transpiring sole for footgear, using a membrane of vapour-permeable and waterproof material in order to allow air to be expelled while liquids are kept out.

The core of the invention was based on the membrane's microscopic pores that are larger than water droplets but smaller than water-vapour molecules so that foot sweat could escape but water could not get in.

The object of the invention is to provide a vapour-permeable shoe allowing exchanges of heat and vapour without allowing external humidity or water into the shoe. The aim is to combine optimum heat and water vapour exchange, both through the upper and through the sole, with equally optimum protection of the components accommodated inside the sole⁵.

Mr. Polegato's technology consists of three different components:

1. A perforated inferior component called the outsole,
2. A superior perforated component called the mid-sole
3. The membrane, which is positioned between the outsole and the mid-sole which is permeable to vapour and waterproof.

The combination of the membrane with holes on the outsole and mid-sole allows vapour to move out while preventing water from entering.

2. The market

2.1 The business behind the first patented technology

Thanks to an innovative product solution, GEOX grew from a micro company (5 employees) to the current size company worth with a workforce of more than 5,000, directly employed and 30,000 indirectly employed all over the world⁶.

From Mr. Polegato's first patented technology, the company expanded the product line and kept investing in research and development (R&D), which led to the discovery of new technologies. In 1999, GEOX patented an idea to apply their breathable and waterproof technology to garments such as jackets, anoraks, and sport jackets. After a testing phase, GEOX own line of patented apparel was commercialized in Italy. Since 2004, the company has been listed at the Milan Stock Market Exchange. In 2008, GEOX launched worldwide a new line of sport footwear able to release the sweat produced by the foot sole during intense physical activity, based on the patented "NET System" technology. In 2010, the GEOX group inaugurated the „Breathing Building" in the historical center of Milan. It is the largest GEOX shop in the world and the brand's flagship store. During 2011, new applications were developed for shoes, namely the « Amphibiox » project. This innovation will allow GEOX to enter Scandinavian markets in particular. GEOX also continues to develop technical footwear for Formula One drivers. Research is being combined into completely breathable soles (« Net » patent) based on the experience gained in waterproof shoes,

⁴ Vapor-permeable shoe , www.patentgenius.com

⁵ Vapor permeable sho- US Patent 5992052 Description, www.patentform.us/patents/5992052/description.html

⁶ Case Study: GEOX, The European e-Business Market Watch

in order to achieve a very light and flexible product with large perspiration areas, which would be optimal in situations of high stress, such as long sport competitions.

The company is now the top shoe manufacturer in Italy and the top-ten branded shoe manufacturer worldwide. More specifically, GEOX is a leader in the Italian market in its own segment, and is the second leading brand in the *International Lifestyle Casual Footwear Market*⁷. In 2011, net sales reached € 887.3 million. Footwear sales represented 85% of sales, while apparel sales accounted for 15% of sales. 38% of sales are made in Italy, 42% in Europe, 6% in North America and 14.1% in other countries⁸. The company has a worldwide chain of about 1,140 stores.

As regards the distribution process, the GEOX Shop channel (franchising and directly operated stores) represented 45% of sales, while the multibrand channel accounted for 55% of sales⁹.

GEOX has undergone a rapid internationalization process. It is now doing business in 105 countries. The foreign sales amount to 60%, and are mainly made in Germany, France and Spain.

Although GEOX is marketed as an Italian brand (the raw materials, technology and design are Italian), their products are manufactured outside Italy. However, Italian technicians control the entire production process, and the shoes are stored in Italy where they undergo final quality control.

Given the success gained with its footwear, the company has extended its breathability concept to apparel (especially when it comes to jackets and coats) and to sport footwear.

In Italy, GEOX current strategy is to consolidate and strengthen its leadership by i) opening new "GEOX shops" ii) increasing market share and strengthening the loyalty of multi-brand customers through a greater use of "corner shops" and "shops-in-shops". GEOX is also continuing international expansion. In 2011, over 60% of the footwear sales were made abroad, particularly in Europe, and North America.

The company is heavily investing in R&D and marketing in Italy. It has also expanded its product range to produce fashion and dress formal shoes as well as sport sneakers, and more recently a clothing line.

2.2 Overall market prospects

The European footwear industry is – as also in other parts of the world – considered a mature market, with rather level of technological innovation and of R&D expenditures. In 2008, there were some 24,000 footwear firms in Europe (EU-27), with a combined overall turnover of € 26.5 billion. The industry employed some 325,000 people and produced some 577 million pairs of shoes. Overall consumption was, however, 2.8 billion pairs of shoes which reflects a high share of imports.¹⁰

The European industry is plagued by high exchange rates and competition from Asia. Labour intensity, often-limited returns yielded by technological innovation, easy to counterfeit production processes and end products as well as saturated and mature markets create a very difficult market environment.

Against this backdrop, GEOX is seen as a textbook example of how a new firm can successfully enter a mature market with a combined approach using both patented technology and "...a unique and consistent configuration of complementary

⁷ Shoe Intelligence, 2011.

⁸ Geox S.P.A Board of Directors approved 2011 financial results.

⁹ Geox S.P.A Board of Directors approved 2011 financial results.

¹⁰ EUROSTAT figures cited by the European Commission,
http://ec.europa.eu/enterprise/sectors/footwear/files/statistics/footwear_en.pdf

activities".¹¹ By leveraging on the 'breathing shoe' concept and attenuating the technology in its marketing, GEOX serves a larger customer base than many of its rivals who only address certain market segments. For example, GEOX competes in the casual footwear market like Nike as well as with segment specialists such as Florsheim or Birkenstock.

In production, GEOX has concentrated the sole injection/molding process in a few locations both for efficiency and know-how protection reasons, while the upper construction and sole bonding processes are more dispersed in smaller units.

In terms of distribution and retail, GEOX follows a strategy whereby it enters markets with the aid of multi-branded shops only to hereafter establish a network of single-brand GEOX stores. This approach is to ensure high brand loyalty. The "made in Italy" tag is compelling in fashion and design, particularly when it comes to shoes, and Mr. Polegato agrees that being an Italian brand helps. However, he feels that GEOX's most marketable differentiator is the technology behind.

The competitive advantage of the company is hence based on the innovative technology used. GEOX believes to still have considerable growth potential, considering that 90% of the world's population use rubber-soled shoes (10% use leather-soled shoes), and that the invention of the GEOX concept has the potential to replace rubber soles in many instances¹². A main success factor for GEOX is the securement of technological leadership through more than 60 different patents that protect the technology in Italy and internationally¹³. Overall, innovation remains fundamental for the consolidation of the GEOX's competitive advantage.

Another success factor is in the organisation and management. In many sectors of the Italian industry the dominant model is still that of a traditional family business, where the family members are taking important managerial and operational roles. By contrast, GEOX employs professional managers for production, marketing and distribution.

In 2010, the firm had some 2,590 employees.¹⁴ Consolidated sales amounted to €850 million, 86.1% of which was accounted for by footwear and 13.9% by apparel, a new segment also employing the GEOX technology. 60% of the footwear sales were abroad. Around 10,000 multi-branded selling points and 1,039 GEOX shops sold GEOX products.

3. The role of the patent(s) and Intellectual Property Rights (IPR)

3.1 Motives for and benefits of patenting and employed IPR strategy

Because of the importance of technology leadership, the core of the GEOX strategy is to continue research, patenting and implementation of new solutions. The original first patent is now part of a portfolio of around 60 different patents registered in Italy and extended internationally¹⁵. This patent portfolio covers breathable and waterproof shoes, but also shoe inserts and waterproof clothing.

Remaining innovative is both the primary purpose and benefit of GEOX IPR strategy. The main justification for patenting is not to obtain financial income from the IP (i.e.,

¹¹ Camuffo, et al. (2005): Breathing Shoes and Complementarities: How GEOX has rejuvenated the footwear industry, Massachusetts Institute of Technology IPC Working Paper Series IPC-05-005

¹² Patented Functionality – Unique Selling Proposition of "Breathing" Shoes: GEOX

¹³ Geox Annual Report 2011.

¹⁴ GEOX – Annual Report 2010, <http://www.geox.biz/pdf/2011/Annual%20Report%202010.pdf>

¹⁵ Geox S.P.A Board of Directors approved 2011 financial results.

through licensing), but protection of the technology developed by GEOX and denying competitors access to these this technology.

As a result, IP that guarantees the company a lasting competitive edge is seen as a key element of the business strategy. Mario Polegato, chairman and founder of GEOX, believes in the importance of IP, in particular patents, for innovation:

“Innovation, innovation, innovazione. In Italy there are many inventors but they often throw away their ideas because they do not believe enough in patents and do not use them”¹⁶

In 2003, GEOX invested € 7.5 million in R&D. Today the company is investing 2% of its turnover in research and development in order to continue to innovate and preserve the company's main assets, namely its patents. The company has a dedicated budget for patents, and in 2011 € 1,3 million of capital expenditure had been dedicated to patents and trademarks¹⁷. This research effort resulted in a stream of patented inventions and innovations related to the original concept, as well as many others relating to material (e.g., plasma applications), products (e.g., breathable leather shoe), processes (e.g., glue saving assembly and sewing systems allowing improved shoe perspiration and flexibility), equipment and machinery (e.g., for shoe sole molding and injection). This series of derived patents developed around the original patent have the clear function to make it impossible for competitors to simply copy the product when the original patent expires.¹⁸.

3.2 Patent statistics and patenting trends

The nominated patent EPO619959 “waterproof transpiring sole for footgear” was applied for in 1994 and granted by the EPO in 1998. After 18 years, it is still in force in 20 countries: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, LI, LU, MC, NL, PT, SE, HK, US, JP, CA. The patent has been 22 times by other patent applicants, especially by Adidas and NIKE.

GEOX, respectively Mario Polegato as inventor, have applied for a total of 104 patents referring in the widest sense to the production of shoes. These patent applications span some 54 countries; in particular, however, Italy, the U.S. and Japan. The application rate is rather continuous, with about 7 patent applications per year.

Up until, there have been 269 patents and utility models concurrently applied for in the IPC classes A43B 7/06 (ventilated footwear) and A 43B 7/12 (watertight footwear). Since Polegato’s application of 1994 year’s application figures increased to more than 20 patent applications in this field. GEOX is the most active patent applicant (with 48 applications), followed by GORE WL & ASSOCIATES (22). All other applicants have less than 5 patent applications in the said IPC classes. 59 applications are utility models from China, which have been registered especially since 2007 onwards.

Apart from patents and utility models, design protection is also very relevant for GEOX. Against this backdrop, it comes at no surprise that GEOX has protected some 98 designs as registered designs (5 in Canada, 28 in Switzerland, 1 in China, 1 Japan, 57 EU, 6 U.S.). Furthermore, the firm has also registered some 29 trademarks which are relevant/valid for the European markets.

¹⁶ Patented Functionality – Unique Selling Proposition of “Breathing” Shoes: GEOX

¹⁷ Geox, FY 2011, Results Presentation, March 8 2012.

¹⁸ Patented Functionality – Unique Selling Proposition of “Breathing” Shoes: GEOX

4. Overall assessment of the patent value and achievements

The success of GEOX is clearly due to a continuous focus on the use of innovative solutions and technologies and on well-defined IPR strategy which is an integral part of the business strategy. The company's constant stream of patented inventions and innovations ensures that competitors would be unable to simply copy the product after the expiration of the original patent. The use of intellectual property (IP) guarantees GEOX hence a lasting competitive advantage. In particular, it is very much in the company's interest to protect its technology through patents as this technology forms the base for increasing the value of the GEOX trademark.

The company's success is also reflected in a wide range of prizes Mr Polegato has received. Most recently, he won the "Innovator of the Year" award at the CNBC European Business Leaders Awards 2010, for the development of a fashionable brand with new technology.