



Internationalisation of innovation in SMEs

Case Studies, Exemplary Support Practices and Policy Implications

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Case Study No. 9:

poLight, Norway:

Marketing an innovative autofocus technology with key partners in Asia

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About the InterSME Study

The study on "internationalisation of innovation in SMEs" was based on a contract between the European Commission, Directorate General Research and Innovation, and empirica Gesellschaft für Kommunikations- und Technologieforschung mbH (coordinator, Bonn, Germany) as well as Dialogic (Utrecht, the Netherlands).

The study focuses on two subjects – innovation and internationalisation – which are deemed to be crucial for the European economy. It has two main parts: (1) Twelve case studies of small and medium-sized enterprises (SMEs) with insightful international innovation practice and (2) an analysis of strengths, weaknesses, opportunities and threats (SWOT) of European policy measures seeking to enhance such internationalisation. This publication presents one of the twelve cases selected.



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poLight offers a new autofocus technology for micro lenses in mobile phones and cameras. Since major customers are located in East Asia, the company builds parts of its value chain with partners in Taiwan, China, Korea, and Japan. It needs to manage challenges related to distance, mentalities, and language.

Abstract



poLight developed and offers an innovative autofocus technology for micro lenses in mobile phones and cameras, targeting a multi-million market. The venture-backed company is based in Norway and has currently around 25 employees. A large part of the employees are from outside Norway, seeking to attract the best staff available. Founded in 2005, poLight internationalised its business and innovation activities right from the start. Major customers are the large mobile phone and camera manufacturers which are located in East Asia, increasingly concentrating in China. In order to build the value chain close to them, specifically the assembly part, poLight established its value chain with partners in Taiwan, China, Korea and Japan. Partners in East Asia were also found to offer a good value for money, i.e. excellent technological skills in combination with reasonable costs for testing, designing and manufacturing. On establishing its partner network in East Asia, poLight encounters difficulties related to distance, mentalities and language. However, the benefits of the Asian partners outweigh the costs. Another major partner that develops a certain piece of the product is located in Italy. While poLight occasionally uses some support from governmental agencies, the company found its foreign partners through its network of experts. Participating in international research projects was very conducive for expanding this network.

Case study fact sheet

<i>Name of company and locations:</i>	<i>poLight AS (http://polight.com), Horten, Norway (headquarters); set-ups in France, China, Korea, Japan</i>
<i>Year of foundation:</i>	<i>2005</i>
<i>Number of employees:</i>	<i>25</i>
<i>Budget in most recent financial year:</i>	<i>n.a.</i>
<i>Industry sector:</i>	<i>Optoelectronics</i>
<i>Business activity:</i>	<i>Developing, producing and marketing a new autofocus technology for micro lenses</i>
<i>Activities focused in this case study:</i>	<i>Engaging in different kinds of international relationships with several countries in East Asia</i>
<i>Case gatekeeper:</i>	<i>Pierre Craen, Chief Technology Officer, poLight</i>

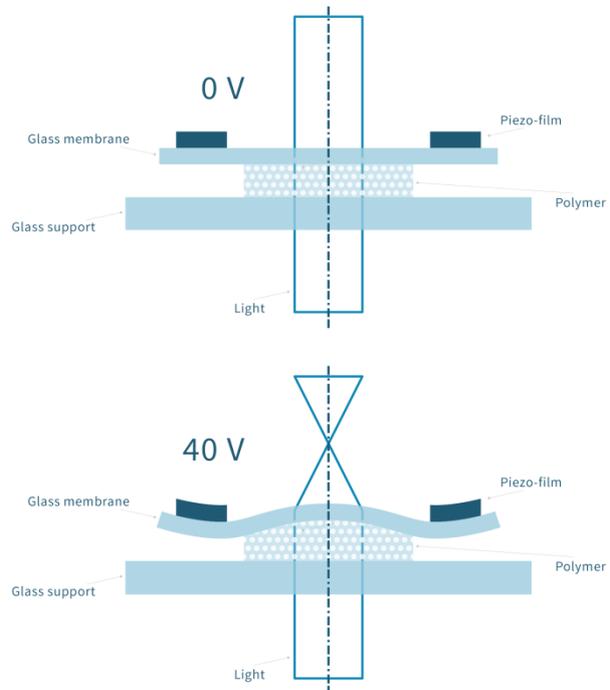
Background

Business activity and competitive situation

Profile: poLight is based in the Norwegian city of Horten. Aiming to replicate the human eye lens, the company has “developed the fastest focus actuated lenses on the market”¹. It is in the final stage of introducing products to the market for mobile phones and cameras. The company was founded in 2005 with research originating from SINTEF, a large Norwegian non-profit research organisation.² Today, the company has around 25 employees.

The company’s first **product** is the TLens® Silver, which became ready for customer projects in late 2015. This product is, according to poLight, extremely small in size as well as faster focusing and less energy-consuming than competitive technologies. It also has no magnetic interference. A piezoelectric element – “piezo” referring to electric charge caused by pressure – is placed on a thin glass membrane with a patented polymer sandwiched in two glass layers. The functioning is that the piezo material deforms the polymer when a voltage is applied.³ See Exhibit 1-1.

Exhibit 1-1: Fehler! Kein Text mit angegebener Formatvorlage im Dokument.-1: **The principle of poLight’s TLens® product**



Source: <http://polight.com/technology/how-does-it-work>

Autofocus technology is a multi-million **market** worldwide. The main competitive and incumbent technology is voice coil motors (VCM). poLight considers VCM as bulky and performance limited and its own technology as superior. According to poLight, the market has so far not really been characterised by **innovation**. The VCM technology is mature and becoming a commodity. At the same time it is difficult to produce and shortcomings in production occurred on the competitors’ side. Hence, backed by several venture capital investors, the company seeks to take 10 % of the autofocus market with its innovative product in a few years. At the time of writing this case study in early 2016, poLight is delivering product samples to major mobile phone manufacturers in order to prepare mass production which is planned to start in 2016.

As regards targeted **countries** of direct customers, poLight follows the business ecosystem of mobile phone and digital camera module manufacturers. This is more and more moving to China but still also strong in Taiwan, Korea and Japan.

How and why poLight internationalised its business activities

poLight interacted internationally right from the beginning. In order to be able to produce and sell large amounts of its product, poLight had to engage with certain types of enterprises in the value chain. On selecting partners, poLight looks for the best balance between technological skills, costs and proximity to the main customers. One major co-operation partner is located in Taiwan, a large enterprise doing the final manufacturing steps and the final testing of the product before shipping

¹ According to poLight website, see <http://polight.com/about-us>.

² See <http://www.sintef.no>.

³ See <http://polight.com/technology/how-does-it-work>.

to customers. It has the capacity to also serve large volumes in the future. poLight carefully selected this company in an identification process with personal visits that took more than half a year. Before engaging with this Taiwanese partner, poLight had approached a US-based multinational enterprise. Negotiations with this enterprise were discontinued when no satisfactory agreement could be concluded in the targeted period of time.

Another important partner company that develops a certain micro-electro-mechanical piece of the TLens is located in Milan, Italy. Further partners include an expert supporting the design of the test equipment located in South Korea, as well as consultants and suppliers in Japan and China.

Internationalisation of innovation in poLight

Practice

poLight's internationalisation practice beyond Europe is mainly in **partnering** with the enterprises in Taiwan and China as well as with experts in Japan and Korea. poLight received hints to suitable enterprise partners and experts through "the ecosystem", i.e. people in poLight's network of experts and also customers, as the company's Chief Technology Officer (CTO) Pierre Craen states. Next steps may include expanding contacts also to Malaysia, India and Brazil.

Furthermore, poLight has a very **international team**, with employees for example from Norway, Sweden, Korea, China, Belgium, Romania, France, and Russia.

Drivers and barriers

The driving force for linking up with international partners was to find the best ones in terms of performance and costs. poLight found that this can be a tricky issue because cheap does not always turn out to be as efficient as promised. Another driver was to be close to the customers in Asia and to be close to vendors of specific parts of the TLens which are not easily available in Europe.

However, **distance** is a challenge when seeking to create effective and efficient teams but it is hardly possible to sit together regularly. The positive side is that distance allows, alternately, some to work while the others are sleeping. "If you play it well, it is perfect", says Pierre Craen.

There are also **cultural differences** between Europe and Asia which sometimes make it difficult to establish and lead teams. For example, some Asian workers were not found to be used to raise problems and to report them to their superiors, which may however be necessary to identify and solve problems. Mindsets in Japan may tend to be very detailed and from time to time to seek to "control everything", in Pierre Craen's experience. Koreans were sometimes found to be quite pushy. Finally, **language** can also be a barrier. While everyone speaks English, the level of comprehensibility is not always sufficient.

Considering these challenges, poLight might even consider moving some activities in the value chain to Europe sometime in the future. The technology for producing the TLens is highly automated so that labour costs do not play a big role. For the time being, poLight is satisfied with the strong partners the company has.

Support to internationalisation

poLight uses **occasional support from public agencies** for specific purposes. For example, Innovation Norway (<http://www.innovasjon Norge.no>) provided information for checking what it would take to build a poLight company in China. Innovation Norway also helped to find the right contacts in Asia and specific legal support. poLight found the support from this governmental agency very competent and practice-oriented.

poLight is also looking for benefits in **national and international research projects**. After the initial support from the Norwegian Research Council, poLight took part in a few national and European research projects. While poLight did not yet use outcomes from these projects for its product, such research projects are very important for expanding its network of experts. The

advanced concepts from these projects may also be applied in products some day, says Pierre Craen.

Impact and lessons learned of internationalising innovation on poLight

Impact

For poLight it was no question that the company had to internationalise its innovation activities. There is a strong need to be close to the main customers which are located in Asia. There also needs to be the best balance between performance and costs which could not be found in Europe.

Lessons learned

- **Building international networks takes much effort and time**

Establishing international networks of business partners, including developers, testers and consultants, requires strong efforts. One needs to understand the targeted people and their constraints. All in all, however, poLight had to establish such a network mainly in Asia rather than in Europe due to its specific field of business.

- **Possible difficulties with international partners need to be managed**

Engaging with a network of international partners may be challenging due to different mentalities, language barriers, and the simple fact of distance. Targeted service partners may not always keep the promised quality and efficiency when relatively low costs were alluring. SMEs need to anticipate and manage such difficulties.

- **Using international research projects for expanding expert networks**

While innovative SMEs may need to spend most of its resources on manufacturing and marketing, it may nevertheless be worthwhile to participate in international research projects. Such projects may help extend the expert network which is important to find further business partners and employees. The projects may also develop technology for commercialisation in the future.

References

Research for this case study was conducted by Stefan Lilischkis, Senior Consultant at empirica Gesellschaft für Kommunikations- und Technologieforschung mbH, Bonn, Germany, on behalf of the study about internationalisation of innovation in SMEs. Sources and references used include desk research plus the following.

Interviews

- Pierre Craen, Chief Technology Officer, poLight, phone interview on 16 February 2016

Websites

poLight homepage: <http://polight.com>, last accessed 11 March 2016.

Innovation Norway homepage: <http://www.innovasjon Norge.no>, last accessed 11 March 2016.

SINTEF homepage: <http://www.sintef.no>, last accessed 11 March 2016.