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FAIRWIND

Italy, www.fairw.com

A sectoral cluster project in the Venice area of Italy, funded by the European Commission, brought together two SMEs which joined their complementary skills in metal parts and electronics to develop a revolutionary lighting project with the help of a local university

Executive Summary

Fairwind is an Italian SME with expertise in special electronic and lighting components in the healthcare and wellness sectors. Following the financial crisis of 2008/2009 and the resulting difficulties within their market area, the company decided to diversify into the lighting sector. They undertook R&D work with LEDs for improving quality of light and air. This led them into an OI collaboration with a local university. Furthermore, thanks to a local lighting cluster network which was involved in an EU-funded project promoting OI in the LED lighting sector, Fairwind came into contact with another SME which allowed them to produce and file for a patent for a hygienizing lamp which improves light conditions and is capable of effective virus and bacteria removal from the atmosphere. The product is currently in the commercialization phase.

CASE N° : SE04

SECTOR: LIGHTING, HEALTH

TECH INTENSITY: LOW-MEDIUM TECH

LIFE CYCLE STAGE: RENEWAL

INNOVATION VECTORS: PRODUCT

01 PARTNERS: PSR, OTHER SME, SECTORAL CLUSTER

KEYWORDS: Lighting, LED, health, light, air, diversification, cluster

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BACKGROUND

Fairwind Electronics s.r.l. was founded in 1985 in Ponte di Piave (near Venice) with the aim of developing projects and special electronic and lighting components in the healthcare sector: principally solariums and hospitals where their technologies for sterilization of equipment and electronic control of other hydro-based products were requested by specific industries. Initially, Fairwind was not operating directly in this market, but acted rather a component supplier and their technologies were integrated in other brands' products.

As the company became more established, they experimented and tried different markets; the most successful one for them turned out to be the wellness sector, in particular solariums and hydromassage. For more than 20 years, the company was successful, employing over 40 people and with an annual turnover of more than €5 million. They were present in several countries (Italy, Spain, Germany, Iran, etc.) and fought off competition from China. But the worsening economic crisis of 2008–9, with the construction industry particularly hard hit, spelled hard times for the SME, and in 2011 the new Fairwind s.r.l. was founded and part of the personnel moved to the new company to try to refocus their innovation potential.

INNOVATION CHALLENGE & MARKET OPPORTUNITIES

Realizing that the wellness market was not able to maintain the activity of the company, CEO Cipriano Padovan looked to diversify into the lighting sector. Many companies from the electronic sector that had experienced difficulties in the 2008–9 economic crisis due to the down-turn in the construction industry, turned to the lighting industry. It is a market which operates on a global scale and many big players have created high barriers to entry. Nevertheless, Fairwind banked on being able to find a niche area. They selected the use of LEDs to purify the air and integrate them into their concept of creating the perfect environment for humans.

A survey of health professionals revealed that one of the top concerns when choosing light fittings for hospitals, doctors' surgeries and dental clinics was infection control. Health professionals considered

this just as important as light quality and low maintenance.

OPEN INNOVATION TRAJECTORY

Concept development

The company set about developing LED lighting technologies to improve the quality of air and light in indoor spaces.

The development process, IPR and competition strategy

One of the first products that the SME produced for the lighting market was lighting technology that could change colour and brightness to match the body's circadian rhythm, thereby promoting wellbeing. This was developed for one client as an entire flat-wall feature for a living space which was totally underground with no access to natural light.

Apart from the benefits of using LEDs to mimic circadian cycles, Fairwind began to look at how these lighting technologies could also be applied to regulate or kill bacteria in the air around them.

The breakthrough came about through an open innovation programme, co-funded by the European Commission, in which lighting companies were encouraged to pool their knowledge and resources to explore new avenues for development. In 2014, representatives of more than 30 companies, universities and municipalities took part in a series of workshops in Venice organized by the local Luce in Veneta consortium (a lighting cluster for the Venice region), to come up with ideas that they could take further.

Fairwind and another local SME, Arte Light, were interested in creating a product that would improve light and air quality at the same time. Arte Light is specialized in prototyping and manufacturing custom-made lighting products. To begin with, the two SMEs studied the characteristics of different interior spaces and the difficulties to contain contaminants introduced internally and externally. They collected data and began to think about how to structure the project and manage it between them. Initially, Fairwind and Arte Light collaborated under a "gentleman's agreement" whilst they worked to understand the potential and feasibility of the project. Once they had agreed on a roadmap, they entered into a more formal agreement governing the sharing of operating costs to arrive at the market entry stage. The agreement was valid for three years and foresees an eventual exit for

each of the companies in respect of their activities.

The role of the cluster Luce in Veneta was instrumental during the development phase by providing free training on how SMEs could use the open innovation approach and then supporting those companies who identified joint goals. Given the diversity of companies and groups involved, it was essential to have some governance to ensure the reliability of the initiative and oversee the transition from potential competition to collaboration with a win-win outcome. Luce in Veneta also helped Fairwind and Arte Light strengthen some skills which are often overlooked by companies at the outset of a collaboration. The first activities focused on market assessment, which was done at relatively low cost with contributions from the Veneta region.

The SMEs received help from a research fellow at a local university with expertise in air cleanliness to complement their already considerable existing knowledge in lighting. The testing of the H-Lamp's sanitizing properties was done in collaboration with the university research teams. In general OI collaborations are put under strain because PSR bureaucracy makes it very hard to conclude R&D agreements quickly and the long wait can have devastating effects on getting the product ready for market.

The SMEs also carried out a patent search at this stage, with the assistance of Luce in Veneta and Treviso Tecnologia (an innovation and tech transfer consultancy firm) with a view to (1) making a careful analysis of the applications and patents already filed and (2) deciding how to differentiate their product.

Cipriano Padovan found patents that covered IP similar to that developed by Fairwind. He therefore had to find a way to differentiate their technology from others, and this point of differentiation became the area of application of the final product: a hygienizing lamp.

From his research, Padovan gained an in-depth knowledge of how to apply light to obtain the most adaptable functions within Fairwind's technologies. Many of their competitors – for example Waldeman – started from phototherapy and the application of light in hospitals using a certain type of methodology, whilst others, such as Philips, use a different approach. These companies are going in the same direction but along parallel paths and there is a big difference in their missions. The result is that there are different products, and so it eased the barriers to entry. Fairwind decided to concentrate on very niche products.

Commercialization and follow-up

Two experimental installations were carried out in mid-2015: one in an industrial site for food/beverage processing and one in a local health-care provider. This provided key information to help ascertain the real need for investment for the commercialization phase.

Although Fairwind and Arte Light have in place a network contract to conclude negotiations with potential business partners, in reality they have found that micro and small firms have real difficulty in generating networks of collaborations with each other and play at a scale comparable to larger organizations. Fairwind is currently still trying to find the resources to go into production of the H-Lamp and to secure a commercial network to distribute the product on an industrial scale. Their real concern is that if the project takes too much time in maturing it will lose its market potential.

Networks which could have an interest in commercializing the product are waiting until all the necessary investments have been made and the product is mature and ready to be replicated. The risk is fully borne by the SME. If the market accepts the product at a later stage, they will either develop it further or they will abandon it immediately with almost zero investment costs. The liability of being small is a real problem.

To offset these problems, Fairwind is continuing to improve the innovative character of the H-Lamp and is working with the University of Padua on testing different nanomaterials and simulations to optimize its efficiency and suitability to different applications.

Fairwind currently has a patent pending on the H-Lamp and an exploitation agreement with Arte Light. Arte Light brings manufacturing capabilities for metal parts and Fairwind brings manufacturing capabilities for electronics; this way their knowledge and capabilities create synergy.

Fairwind and Arte Light have experienced delays in finding a commercial partner to take the product forward. Due to the fast innovation process in the lighting industry, there is pressure on the SMEs to develop the project early to avoid it becoming obsolescent. These two points combined are making Fairwind and Arte Light consider whether to sell the exploitation rights on the patent they have filed (patent pending).

BUSINESS IMPACT

The main outcomes of the project have been:

- Collaboration and synergy, and clear shared goals between SMEs;
- Studies in collaboration with the university to measure effectiveness in both domestic and industrial settings; if these measures can be provided to the developers, product production may reach industrial level;
- Through their collaborative work on the H-Lamp with the University Padua, Fairwind has gained new knowledge on nanotechnologies and Computational Fluid Dynamics.
- On an industrial level, both SMEs continue to develop their skills in quality manufacturing.

Fairwind and Arte Light applied for funding to commission work that was outside their core expertise (e.g. patent search, market analysis). This turned out to be an effective and efficient way to generate useful knowledge.

The companies shared costs for development and testing; each contributed financially and with their technological know-how. This allowed them to develop the product more quickly, in spite of delays with clients and the research organization. Fairwind learned that it is preferable to take a lower risk and be open to collaboration. The company has also developed the ability to understand and experience the planning of a new business, to diversify its activities and be open to potential new applications of its know-how – as long as commercial issues and market presence are resolved.

Without the possibility of sharing the development costs between the two SMEs, this project would not have taken place. Around €50 000 was spent on material and experimentation, which for Fairwind was considerable. The company maintains its existing product(s) while trying to invest in this one development project. It is a balancing act of trying not to compromise the activity of the company whilst they focus on bringing the new technology through to the commercialization stage.

LESSONS LEARNED

Among the critical success factors in this case have been the supporting role played during the development phase by the lighting cluster, Luce in Veneta, which supported the SMEs in the open innovation process, in terms of local training and

specific tools. However there still exists a valley of death to commercialization with which Fairwind and Arte Light are struggling. It shows a clear need for external expertise and investment at this critical stage to ensure that the innovations are not lost. Another critical success factor of this project has been the proximity of the organizations involved, which has facilitated the collaborative work during the development phase. Clear agreements to share costs and an exit strategy replaced an initial "gentleman's agreement".

Main lessons learned:

1. Lack of investment and/or lack of government policy to help SMEs to extend their innovative work and take it to the next level are a substantial obstacle.
2. Micro and small firms have difficulties in generating networks of collaboration with each other.
3. SMEs and PSR organizations move at very different speeds, which the innovating company may find curtails agility and reactivity to market evolution. Being able to adjust expectations and timings is therefore important.