NEWS

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Innovating business

Opto Eletrônica gets BNDES' first financing for innovation; new lenses will increase product's competitiveness

Janaína Simões

The National Bank for Economic and Social Development (Banco Nacional de Desenvolvimento Econômico e Social) – BNDES – informed on March 1: the first project approved in the Innovation Production (Inovação Produção) – PDI – line, announced two weeks earlier, was the one submitted by Opto Eletrônica, a technology-based company specialized in precision optical instruments from São Carlos, in the interior of the State of São Paulo. The company will use the R$ 6.7 million (approximately US$ 3.2 million) to implement a production line of lenses that will increase the competitiveness of one of its main products. The lenses are of the aspheric type, and will provide more precision and better price for the retinographers – used by ophthalmologists for examining the retina – that Opto manufactures. The Bank funds correspond to 55 percent of the company's investment, and will also finance the development and engineering needed to make possible for the lenses to be implemented in the retinographers. Opto expects to begin the plant operation by June because, among other reasons, it has orders from abroad.

The company has 275 employees, of which 35 work in its R&D department (nine PhDs, six Master's, 15 engineers and six technicians), and its sales in 2005 totaled R$ 35 million (approximately US$ 16 million). Opto has 16 patents in Brazil and two requests being analyzed in the United States and Europe. The company also publishes scientific articles – eight, in the past five years.

Technological barriers

According to Jarbas Castro, Opto's president, the technology for the manufacture of aspheric lenses is sophisticated. "Production costs vary from US$ 200 to US$ 300, but manufacturers sell them for up to US $ 4 mil", he says. Aspheric lenses increase the precision of optical instruments and make possible the use of a smaller number of lenses. Currently, Opto's retinographers need a set of 55 lenses. When the production of the new lenses begins, this number will be reduced by two-thirds. Their price will drop and the quality increase. Today an Opto retinographer costs around US$ 30,000.

"Only four or five places manufacture this equipment," informs Castro. For that reason he expects to increase the exports of retinographers from today's 20 percent of the production to 40 or 50 percent with the new lenses. "We're not going to sell the lenses, but rather will produce those we need to make our product more competitive," he explains.

This innovation will require great effort on the part of Opto's researchers, engineers and technicians in the process of optical redesigning of the equipments. The company expects to hire one or two scientists for the job. "Redesigning the equipment's optics is one of the most expensive parts of research and development," says Opto's president, who has a PhD from the Massachusetts Institute of Technology (MIT). In order to do it, Opto has imported equipments from European companies. Made to order, they cost over 1 million euros; Opto will hire a PhD in Optics to operate one of them.

The company's relations with Academia

Born in 1985 with the name of Opto Eletrônica São Carlos Limitada, the company is a spin-off of the Physics Institute (Instituto de Física) of the University of São Paulo (Universidade de São Paulo) – USP – at São Carlos. A group of Institute researchers and technicians dedicated to research with laser created the company with the goal of producing the first laser in industrial scale in Brazil. "Most of our products come from R&D activities," tells Mario Stefani, Opto's R&D director.

Much of these innovations come from the demands from clients, but the company also has a product that requires from the market a "culture of use" in order to become better known. Such is the case, for instance, of the digital retinographer. "There's only another one similar to ours, and we are already exporting to Europe", says Stefani. The equipment, which has already been approved by the U. S. Food and Drug Administration (FDA), currently awaits permission from countries such as India and Indonesia to begin to be exported to Asia. In the Americas, besides the U. S. Chile and Venezuela are expected to buy it.

Opto has its own structure of laboratories just for R&D, and thus uses very little the existing public infra-structure for that kind of activity. Some essays and tests, including for certification, are carried out in places such as the National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais) – Inpe – and the Institute for Technological Research (Instituto de Pesquisas Tecnológicas) – IPT –, but the efforts are concentrated in the company. "What we really use is the product of the university, which is well-formed people. Opto needs people with international level formation, because we compete against very large companies, such as Canon and Nidek", he comments. "It's difficult to generate a product in a university; it generates knowledge. Technology must be generated in the company; it is the company that knows how to produce with quality, cost and scale, that knows the market, that is able to reach the client", he adds.

Stefani gives an example: when Opto started, the owners wanted to produce helium-neon laser, which was already the object of their research at USP-São Carlos' Physics Institute. "At the university lab we produced one to five lasers a week, but when that came to Opto we needed production scale, we need to produce 50 lasers a week", he recalls. "The basic knowledge about laser came from the university, but we had to re-project, under the engineering point of view, all this basic technology that we had been able to develop in academia in order to sell. It was a complete turnaround", says Stefani.

Today this USP spin-off has five divisions. Opto Sul, in the State of Rio Grande do Sul, manufactures anti-reflection lenses in Porto Alegre. Opto-USA, created more than six years ago, located in Miami, is a U.S. company whose single stock-holder is Opto Eletrônica. Opto-LatinAmerica is directed towards this marked and is headquartered in São Carlos. Opto-Global Holdings PTY, in Australia, is a network of global distributors that has international investors as partners. And Opto-Components was born out of a partnership between Opto Eletrônica and Austria's Glassner Optronika GmbH to distribute optical precision components in Europe.

Project with Fapesp's support

In 1998, Opto participated in the Innovation Program for Small Businesses (Programa para Inovação na Pequena Empresa) – Pipe –, a program directed to small businesses interested in taking the risk of innovating funded by the State of São Paulo Research Foundation (Fundação de Amparo à Pesquisa do Estado de São Paulo) – Fapesp –, with a project to develop a new laser distance measurer. “We sold only eight of them, but that project generated an important know-how because from it we developed a surgical laser for ophthalmology that has become into one of our main products”, he says.

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