

# Out of the Economic Slowdown

## Companies perceive an upward trend

Without doubt, photonics is one of the key industries of the future for the German economy. This is despite the fact that the importance of photonics is not widely acknowledged by the general public. Irrespective of this, photonics products can be found in nearly all spheres of life and the photonics industry remains highly innovative, experiences above average growth rates and employs more than 110,000 people. The photonics industry lacks public recognition because its technologies are spread across a wide spectrum of discrete industries. Whether it is a tiny component or more complex machinery, photonic technologies are traditionally apportioned to the corresponding areas of application. Without photonics, however, there would be no semiconductor production, no solar energy harvesting, no digital cameras and no flat screen TVs.

As a key technology, photonics is at home in many diffuse industries. With an impressive export ratio of 65 percent, the German photonics industry has proven to be internationally competitive. German companies have already secured a large piece of the future photonics market and currently hold a seven percent share of an industry with an annual turnover worth of around 270 billion Euros worldwide. Although Asian countries and the US share a larger proportion of the total value, German producers have been able to establish themselves successfully in a number of niche markets. This is especially true for innovation-intensive high-tech areas and for products that require very high-precision and quality values. Companies such as these have not been focusing as much on the cost-driven mass production of optical appliances.

After the double-digit growth rates of the previous years, the photonics industry was also hit hard by the international financial and economic crisis. Following a small decrease in turnover in 2008, 2009 saw

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double digit decreases being recorded across most of the industry. Certain industries were hit harder than others, with the automobile, semiconductor, and mechanical engineering sectors being the worst affected. Interestingly, in the field of medical technology, which is one of the larger application markets for photonics, only a slight decrease in turnover was recorded (-3 percent). This is a sign of the positive impact of continued diversification of photonic technologies. Despite the recent crisis, the industry has reason to be optimistic with the majority of companies forecasting considerable increases in turnover for the coming year.

### A Positive Prognosis for 2010

At the moment, all signs seem to be pointing toward a more conducive business environment as the economic recovery becomes palpable. A large number of photonic technology companies are now reporting increased order numbers. SPECTARIS alone has forecasted an impressive 10 percent growth in turnover for this year, which will see its volume once again reaching the 20.2 billion Euros mark. In further positive news, SPECTARIS are also predicting that employee numbers will rise by about 2 percent. It goes without saying that we are confident our members will continue to repeat their successes of the pre-crisis years going forward.

In the future, it will be especially important for our companies to maintain the edge in innovation and to uphold technological leadership in the field. In many areas, German companies are already at the vanguard of technological development and it is important for SPECTARIS to further promote this development. For German producers, particularly at times such as these, there is no alternative to innovation. The German photonic industry always has to remain one step ahead of its competitors in Asia and the US. Innovation is the key to this position. If the German photonic industry can maintain its present market position, it will almost certainly contribute substantially to broader German economic growth. This will undoubtedly create new growth areas for the industry in addition to the already established photonic base industries. As the last year has demonstrably shown, international competitiveness via new innovative growth industries is of crucial importance for the export-driven German economy, and this is true not only in times of crisis.

### Project Grants: A Success Story!

For the high-tech industry in Germany, project grants have become an indispensable building block for R & D and have made a significant contribution to the continuing status of Germany as a technological innovator and leader. Each year more than five billion Euros of capital investment grants are awarded under the auspices of the Federal Project Promotion and Grant Program. It is important to note the extent of public leverage in the funding equation: for each publically funded Euro, two Euros from private sources are added. Significantly, according to a study by the Center for European Economic Research, no windfall gains have been observed in relation to the Project Grant Program.

The photonics industry has benefitted enormously from the Federal Project Grant Program. The grants have been an important factor in the industry's marked turnover growth and increase in employee numbers over the past few years. The figures speak for themselves; in 2005 around 100,000 employees produced a turnover of circa 16.3 billion Euros. In 2008 however, turnover and employee numbers had climbed to 22 billion Euros and 120,000 respectively. The advantages of project grants reach far beyond immediately striking financial data. Professional networks and connections built-up during projects supported by grants remain intact even after the grants have expired. The results are im-

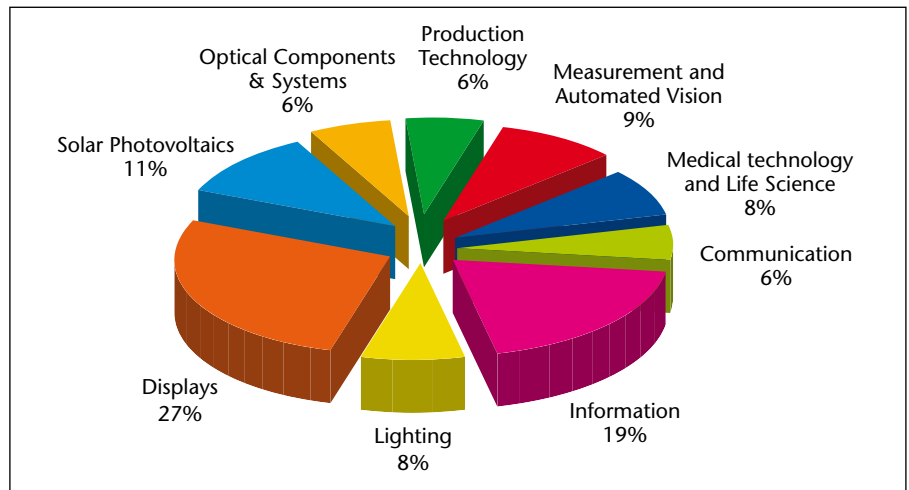


FIGURE 1: Photonics World Market 2008 (Total: € 256 Billion) – Application fields. (Courtesy of OPTECH Consulting)

pressive – follow-up projects arise, new partnerships are created and research teams continue to cooperate. These partnerships further support the recruitment and training of skilled employees, who benefit from the expertise extended networking possibilities provide. The photonics industry has become dependent on the close vertical networks developed between producers and users thanks to the Federal Project Grant Program. Crucially, the Program has also helped to extend these networks to incorporate universities and other scientific institutions. From SPECTARIS' perspective, it is essential that research funding be further extended right up to the actual products on the market. To facilitate this broader scope for investment grants two important points need to be considered.

### New Criteria for Grant Eligibility

Firstly, the need to optimize the procedure for the determination of focal points for Project Grants must be addressed. SPECTARIS recently commissioned a study by the German Institute for Economic Research (DIW) who then developed a proposal to make the grant procedure more objective and transparent. This proposal sets out a transparent selection procedure in a clearly defined process. Interestingly, in addition to the technology preview and forecasting undertaken by the federal government, this proposal also incorporates economic factors into the award process. This is a vital aspect if research is to be promoted in those fields which contribute to the industry location Germany and are of special economic importance to the German economy. According to this proposal there are three criteria which should be used to judge grant

eligibility: research and innovation intensity, the growth dynamics of the industries concerned, and the economic potential of the technologies in question.

As one can see, it is not our aim to simply demand hand-outs for the photonics industry as a whole. In fact, it is often areas outside the limelight where highly innovative, medium-sized companies are internationally successful and create employment. What we are aiming for is the creation of a grant selection process which will pick out the projects of most benefit to the German photonics industry and, consequently, the wider German economy. The photonics industry has the potential to significantly increase broader economic growth in Germany and could undoubtedly help free its export driven economy from an unhealthy dependence on certain established industries. If we have learnt anything during the past two years of economic contraction, it is that diversification is key to creating a robust industry ca-

### INFO-BOX

#### The German Photonics Industry at a Glance:

- In 2009 circa 1,000 companies produced a turnover of nearly 20 billion Euros.
- More than two thirds of the turnover is achieved outside of Germany.
- The industry employs around 110,000 people.
- R & D investment amounts to around 10% of turnover.
- Photonics has a bright future with its high growth potential despite any short term weakness.

THE COMPANY

SPECTARIS

Berlin, Germany

SPECTARIS, the association for high-tech industries, has close to 100 producers of optical technologies in its Photonics + Precision Technology grouping. Other important photonic firms and photonic technology developers are spread across different industries, such as medical technology, mechanical engineering, and in the semiconductor-, lighting- and energy areas. SPECTARIS actively supports medium-sized industry through active industry marketing both within and outside of Germany. Activities include political representation and other diverse services, such as hosting seminars and conferences as well as the collection and provision of industry data.

[www.spectaris.de](http://www.spectaris.de)

Better Dovetailing between the Grant Systems

A second measure to encourage industry growth would be increased dovetailing between the disparate grant systems. Presently, there are two ministries awarding grants to the technology sector – the Federal Ministry for Economics and Technology (BMWi), and the technology orientated project grants awarded by the Federal Ministry for Education and Research (BMBF). Each of these ministries sponsors its own grant system. Each grant has demonstrated its efficacy based on take-up within the industry and on a proven track record vis-à-vis job creation and innovation. The technology-friendly BMWi grants support common industrial research through the Central Innovation Program for Medium-sized Firms (ZIM) which has been supporting businesses since 2008. The BMBF grants target specific research fields. According to a recent SPECTARIS members-poll, both types of funding instruments are being utilized. However, there was much criticism of the red tape involved in applying for these grants. The unnecessarily complex nature of the programs themselves also came in for criticism. To award Project Grants to those closest to the pulse of the real phot-

onics market, we believe that the numerous small and overly complex grant programs need to be simplified. Furthermore, there also needs to be much closer cooperation between the two ministries responsible for the awards.

In respect of the above comments, we wish to make a few closing remarks about the planned introduction of tax incentives to encourage innovation and investment in R&D. We do not believe it is possible to encourage and create innovation in the photonics industry using tax incentives alone. SPECTARIS will not support additional research funding in the form of tax incentives unless they are used in conjunction with the current federal capital investment grant programs. The current programs, as discussed above, have reaped success within the industry by creating jobs, fostering better partnerships and have thus helped to maintain Germany's position as a leader in photonic technologies. The combination of technology specific support via the Project Grants (BMBF), and grants such as BMWi R&D support structure ZIM, should not be abandoned in favor of a tax incentive.

pable of withstanding economic turbulence. This increased diversification is only possible if federal R & D funding is awarded to those firms with the most potential.

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