

## Topic of the Week Ireland

### Firecomms: Opto-electronics specialist with focus on automotive applications On the road to Success with MOST and IDB1394

**High-volume, RCLED-based opto-electronics solutions for the areas of consumer, industry and especially automotive electronics are the domain of Firecomms.**

Founded in May 2001 as a spin-off of the NMRC (National MicroElectronics Research Centre), Firecomms reflects the new business culture of Irish electronics companies. A total of twelve employees focus exclusively on design and engineering of the products at the company's headquarters in Cork.

Production has been completely outsourced to Asian service providers. According to information supplied by Dr. John D. Lambkin, CTO of Firecomms, the product range is based on eight years of research work at the NMRC and nowadays includes automotive FOTs for MOST and IDB1394, red vertical cavity lasers (VCSELs) and FC300R red 250 Mbps resonant cavity LEDs as well as FC-300D receivers for 250 Mbps.



**Dr. John Lambkin,**  
Firecomms

»Most and IDB1394 in the automotive sector offer us, as a young company, the opportunity to benefit from this growth market via second sourcing in particular.«

Based on RCLED solutions, the young company has established itself in recent years especially in the European automotive industry and competes against companies such as Infineon Technologies, Agilent Technologies and Hamamatsu. This is not really a problem for Dr. Lambkin, "because even in these large companies, only comparatively small units focus on this product area." Dr. Lambkin justifies the fact that, in its beginnings, Firecomms concentrated so heavily on the automotive sector with the rapidly increasing unit numbers in the

MOST area, for example, "Last year, demand sat at around 8 million pairs, for this year, we are forecasting an increased demand to about 15 million pairs, and for 2006, we expect a demand volume of up to 25 million pairs."

The tough operating conditions in the automotive industry, requiring operating temperature ranges from  $-40$  to  $+95^{\circ}$  Celsius, are advantageous to the characteristics of the Firecomms products. At the same time, and this is unusual for the automotive industry, it is among the early adopters with regards to MOST and IDB1394 and thus drives development. Unlike the consumer market, the automotive industry so far also has been paying for development work. For the Firecomms founders, this is a crucial argument. In addition, the automotive industry is extremely dynamic. For example, MOST (50 Mbps) became a serial element within a very short time span.

Currently, the area of IDB1394 is of great interest to the automotive industry. In their efforts to improve their infotainment offers and provide features such as film-within-film or image-within-image, automotive producers are opting for IDB1394. Renault, for example, is working on a product that allows external consumer electronics devices, e.g. the iPod, to plug into the car's infotainment system. For companies such as Firecomms, this is a promising opportunity. BMW and DaimlerChrysler are also currently running projects aiming at a realisation of a GBit link in cars. Instead of POF, these companies,

however, are focussing on fibreglass transmission.

Although there are application options for RCLEDs as well as VCSELs in the data communication, data storage, bar-code and medical fields, the automotive industry offers an already established market for these products, according to Dr. Lambkin. "Because of that, there is an opportunity for second-sourcing," he says. He sees the main opportunities in the consumer electronics field in the area of FTTX home networks. "With increasing bandwidth, copper-based solutions are becoming too complex and too expensive," he explains the advantages of GI-POF. "Fibreglass solutions, however, are too expensive and technically over-specified for this application." The use of visible red light also eases the testing of such networks. In addition, POFs can be easily installed by the construction industry.

Other possible applications, especially for the red VCSEL technology, are bar-code readers and optical mice, according to Dr. Lambkin. There are also projects in connection with retinal scanning aiming at a more efficient generation of head-up displays. In the field of medical technology, red VCSELs may be used as sensors. The next phase of development at Firecomms, indicates Dr. Lambkin, will focus on plastics-encapsulated VCSELs for data communication applications, VCSEL arrays in the versions  $1 \times 2$  and  $2 \times 2$  as well as lenses integrated onto the LED-Dies via inkjet printer or lithography. (eg.