

Investigating the sensors industry

Tony Ingham from Sensor Technology speaks to Rachael Morling about sensor markets; product and application developments; innovations; and the future possibilities for sensors – which are ‘virtually endless’

The use of sensors is becoming more and more common, which is driving volume into the sensors market. They are also becoming more sophisticated. In fact the sensors market is changing fast, and will continue to do so for many years to come.

Products are also becoming more ‘intelligent’ which usually means they are fitted with sensors plus the onboard electronics to process the signals and make decisions. Automatic cameras, for instance, will include gyroscopes to detect shaking/movement, light intensity sensors, etc.

Most cars (even the basic models) are now filled with sensors, monitoring engine performance; exhaust content; temperature in the engine bay, passenger cabin and outside; ambient light; speed engine revs; brake pressure, etc. Thirty years ago the average family car had no more than half a dozen onboard sensors – it’s currently somewhere around 250, and will increase exponentially as safety and environmental regulations tighten.

Similar things can be said of light aircraft and pleasure boats – they are gaining many of the sensing systems previously confined to airliners and cruise ships. Engine management (whether it is in a car, boat, plane or train) is another booming sector, as we strive for cleaner performance, better speed and reduced fuel consumption.

Medical technology is also becoming more sophisticated by the day, with automated machines to diagnose conditions and deliver treatments – these bristle with sensors. And medical technology is fast escaping the confines of the hospital. Community nurses, paramedics, dentists and chiropractors are all getting technical aids, with drivers in the last 10 years including battlefield medicine and subsequent trauma recovery and rehabilitation, both of which transfer into the civilian world.

Technological innovations

A number of technological innovations have benefited both sensors and sensor users. The greatest innovation, however, has to be the massive increase in computer power, the ability of one or two chips to collect masses of data from a sensor, interpret it and issue commands is phenomenal. This has, and will continue to drive innovation

upon innovation in virtually every area where sensors are used.

But it’s not just the technology and applications that have changed. So too have the demands of both the users and specifiers.

We have seen the emergence of a commodity or volume sector, where people want to buy a packaged sensor that is simply fit-and-forget. For these users price is often critical.

More technical users still exist of course, and they are splitting into two camps: those who want to know all about the sensor – how it works, how they can adjust them, etc; and those who just expect it to work so that they can concentrate on analysing the data.

These trends imply that the sensors sector is still expanding.

Driving innovation

There are three main innovation drivers:

- The market will always want the sensors to do more and they will always want the prices to come down. Technology development companies, such as Sensor Technology, recognise both of these requirements and try to harness them – accepting the customers always want more for less is fundamental to long term development strategies.
- Technology has a development momentum of its own. Put a boffin in a lab and ask him to develop a widget, and he will produce at least three options, all of which are worth exploring – during which time new ideas naturally emerge in a fairly steady stream.
- The third driver is the curved ball from left field. Simply, you never know what is around the corner. Who would have said in 1999 that the military were about to become the

biggest driver in medical technology. Many of us thought the Instamatic was the mature state of the camera technology – we didn’t see the potential of integrating it with computer and mobile communications. We have seen clean power switch from an idle daydream type technology to one of the main objectives of global research, and cars develop unbelievably.

Weathering recessions

While the recession has, of course, affected the sensor market, it has not been all doom and gloom. In fact, when times are hard one way to win sales is to incorporate new features into your product. This often involves building extra sensors into the product or alternatively testing the innovations using sensors. Either way, it’s a win for sensor companies.

In our case, many of our customers are working on long term projects that will keep running through a recession, and may even be speeded up to get an exciting new offer out to a moribund market. We are, for example, working with several teams to develop wave, tidal and wind power generation. These often have stable financial backing from several third parties and if anything they have accelerated over the last three to four years.

Furthermore, medical R&D seems to plough on regardless of the state of the economy, and of course motorsport never slows down.

Technological developments

The sensors world is charging ahead with technological developments in so many fields. We have already talked about increased computing power; the actual sensors heads themselves are becoming better designed and better built; and volume manufacture always improves reliability, performance and quality.

Finally I think we are on the cusp of an explosion in micro-engineering, where new materials and techniques will lead to a virtual revolution in many areas of manufacture. Miniature ceramic medical implants will become more and more common; tiny mass produced sensors will become so cheap that they can be built into virtually any consumer product.

Sensors are about to do what silicon chips did 25 years ago – the possibilities are virtually endless, and today’s young engineers have very exciting careers ahead of them.

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Sensor Technology supplies its TorqSense sensor into a wide variety of applications