Mind the gap! FAST magazine features our productivity focus

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If UK manufacturers are to reach their business goals this year, they will have to achieve the greater levels of productivity that are proving elusive

With manufacturing productivity in Q4 2016 growing by 1.7% on the previous quarter (Office for National Statistics) – though overall growth is still lagging behind the curve – the UK economy continues to be haunted by the productivity puzzle'. Engineering adhesives specialist Intertronics works with its customers to enhance their productivity in order to compete in both home and export markets.

The latest Executive Survey from manufacturers' organisation EEF clearly confirms a broad recognition of this need. Findings indicate that, in order to reach their business goals in 2017, UK manufacturers will achieve greater productivity in three ways:

- Process innovation
- Investment in technology and innovation
- Continued work to ensure flexible supply chains.

Often the approach required is quite holistic, tackling more than one of these trio of considerations at any one time.

More than half (56%) of survey respondents reported that they will be undertaking process innovations to increase productivity. Medium-sized firms (those with 101-250 employees and quite possibly the unsung heroes of our manufacturing economy) are the most likely to do this, with seven in 10 citing it as an action they will undertake. Half of companies surveyed said they expect to increase investment in technology and innovation in the next 12 months.

Intertronics states that it is successfully helping both existing and new customers with process innovation in areas such as very fast light curing of adhesives and coatings using UV and/or visible light, and sophisticated mixing and degassing. They are investing in technology and innovation in the form of material application automation and precision, and surface treatment.

Customers are also said to enjoy reliable, fast delivery and, where required, flexible shipments, consistent with supply chain efficiency.

> "Our focus is on the use of advanced engineering adhesives as an efficient and reliable fastening method suited to automated assembly, in the form of our latest materials dispensing and curing technologies."

Above: Designing-in light curing adhesives.
Above left: Intertronics' new technology centre.
Left: Productivity – how it used to be done.
Right: Piezobrush PZ2: nozzle attachments for surface activation across many applications.

Intertronics managing director Peter Swanson explains: "Our focus is on the use of advanced engineering adhesives as an efficient and reliable fastening method suited to automated assembly, in the form of our latest materials dispensing and curing technologies. For example, UV/visible light cure adhesives that cure in seconds, THINKY mixing and degassing equipment, alternative dispensing technologies, our range of dispensing robots and advanced surface treatment techniques are all helping manufacturing companies at all levels of automation maturity to enhance their processes and productivity."

Intertronics organises regular seminars to demonstrate how the latest technologies and products can play a major role in this. Also, the company's Oxford-based Technology Centre is in constant use, enabling both design and production engineers to evaluate and compare adhesives, coatings, sealants and equipment in the context of their assemblies and processes – enhancing competitiveness, product quality and reputation.

Meanwhile, when it comes to the improved adhesion on surfaces that are otherwise difficult to bond, print on, coat or laminate, the Relyon Plasma Piezobrush PZ2 from Intertronics may have the answer, with its nozzle attachment options for surface activation across a wide range of applications. Treatment of metals, and smaller and more precise applications, are now said to be possible by choice of a suitable nozzle, while the use of a variety of special gases also enhances the possibilities of PDD (Piezoelectric Direct Discharge) on challenging substrates.

Based on the direct, electric discharge at an openly operated piezoelectric transformer, low input voltage is transformed, resulting in high electric field strengths. The Piezobrush PZ2's ionised energy output of cold active plasma gives successful pre-treatment and surface activation, enhancing wetting and adhesion with Standard, Nearfield, and Multigas-and-Needle nozzle options.

"When used on conductive surfaces, the Piezobrush PZ2 Nearfield Nozzle helps resolve issues where direct plasma discharges can damage some substrates or even the plasma device itself," states Intertronics. "Inside the PZ2 Nearfield Nozzle, a glass inlet forms a dielectric barrier and changes the type of discharge, distributing the power from the direct discharge uniformly over the treatment area, therefore eliminating the possibility of damage to the surface. This allows metals and other conductive substrates to be treated with confidence."

Surface activation using the PZ2 Nearfield Nozzle can allow printing on materials which in normal conditions form poor bonds with inks, adds the company. "A good example is a printed anodised aluminium and polyethylene composite material (Alu-Dibond) where a cross-cut test on the patterns shows that there is a significant adhesion improvement. A short treatment by the Piezobrush PZ2 gives distinctly better results for the ink bonding in this and many other cases."

Medical device technology

The PZ2 Multigas-and-Needle Nozzle can be used without a special gas (using ambient air) for a very precise surface activation treatment with a needle jet of plasma. This narrow output of plasma energy may be used for the treatment of very fine structures, including undercuts or small holes. Alternatively, the PZ2 Multigas and Needle Nozzle can be used with an input of additional selected inert gases, which allows a range of processes to be implemented, which would not be possible with normal gases such as air or nitrogen alone.

For instance, to treat Teflon (PTFE), a plasma gas with a special composition is used. This is a situation found where small PTFE inner coated catheters may be successfully treated to allow improved wetting. In tests, comparison shows the increased degree of wetting of the catheter achieved on the basis of capillary forces, with an improvement of over 300% being achievable.

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