‘Food Waste’ is now a worldwide catch cry, with fresh fruit and vegetables being discarded by families due to their short life in the refrigerator! Reducing food waste can be addressed with the use of laser technology, through ‘EMAP’ packaging, a procedure that creates micro-perforated holes in the film of packed produce that matches the respiration rate of the goodies inside giving them a longer life, even as much as 100% on previous storage time.

**How it works:**

Fresh produce respires. Respiration is a complicated sequence of chemical reactions involving conversion of starches to sugars and transforming the sugars into energy. Respiration rates vary from product to product, even season to season and thereby country to country! Equilibrium Modified Atmosphere Packaging (EMAP) is one way of controlling respiration rates responsible for the deterioration of taste and flavour. So when a product, strawberry, grape or banana, arrives at the packing shed, the first step is to place it in a Respiration Meter, where its rate of respiration is measured. This information is calculated to provide the desired perforation size and then passed to the computer managed laser system.

The third step is the laser perforation process. Usually integrated into the packaging system, film is perforated during the packing process. Holes as small as 55 – 60 microns in diameter can be made.

The forth step in the process occurs with each perforation inspected by an integrated camera, analysing the diameter and shape. The vision system exercises quality control by checking the oxygen transmission rate of each pack. The PerfoTec laser is the only laser in the world with the ability to adjust micro-perforation with relation to film thickness with its patented closed-loop feedback camera system.

PerfoTec lasers are used extensively in Europe and the UK with Marks and Spencer conducting their own trials concluding laser perforated packaging of berries in particular, have increased shelf life, sales and customer satisfaction and, reduced food wastage. This has lead to M&S specifying that laser generated perforation, or EMAP, is conditional to supply of fresh produce to their international chain of stores.

A survey by Euromonitor in 2015 recommended EMAP as a major benefit to Australian growers as extending the life of fresh produce has real advantages not just for local supply but for export where delivery times are greatly increased. For countries such as Australia with the challenges presented by distance and the rise in export of fresh produce, adopting laser technology can provide a valuable solution to growers and their customers.

For more information see www.perfotec.com or contact Raymax Applications +61 2 9979 7646
Optics: Fluid Jet Polishing Technology:
LightMachinery’s patented computer controlled fluid jet polishing system uses a fine stream of slurry to accurately remove nanometers of material from an optical surface. Having spent many years refining this computer controlled polishing technology, 90% of our optical fabrication is still done using conventional techniques, but most of our high accuracy wafers, etalons and interferometers are finished using the ‘FJP’.
Fluid jet polishing means tackling some very complex and difficult optical fabrication tasks for example:

- The adjustment of the shape and flatness of optical components such as etalon mirrors to within a few nanometers
- Very thin components, such as wafers and thin etalons, that are impossible to accurately polish using conventional technology
- The ability to measure the final performance of complex assemblies such as Michelson Interferometers and then to make arbitrary surface corrections to correct the overall performance
- Arbitrary optical surfaces such as phase plates, corrector plates, axicons and cylindrical axicons

Steps in the FJP process:
1: Measure the current surface profile. Usually done using an interferometer.
2: Compare current surface to the target surface profile.
3: Compute the required removal pattern

Finished product:
Created with FJP technology this demonstrates our ability to make completely arbitrary shapes to very high precision. The fringes are caused by the air gap between the designed surface and a flat substrate.

Specially designed optics by LightMachinery are available through Raymax Lasers along with advice and support: 02 9979 7646

NEWS FROM OUR SUPPLIERS:

The world leader in fume extraction technology is not only ahead in technical developments but communication. Marketing is not always a strength amongst laser and optics suppliers, but BOFA leads the charge in their use of the latest social media to get their message out! You can Get social with BOFA via: Facebook, Twitter, and LinkedIn; you can check out BOFA’s flickr photos and watch BOFA movies on youtube! Now they have developed a BOFA iPhone App providing mobile access for you while on the factory floor or in management meetings! And this is all for FREE!

Klöé
Is promoting their Dilase Technology as running a successful campaign to promote their high performance laser systems in high-resolution direct laser writing with its very high aspect ratio over thick photoresist layers, as providing the ‘Keys to your expectations in optics’! This new push through marketing of Dilase, UV-KUB and K-ILU product ranges has had the effect of getting customers to unlock the potential of Klöé resulting in many satisfied customers!

WHAT’S IN MY INBOX!
CSIRO Blog reports - Seaweed could hold the key to cutting methane emissions – from COWS!

To appreciate this scientific research we need to set aside our presumption that most live-stock generated methane comes from farts as it doesn’t. 90% of methane emitted into the atmosphere comes from burps! Several years back a Canadian farmer noticed his cows grazing by the sea were far more productive – it was simply as they were eating seaweed which improved the cows health and growth as well as substantially reducing the amount of methane produce. Now CSIRO in partnership with Southern Queensland University have found a varietal of Australian seaweed Asparagopsis taxiformis that reduces methane by up to 99%! So for those climate control enthusiasts, as well as for the milk and meat enthusiasts, this could be good news!