

# The Superyacht

TRUTH • OPINION KNOWLEDGE • IDEAS AND EXPERT INDUSTRY ANALYSIS



# REPORT

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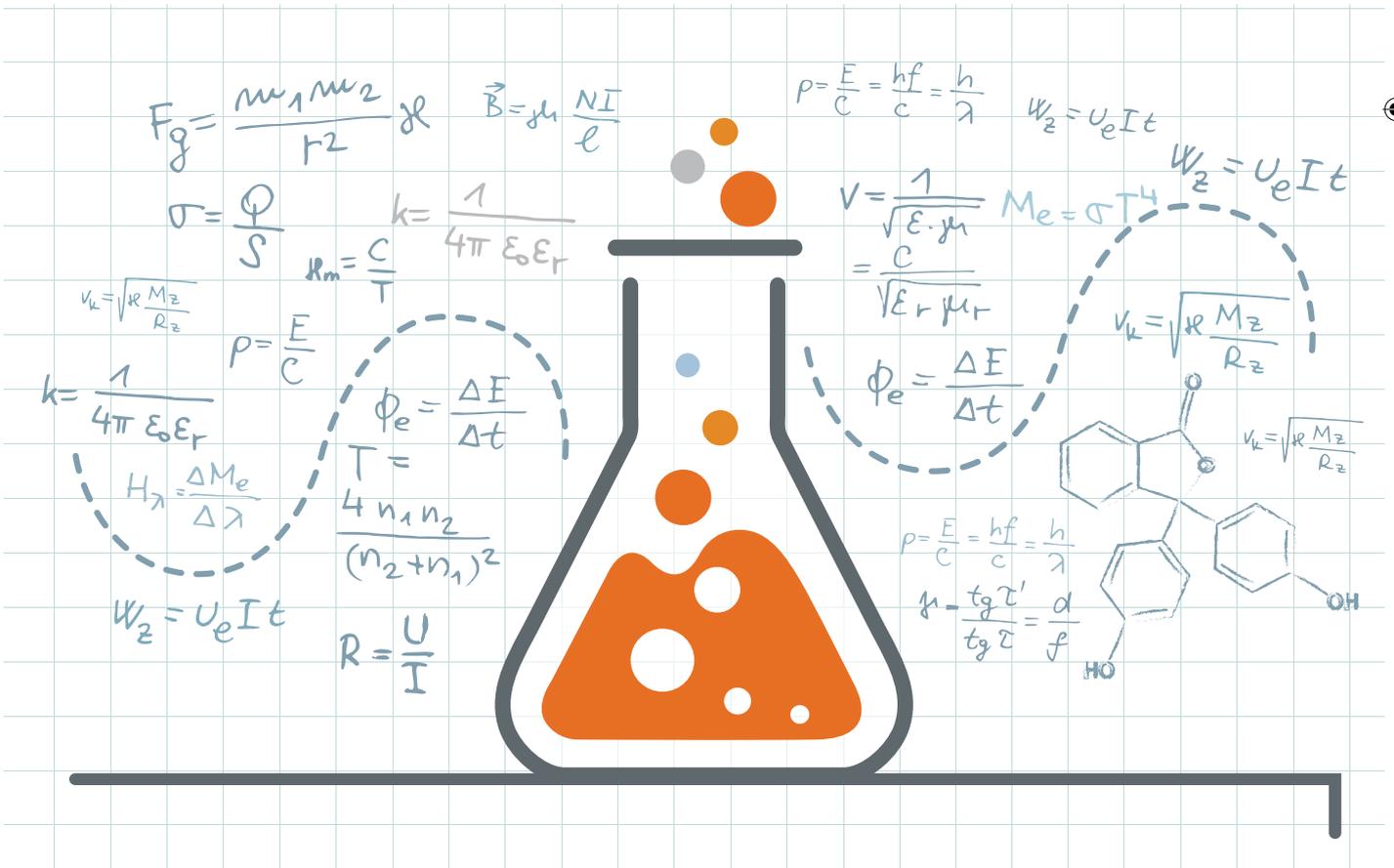
What captains, project managers, ETOs and owners will want to know about the future of superyacht satcoms.

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# WHEN MORE MEANS LESS

WORDS: DON HOYT GORMAN  
IMAGE: ISTOCK.COM

How a pioneering nanotechnology company formed from the remains of Kodak developed one of the most innovative superyacht products.



Nanotechnology suffers horribly from snake-oil syndrome. To many people, its claims may sound preposterous, but, as *The Superyacht Report* savvy readers will already know, nanotech – which can mean both the imperceptibly tiny fragments of stuff that performs the magic and the process by which it works – has infiltrated every part of our daily lives. You may not know the names of the particles that have made your world an easier place to inhabit, but you certainly will have benefited from their introduction.

I used to edit a science magazine, have been to MIT's nanotech labs, met Nobel Prize-winning scientists and written and edited articles about the nanotech revolution. So it was with real interest I delved into the fuel additive product GO2 when it first appeared in yachting circles a couple of years ago. I've followed the substance's ingress into yachting since *Big Fish* ran on-board tests of the additive's claims back in autumn 2011, and last year, just after FLIBS, I flew to Rochester, New York, to see for myself how GO2 is made and how it's sold, and ultimately to try to determine whether it's worth your attention.

A quick answer to that question is 'yes'. For most large yachts, buying and dosing your diesel with GO2 will provide a bit of a fuel-saving benefit, a lot of emissions benefit and a significant decrease in carbon grime build-up on the hull coming from the exhaust. On older engines, it can make the exhaust belch black stuff badly for a day or two as it cleans the cylinders and exhaust, so start the dosing somewhere appropriate. The costing will be different for every vessel, but from what I can see, and from reports from various engineers who've used the product, it does what it says on the bottle.

From the outside, the plainly labelled containers don't give much away as to the contents. Take the cap off and what you see looks like tea that's been left to stew for a day while the per litre the price of the product is comparable to that of cognac. So you'd be forgiven for being sceptical. Indeed, given the number

of dubious fuel additive products that have circulated the market over the years, most engineers in the superyacht world are forgiven for the experience-based scepticism they apply to all kinds of claims.

According to Richard Franklin, owner and MD of ECOSuperyacht and GO2 Global Yachting – the exclusive worldwide distributor of the GO2 fuel additive, manufactured by Cerion Energy in Rochester, New York – the market for GO2 is booming. "We now have over 160 superyacht customers and we're looking to double that number, with sales revenues expected to exceed \$1m annually, as we grow customer numbers and add new outlets and partners. We also expect to see more customers decide to install fully automated dosing systems, making light work of dosing fuel with GO2 each time they bunker, as we've done with *Chopi Chopi*."

Rochester is one of the lovely old US north-east industrial towns replete with large dark-brick homes set back on lawns stanchioned with enormous shady trees. However, in recent times, it has suffered from stagnant or falling house prices and




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reduced services, although it is home to a remarkable research university and one of the best-known brands in the world: Kodak.

Kodak famously lost the plot when it failed to innovate – and then innovated too late and in too costly a fashion – at the dawn of the digital photography era, and went into bankruptcy proceedings in 2012, from which it emerged a much smaller company last September. The failings of Kodak's management, however, masked the furnace of innovation and



entrepreneurial spirit that still burns within the darkened halls of Kodak's old buildings in Rochester. At the centre of that new spirit of invention is Cerion Enterprises.

Cerion Enterprises' CEO is Landon Mertz, whose name suggests a man of a much earlier generation but whose remarkably swift and disciplined thinking come in the form of a tall, smiling 30-something-year-old. Mertz took me through the company's modest, decidedly unmodern offices that abut a broad rank of railway lines. In the boardroom he showed me a corporate presentation, which outlined the company's history.

Kodak, while best known as a photographic film brand, was at its essence a research company that developed remarkable products through the magic of chemistry. Colour film-coated paper, altered by exposure to light, could later be treated to convey a captured second of time. The remarkable potential of the molecule cerium was already well

understood, but it wasn't until Kodak scientists were able to develop a system to manufacture cerium particles incredibly small – nano-scale to be precise – that they could unlock the material's capabilities. Understanding the opportunity presented by this discovery, a group of the scientists involved quit Kodak to form Cerion Enterprises, which was set up to fund those developments and to find markets into which their new inventions could be sold.

Cerion's research team found a way to synthesise cerium dioxide at the 2.5nm scale while achieving a very consistent particle size in a process that could be expanded to industrial scale. As Mertz explained, at that scale, the particles start to do remarkable things – and, crucially, Cerion had invested in and owned the patents that then protected how they synthesised the stuff. Mertz joined as CFO before taking the reins as CEO to manage the running of the operation and the company's strategic plans for

development.

“As you know, the performance fuel additive market is littered with products that make outrageous claims that are neither backed by common logic, credible science or rigorous real-world testing,” Mertz said. “The noise created by the competition gives fuel additives the stigma of being junk science. This is why we’ve put such a strong emphasis on education, the transparency of our science and backing up our performance claims with very rigorous and expensive in-field testing.”

Taking a shortcut, Mertz led me across the train tracks to one of their labs in a building where engine testing was taking place. GO2 works in every diesel engine, whether in a small recreational marine boat, a yacht, a train or a truck – but Cerion is not focusing on moving GO2 to every area. “Our goal isn’t to have a presence in every sector, but to be the dominant solution in the sectors we’re in,” he said. “So, we are selective about the sectors we choose, and when to enter new ones. If we pursued every sector at once, we’d make small incremental gains in all, instead of meaningful gains in a few. To break through the competitive noise in each sector requires us to be 100 per cent attentive to the customer, their needs and proving our value to them. How this is achieved is different from market to market and requires significant focus and investment. For a sector like on-road, we see a cut-throat retail business with low barriers for product entry, a fragmented customer base, an overly complicated distribution network

and minimal opportunity to educate and support the customer around the product – making it difficult to achieve the penetration levels that ensure a dominant position in the market.”

The superyacht sector benefited from the entrepreneurial savvy and high-wattage intellect of Richard Franklin, who, when Cerion first appeared, had recently set up ECOsuperyacht to provide superyacht owners, captains and engineers with a practical approach to reducing emissions and improving energy

was. It had its own power plant, and its own railway line, locomotives and cars. It was an industrial city, totally self-sufficient. Today its enormity stands in contrast to the quiet that has descended on the facilities, like a huge university campus that’s on permanent summer break. But inside, new companies are taking root, using parts of the vast infrastructure to build new businesses, create new jobs and offer new solutions to a rapidly consuming global economy.

“We’ve become a pretty popular

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efficiency. Within two years, Franklin has put GO2, which comes in four-litre (€560), 10-litre (€1,400) and 20-litre (€2,800) containers in Europe, into an increasing number of yachts with an expanding distribution network that now serves the Caribbean, Mediterranean, Pacific and the US.

Back in Rochester I was floored by just how enormous the Kodak factory

name in the area,” Mertz said. “People send their CVs to us all the time, as we’re in the news pretty frequently.” The company, which employs about 50 people across its three facilities in Rochester, is working with the highly regarded local Rochester Institute of Technology, as well as with high-profile institutions across the United States, on collaborative projects in the areas of

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battery technology, pharmaceuticals and fuel catalysts.

“When it came to yachting, what we saw was an industry that was concerned about reducing fuel costs, as well as looking for ways to reduce soot and improve the health of their engines, ease the burden of cleaning soot from the hull and ridding guests and neighbours of diesel exhaust smell,” Mertz explained. “The needs of the yachting community fit with GO2’s benefits, and in less than two years we can see that our belief that GO2 could be a meaningful part of the yachting community is coming true, with over five per cent of the fleet using GO2 and new yachts being added every single month.”

However, I had questions. One of the persistent concerns about nanotechnology is the lack of public understanding about whether nanoscale particles are safe. “Regulation of exhaust is broken down by type, that is PM, NOx, SOx, CO and CO2,” Franklin explained. “The measurement of particulates (PM) is done on two very specific criteria: PM2.5 and PM10 (measured in micrometers). This is designed to measure carbon-based particulates as a by-product of combustion. The interest is because particles of these sizes have been specifically shown to be harmful to health. Cerion’s nanoparticles are so small (2.5nm) that they wouldn’t register, even under PM2.5, as they are a factor of 1,000 smaller.”

One per cent of GO2 is active nanoparticles. The dilution rate is 1:4,000, so the fuel is dosed at a concentration of 1:400,000, before

taking account of losses during combustion. There’s not much regulation of nanoparticles at the moment, by either the IMO or the EU. “As far as I know, the only environment in which nanoparticle use is currently controlled is in enclosed environments, such as underground

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– Landon Mertz, CEO, Cerion Enterprises



# CREW TRAINING FOR T/C?



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– Richard Franklin, owner and MD,  
ECOSuperyacht and GO2 Global Yachting

mines, where the EPA and mine safety body regulate their use,” Franklin said.

“While we do see some signs of increasing government interest in nanoparticles, for instance by the French government, who attempted and then effectively abandoned a plan to register all uses of nanoparticles, at the moment there is nothing that I would see as a threat to the use of nanoparticle-based fuel additives,” Franklin said. “So at this stage we don’t see emissions regulation as a threat to GO2. In fact, quite the opposite; we see GO2 being proactively adopted as an effective way of reducing production of carcinogenic carbon black, by enabling more complete combustion.”

In response to a question posted on *SuperyachtNews.com* about whether using GO2 voids the engine manufacturer’s warranty, Franklin replied that, “The key point for original equipment manufacturers (OEM) in respect of warranties is that fuel has to remain within spec against ISO, EN, ASTM

or individual OEM standards. Fuel correctly dosed with GO2 remains within spec on all criteria. A copy of the fuel sample analysis undertaken by SWRI, a leading independent US test laboratory – showing that fuel dosed with GO2 passes on all points – is available from our website.”

The yachting industry too often sees itself as a cottage industry, a quaint backwater of the global economy – a false image that I’ve railed against before. Cerion Energy’s involvement in superyachts is proof that as much as any other industry, clever people and clever products are driving real, meaningful innovation in the superyacht market, and creating new business opportunities and profit centres. The work continues: Franklin is presenting evidence to get a leading classification society to certify that fuel dosed with GO2 does not alter its composition outside the parameters stipulated in Caterpillar, MTU and Cummins warranties.

It’s such a simple thing and, to my mind, a brilliant product: a diesel additive that cleans the engine and exhaust, reducing smell, soot and grime, perfectly suited to the superyacht market and driven by innovations in industrial chemistry. GO2, to me, should be championed not only by engineers, but also by the wider market as the kind of smart business our industry should celebrate. ■



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WITH SUBJECT: WHEN MORE MEANS LESS