Global leader for inhalers earns local recognition

Copley Scientific's history stretches back 77 years – 50 of those spent as a Chamber member – and during that time it has built a reputation as a global leader in manufacturing inhaler testing equipment. Yet only now is the Nottingham-based company earning local recognition, having been named the Chamber's Nottinghamshire Business of the Year for 2022. **Dan Robinson** visits its headquarters to meet CEO **Mark Copley** (*pictured*).

How the Swiss Mills factory looked in 1946

If you happen to use an inhaler to treat asthma, or perhaps have a friend or relative who does, there's a very good chance its existence owes a debt to the small team working in a family-run business tucked away in the east of Nottingham. Even if you live on the other side of the world.

Before they are cleared by regulators for use among the 262 million people estimated by the World Health Organisation to live with the respiratory disease, every inhaler must undergo rigorous testing.

The "vast majority" of these medical devices are assessed using equipment made by Copley Scientific, which from its base in Nottingham's Colwick Quays Business Park exports to about 100 countries worldwide.

Mark Copley is the third-generation CEO who has helped to grow the business in recent years by creating new products, diversifying into adjacent markets and finding new international trading partners.

Turnover increased by a third to £14.7m in the two years to December 2021 – success that ultimately resulted in Copley Scientific being crowned the Chamber's Nottinghamshire Business of the Year for 2022.

'We trade in every continent and are considered to be thought leaders for testing equipment'

"Knowing that products made in Nottingham are being used in labs around the world gives us a huge sense of pride," he says.

"What's driven our growth has been a desire to deliver the best technology out there and be the undisputed leaders in our field.

"We trade in every continent and are considered to be thought leaders for testing equipment. We have an established presence in the EU and North America but are now finding emerging markets too like China, which leans heavily on our expertise.

"It means we get invited to speak at various conferences and have previously given talks to the Chinese regulators about the future of inhaler testing. We also help various industry consortia to develop how products will be regulated in the future. It's kept us at the cutting edge of respiratory product development."

COPLEY SCIENTIFIC HASN'T moved too far from its original Beeston home but the company looks a lot different to how it did back in 1946.

That was the year Mark's grandfather Frank set up F. Copley & Company to manufacture glassware for the pharmaceutical industry.

Born in Sheffield, he left school without any qualifications and trained as a glassblower, making products like neon lights and Christmas tree baubles that were relatively new at the time. After setting up his own company, it won a contract from Boots to produce glass droppers used for eye and ear drops at its Swiss Mills factory.

"For a guy with no education, he was smart and built his own machines to automate production of these glass droppers," says Mark, sitting in front of the boardroom wall where the original company registration certificate is displayed.

In the mid-1950s, the firm diversified by adding pharmaceutical test instrumentation to its product range.

Unlike now, however, it was an import company whereby it represented predominantly German manufacturers of lab instruments in supplying the UK market. It also expanded into tablet dissolution testers and, after moving to Colwick and a first name change to Copley Instruments, the first equipment for testing inhalers was developed in the late 1980s.

Mark explains: "Our pharma customers were developing inhalers in-house for the treatment of asthma, chronic obstructive pulmonary disease (COPD) and other respiratory illnesses, and wanted us to help them develop the testing equipment.

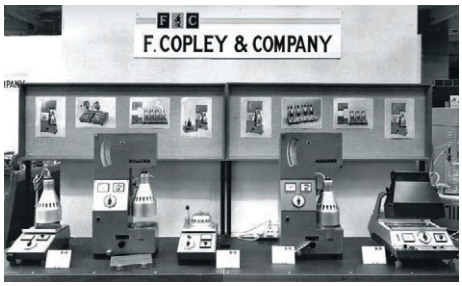
"At that time, Boots was moving away from glass droppers to plastic bottles as the technology had moved on, so we sold off the glass manufacturing part of the company.

"We started working with companies like GlaxoSmithKline (GSK), AstraZeneca and Fisons (now Sanofi) on licensing testing technology developed by these companies, but then eventually started designing and manufacturing our own tablet and inhaler testing equipment."

There followed a further rebranding in 1998 to its current guise of Copley Scientific, international expansion with an office opened in Switzerland in 2003, and a raft of new products and services. These included upgrades to the technology used in testing to improve reliability and better mimic human use, as well as creating software for analysing inhaler testing data and a modern platform for solid dosage testing. This innovation has been crucial to the company's growth throughout its history but particularly in recent years since Mark took the helm.

He is a born innovator, joining the family business in 2000 with a master's degree in

Frank Copley, company founder, pictured in 1964



Pharmaceutical test instrumentation was added to the product range in 1957

PLAYING A PART DURING THE PANDEMIC

A Chinese-made inhalable Covid-19 vaccine was tested using equipment made by Copley Scientific.

Approved by Chinese regulators as a booster vaccine in September last year, it is inhaled via the mouth from a vessel with a short mouthpiece, rather than injected like other vaccines.

Mark says: "It's a big moment because to get an injectable vaccine rolled out quickly, you have to train up lots of staff in a very short space of time to administer it, as we saw in village halls and car parks across the UK.

"Having an oral vaccine that can be self-administered like an inhaler means this isn't as necessary. Testing for this product was carried out on our systems, so it was great to play a role in this landmark achievement."

Mark believes Covid-19 has raised the profile of respiratory diseases among the general public, which could have a broader impact on his corner of the pharmaceutical industry.

"The person on the street was suddenly aware of threats and treatments available," he adds. "Historically, most inhaled products have been for treating conditions such as asthma, COPD and cystic fibrosis, where the disease state is directly in the lungs.

"But now we're seeing inhaled biologics – drugs being developed for migraines and other pain relief that isn't lung-based, but is delivered by the lungs to get a very rapid onset of the effect.

"Scientists have for a while looked at things like insulin, which is traditionally injected, and using nasal products to treat conditions including depression.

"We're going to see increasing innovation in this area and at Copley, we're developing our products to help these companies with inhaled biologics."

Tony Copley and Mark Copley celebrate 75 years of business

aerospace engineering. His first role was technical sales manager – when he was one of four members and three generations of the Copley family, along with uncle Peter, father Tony and Frank, who retired aged 86 – before progressing to sales director and then taking over the reins in 2018.

"Innovation has been a big part of our story in recent times," he says. "Over time, we did less and less of reselling other companies' products as an importer, and more in developing our own niche in inhaler testing equipment.

"We effectively became the word leader in this field as a manufacturer, speaking to our customers to meet their needs and the evolving regulatory environment.

"By becoming a manufacturer, it suddenly opened up the export market, which we've grown via a network of distribution partnerships across the world, and we now export 90% of everything we make to more than 100 countries."

TODAY, COPLEY SCIENTIFIC has a core range of about 50 products, along with various accessories, used at every stage of development for both innovator and generic pharmaceutical products in inhaler, tablet and detergent testing. About 1,000 units are sold each year to markets including Europe, United States, China and India.

There are typically two types of inhalers – relievers, which ease symptoms when they occur, and preventers to stop symptoms developing.

"We make equipment that tests the quality or output of an inhaler," explains Mark. "It will firstly check the delivered dose – what's coming out of the inhaler when you puff on it each time, so you can be confident you're getting the right amount of dosage during its life.

"The second thing we do is test the aerodynamic particle size distribution. It's important to measure the size of the particles so they can deposit in the lung – if they are too big, they get swallowed into the stomach and if they are too small, they just come straight back out when you exhale."

Where the technology has developed is in its ability to simulate how patients use inhalers more effectively, with Copley deploying breath simulators, vacuum pumps and flow controllers to profile breathing.

IDEAS CAN STRIKE ANY TIME

Innovation can arrive in the most bizarre fashion, believes Mark. He recalls listening to a podcast in which Dragon's Den investor Steven Bartlett discussed how innovation doesn't happen around the boardroom table, but in unexpected moments.

"I can think of any numbers of times I've stood in the shower and just thought about new products or something has come to me while walking in the park," he says.

"When you're sat behind a desk, you go through the machinations of the day to day, but it's that silence when you're doing something completely different and your mind wanders off where the ideas can flow.

"A senior scientist of one of our big customers woke up in the middle of the night and said 'I've got it'. He came up with this new inhaled drug formulation, which was a blockbuster for their business and is now worth nearly $1bn annually."

TOP TIPS ON BUILDING A NEW INTERNATIONAL MARKET BY MARK COPLEY

1. Understand the market needs
Part of it is about understanding what that market needs compared to your established markets. It's important to have a partner or distributor that understands the language and market to build a trusting and lasting relationship.

2. Identify nuances
Get to know what the culture is – how do they buy things? Is it based on technology, relationships or price? Do they value or resist overseas products?

3. Build your presence
Get to conferences and exhibitions to understand who your customers are. Showing a western face at a show in Asia signals you are a bona fide company that cares about the local market.

4. Adapt your language
Produce your instruction manuals and marketing materials in the local language so it's accessible.

Mark adds: "In more recent times, we've moved from rudimentary quality control tests to something that increasingly reflects how a patient uses an inhaler, so the data is more valuable in R&D. We've typically worked with academia and industry to understand what a patient does in a real clinical environment. Our equipment has been developed to reflect this with lab-based throat models that mimic the shape and size of a human throat, and simulators that generate real human breathing patterns. By making the equipment more clinically-relevant, it means better product development for pharmaceutical companies and better products for consumers that are quicker to market and lower cost by de-risking clinical trials."

AWARD WIN BOOSTED FIRM'S PROFILE

Being crowned the Nottinghamshire Business of the Year filled Mark with plenty of emotions – not least shock – but the accolade has provided a significant boost to its reputation locally.

He had already been joined on stage by colleagues twice to collect the Excellence in International Trade and Small Business of the Year at the Nottingham Belfry awards ceremony in November last year, when he found himself caught on the hop as the top award for the night was announced.

Mark recalls: "What happened at the awards was a complete shock. I nipped to the loo after the second award and thought there was no chance we would win the Business of the Year too.

"It was just as I was walking back to the table when I heard our name, and I couldn't believe it – my jaw must have put a hole in the ground!

"The award was recognition for what a good job our team does. We have a fantastic culture with brilliant people doing something highly valuable across the world and it was great to showcase this at a local level."

Copley Scientific was also rewarded for 50 years' membership in the Chamber at the AGM in December.

One of the key areas in which it has used the Chamber is in export documentation and Mark wants to use the award to propel new closer ties with the local area.

He adds: "Our target market is global in a very niche field. There will be a small town in the United States with a lab where they know the Copley name, but people in Colwick will never have heard of us.

"That makes it difficult to build a team, especially when we don't have the same footprint as companies like Boots, Experian and Rolls-Royce.

"As we've grown our business, we've realised how important it is to develop this local footprint from a recruitment perspective, as well as in establishing relationships with academia and other businesses."

While Copley is the global market leader in inhaler testing equipment, it owns somewhere between 5% and 10% of the market when it comes to solid dosage testing for multinational groups. Similar approaches are taken in these spheres – in tablets, for example, it measures drug dosage levels and analyses how they dissolve in a stomach.

The company's products are on display in a lab-style demonstration room at Colwick Quays, where it also has a small lecture theatre for external training on using these devices.

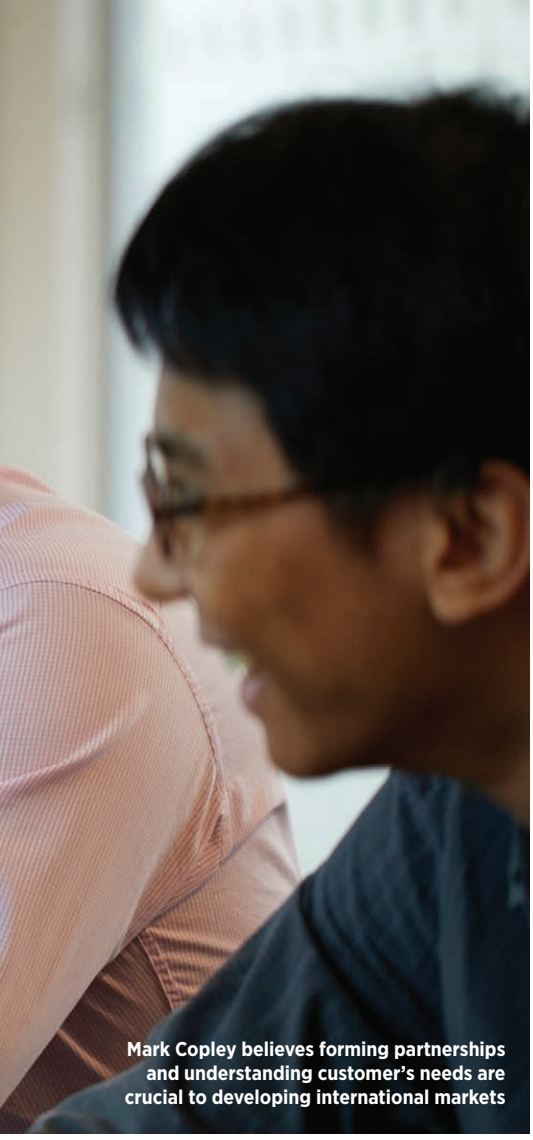
More will no doubt be added in future, with two patents granted and another two pending.

A culture of creativity has been fostered among the 35-strong and growing team. Employees are presented with the company's four values of excellence, innovation, ownership and care on the walls at Copley HQ, which tripled in size to 16,000 sq ft in 2017.

Mark adds: "We have a great team here that thinks in a similar way because our culture here is to never stand still as a business.

"What drives innovation is this constant desire to move forwards because otherwise you're

The Copley Scientific team at the Nottinghamshire Business Awards 2022



Mark Copley believes forming partnerships and understanding customer's needs are crucial to developing international markets

effectively getting left behind. We have lots of good thinkers and engineers, as well as people who are just inquisitive in how they look at ways to make a technology practical or meet a need. Innovation and excellence are a big part of our values, and that's what we instil within the team.

"We encourage people to not just do things the way they've been done before, and try to give them the freedom to step back so they can think creatively. That's led to new IP, which is the backbone of the business."

LIKE MANY MANUFACTURERS with arms stretching across the globe, Copley hasn't been without its challenges in recent times.

The impacts of Brexit and Covid-19 have significantly reduced the talent pool, says Mark, leading to difficulties in recruitment. It's a common story, with Chamber research showing four in five businesses that have attempted to hire have struggled to fill roles over the past year.

Mark says: "There's fewer European engineers here than previously and more people have been retiring early since the pandemic, so there's been a generally tight labour market.

"We have four foreign nationals among our staff who came here before Brexit. They are highly skilled and contributed a huge amount to the business, but finding people like that now is extremely difficult."

There have also been increased delays at borders and added administrative work. A lot of the equipment Copley exports must also be returned annually for maintenance, which requires extra documentation.

"Pre-Brexit, it was very fluid but it's created so much red tape," says Mark. "It frustrates our European customers, causing delays to their testing programmes and puts us at a competitive disadvantage. We have integrated supply chains around Europe where things arrive just in time on a very efficient trading regime, and suddenly there's a big barrier in the way.

"There's one slim upside, which is that if you're a company that was exporting only into Europe, you've now learned how to do the paperwork that is the same you will need for other parts of the world – so you are now better set up for having a global outlook."

More broadly, he would like to see a more concerted effort to raise the profile of STEM subjects in schools and investment in locally trained, skilled people.

"The best way is to get children doing practical things in school by giving them a real-life problem to solve, as that's what generates creativity," he says.

"But we don't have a culture in the UK anymore of engineering and science being 'sexy' – 'engineering' is a dirty word. In Germany, they put the abbreviated title 'Ing' before your name if you're a trained engineer, like we do for doctors, because it's regarded as a highly skilled profession.

"Here in the UK, we think of engineers as someone who will fix a broken kitchen appliance, which is essentially a technician.

'We're always looking to expand into emerging markets and they have been a large part of our success'

"I think this is part of the reason why British manufacturing, although still a significant part of our economy, has dwindled away in recent decades. That's sad because British manufacturing is still well-respected internationally."

TO UNDERSTAND THE size of the market it operates in, NHS England estimates more than 12 million people in the UK are affected by lung diseases such as asthma and COPD.

Sixty million inhalers are prescribed to treat these conditions, many of which are tested using Copley Scientific equipment and platforms – as are a range of medication for other ailments such as tablets, capsules, creams, ointments, gels, transdermal patches and suppositories.

Britain, however, represents just a fraction of the company's turnover. Its wide geographical spread incudes established markets like the EU, US and Japan, but also emerging markets such as China, India, Brazil, South Korea, Vietnam and Indonesia.

"To grow a business, you have to either create new products or get the existing products to more people. So we're always looking to expand into emerging markets and they have been a large part of our success. If you do that, you can secure the business' future and make money to reinvest into growing the team, and build a business that adds value to the local community."

Putting a Nottingham company – and its suppliers, the majority of which are local – on the global stage was an important factor in Copley Scientific winning three awards, including Business of the Year, at the Chamber's Nottinghamshire Business Awards.

Ensuring the products emblazoned with his name are high quality also offers a sense of personal pride for Mark, who compares the company to being his "baby".

But perhaps the most important element comes back to the vision that is captured in the office surroundings for staff to see every day.

"We've wanted to grow as a company but it was more about wanting to get our products in the hands of people who need them," he adds.

"Most successful businesses, and particularly those that are innovative, come from having a vision, which is rarely monetary but about meeting a greater need.

"Our vision is to help scientists the world over to improve the quality of people's lives, so getting products to the people who really require them gives me and my team a huge amount of satisfaction."

REGION CAN LEAD THE WAY FOR EXCELLENCE

The East Midlands is well-placed to be a Centre of Trading Excellence, believes Mark.

He has thrown his backing behind the Chamber's Business Manifesto for Growth, which was launched in Parliament last November.

It features a call for Government to harness the region's strengths in making things, moving them and innovating in how we do this, in order to create a formula for economic growth in the region and across the UK.

Mark says: "The East Midlands has an advantage nationally by being centrally located, with easy transport links to the rest of the country, and a great manufacturing heritage. In the healthcare industry, we have the strengths of BioCity, Boots and our universities to call upon, but there's still a lot to be done for us to get the East Midlands on the map internationally and attract inward investment.

"I'd like to see more businesses in similar sectors coming together to share experiences and ideas, so we can all work towards a common purpose."

The manifesto includes a recommendation to bring businesses and universities closer together, something Mark supports given his company's successful collaboration with the University of Alberta in Canada.

This partnership has helped to commercialise the university's expertise in nasal geometries into a licensing agreement.

He would like to establish closer links with locally-based institutions too, but more broadly he believes there is a lot of work to be done to harmonise the worlds of business and academia.

"Academics aren't always commercially minded so they want to get their knowledge out there and be seen as experts in that area," he says.

"That goes against commerce because as soon as you release ideas into a public domain, other companies can rapidly take advantage of it.

"So they should be encouraged to hold back and get patents before publishing papers on their novel thinking and strike up commercial relationships that can help fund future research."