

'May you live in interesting times'

Paul Sheppard

The phrase 'may you live in interesting times' was thought to be a translation of a Chinese curse (attributed by Sir Austen Chamberlain in 1936), but the reality is, like this cursed virus, the origin is not really known. When everything is weighed and sifted, much of the coatings industry (and its raw material suppliers) has managed well to stay operational over the last few months, albeit with considerable numbers of people working from home and some that have been furloughed.

The strength of any organisation can only truly be assessed during times of crisis. Many of our members have kept working during the pandemic to ensure manufacturing and supply of paints, coatings and chemicals have continued to contribute to the fight against the Covid-19 virus. During these difficult times OCCA has shown itself to be responsive and supportive to the needs of our members.

Since the outbreak of the pandemic and the start of our 'national lockdown', we here at OCCA HQ have been busy adapting to new ways of working and communicating as an Association. Not only have we had to re-think working practices in terms of Council and Executive meetings, and the rescheduling of Surfex from June to October, but we also have a responsibility to continue to engage with our members, sponsors and academic partners both now and moving forward. We thought we would share some of our thoughts on the impact of Covid-19 pandemic.

In this special feature, we intend to focus on how the pandemic has been impacting on our members, our sponsors from Industry and Academia, our Professional Association partners and the Coatings Industry in general. We have showcased the many ways in which companies and universities have generously supported the fight against the virus. We should also not forget the role of chemicals and coatings in the fight, from painting the Nightingale hospitals to the supply of alcohol for the production of hand sanitiser products.

At the same time, we cannot ignore the scores of members and their families who have been involved on a very personal level in the massive volunteering effort that has been witnessed throughout our local communities and, indeed, in many countries around the world. From our NHS volunteers, assisting with preparation and delivery of food parcels to vulnerable families and members of local communities, to offering telephone befriending services for lonely and elderly people, to delivery of NHS prescriptions and help with taking patients to and from appointments. The efforts of our many 'community heroes' is something we should be extremely proud of.

For OCCA, the past two months have presented many challenges, which have taught us many new skills, particularly with regards to the use of digital video conferencing platforms and communication with members and colleagues alike.

Council representatives recently attended a Zoom session organised by the British Science Council, examining the impact of the 'new normal' on the organising of conferences, exhibitions and seminars - which are the 'mainstay' in terms of income-generating streams for many of our Professional Associations. It was interesting to learn about the impact of the pandemic on scientific organisations. We will be watching and reporting on this in the weeks and months ahead.

In May we joined forces with "Campaign for Learning" as they launched their annual "Learning at Work" Week. This prompted us to consider how best to engage with members and provide more opportunities for professional and social networking for members around the world. As a result, our "OCCA Weekly Webinar" series was launched. Designed to run for an initial period of 10 weeks, we are hosting 10 guest speakers, typically using the Zoom webinar platform for one hour on a Wednesday afternoon: each speaker will deliver a 30-40 minute presentation followed by a 'live' Q&A session. All details of our planned series are published on our website and have also been promoted by our newly revitalised social media platforms, including LinkedIn, Facebook, Twitter and Instagram. This series is available free to members, Corporate Sponsors, staff and students at our Educational Partners and is already proving to be very popular.

Our Annual General Meeting, scheduled to be held at Emirates Old Trafford in July to coincide with the Lancashire Lightning's T20 Blast match against the Worcestershire Rapids, has had to be cancelled. We are planning to host our AGM online in September and will have a charity fundraiser for one of the many Covid-19 charities as an integral part of this year's meeting.

Aside from educational and operational issues, we must also acknowledge the importance of the mental wellbeing of our members and colleagues - many of whom are self-isolating or shielding. To this end, we have initiated a fortnightly 'social night' on Zoom for our members and friends. We are also planning several other interactive social activities throughout the summer months. All details will be published on our website and across the social platforms, so please watch out for those.

As you can see, the past two months have been an exceptionally busy time for everyone here at OCCA HQ. We have embraced the challenges with gusto and are extremely optimistic that, by engaging in such an interactive way with members and non-members alike, we are providing an effective service that will educate, entertain and provide a supportive network for the paints and coatings industry.

Industry responses to the COVID-19 pandemic

Pronto Paints manufactures WHO hand sanitiser

Pronto Paints, assisted by their suppliers, are manufacturing an isopropanol-based hand sanitiser in accordance with a World Health Organisation formulation at their Chesterfield plant. UK healthcare facilities including hospitals, doctor surgeries and care homes, will have priority access to supplies at a special discount. In addition, several 5 litre containers from every batch manufactured will be donated to local Chesterfield healthcare facilities. Pronto Paints have donated the equivalent of 25 thousand hand washes to organisations in urgent need. Pronto are also supporting manufacturers who supply other products to the UK healthcare sector, by providing sanitiser refill containers so that they can continue working safely.

Hand Sanitiser: the First Thing donated by HMG Paints

HMG Paints, the UK's largest independent paint manufacturer, has supplied the First Thing sanitiser to front-line health workers, care providers and charities in the Manchester area and across the UK. The First Thing sanitiser, the name referring to the need for staff to make washing their hands the first thing on their minds, is based on a World Health Organisation recommended formulation and produced using HMG Paints' existing stocks of alcohol.

The first batch of First Thing sanitiser was donated to the Greater Manchester Police, local care homes and frontline workers. The company plans to make as much hand sanitiser as possible, setting aside a number of 250 ml bottles for donation to those health workers most in need during the crisis.



Photo: HMG Paints

Different alcohol-based First Thing hand sanitisers

"Our team of chemists have worked extremely hard on the formulation and it has been a true team effort to make the hand sanitiser available," said John Falder, Managing Director. "By utilising our existing alcohol stocks, we believe that we can help the HMG Family, our customers and those who need it the most during the current shortages."

Inktech, an independent manufacturer of specialist inks and coatings located in Rochdale, is manufacturing a World Health Organisation approved formula for hand sanitiser. They have so far supplied around 40 new clients across all sectors, including care homes and NHS practitioners from the Manchester and surrounding areas.

The **2M Group** have donated over 20 thousand bottles of hand sanitiser, made using Surfachem's technical laboratory in Huddersfield and MP Storage and Blending's facilities in Middlesbrough. The institutions supported so far include A&E wards in a number of hospitals, pharmacies, Manchester Children's Services, schools open to look after the children of key workers, care homes and foodbanks.



Photo: Hexigone Inhibitors

Hexigone Inhibitors' hand sanitiser product

Hexigone Inhibitors, a start-up chromate-free corrosion inhibitor company based near Swansea, is using its large mixing vessels to produce a hospital-grade hand sanitiser, according to a WHO formulation. There is currently huge demand for isopropanol, the main ingredient of hand sanitiser. The UK government's innovation agency, Innovate UK, paired Hexigone with GlaxoSmithKline, who donated 8 thousand litres of isopropanol. As an SME, the efforts need to be financially sustainable, so the hand sanitiser is sold at cost price to local authorities for distribution. However, the local authorities have agreed to donate 25% of production. The team has also donated additional PPE, all their own stock and excess facemasks from other local businesses (totalling over 1600 FFP3 facemasks), for hospitals and care homes.

Trimite Global Coatings has launched a recently developed advanced antibacterial hand wash.

Crown Paints has donated personal protective equipment to a number of hospitals and doctors' surgeries across the UK and Ireland.

AkzoNobel has supported the Royal Mail's plan to paint several postboxes close to hospitals blue to show support for the NHS, by donating its Cromadex products (in 'NHS blue').

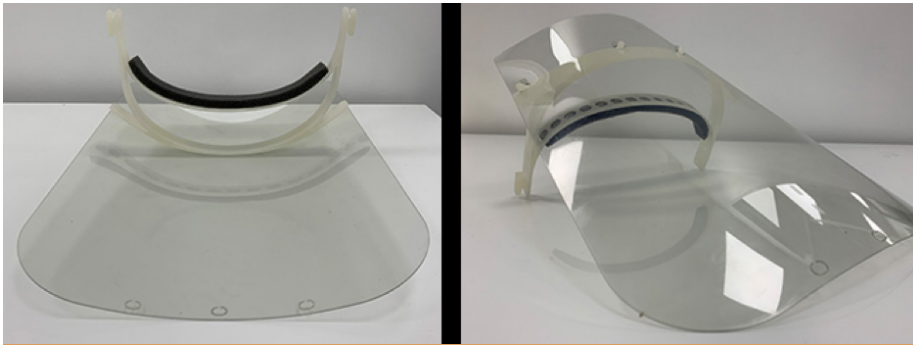


Photo: Ricoh UK

Print company **Ricoh 3D** has developed a 3D printed prototype face shield, approved for mass production after being tested by The Royal London Hospital in Whitechapel. Initially Ricoh's own 3D printers were producing one thousand face shields per week, but from 20 April its injection moulding facility in Telford, capable of producing 40 thousand face shields per week, went into full production.

The first prototype was printed and assembled in less than 24 hours thanks to 3D printing technology and the strength of Ricoh's supplier network

A charity for homeless teenagers in Blackburn has handsfree door openers to help during the Covid-19 pandemic thanks to **Manchester Metropolitan University**, **BASF** and social media. Jeremy Pearce, who retired last year as Process Development Manager and now works as a part-time consultant at BASF Agricultural Specialities in Littlehampton, West Sussex, developed door openers for the site, which produces nematodes to control garden pests.

Jeremy, a 3D printing enthusiast, was looking for ideas that would help in the current situation. He found designs for handsfree door openers on an international 3D printing website called Thingiverse. "The door opener wasn't my idea, it was my interpretation of it. It evolved through

testing at the Littlehampton site." A colleague at Littlehampton tweeted a photograph of the door opener and Dr Geoff Mackey, BASF's Corporate Affairs & Sustainability Director, posted it on LinkedIn.

Geoff's post was seen by Craig Banks, Professor of Nano and Electrochemical Technology, Faculty of Science and Engineering, Manchester Metropolitan University, who evolved the basic design and offered to share improved design files. This led to Manchester Metropolitan University offering to supply door handles free of charge to Nightsafe in Blackburn - a charity for homeless teenagers (16-25 years old) who have 3 live-in projects for 15 young people and a drop-in shelter for unknown numbers of homeless teens on a daily basis.

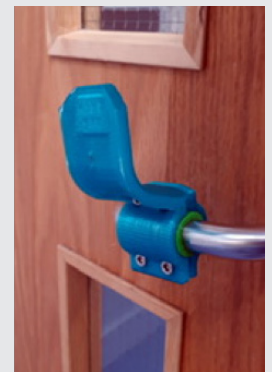


Photo: BASF

Handsfree door opener at BASF Littlehampton site

The Sherwin-Williams Company has donated tens of thousands of N95 masks, protective gloves and coveralls to hospitals, clinics and first responders across the US and beyond who are in critical need of personal protective equipment. In addition, 150 gallons of paint (and painting materials) have been donated to McCormick Place, the Chicago convention center that has been transformed into an emergency care facility (expected to care for 3 thousand patients).

Eastman, a producer of specialty chemicals found in a variety of every day products, has made the following contributions:

- In collaboration with ETC, a Wisconsin-based manufacturer of lighting and rigging technology, 3 thousand m² of donated materials will be used to manufacture thousands of face shields to be delivered locally and nationally
- 10,000 face shields (made in collaboration with SMC Ltd) given to hospitals in Massachusetts
- Copolyester resin donated to PRP Creations in order to produce 475 thousand bottles of hand sanitiser for

health organisations in France

- Window film distributed to Harlow college in order to produce 300 face shields for UK hospital workers
- Copolyesters donated to companies in Brazil for the manufacture of 20 thousand face shields for hospitals
- Critical PPE (including 180 N95 masks and 4.4 thousand nitrile gloves donated to first responders in Massachusetts

In addition, Eastman has converted a pilot plant at its largest US manufacturing site to produce hand sanitiser for local schools and emergency responders.

Eastman and Rotuba, the largest independent global custom compounder of cellulose, have collaborated to produce 75-100 thousand splash guards. Rotuba has modified its pen manufacturing business to manufacture face shields using Eastman's cellulose acetate. The splash guards will be sold across the United States and supplied to first responders at cost price.

Huntsman Corporation has three sites, McIntosh (Alabama), Monthey (Switzerland) and more recently

Melbourne (Australia) now producing hand sanitiser for donation to healthcare and other critical health facilities. The Melbourne site plans to produce 22 thousand litres of the hand sanitiser per week, which will be provided to health facilities free of charge and sold to local retail stores at a price that covers its costs.

Clariant intends to produce 2 million litres of disinfectant per month at its Gendorf facilities in Germany. This will allow the company to supply approximately two thirds of the monthly demand of the Bavarian State over a three-month period. Clariant has offered its contribution at cost price.

Clariant is also working closely with industry partners in order to donate approximately 80 tons of disinfectant per month to the Swiss Federal Authorities. CropEnergies, the largest producer of renewable ethanol, is providing renewable ethanol for the disinfectant both for Switzerland and Bavaria. Brenntag is using the ethanol to produce the disinfectant (to a WHO standard) at its locations in Basel and Lohn-Ammannsegg, Switzerland, with all costs of production and delivery paid by Clariant.

Clariant in India has donated Rs. 15 lakh to CM Relief funds for COVID-19 of Maharashtra and Telangana, and voluntary donations by employees and an equal amount from management totalling Rs. 16 lakh were put towards the Prime Minister's Citizen Assistance and Relief in Emergency Situations (PM CARES) Fund.

Perstorp has converted its plant in Perstorp, Sweden to produce hand sanitiser and surface disinfectant for the Swedish healthcare sector. With a capacity to produce over 2 million litres per month, Perstorp aims to solve the current lack of disinfectants at a national level. The products are being offered at cost price.

Hexion has repurposed mixing machines at two of its sites – the Letmathe site in Germany and its joint venture in Bunbury, Western Australia – to produce approximately 25 metric tons of hand sanitiser. In addition, Hexion's Application Development Center in Shanghai has donated masks to a local hospital; and its manufacturing sites in Springfield, Oregon, and Pernis, The Netherlands, have donated PPE to local medical centres.

AutomotiveTouchup, a New Orleans based manufacturer of automobile paints and supplies, said it repurposed part of its production line to produce more than 900 units of hand sanitiser that will be donated for hospital use at LCMC Health New Orleans.

A Dutch consortium comprising **AFPRO Filters, Royal Auping** and **Royal DSM** has begun the large-scale production of medical FFP2 facemasks for the protection of healthcare workers. New production lines have been set up in Deventer and

Alkmaar capable of delivering 1 million FFP2 facemasks per week, which will be supplied to healthcare institutions at cost-price.

PPG and the PPG foundation announced a \$1.5 million donation to organisations supporting community relief efforts, including supporting food banks, the Chinese Red Cross and various community relief efforts.

PPG has donated 290 gallons of MASTER'S MARK antibacterial interior latex coating to the Shanghai Tong Ren Hospital, where it will be used in the refurbishment of its medical laboratory, fever clinic, negative pressure isolation room and centre of disease control, increasing protection of healthcare workers and patients. PPG has also provided 80 thousand masks to hospitals in the Pittsburgh, New York, Cleveland, Detroit and Huntsville (Alabama) areas.

Synthomer Malaysia is donating 450 thousand medical gloves to the Papa Giovanni XXIII hospital in Bergamo, Italy. The first of two shipments arrived in Bergamo in mid-April. "Our Italian colleagues made us aware of the severe shortage of PPE in the region, and as one of the world's leading suppliers of Nitrile Latex, we were able to reach out to some of our major customers and commercially secure medical gloves supplies. At this time our customers are oversold with lead times of four to six months, so we are extremely grateful for their assistance and swift response to our request, and in addition for the matching donations a number of them made", said Derick Whyte, Synthomer President Performance Elastomers and Asia.



Photo: Labman

Labman Automation, a North East company specialising in custom automation and robotics, have devoted half their factory space to a team of volunteers (both staff and members of the local community) to manufacture a simple, single-use clear visor (called the Labmask), designed to prevent fluid from reaching the face. The Labmask initiative has one message: 'Thank you NHS, you are awesome – this visor is not for profit, it's for people'. By mid-April, the team had produced over 50 thousand masks, which have been donated to hospitals and surgeries.

Labman have also donated and installed Perspex screens in the local pharmacy, surgery, post office and other local shops to minimise the risk of airborne and touch contamination at the counters.

allnex sites in Louisville, Kentucky and Langley, South Carolina, have been approved to produce and distribute medical-grade sanitiser to their local communities. Although raw materials for the hand sanitiser are in high demand, the Louisville site anticipates the production of 8 thousand gallons of sanitiser using its current supply of raw materials.

The **allnex Netherlands** site in Bergen op Zoom has started to make hand sanitiser, after receiving an exemption for making gels from the Dutch Government and a permit issued by the provincial environmental agency. The first batch was made and delivered to "Thuiszorg West Brabant" in April.

"Covid-19 has a major impact on our society, and the healthcare sector in particular is under great pressure. allnex has launched similar activities within Europe and America. As a chemical company in Bergen op Zoom, we want to help and this is possible by producing disinfectant liquids. Internal action was therefore taken very quickly and we were able to supply our hand sanitiser to Thuiszorg West Brabant fast. Our employees are ready to make a new batch for them and other healthcare institutions," says Erik Meijer, Site Manager at allnex Bergen op Zoom.

The allnex site in Hamburg had already prepared their own sanitiser for their employees' use, as they had the required chemicals on-site. As external demand increased, allnex made contact with officials in Germany to offer support. allnex learned that DFG-Bonitas, Germany's largest outpatient intensive care provider (also owned by Advent International) urgently needed 3600 litres of hand sanitiser per month. A first batch of 260 kg was produced and supplied to DFG-Bonitas in April.

allnex sites in Bitterfeld, Shebekino, Wiesbaden, Graz, Wageningen, Wallingford and Alpharetta have also formulated hand sanitiser to meet their immediate internal needs, as well as to supply to organisations in their communities.

In April, several **Arkema** sites in France (Villers Saint-Paul, Carling, Feuchy, Honfleur, Mont, Genay, Balan, Serquigny and others) rallied to donate protective equipment to local healthcare facilities. Equipment provided included masks, gloves, disposable gowns, safety goggles, caps, socks and alcohol-based gel.

Arkema has implemented a number of measures, including the setting up of emergency manufacture of alcohol-based solution and distributing the solution free-of-charge to French hospitals.

In China, Arkema-Armaz has donated 1,750 kg of 3% hydrogen peroxide to 7 primary and secondary schools local to the Armaz Kunming plant, to enable them to re-open. In Mexico, the Arkema Matamoros site has donated clear acrylic glass sheets to the city's main hospital, Instituto Mexicano del Seguro Social – IMSS, for making shielding frames for patient intubation. In the United States, a production line at the Geneseo plant in New York State has been repurposed for the manufacture of hand sanitiser solution. Thirty-eight thousand litres of the solution have been donated to New York, Pennsylvania, Tennessee and Texas.

3M and Ford have collaborated to bring a new powered air-purifying respirator (PAPR) from idea to product in 40 days, working closely with U.S. Centers for Disease Control and Prevention's (CDC) NIOSH National Personal Protective Technology Laboratory. More than 10 thousand of the newly designed PAPR are ready to ship from Ford's Vreeland facility near Flat Rock, Michigan. 3M will sell and distribute the PAPRs through select 3M-authorized US distributors, with any profits donated to COVID-19-related non-profit organisations.

Axalta has dedicated lines at its Sao Paulo manufacturing plant to produce hand sanitiser to WHO's standards. The sanitiser was donated to Guarulhos' city hall and will be distributed to essential care centres and businesses in the local area. In addition, the company has donated Tyvek coveralls to Honda, where its employees are working on repairing ventilators. Honda is collecting, sanitising, calibrating and repairing the ventilators to get them back into use at hospitals in Brazil.

In May, Axalta's Tlalnepantia facility in Mexico produced more than 1000 litres of hand sanitiser, which is being donated to local healthcare facilities, first responders and other essential businesses.

Thousands of gallons of hand sanitiser have been produced at repurposed Axalta manufacturing plants in the United States, Europe and Latin America and donated to local hospitals, first responders and essential businesses. In addition, Axalta has

donated PPE, such as facemasks (including its N95 inventory), coveralls, closed hoods and protective sleeves to hospitals throughout the world. The company has also donated more than 5 thousand seat covers (used in bodyshops) to local hospitals, where medical professionals use them in their own cars when visiting patients with COVID-19 in order to reduce the risk of transmitting the virus.

Nippon Paint has donated 2 million RMB (approximately ¥32 million) to support activities of the Red Cross Society in XianNing, Hubei Province in China. In April, Nippon Paint employees and Labor Union donated about ¥760 thousand to the Japan Platform, as a relief fund for people affected by the coronavirus outbreak. Nippon Paint has also donated medical masks to medical institutions in Japan and children's masks to Kita-ku, Osaka City.

Xerox Holdings Corporation has plans to produce approximately 140 thousand gallons of hand sanitiser at its Toronto and Rochester facilities, by June. The product will be distributed to approved vendors to frontline healthcare organisations.

Xerox are also partnering with Vortran Medical Technology to accelerate production of the GO2Vent ventilator and related Airway Pressure Monitor (APM-Plus) for hospitals and emergency response units. Assuming a stable supply of essential parts, the companies will be rapidly scaling up production from approximately 40,000 ventilators in April to between 150,000 and 200,000 ventilators a month by June. Xerox plans to manufacture these FDA-approved ventilators and APM-Plus devices at its facility outside of Rochester, NY, where the company was founded and maintains a large presence. Vortran will continue to manufacture ventilators at its current facility in Sacramento, CA.

Sika has been producing respiratory masks (made almost entirely using Sika products) at its Les Salles du Gardon factory in southern France. Nearly 50,000 masks have already been produced and orders placed for over 165,000 more. The masks incorporate polyester-based protective layers (normally inserted between the base and membrane in roof waterproofing) as well as silicone-based sealants used for glazing and jointing in construction facilities.

Sika has also manufactured over 35 thousand litres of hand sanitiser at 15 national subsidiaries worldwide. Given the shortages and delays in procurement, the company was granted the relevant approval after consultation with the local authorities. Aside from Sika employees, sanitiser has also been supplied to various hospitals, blood donor centres, retirement homes and care facilities that contacted Sika due to bottlenecks.



Photo: University of Warwick

At the **University of Warwick**, many of the research laboratories have suspended activity in support of the Government's instruction for all but critical workers to stay at home. Those labs have donated significant supplies of personal protective equipment (PPE) to University Hospitals Coventry & Warwickshire's hospital site in Coventry and the South Warwickshire NHS Foundation Trust.

Engineering and WMG researchers have been undertaking a number of activities in support of healthcare operations including:

- supporting a consortium of scientists and companies to develop an alternative model of ventilator, called the exovent
- Researchers at the medical school are making and supplying reagents necessary for COVID-19 testing to UHCW's Coventry hospital
- Members of the School of Engineering are 3D printing hundreds of PPE face shields using a design devised by a PhD researcher

In addition:

- 120 final year students from

The exovent is an alternative model of ventilator being developed by Engineering and Warwick Manufacturing Group researchers

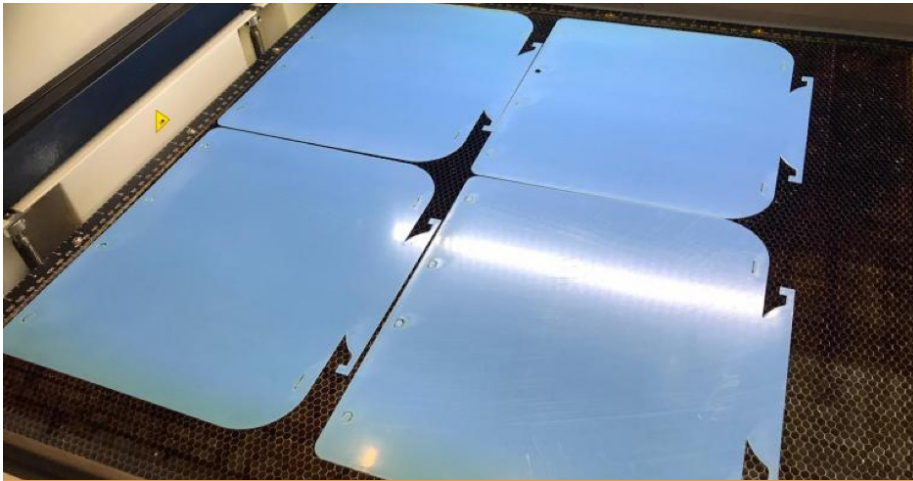


Photo: University of Salford

Visors in the process of being made by The Maker Space at the University of Salford

Warwickshire Medical School have been employed by the NHS to support health services across Coventry and Warwickshire

- The outreach team at WMG, with support from HVM Catapult, has produced a number of online activities for children of all ages
- Warwick Conferences is providing bed and breakfast accommodation to NHS staff and Warwick medical students to enable them to continue fighting at the frontline against the COVID-19 pandemic
- Warwick Conferences has also donated fresh food to Emmaus (a charity supporting homeless people get back on their feet) and providing them with soup. They have also donated food boxes and toiletries to Coventry food bank and a YMCA respectively

In March, the **University of Salford** handed over their Real-Time Polymerase Chain Reaction equipment (ABI 7500) to armed forces personnel who transported the unit to a company tasked by the government to carry out COVID-19 testing. The equipment is capable of detecting a single virus particle in swabs taken from the inside of the mouth or nose.

The university has also donated significant quantities of personal protective equipment and hand sanitiser from the biomedical science department to Salford Royal NHS Foundation, including 37 thousand pairs of disposable gloves, over 500 lab coats, 100 pairs of safety glasses and 10 full body suits.

The University's Maker Space – a state-of-the-art engineering and digital fabrication facility – has developed a prototype protective visor designed to be sterilisable, with testing and feedback from Salford Royal. It is planned to produce about 75

visors per day, which will also be donated to Salford Royal NHS Foundation.

The University is leading a multinational project team of over 40 people including radiographers and radiography leaders, to create a free online information and support system for radiographers undertaking mobile chest X-rays of COVID-19 patients. Topics covered include:

- Minimising risks through infection control, use of PPE and effective communication; How to safely use mobile equipment, optimising images while ensuring patient and radiographer safety
- The radiographic procedure (including how to prepare for the procedure, carrying out the x-ray of the chest, what to do in post-examination)
- How to assess the images, interpret them and report on findings

A series of webinars will be organised in the next phase of the project.

Dozens of final year biomedical science students (including those currently on hospital work placements) and a significant number of nursing and midwifery students are working in hospitals across Salford and the Greater Manchester area.

In addition, the University has hosted training for the medical staff of the new NHS Nightingale Hospital North West (also known as G-MEX). The training has been designed specifically for them, covering topics such as the use of personal protective equipment (PPE), assisted breathing techniques (CPAP), communication and refreshing clinical skills. Professor Margaret Rowe, Dean of the School of Health and Society at the University of Salford said: "As one of the largest educators of nurses and allied health professionals in the North West, our facilities here at the university

closely reflect those in practice, giving our students the chance to learn from simulated scenarios in a safe environment. We now hope these facilities will give those returning to the NHS or taking on new roles to support the Nightingale North West the training and preparation they need for the challenge ahead."

A collaboration between clinical staff, engineers and physicists at Leeds Teaching Hospitals Trust and academics and technologies at the **University of Leeds** has led to the conversion of a device known as a NIPPY 3+, a sleep apnoea machine that is being phased out of service, into a ventilator to treat patients with the COVID-19 virus.

The machine operates in a mode called CPAP: constant positive airway pressure. That means the pressure inside the mask is slightly raised, keeping the patient's airway open and making it easier for them to breathe. It provides enriched oxygen of between 40 to 60%.

It is estimated that there are thousands of these devices across the NHS (with about 100 in Leeds hospitals), and their rapid modification would significantly increase the respiratory support available to hospitals and potentially extend the useful life of the equipment. Because it is a modification to a device, it does not have to go through a full regulatory approval process.

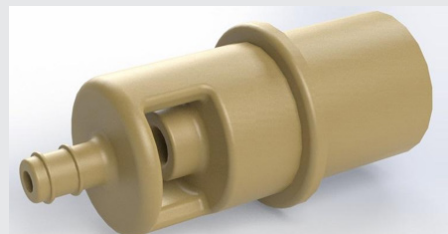


Photo: University of Leeds

Leeds Venturi Valve

Researchers from the University of Leeds, alongside Leeds Teaching Hospitals NHS Trust (LTHT) and Bradford Teaching Hospitals NHS Foundation Trust, have also focused on redesigning the Venturi valve - a small plastic device normally used to increase the flow of oxygen to a patient.

The repurposed device not only delivers an increased flow of oxygen to the patient, it also raises the pressure of that flow, opening the tiny air sacs in the lungs that are damaged by the virus and allowing oxygen to get into the body. Known as the Leeds Venturi valve, the remodelled device is subject to regulatory approval.



Photo: Swansea University

The team at Ty'r Felin Surgery, Gorseinon, pictured with the sanitiser manufactured by Swansea University

A solar tech laboratory at the **University of Swansea**, manned by over 30 volunteers from Swansea University colleges, has been producing 5 thousand litres of hand sanitiser a week. The hand sanitiser, that meets the WHO standard, is being delivered to local health boards and care homes. The team has been tweaking the manufacturing process by building a multi-head bottling apparatus in-house that is able to fill a 5L bottle in 20 seconds (three times faster).

Staff from across the university have been compiling online content to help Welsh sixth-formers learn from home and prepare to enter higher education.

More than 700 nursing students from Swansea university have joined the NHS and taken on clinical roles, caring for patients in Wales. Although the students are working on the frontline, their roles have reflected their areas of experience. Their training and assessment are continuing, and there are protected learning times.

Student volunteers who work with disabled adults have been staying in touch with them during the coronavirus crisis, offering support over the phone and involving them in online activities to help others. In addition, a team of university psychologists are providing support for isolated patients, including those who have had appointments cancelled.

Final year nursing and midwifery students at the **University of Surrey** have volunteered to work in clinical environments under the Nursing and Midwifery Council's emergency policy. They will complete their studies while on an extended placement supporting the fight against the coronavirus.

The university's final year paramedic students have signed up to work shifts with the South East Coast Ambulance Trust, helping to manage the high number of calls.

The university has also opened its doors to NHS staff to use its state-of-the-art clinical skills and simulation wards, together with the computer laboratories located in the Kate Granger building. The staff in the School of Health Sciences have helped train former NHS staff to treat COVID-19 patients, with particular focus on caring for acutely ill patients requiring breathing support.



Photo: University of Surrey

The new Kate Granger Building, home to the School of Health Sciences at the University of Surrey

The university has also provided the Royal Surrey County Hospital with two anaesthetic machines.

Over one hundred Hull York Medical School (HYMS) students have graduated early and taken up interim posts. In addition, over 30 medicine students from HYMS have volunteered at Trusts and GP surgeries in the region and one hundred final year nurses at the **University of York** have volunteered to start work for the NHS as part of extended placements.

The Department of Biology's Bioscience Technology Facility at the University of York has loaned a qPCR machine, used for the diagnosis of COVID-19, to York Hospital, doubling its capacity to test patient samples. A number of volunteers from the university are helping to run the tests.

Volunteers from the University of York are helping to pack and deliver 2,000 packed lunches a day to frontline staff at York Hospital, as the hospital's own catering staff were diverted to patient services.

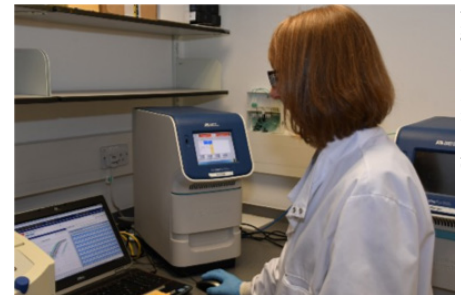


Photo: University of York

qPCR machine will double York hospital's test capacity

The **University of Nottingham** has supplied test equipment to local clinical laboratories, including the Maxwell RSC 48 instrument sent to the testing laboratory at the Queen's Medical Centre to help them triple the number of tests they can carry out; 13 Polymerase Chain Reaction (PCR) machines (and 3 from Nottingham Trent University's Clifton Campus); and 28 Category 2 Cell Culture Cabinets that will provide a highly controlled environment to protect scientists carrying out tests for COVID-19.

The Centre for Additive Manufacturing at the University of Nottingham has worked with colleagues within the University's Bioengineering Research Group, Nottingham University Hospitals NHS Trust (NUH) and a host of external collaborators and contributors to develop a Personal Protective Equipment FaceShield to meet the critical need for COVID-19 related PPE from healthcare professionals. The team will deliver 5 thousand face shields to Nottingham's NHS and community healthcare workers.

The university has also offered accommodation in halls of residence on the University Park to key workers who need accommodation close to Queen's Medical Hospital. There are also free parking spaces in the Nottingham Medical School car park, at University Park, at Derby Medical School and Jubilee Campus to enable workers to carry out essential front line services.

Final-year medical students have graduated early to offer them the opportunity to support the NHS response to the COVID-19 pandemic, while hundreds of student nurses have signed up for extended paid placements in the NHS.

John Atherton, Pro-Vice Chancellor for the Faculty of Medicine and Health Sciences told the BMJ, "We are very proud of our students; their enthusiasm is inspiring and they are a credit to the University." They are volunteering while continuing their

training to ensure that there was "no delay in providing the NHS with newly qualified nurses, doctors, and other healthcare professionals over the coming years."

The **University of Birmingham** has repurposed laboratories to run tests for the COVID-19 virus on frontline hospital staff working at University Hospitals Birmingham NHS Foundation, the West Midlands Ambulance Service and Birmingham Women's and Children's Hospital. The service plans to deliver same-day testing for healthcare workers, prioritising staff who are showing symptoms or living with someone who is symptomatic.

A group of first and second year medical students have volunteered to help the West Midlands Ambulance Service by training as NHS 111 call handlers. Students and staff from across the campus have teamed up with members of the School of Engineering to produce around 100 visors per day using 30 3D printers. A team at the University has developed the Disposable Resuscitation, Intubation and Nebulisation Kit Shield (or DRs INK Shield), a compact device designed to cover the patient's head, neck and shoulder area while treatments for COVID-19 are administered.



The 3D printed component of the visors is a headband onto which is fitted a clear plastic sheet



DRs INK Shield developed by the University of Birmingham

Engineers at the **University of Plymouth** are working in collaboration with Plympton-based Prestige Packaging to design and manufacture recyclable face shields. Now fully tested and certified as meeting BSI standards, 20,000 of the shields have been manufactured. The frame and strap are made from a folding boxboard that is 100% recyclable, 100% compostable and made from FSC-certified wood products. The anti-fog, anti-glare, see-through visor is made from a type of polyethylene terephthalate (PET) that is 100% recyclable and can be returned back into the production cycle.

The University of Plymouth is also part of a city-wide consortium providing 3D-printed face shields to frontline staff during the Covid-19 pandemic. University technicians and academics in subjects including design, robotics and marine biology are using 3D printing equipment housed in the new Digital Fabrication Laboratory and the Plymouth Electron Microscopy Centre, as well as labs within Smeaton Building and at Plymouth Science Park.

BCF's essential coatings and inks campaign highlights industry involvement in fight against coronavirus

British Coatings Federation (BCF) has launched a new #essentialcoatings and #essentialinks campaign to highlight the critical role the coatings and printing inks sectors play in the UK economy and, in particular, as part of the nation's response to the coronavirus pandemic.

At any given time, coatings have a vital role to play in a modern economy. However, above and beyond this, over the past few months the sector has played an increasing role in the nation's response to coronavirus. BCF members have been playing their part supplying key coatings and inks used in products and components for items such as ventilators, hospital beds and trollies, sneeze guards for checkout counters, oxygen cylinders, hospital isolation units, and also in meeting the increased demand for food and pharmaceutical packaging. In addition, BCF members have demonstrated a strong communitarian role. They have been using their facilities to switch production to now much-needed products for the NHS and local communities, like hand-sanitiser and PPE, as well as helping out in their local areas more generally.

The new #essentialcoatings and #essentialinks campaign serves to showcase the essential functions of coatings and inks in the fight against the coronavirus with a dedicated webpage featuring BCF member case studies along with a social media campaign to promote the efforts. Visit www.coatings.org.uk/essential for more information.

Tom Bowtell, CEO of the British Coatings Federation said: "The coatings industry is playing its part in the ongoing fight against coronavirus, supplying the vital goods and components others in critical frontline sectors need. I am proud of the way in which our members have contributed and our #essentialcoatings and #essentialinks campaign helps make clear to a wider audience what they have been doing.

"However, while we are all rightly focussed on the response to coronavirus at the present time, we also want to make sure that the industry's wider, historical and ongoing contribution to our economy gets the recognition it deserves. So our campaign will continue, over the course of the year, to highlight the diverse and important ways in which coatings and inks help UK industry and consumers day in, day out. From the health sector to defence and from automotive to any number of home and office applications, coatings and inks are essential products."