

A spotlight on the vibrant north west chemicals sector

Elements



**NET
ZERO**

In this issue:

- *What is the value of the environment?*
- *Do the Unitary Patent and Unified Patent Court offer advantages for SMEs?*
- *Ultrasonic flowmeter measurement solutions in the demineralisation plant*
- *Change management – things to consider*
- *Roadmap to a Sustainable Transition*
- *Is there a UK skills migration?*
- *Flood Risk and Preparedness - join the working party*

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Membership

Would your company benefit from joining an organisation that supports and promotes the chemistry-using sector in the Northwest? Do you want to understand more, and contribute to, the industry issues within the region?

If you are a manufacturer, chemical user or offer products and services to the sector, why not join us today?

<https://www.cia.org.uk/chemicalsnorthwest/Membership/Benefits-Costs/2022-rates>. (from 1st April 2022)

Micro corporate membership (1 - 10 employees)	£469.79
Standard corporate membership (11-100 employees)	£817.11
Large corporate membership (100+ employees)	£1039.86

Our membership year runs from 1 April to 31 March. A pro-rata basis usually applies to joining at other times in the year and we'd be happy to discuss on application.

Welcome

Dear Reader,

Welcome to the Autumn edition of Elements magazine.

As we enter Autumn, our sector faces challenging times, with energy prices impacting hugely on profitable operations. However, it is heartening to see many of our members focusing on the future of the industry, thinking about the supply of talent into our businesses, innovations around the drive towards net zero and the capabilities of the supply chain, focusing on improvement of processes and management of production.

This edition we have contributions from across our membership, with a look at the area of patents from two different viewpoints, a considered view of whether we have a skill migration problem, a focus on translation services and how it can help business expansion, as well as discussion around considerations for change management and look at the value of the environment in regulatory compliance.

We also have our member SLR Consulting highlighting the issues around flooding, which is of real concern for those operating around the flood zones within our region. As one of our new initiatives, we are working with them jointly to create a working group for companies across our membership, who can offer real support to industry on this topic. Details of how to join are included on page 17.

Our next breakfast networking event, on 21st September, will feature presentations from new members, Pumptec and ikm consulting, giving you the chance to learn more about them. Please make sure you book online, on our events page.

Finally, September sees the return of CNW Marketing Manager Alex Abraitis following her maternity leave. I'm sure you will join me in welcoming Alex back! She will be picking up the reigns across the board and again become your day to day contact.

Please keep an eye on our website for upcoming events, news, industry updates, careers information and the latest Elements magazine <https://www.cia.org.uk/chemicalsnorthwest/>

If there is anything else you need from us, please do not hesitate to get in touch.

Fiona Hought - Member Services and Events

About us...

Chemicals Northwest is an established business network wholly owned by the Chemical Industries Association.

With around 160 members we actively promote this important regional sector and our objective is to help membership to grow through;

- **facilitating** networking events, common interest groups and interactive workshops, all aimed at covering topical industry issues.
- **supporting** projects and programmes that identify and enhance business performance and generally support continuous improvement across the sector.
- **promoting** science and engineering based skills, helping to address the region's future needs.
- **improving** the image of the industry overall, including generating a positive reputation, through communicating achievements and success.
- **contributing** to the industry's strategic voice and the national growth agenda aligned to the work of the Chemical Industries Association.
- **connecting** the community of chemistry-using businesses and the vital supply chains here in the Northwest.

Chemicals Northwest really does bring people together! It is an essential feature of successful networking strategies used by many organisations. We coordinate a range of meetings and events to enable 'face to face' networking for the benefit of all members. Every successful business networking organisation also needs effective communications channels.

As a result of gradual development over recent years, getting messages across, promoting member companies and reporting news, Chemicals Northwest has reached new levels of topicality and quality.



Challenges and Opportunities in Chemical Manufacturing

Chemical manufacturers are facing many challenges post Covid-19, including the sourcing of raw materials, fluctuations in pricing, and government regulations regarding disposal and cost of production. Environmental, Social and Governance policies are increasingly important for investors and customers seeking long-term value and alignment with sustainability and climate-related objectives.

Amid these challenges, chemical manufacturers require tools that will help control and maximise assets, minimise operating costs, and monitor the impact of decisions on production, inventory, and distribution.

Environment, social governance and sustainability

Environmental and social governance (ESG) is a key focus for the chemical industry as companies are scrutinised on their operations' sustainability and increasingly stringent regulatory requirements. ESG performance is anticipated to receive the same high benchmarking treatment as cost and other productivity measures.

Corporate, domestic and international initiatives aim to eliminate net greenhouse gas emissions by 2050, ensuring the Paris Agreement and COP26 commitments are met.

Plans to reduce carbon emissions are more complicated in the chemical industry, where sustainability needs to extend throughout the supply chain. This includes the ESG and sustainability principles of all chemical plant suppliers and partners as well as downstream partners.

This strong trend places particularly high demands on the chemical industry, which is responsible for most of the world's emissions. One of the most important ways chemical companies are improving their sustainability profile is by developing innovative new technologies, including research and development, biotechnology, artificial intelligence (AI), and automation.

Technological developments

Every section of the chemical industry exhibits the constant adoption of technical advancements, generating opportunities and threats. The increased requirement for process efficiency is driven by the introduction of technology like IoT (Internet of Things) sensors for both manufacturing processes and end-product performance. Blockchain technology is also becoming more widely used to support product traceability and supply chain transparency concerning the timely delivery of chemicals to end markets.

The most untapped resource in our modern world is data. The issue is not a lack of raw data; rather, there is a significant gap between the availability of raw data and the people, systems, and resources needed to transform it into insights that can lead to data-driven operational certainty.

Production Planning

Manufacturing chemicals can be a complex process with many steps, and chemical suppliers must plan production carefully to meet customer demand. Production facilities need to know what chemicals they will need to produce a product, what reactants and solvents will be used, and where those products are located in the supply chain.

Chemical producers use information technology (IT) systems like enterprise resource planning (ERP) to manage all the complexity involved in manufacturing. However, these systems are unable to keep up with the rapid changes in the chemical industry without enhancements to AI.

So how can Yokogawa and AI help within the Chemical Industry?

In March 2022, Yokogawa and JSR announced the successful completion of a field test in which AI was used to run a chemical plant autonomously for 35 days in the world's first.

This trial used next-generation control technology that considered quality, yield, energy saving and sudden disturbances. The test confirmed that reinforcement learning AI can be safely applied in a plant and demonstrated that this technology could control operations beyond the capabilities of existing control methods (PID control/APC).

The AI trial also maximised the waste heat for use as a heat source, thereby saving energy, and all products met rigorous standards and were subsequently shipped. In addition, off-spec products were eliminated, which helped to reduce fuel, labour and other costs.

Yokogawa welcomes customers who are interested in these initiatives globally. The company aims to swiftly provide products and solutions that lead to the realisation of industrial autonomy. Contact Yokogawa to discover more tailor-made solutions for your plant. (uk.marketing@uk.yokogawa.com)

uk.marketing@uk.yokogawa.com



RISK & HAZARD MANAGEMENT

Understanding and facilitating the effective management of risk is our core business. Our expertise covers the full range of risk assessment and management services.

"We cannot solve our problems with the same level of thinking that created them." Albert Einstein



Safety Risk



Business Risk



Environment Risk

Only when the risk facing an organisation is well understood can it be effectively managed. Key to the successful identification, assessment and management of risk is engagement with the right people, using the right processes at the right time. We believe we are different to many of our competitors and our approach is distinctive, we don't always walk the well-trodden path but look at each client's particular risk context and develop a tailored solution, working in partnership with our client.

We work across all aspects of risk, from Quantitative Risk Assessments and Predictive & Consequence modelling, through to the 'softer' risks which may affect an organisation's reputation.



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What is the value of the Environment?

Valuation of Environmental Harm for COMAH Cost Benefit Analysis

COMAH environmental risk assessment is typically performed in line with the Chemical and Downstream Oil Industries Forum (CDOIF) Guideline on Environmental Risk Tolerability for COMAH Establishments (V2.0).

This involves prediction of whether there is the potential for Major Accidents To The Environment (MATTEs), rated A through D with increasing consequence. The results of such assessments often involve conclusions that the risk to certain environmental receptors is tolerable if As Low As Reasonably Practicable (ALARP). Therefore, subsequent demonstration that the risk is indeed ALARP is required. ALARP decisions and conclusions can often be based on engineering judgement and operational feasibility. However, where this is not possible, cost benefit analysis (CBA) can, in theory, be useful. One element of CBA is the cost of environmental damage (or value of preventing it), which requires assigning monetary values to the environment for use within CBA calculations. If the cost of implementing a proposed risk reduction measure is grossly disproportionate to the justified spend to reduce risk, then rejection of the measure can be justified. This is analogous to the approach taken for safety risk to people, for which there is a long-established monetary value for the prevention of loss of a single human life. However, considering the environment, there is no such benchmark. If CBA is to be used effectively for environmental risk, then it would make sense to have analogous benchmark values in place.

Current guidance suggests that the value(s) to use should be estimated on a case-by-case basis and consider a series of cost influencing factors. For example, clean-up costs, restoration and ongoing monitoring, fines, and civil liability claims such as loss of fisheries, impact on tourism or loss of water abstraction. It is also suggested that business related costs such as production downtime, asset damage and raised insurance premiums should not be included. Therefore, it is understandable that consistency across the industry is difficult to achieve, even for very similar sites and risks, yet different operators. Taking fines as an example, estimating these for

MATTEs that you might cause could look to previous incidents of a similar magnitude for an indication. Whilst there is a multitude of legal guidance and protocol to be followed when fines are issued, there is still significant scope for variation. The nature of an offence feeds into the magnitude of a fine and involves both culpability and harm. Culpability is split according to whether the offence is judged to have been deliberate, reckless, negligent or with low to no culpability. This cannot be reliably predicted before an accident occurs. Another factor is the size and turnover of the offending organisation.

There is vast scope for inconsistency on how incident data is used, depending on which and how many incidents are reviewed and on any assumptions made.

Identifying and then accounting for all cost influencing factors is a vast challenge. Without set figures, even as benchmarks or guidelines, there is the risk of immense over or under-estimation, prompting questions about the value of performing such calculations.

One of the most important aspects of a Cost Benefit Analysis is determining whether one should be conducted in the first place. Often, CBAs are misused, potentially resulting in disastrous outcomes, especially if the incorrect values for the environment are used. Most of the time it should be evident whether a measure should be implemented. There are cases however where understanding the economics of suggested measures can be helpful, for example when comparing multiple options, and for this a reliable value of environmental harm is required. Going forward, efforts are underway to develop a set of benchmark values for different MATTE levels to different types of environmental receptors and to produce an industry guidance document. This should help to improve consistency across different companies, sites and geographically and ensure a more level playing field for everyone. RAS Ltd has been commissioned by the Energy Institute on a project to do this, with ambitions to publish industry guidance. Part of this involves a detailed interrogation of incident data and costs, with a view to revealing patterns that can feed into any set of benchmark values.

enquiries@ras.ltd.uk



6 reasons chemical organizations need to implement an industrial cybersecurity program now

In the last year, a surge of unprecedented cyber-attacks has thrust industrial cybersecurity into the spotlight, making it a top priority for organizations around the world.

This is particularly true for businesses within critical infrastructure sectors like oil, gas and chemical. Threat actors have moved from stealing valuable data to attacking operation technology (OT) networks, allowing them to gain control over entire market ecosystems.

Last year's Colonial Pipeline incident demonstrates how hackers can wreak havoc when organizations assume IT threats will not impact OT environments. This ransomware attack was the result of a strategic password breach, which snowballed until operations were completely shut down. The consequence was a shortage of gasoline along the United States' East Coast, pushing gas prices to their highest level in six years.

This breach was not only a wake-up call for organizations but for cybercriminals as well. The impact on the nation's supply chain and economy confirmed that critical infrastructure is a valuable target—and a vulnerable one. Organizations must prioritize the implementation of industrial cybersecurity programs if they want to protect their operations, the environment, and their communities.

What Makes Chemical Companies Vulnerable to Attacks?

1. Lack of cybersecurity controls: The chemical industry does not have standard OT cybersecurity strategies and regulations. This has led to companies having disparate—and often inadequate—security practices. Furthermore, OT support too often relies on existing teams ill-equipped to meet the needs of an OT program. IT professionals either lack experience in OT cyber or operations teams are at a disadvantage because they do not understand cybersecurity principles. Contrary to what many organizational leaders believe, IT solutions cannot simply be applied to OT systems. They require specialized cybersecurity solutions and dedicated staff with OT expertise.

2. Growing operations drive the expansion of attack surfaces: As chemical organizations expand their operations, the ways in which cyber threats can penetrate systems, also known as “attack surfaces,” are growing. Attackers are now trained to exploit the cracks found in these larger attack surfaces.

3. Remote capabilities are open to attacks: Today, many chemical organizations have dispersed assets and are heavily dependent on remote monitoring for management. While this connectivity offers many competitive advantages, it also creates vulnerabilities. Each remote device is a possible point of failure. As these ecosystems grow, so too does risk.

4. Modern technologies pose new cyber risks: Digitalization, data analytics and automation are all competitive advantages. However, they pose new cyber risks. Many industrial environments are comprised of decades-old legacy systems. These systems were built for longevity—but they were not designed to be connected to wide area networks (WANs) or other modern technologies. This makes them vulnerable to attack.

5. Attackers want more than data – they want physical control: Cyber attackers no longer just want to steal and manipulate data—they want direct control over physical environments. Attacks can now damage critical infrastructure, grind operations to a halt, threaten national security and put lives at risk by crippling essential industries.

6. Attackers are forming businesses: Although there are many distinct types of cyber attackers with different motivations, they have started to form businesses around hacking. While terrorists and hacktivists may not be working with each other, these groups are forming alliances with other individuals who share their values to broaden their reach and expand their capabilities.

Make OT Cybersecurity a Priority

Organizations must understand that patching the vulnerability that led to the last high-profile attack is not enough. Since attackers are highly adaptable and constantly evolving, chemical companies must focus on building robust industrial cybersecurity programs that take a proactive approach to security. It's vital to prepare for when, not if, an attack occurs.

The most successful organizations develop a framework early. It should include processes for identifying weaknesses, protecting against attacks, detecting attacks when they occur, responding quickly and recovering effectively. Taking a proactive approach will make an organization resilient to future attempts and provide peace of mind in a quickly changing environment.

Ian Bramson, Global Head of Industrial Cybersecurity at ABS Group, USA

How language translation can help expand your company

It's every business owner's goal to become a global name in the industry, but it's no mean feat to grow a company on an international scale. Translating your services and marketing into several other languages to test the overseas water in your industry is an excellent way to expand your business, and below are just a few reasons why:

1. Improve customer trust and understanding

Studies show that 70% of individuals are more likely to purchase a service or product from a company if it is translated into their native language. Although English is the third most commonly spoken language in the world, an organisation's brand image will be improved if potential overseas consumers can see that you have made the conscious decision to communicate in their native language. Additionally, localising your content to specific countries will ensure that the meaning of your content is fully understood by your new market and is using appropriate customs for the culture. This in turn will encourage customer loyalty and retention through an honest, considerate brand image.

2. Increase Google Ranking with multilingual website

In recent years, Google has largely increased the number of elements that contribute to having a good Google Search Ranking. Gone are the days that you could simply pay to be at the top of the search engine; Google now requires Search Engine Optimisation to be the biggest factor in your ranking

success. Keyword ranking is at the heart of SEO, meaning that Google will display your business to overseas consumers much more frequently if the translations match the phrases and words that individuals in that area are searching for. This means that not only will translations increase the chance of globally expanding your audience, it may also improve your ranking in the UK as well.

3. Increase employee possibility

Expanding your market to a global audience not only means increased consumer possibility, but it also allows you to expand your employee pool if your business is able to accommodate remote working. With remote working having increased by an exponential rate over the last three years, working possibilities have expanded considerably. A survey showed that almost half of 4,000 workers would consider leaving their co-located jobs for a fully remote job. Recruiting staff from a different country and culture is one of the best ways to bring in new knowledge, skill sets, and above all, a fresh insight into how to reinvigorate an organisation.

There are many benefits to translating your services and marketing to become multilingual; Fortune 500 companies that had multiple language solutions were twice as likely to increase profits compared to their single language counterparts. However, it is imperative that this is done accurately and with expert knowledge in the industry and native language.

www.twlanguages.com



Is there a UK skills migration?

Approaching Brexit we feared the reduced import of professional skills to the UK, skills upon which we are highly dependent, particularly in science, medical, technology and engineering. This coupled with the restrictions on our ambitious home-talent to fulfil European work experiences or career opportunities made Brexit a fairly daunting prospect.

But what about now?

Have these new rules hampered the availability of talent into the UK and has the prolific increase in remote working meant we are starting to lose 'too much' talent overseas?

The UK Chemicals sector is resilient as we know, and continues to battle against the issues it faces, but as quoted by Steve Elliott in a CIA Press Release in May 2022, "we are seeing an increasing resource and competence challenge."

Elliot stresses the need for UK to stay competitive against global and European players as "the scale and cumulative impact of these rising costs will inevitably put pressure on investment decisions for UK businesses, many of which are headquartered overseas".

The hidden danger being that if we don't stay competitive, we will see an in-balance of the skills movement which is essential to the UK; more of our experienced or highest-potential talent will be poached abroad by more competitive players. With the increase in 'remote working' this increases that danger.' We must be aware of this added competition to our skilled resources in the UK Chemical sector, in my view this 'talent spotting and poaching' has already started to increase.

Interestingly, 'Perkbox' in April 2022 quoted '62% of UK workforce considering professional move abroad, in remote working era'. And I see it is an issue that is likely to increase, due to the expectations of many candidates now to be able to work remotely.

RMG is seeing an increase of requests by contacts in the UK, to recruit UK Operational or COMAH qualified professionals for their global sites, including in the US, China, and the Middle East. The perceived calibre of our UK experienced operational candidates is that they have extremely high standards of HSEQ expertise having worked under rigorous

UK standards of control. For permanent roles and interim contracts these are typically highly lucrative and offer exciting career propositions. The need has increased due to the higher emphasis on control, efficiency and Health and Safety needs globally.

Having recruited in the Chemicals sector for 30 years, I've always been exceptionally interested in UK senior professional leaders (typically in Operations, Engineering, Science and Tech) who are seeking to return as candidates to the UK. I have enjoyed working with outstanding individuals who have experienced a career acceleration in their global group, usually through a high-talent progression program. These bring exceptional life experiences, ambitious attitude, and transferable skills back into the UK.

In the UK Chemical industry, we have a highly skilled workforce, 'double that of any other manufacturing industry', quoting Simon Marsh recently from the CIA. Our sector and these employees are essential to the UK and to the Government's 'levelling up' agenda particularly for us here in the North West. I wholeheartedly agree, retaining and securing a continual succession plan to acquire or train these skills for the future is also essential for the North of the UK, and the UK economy, don't let's shoot ourselves in the foot 'again'.

As a suggestion to improve your availability of skills or to keep one step ahead of your competition locally, is to take a more proactive approach to your skills planning in the short to medium term. We have seen many companies take more control of their 'continual-needs' skill base and for key succession-planning within their organisation through 'Market Mapping' projects. Your competitors may already be doing this! Market Mapping is a way to compete through market IP knowledge to give you advantage in the professional skills market and for when you need to recruit quickly. It is one way you can intelligently analyse and 'market map' the talent available (within realistic parameters), so in my view, surely must be worth consideration.

**More details on Market Mapping can be found here - <https://www.rmg-uk.com/market-mapping>.
anita.caldwell@rmg-uk.com**



Patenting research outputs – the Unitary Patent and Unified Patent Court

Before making the leap into patent law as part of WP Thompson's chemical and life sciences team, Dr Ian Wilson worked and studied in academia for over a decade. In our continuing series, Ian investigates the key considerations for researchers as the European patent landscape receives its biggest overhaul in decades.

The status quo

As mentioned in our last article, inventors entering the national/regional phase of a patent filing strategy in Europe may choose to file a single patent application at the European Patent Office (EPO). The EPO facilitates centralised filing and prosecution of patent applications that applies to 38 countries, including all EU member states and the UK. Upon grant of their patent, applicants must request validation in each country in which protection is required. This system permits flexibility of jurisdiction of protection, and annual renewal fees permit flexibility of duration. However, the more extensive the protection sought, the more costly that protection becomes, leading many patentees to validate in only a handful of countries.

The Unitary Patent and the Unified Patent Court

Expected to become available in early 2023, the Unitary Patent (UP) will offer an alternative option following grant. Administered by the EPO, the UP will be a single patent that automatically applies across all participating EU countries, of which 17 are expected, initially. Effectively, this is a regional validation of the regional application, one requiring payment of a single renewal fee each year. Importantly, concurrent protection in all non-participating EPO member states can continue as normal with individual national validations.

Currently, nationally validated patents are enforced and litigated at the relevant national courts. However, upon the introduction of the UP system, both UPs and these nationally validated European patents will automatically be enforced and litigated before the upcoming Unified Patent Court (UPC). Helpfully, for at least a seven-year transition period, it will still be possible for owners of nationally validated European patents to opt-out of the UPC's jurisdiction and to have infringement and revocation proceedings conducted before the relevant national courts instead. Post-Brexit, UPs will not be enforceable in the UK, but they can still be granted to UK applicants and represented at the UPC by UK European patent attorneys.

Risks and Rewards

As an alternative to the traditional national validation route, UPs will offer inventors more choice in how they pursue patent protection. They will also offer potentially large financial savings. The UP pricing scheme – including validation and annual renewal fees – is set to be more cost-effective than the traditional route if protection is sought in at least four countries.

Of course, as is often the case, such financial rewards come with potentially significant risks. Via the traditional route, a third party wishing to challenge a patent must do so in each individual validated country. Conversely, to challenge a UP, they will need only file a single action at the UPC to potentially destroy that patent's protection in all 17 participating states. Inventors will therefore soon need to weigh up the risks to their flagship intellectual property rights against the beneficial cost savings of a UP.

Although the ability for a single court action to so widely destroy patent protection is seen as a risk, the UPC is an unknown quantity. At the time of writing no judges have been appointed, so we can infer nothing of individual inclinations that may influence future decisions. Further, common law applied to rulings is based on previous similar cases in relevant courts, meaning established legal systems have a wealth of legal precedent upon which to draw. As an entirely new court, the UPC need not be bound by existing decisions, and has a chance to set its own precedents – an exciting prospect but one that means any action before the UPC comes with potentially unpredictable consequences.

Watch this space

Although in development for decades, the unitary patent system looks like it will finally be with us next year. Presenting an exciting mix of potential risks and rewards, it is worth inventors knowing about the UP and UPC in the early stages of developing their invention, in order to be better prepared and better informed when it comes time to answer the question, to UP or not to UP?

www.wpt.co.uk
Stuart Forrest: sfo@wpt.co.uk

Supporting the drive towards a hydrogen economy with quality and inspection consultancy for new build, refurbishment and replacement equipment

It is clear that the UK industrial sector will play a vital role in the development of a hydrogen economy with industry producing 16% of UK emissions in 2018¹. The industrial heartlands of the UK including the North West has already demonstrated its commitment for large scale low carbon hydrogen supply through collaborative initiatives. It is this intention that drives the specialist engineers at Axiom to ensure that industry sectors in the North West have access to pragmatic Quality and inspection support to address the challenges of the production, distribution, storage and use of hydrogen.

Inadequate owner/user quality & inspection presence – the risks

Over time, we have had numerous enquiries for quality and inspection consultancy from issues that arose after construction at the pre-commissioning stage. It would ordinarily be expected that these issues would be caught at hold points during the construction phase and remedied / mitigated. Observations seen by our team include:

- The use of the wrong welding filler
- Non-adherence to, or an incorrect, welding procedure
- Construction materials not as per design specification
- Insufficient NDT coverage when compared with code requirements
- Entire lines not hydro-tested without an appropriate mitigation
- Non-conformance of as-installed system when compared to design intent

One or a combination of these issues has the potential to lead to commissioning delays, not meeting performance expectations, the non-issuance of CE/UKCA and possible insurance complications that can prove costly.

Why have an owner/user inspection present?

The presence of a quality representative from the owner/user can provide assurance that you get the plant as designed. It can also minimize performance issues during commissioning. The knowledge that their work will be overseen encourages EPC contractors and sub-contractors to manage their quality more diligently as they know any area of work maybe sampled. This can lead to smooth commissioning, the avoidance of unnecessary rework and associated delays and subsequent cost implications.

Quality and inspection service

We offer the following quality and inspection services

to clients carrying out new-build, refurbishment or asset replacement projects:

- Collation and review of Life Time Quality Records (LTQR) / Dossiers
- Review and acceptance of Quality Packs
- Review and approval of weld procedure & performance qualifications
- Welding inspection
- Review and acceptance of Inspection Test Plans (ITPs)
- Witnessing of construction phase hold points
- Witnessing of Factory Acceptance Testing (FAT) & Site Acceptance Testing (SAT)
- Pre-commissioning checks
- Acceptance of mechanical completion
- Review of material certificates
- Review and management of test packs and punch list
- Walkdown and punch listing of piping
- Review and approval of NDT procedures and certificates
- Coordination of Non-Destructive Testing (NDT)
- Supervision and implementation of all quality activities
- Management of NCRs
- Quality Representative on commissioning panels

We can work with your in-house team to deliver any or all of the above services, to de-risk your most critical plant new-build or improvement projects. We have personnel with wide-ranging experience as technical consultants with experience of having worked in senior 'in-house' roles for owner-operators. Thus, we understand the commercial pressures and risks you face running large-scale site projects.

Axiom is committed to the UK's net zero ambition, to prepare industry to decarbonise plant and build net zero infrastructure towards an improved sustainable future.

info@ax-ea.co.uk

www.axiomengineeringassociates.com

¹ Department for Business, Energy and Industrial Strategy (2020), 'Final UK greenhouse gas emissions from national statistics: 1990 to 2018: Supplementary tables' (viewed 27 July 2022)



RISK MANAGEMENT

Ensuring safety and sustainability in the fine chemicals industry

In addition to the non-negotiable, number-one priority of ensuring safety, the key factors driving the fine chemicals industry today are sustainability and efficiency. This is because of the nature of fine chemicals, which are typically produced in relatively small volumes for the manufacture of high-value end products. As a result, process errors or other disruptions that lead to batch rejection can be extremely costly.

Sustainability and efficiency are critical drivers

When it comes to efficiency, the need extends all the way to ensuring an adequate supply of raw materials and supply chain efficiency. In the plant itself, process efficiency is critical and there is a strong focus on getting things right first time, every time. There is also increasing pressure to “do more with less” in order to stay competitive.

From a sustainability perspective, fine chemicals typically require a large amount of inputs to produce a small amount of product, meaning that ensuring each batch is usable is important to minimise waste. In addition, using single-use sensors for example have an advantage over reusable sensors which need to be washed, generating wastewater that needs to be treated.

Automation is the answer

Automation offers a solution to all these challenges. One area that is particularly ripe for automation in fine chemical production is calibration. Beamex's automated calibration solutions combine software, hardware, and calibration expertise to deliver an automated, paperless flow of calibration data that minimises the need for manual data entry, improving operational efficiency.

This not only saves time and makes the process far more effective, but it also helps to avoid mistakes typically associated with manual data entry – thus improving the quality and integrity of the calibration data. Properly calibrated transmitters minimise waste because they help to ensure that the end product has been produced according to the specifications. Furthermore, calibration results are safely stored, tamper proof, and easily accessible in the calibration software for audit or analysis purposes.

Automated calibration is particularly well suited to the special nature of fine chemicals production environments, where for example there can be ATEX (explosive) environments or other highly sensitive areas. Ensuring that all transmitters are properly calibrated is critical for personnel and product safety.

Work with a trusted advisor

As with all digitalisation initiatives, having a trusted advisor who can help analyse the process and find areas for improvement is an absolute must to ensure that all potential benefits of a new solution are realised. In an industry like fine chemicals production with its strict compliance and safety requirements, the deep insight into the process that a partner like Beamex can bring offers distinct advantages and ensures that the automated calibration system will improve the efficiency of existing processes while ensuring compliance with industry-specific requirements.

Download our whitepaper to learn more: <https://resources.beamex.com/lp-improve-safety-and-ensure-compliance-in-the-fine-chemicals-industry>

tony.moore@beamex.com



Human Factors in Health and Safety

Modular training for the process industries

Online and face-to-face courses available

Would you like to develop your understanding of human factors in the chemical process industries?

Are you looking for practical guidance, tools and approaches to help you manage human factors effectively at your organisation?

Register for *Human Factors in Health and Safety* and take your human factors understanding to the next level.

What's available?

Human Factors in Health and Safety consists of four modules:

- Managing Human Factors
- Managing Human Failure
- Strengthening Organisational Performance
- Human Factors in Design

Complete individual modules or all four depending on your training needs.

"Human Factors in Health and Safety has given me the confidence to lead the human factors agenda at a top tier COMAH site."

Ian Taylor,
SABIC UK Petrochemicals

"Human Factors in Health and Safety is an excellent learning opportunity and an important addition to the health and safety toolbox."

Ron Ramshaw,
Interconnector, UK

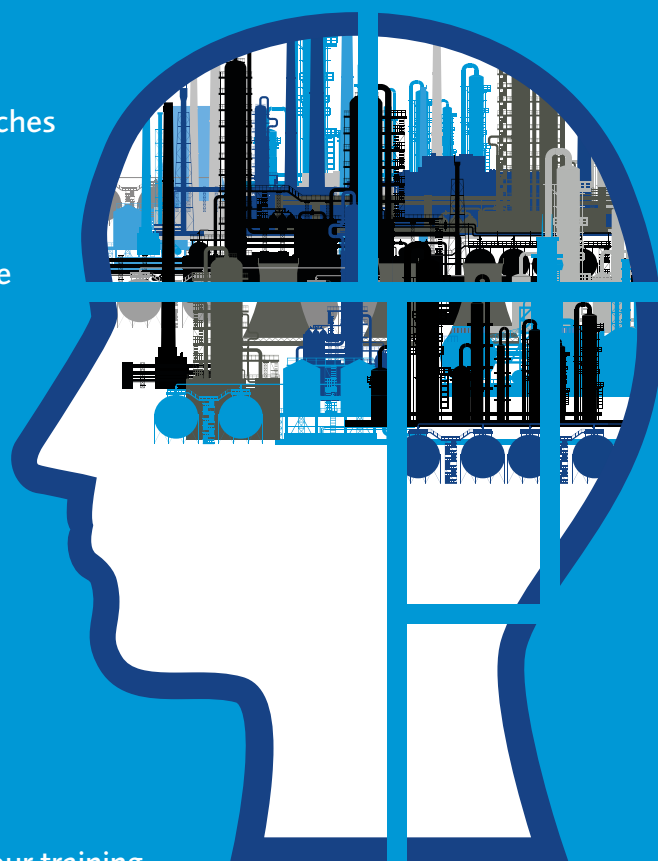
Find out more: www.icheme.org/human-factors



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Do the Unitary Patent (UP) and Unified Patent Court (UPC) offer advantages for SMEs?

As discussed in our previous article, the Unitary Patent (UP) will, for the first time, offer patent proprietors the option to have a single patent covering multiple EU member states (17 at the time of writing, likely to be more in the future) as an alternative to the current validation route in different countries (which will continue).

Whilst the UP potentially brings certain advantages to patent proprietors, it also brings risks and uncertainty. If the UP and the UPC are to be a success, it seems essential that the new systems are used by a whole range of patent proprietors once they become available.

In order to incentivise SMEs to opt for the UP, the new system has introduced the possibility of financial compensation for these proprietors in certain circumstances.

Translations

During a transitional period (of 6 years, which period may be extended to 12 years), any patent proprietor wishing to request a UP will have to file a translation of the patent specification:

- into English if the language of the proceedings before the EPO was French or German; or
- into any other official language of an EU member state if the language of the proceedings was English.

This may be perceived as costly, especially if patent specifications are lengthy. Translation costs may be reduced for some patent proprietors by re-using translations obtained for filing in other non-EU countries, for example when entering the national/regional phase of a PCT application. However, this option may not be available for proprietors such as SMEs who file in a small number of countries.

For SMEs (and also natural persons, non-profit organisations, universities, and public research organisations), cost reductions by means of compensation may be available for the translation costs if they:

- have their residence or principal place of business in an EU member state; and

- filed the European patent application leading to the UP in an official EU language other than English, French or German.

A request for compensation must be filed with the request for a UP along with a declaration that the eligibility requirements are met. Evidence that the eligibility requirements are fulfilled may be requested.

The compensation shall be paid in the form of a lump-sum. It is currently understood that the compensation amount will be set at €500.

In order to try to prevent abuse of the system, if there are multiple patent proprietors, compensation will only be awarded if all proprietors fulfil the eligibility requirements.

Renewal Fees

There will be a single renewal fee payable for a UP. The single fee is based on a fee proposal called the “true TOP4”, which tracks the sum of the post-grant renewal fees that would be payable in the four most commonly validated countries over the entire patent term.

For patent proprietors who validate their European patents in a large number of countries, it will be cheaper to maintain a UP than to maintain many national patents. However, the renewal fees for a UP will be more expensive for patent proprietors who only validate their European patents in a few countries (or who typically trim down the number of countries after a few years).

For proprietors such as SMEs, who may have limited funds, then the UP may offer a way of obtaining patent protection in a larger number of countries at lower costs than would be the case via the current route of national validations.

Enforcing a Patent

The possibility of enforcing a UP centrally at the UPC, as an alternative to multi-jurisdictional litigation in several EU countries, will be more cost effective and may make enforcing patents more accessible to proprietors such as SMEs who could not afford the multi-jurisdictional litigation.

Kate Hickinson, Partner, Appleyard Lees.
<https://www.appleyardlees.com/people/kate-hickinson/>

Flood Risk and Preparedness: Launching a new working group for the North West region

Are you prepared for the worst?

As we experience more frequent flooding across the UK, it's never been more important to make the necessary preparations to deal with the consequences of flooding, in and around your site. Climate change and increasingly common extreme weather means it's likely that many more companies in the Northwest area will have a greater risk of being affected by flooding in the future.

Under the COMAH Regulations 2015, flooding is recognised as both an initiator and escalation factor of major accidents. Recent flood events that have put pressure on industry and emergency services mean that flood preparedness for Major Accident establishments is currently recognised by the Environment Agency, the Government and Industry as a high priority.

In the River Mersey region, there are 40 COMAH Establishments (38 Operators) at risk of flooding, and 83 sites (78 Operators) across the Northwest. With 22% of UK chemical companies based in the Northwest, the potential effects of a flood event to the supply chain could be severe.

Emergency Planning under COMAH

Different flood types, e.g., rivers, the sea, or reservoirs, can present different risks to sites. This means that even if your site is not directly on the coast or the banks of a river, flooding could directly or indirectly affect site activities or key risk controls such as emergency response.

COMAH Establishments at risk of flooding have been categorised by the UK Environment Agency according to four Flooding Major Accident Scenarios (FMAS1-4).

Flood Major Accident Scenario (FMAS) criteria encompasses the following:

- Major Accident Scenario directly initiated by flood event (site level)
- Flood event prevents on-site ability to respond to a Major Accident Hazard (internal emergency plan)
- Flood prevents access to site (external emergency plan)
- Flood elsewhere restricts response (national or regional level)

Operators are required to identify and characterise the flood risk to their establishments (both direct and indirect) and implement all appropriate risk reduction measures so far as reasonably practicable.

Under Competent Authority flood preparedness inspections, operators who are potentially affected by the direct and indirect effects of flood zones from rivers, the sea or reservoir failure (i.e., those in all FMAS categories) are increasingly being asked to complete a Flood Risk Assessment to ensure they are suitably prepared. New planning applicants in FMAS Areas will also need to do this as part of the planning process.

Typical flood risk assessment activities would involve:

- Refinement of flood mapping
- Consideration of potential hazards
- Identification of further measures, as required;

As with all risk assessment activities, the detail of the assessment should be proportionate to the perceived level of risk.



Completion of additional risk assessments for upper and lower tier sites

A guideword-led Flood Hazard Identification Study can be utilised to identify all potential initiators and escalation factors for a part or all of a COMAH establishment. Correctly applied, the study can identify both natural and artificial causes of flooding on an establishment, supplemented by additional risk assessment.

The outcomes of such assessments will allow the development of flood preparedness at the site, to include:

- Information to allow sites to assess the unmitigated and mitigated flood risk and potential effects on site.
- A regular review of the suitability of existing measures in place to prevent, control and mitigate the initiation or escalation of major accidents that may be challenged or affected in the event of a flood.
- Consideration of any early warning information available for a flood event and allow development of recovery plans following an event.

Learning and continuous improvement

Remember, environmentally-based hazard studies are relatively new compared with industry standard methods, e.g., HAZID, HAZOP (HS2/3), and require a different way of thinking to traditional process safety risk assessment.

Industry may not get this right first time, so it is important to find opportunities to learn and understand how your site could be affected; to identify actions and drive improvement where needed.

Where to start? Join our working group!

In collaboration with Chemicals Northwest, SLR Consulting Ltd invites you to be part of a new quarterly Working Group on the topic of Flood Risk.

The group will provide opportunity to share thoughts, experiences, and present ideas to support companies across the Northwest region to continually improve in this important area.

We welcome representatives from across the supply chain to be involved, to make the discussion diverse and interesting for all.

To register for the working group, please go to the events section of the CNW website <https://www.cia.org.uk/chemicalsnorthwest/CNW-Events>.

Once you have, we will send the invite so you can join us virtually for our first meeting in September to learn more about how you can get involved.

SLR Consulting Ltd

SLR Consulting are well placed to offer full flood life cycle assessments that can be tailored to the specific requirements of the site. We can provide support through the provision of aforementioned studies, refined mapping, topographical surveys, secondary / tertiary containment studies, environmental risk assessments (utilising the CDOIF guideline) and the development of restoration / remediation plans.

**David Clark (dclark@slrconsulting.com) or
Ian Walton (iwalton@slrconsulting.com)**

Employee Spill Response

There are many substances that employees will encounter which are harmful to health, and it is vitally important to ensure that even small spills are approached with appropriate caution. Any employees involved in the clean-up process must not only be trained to deal with the situation, but also equipped with suitable Personal Protective Equipment (PPE) and/or Respiratory protective Equipment (RPE) to enable them to safely deal with the spill.

If, as an Employer, you fail to ensure both of these criteria are met, you could find yourselves in breach of the Health & Safety At Work Act, as well as potentially incurring Employers Liability claims for any injuries that your employees sustain as a result.

Volumes do not have to be big to be problematic – a recent HSE prosecution¹ dealt with a case where less than 200 litres of a chemical (which included Hydrofluoric Acid) spilled across a large area of a factory floor.

Four workers were involved in the clean-up that took several hours, and according to the HSE, not only did they have no spill response training, but they were also provided with inadequate personal protective equipment (PPE) and respiratory protective equipment (RPE) to undertake a clear up.

Some of them suffered ill-health following the incident, which included an asthma attack, a severe headache, nausea, sore eyes and throat. One of the workers was referred by his doctor to a specialist for treatment.

The HSE's investigation found that:

- There was significant non-compliance regarding management of substances hazardous to health.
- The company had failed to carry out a suitable and sufficient assessment and had not prepared for this sort of emergency (but foreseeable) situation.
- The RPE (face masks) provided did not have the correct type of filter for protecting against Hydrofluoric Acid gas.
- The type of RPE provided to workers relied on a good seal against the face in order to protect workers and no face fit tests had been undertaken to ensure the masks fitted the workers' faces.
- Furthermore, workers were unshaven meaning their beards or stubble prevented an effective seal of the RPE to their faces.

The company was fined £13,000 and ordered to pay costs of £9,551, but the true cost to the business is likely to be much higher, with senior management time involved in the case, and the likelihood of increased insurance costs due to the HSE

prosecution and potential Employers Liability claims arising out of the incident.

All of these negative impacts could be easily avoided and would have cost far less than the HSE penalties.

So, what can you do?

There is a process you should follow to ensure your Employees will be kept safe should they need to respond to a chemical spill, which includes:

- Identifying products you store, manufacture or transport that are potentially hazardous (as per the COSHH regulations) as part of your overall Spill Response Plan
- Providing spill response training your employees to take into account any of the products that they could encounter (including potential accidental mixing of products due to spillages)
- Ensuring the PPE and RPE you provide is suitable for the situation your employees might encounter

What are the issues surrounding face fit testing and beards?

The general consensus regarding face fit testing and beards is the less hair, the better. In fact, HSE conducted a study² that showed just how much a beard could affect the seal quality; assessing the impact of stubble on the mask's seal quality and measuring its effects from the wearer from being clean-shaven to having seven days of growth.

The study concluded that the effect on protection was quite specific to the mask/wearer combination. Protection could be significantly reduced where stubble was present, beginning within 24 hours from shaving, and generally worsening as facial hair grew.

What are the solutions?

The answer will largely depend on the person's reason for growing the beard. If they don't have a particular attachment to it and are prepared to wear a close-fitting mask, then they could shave this off as well as any additional facial hair that may affect the seal.

However, some people choose to grow a beard for religious reasons, whilst others could grow a beard for medical grounds, so if the beard is grown for either of these underlying factors, then alternative options will need to be found, such as loose-fitting RPE such as visors, helmets and hoods.

Spill Response Planning & Training

Spill response planning and training is a specialist area, and we would urge businesses to only use suitably experienced and qualified providers. OAMPS have worked with OHES for many years, and their team provides the 24/7 Emergency Spill Response on the Pen Underwriting scheme.

Oamps.co.uk

² RR1052 - The effect of wearer stubble on the protection given by Filtering Facepieces Class 3 (FFP3) and Half Masks

¹ <https://press.hse.gov.uk/2021/03/11/global-engineering-company-fined-after-employees-exposed-to-chemical-spill/>

Sci-Tech Daresbury's Quantum Science signs landmark material distribution partnership with Japan's Nishimura Chemitech

Quantum Science Ltd (QS), the leading British quantum dot (QD) developer, has signed a distribution agreement with Nishimura Chemitech Co., Ltd (NYS), the foremost Japanese semiconductor, chemicals, and equipment materials distributor.

QS – which is based at Sci-Tech Daresbury, the world class location for high-tech business and leading-edge science in the Liverpool City Region - has licensed NYS to use, market, and sell its world-leading INFIQ® infrared quantum dots to customers in Japan. The agreement has huge implications for the consumer electronics, automotive, and industrial machine vision sectors.

INFIQ® QDs are used in image sensors to increase accuracy and depth and long range sensing of sensors into the infrared range at unparalleled cost advantages, with the product resulting in costs ranging from 10 to 1000 times lower than current infrared sensing technologies.

The INFIQ® QD technology will redefine the current \$32Bn image sensor markets and open significant new opportunities and new applications for QD sensors in consumer electronics, self-driving vehicles, security and surveillance, and smart manufacturing, and improve quality of life for the planet in the future

Dr Hao Pang, CEO of Quantum Science Ltd commented, “This is a significant commercial milestone for QS. This collaboration reflects the strong market demand for our world-beating INFIQ® QD technologies. It gives our Japanese partners, the world’s leading semiconductor businesses, access to QS’ state-of-the-art products and technologies. This will accelerate the adoption of INFIQ® QD technology in everyday life, such as in smartphones, cars, and in industrial automation products.”

Mr Masayuki Nishimura, Representative Director and Deputy President of NYS, said: “We are very pleased to have reached a final Distribution Agreement with QS. I believe that we can change the world by distributing the unique technology of INFIQ® QD in Japan, as it is the world’s largest sensing market.”

First established in 2018, Quantum Science uses nanotechnology to develop advanced nanomaterials such as its branded INFIQ® quantum dots for use in the semiconductor, environmental and biomedical sectors. The company was initially based at Sci-Tech Daresbury's Campus Technology Hub building but due to its growth moved to the larger Techspace One office and laboratory building in 2021.

Quantum Science has formed many important partnerships through its location at Sci-Tech Daresbury thanks to the site's diverse tenants and strategic partners, including a high-profile collaboration with Hitachi High-Tech Europe to develop a microscopy solution. Its status on the campus also means they have had access to Sci-Tech Daresbury's 'Gold Partners' programme - a cohort of handpicked organisations that offer first-class support for Sci-Tech Daresbury businesses in a range of specialist areas.

Similarly, the company has also made use of the impressive research facilities available in the North West, by working in collaboration with University of Liverpool, and University of Manchester.

John Downes, chief executive officer of Langtree and director of Sci-Tech Daresbury, said: “We are delighted by this latest milestone for Quantum Science, a company that embodies so many of the values that are at the heart of Sci-Tech Daresbury. It's been a privilege to support the company on its journey as it has expanded on campus, something that reflects our 'home for life' ethos, and demonstrates our determination to help innovative businesses throughout the North West to thrive by providing key collaboration and product development opportunities.

“Over recent years we have backed the growth of materials companies on the Sci-Tech Daresbury campus such as Quantum Science through the opportunity to scale lab facilities on the site as well as accessibility to key equipment and expertise. This partnership with Nishimura Chemitech will take expertise nurtured here in the Liverpool City Region to one of the most important markets for quantum dots – it's an incredibly exciting time for Quantum Science, and we will continue to support this brilliant business as they go from strength to strength.”

Tom Carlin
carlin@thisisinfluential.com

Atlas Copco Specialty Rental UK strengthens growth plans with key appointments

Leading rental solutions provider, Atlas Copco Specialty Rental UK has further strengthened its growth ambitions with two appointments.

Atlas Copco Specialty Rental UK has appointed Callum Beig as internal sales engineer. In addition, to reflect the company's growing presence in the Republic of Ireland and Northern Ireland, Atlas Copco Specialty Rental created the role of sales engineer for Ireland, to which it has appointed Neil Smith.

Atlas Copco Specialty Rental UK, part of Atlas Copco Group, specialises in the provision of state-of-the-art temporary compressed air, nitrogen, power modules, and steam boilers, for short or long-term demands, planned contingencies or unexpected emergencies.

Neil Smith, who joins the company as sales engineer for Ireland, boasts more than 30 years' experience in the industrial sales sector including over fifteen years' experience in the compressed air industry. Neil's role includes identifying current and future customer service requirements; nurturing customer and prospect relationships; and supporting clients by providing them with tailored solutions to their temporary air, power, nitrogen, and steam requirements.

Callum Beig, who has extensive customer service experience, joins the team as internal sales engineer. A varied role, in which Callum will provide support to the company's external engineers, this includes capturing customer feedback, providing customers with quotations and product information, and qualifying leads. Prior to joining Atlas Copco Specialty Rental, Callum worked within the air conditioning and refrigeration industry for six years, this experience included running an internal sales desk, as well as working in a supervisory capacity in which he ran a depot which serviced the North of England.

In 2021, Atlas Copco Specialty Rental UK also bolstered its sales team with the appointment of Ben Friend to sales engineer for South East England, and the promotions of Sean Clemens to UK sales and business development manager and of Nick Button to sales engineer for offshore – oil and gas. In addition, the company appointed Alistair Harper to the role of business line manager UK and Ireland, a role in which he will spearhead the sales and operations of the UK and Ireland rental business.

Speaking of his appointment, Neil Smith said: "Atlas Copco Specialty Rental is a global leader in industrial rental equipment, I am therefore delighted to be joining the company. I am looking forward to helping Atlas Copco Specialty Rental further strengthen its presence in Ireland, as well as developing relationships with our customers and working with them to fulfil their steam, nitrogen, power, and compressed air rental needs."

Alistair Harper, business line manager UK and Ireland for Atlas Copco Specialty Rental UK, said: "This is an exciting time for Atlas Copco Specialty Rental as the company is continuing to grow from strength to strength. This is due to the innovation powered by Atlas Copco Specialty Rental Europe, and the entire team's commitment to quality and customer service." Callum Beig commented: "I am pleased to join Atlas Copco Specialty Rental, a company renowned for the high quality of its assets and its service. I have already begun working on collating customer feedback and it is great to see the response the sales and operations teams receive as it demonstrates the exceptional standard of service that is at the heart of the organisation.

"My colleagues have been extremely welcoming, and I am looking forward to learning from them to continually develop my industry knowledge, as well as finding the best solutions for our customers."

The company has also recently expanded its offer with the addition of an 8 ton/h boiler which was developed in-house by the Atlas Copco Specialty Rental Europe Concept Lab. The 8T unit is the first specialty steam solution developed at Atlas Copco Specialty Rental Europe's Concept Lab and complements its existing extensive fleet of industrial steam boilers and steam generators.

Atlas Copco Specialty Rental UK serves a range of industries and boasts a portfolio of specialised products for these sectors. Industries served includes manufacturing, mining, offshore, oil and gas, pharmaceutical, power plants, and food and beverage.

For more information, visit www.atlascopco.com/en-uk/rental



(L) Callum Beig, Internal Sales Engineer and (R) Alistair Harper, Business Line Manager UK and Ireland for Atlas Copco Specialty Rental UK.

Cogent Skills to facilitate first national occupational standards for hydrogen to help shape skills required for green jobs

Following a successful contract bid, Cogent Skills is to facilitate the development of the UK's first National Occupational Standards (NOS) for hydrogen production, storage, and transportation.

Government plans for a thriving hydrogen sector are set to unlock investment of £4 billion by 2030¹ as well as supporting thousands of high-quality green jobs. The announcement of new technical standards to be developed in collaboration with employers in the industry is a critical step towards establishing a highly skilled and competent workforce and underpins the UK's ambition to become a global leader in green technologies.

With over 23,000 separate NOS already developed, the new occupational standards will set out the standards of performance individuals must achieve, together with the knowledge and skills required to work safely and effectively in the hydrogen production, storage, and transportation industry. Widely recognised across all four nations and by employers, regulators, and awarding bodies, NOS are an important part of the skills landscape. NOS can also be transferred into qualifications or training programmes, influence

job descriptions or be used as a measure of workplace competence.

Ian Lockhart, Standards Manager at Cogent Skills, commented, "We're looking forward to working with partners to develop the new National Occupational Standards for hydrogen. Cogent has a rich history of working collaboratively across the science industries to support the needs of employers. The creation of new technical standards for hydrogen is an important step in supporting the growth of green jobs as we transition to a low carbon economy."

Due to be completed by March 2023, Cogent Skills are currently recruiting employers and stakeholders from across the sector who are keen to play a leading role in the development of these ground-breaking new standards.

For more information on how to get involved please contact: Ian.Lockhart@cogentskills.com

¹<https://www.gov.uk/government/news/uk-government-launches-plan-for-a-world-leading-hydrogen-economy>
²<https://www.ukstandards.org.uk/About-nos>

Lokring UK and Ireland new appointment

Lokring UK and Ireland have appointed **Harvey Trounson** as their new technical sales engineer for the North West. Harvey joins the team after completing a masters in Aerospace Engineering at Liverpool University.

Over the next 6 months he will undertake 6 months technical product training during which time he will be meeting with existing customers across the North West and Midlands regions. Harvey is looking forward to working with site engineers in helping reduce maintenance, improve schedule, and increase site safety.

The Lokring "Cold Weld" pipe and tube connection provides an ASME B31 permanent joint without the requirement for hot work and reduces the required resources needed on site to undertake repairs and maintenance. Utilised by the chemical, petrochemical and oil and gas industries both in the UK and Worldwide.

Harvey replaces **Andrew Kilduff** who has been the technical sales engineer in the North West for the past 14 years. Andrew has now moved into the role of EPC project manager, a role which focuses on large scale new build projects not only in the UK but within overseas regions covered by Lokring UK including the Middle East, Caspian, and Africa.

For more information on Lokring visit www.lokring.com



Your roadmap to a sustainable transition

We are all suffering from the cost-of-living crisis. Companies are struggling with energy price hikes, especially true of an energy-intensive sector like the chemical processing industries. But the problem I want to suggest and offer a partial solution to is beyond urgent. It is about climate heating and the imperative sustainability transition.

How do we transform our companies, our commerce and society to become a sustainable one? This is a hard problem and one we are demonstrably well behind on as a society and which needs a monumental effort just to catch up. The latest projections suggest we are heading to a 2.5-3c rise in average global temperatures.

How then can we find some answers in our Roadmap for Sustainable transition? A solid way to think about a strategy for transformation through the framework of the strategic roadmap. Such a framework helps us to consider the Why, Why and How of a situation by adding in a time dimension, the when. I have written before in this comment section about the advantages of strategic roadmapping as a thinking tool.

Strategic Roadmap Thinking

Consider the feature of a roadmapping framework. At the top Layer: The societal, market and business needs are addressed with topics like circular economy, regulation, public expectations as well as strategic and corporate objectives. In the middle layer: Value creation offers new and transformational products, processes, and associated services. In universities, it may be knowledge as value. In the bottom layer: Technologies, capabilities and resources enable the new products and services.

Three points of inspiration

Henry Royce is the research collaboration of several universities that pulled together 220 academics and industrialists to develop a plan for materials as part of the energy transition. Five roadmaps were developed for materials needed for the energy transition. Materials for photovoltaic systems, thermoelectric energy conversation materials, caloric energy conversation materials, low energy loss electronics and materials for low-carbon hydrogen production. These roadmaps provide a narrative to funding bodies and industry about high-priority R&D and commercialisation.

A foundation industries materials producer wanted to significantly improve its standing in its sector to become a far better and more respected innovator. The link to sustainable processes and materials was around the business model, the adoption of digital technologies and the process innovation to switch out of fossil-based fuels

for hydrogen-based processes. Again, the key organising framework, was the strategic roadmap, at a corporate level and market level.

An industrial equipment producer wanted to double revenue while slashing its environmental footprint. Business and sustainability cohabit in the same space. An innovation process was designed to explore the industrial and business opportunities in a shift to sustainable products and operations – including services – and then use strategic roadmapping to frame the very specific and tangible products and services and the associated technologies. Thinking critically, by thinking about the kind of organisation you need to become, only then, can a company find the pathway to a sustainable transition.

Benefits of a Structured Approach to Transition

Technology development and its innovation cousin are hard tasks in their ways. I have also written here before about why technologies can so often fail to launch. These reasons snapshot the big and urgent problems for industrial sustainability, knowledge, risk, change, people, organisation, and leadership.

I have been working on these examples with leading industries and universities that recognise the imperative for sustainable products and new materials. They are grappling with the implications for the business and the role of technology in their transitional roadmap. A key point is that to transition, you have to start. Strategic road mapping is a framework that can help you to make sense of it all, potentially catch up and possibly even accelerate your business.

Want to know more?



*Rob Munro is an Industrial Associate of IfM Engage, the knowledge transfer unit at the Institute for Manufacturing.
Email rjm240@cam.ac.uk*

Change Management: some things to consider

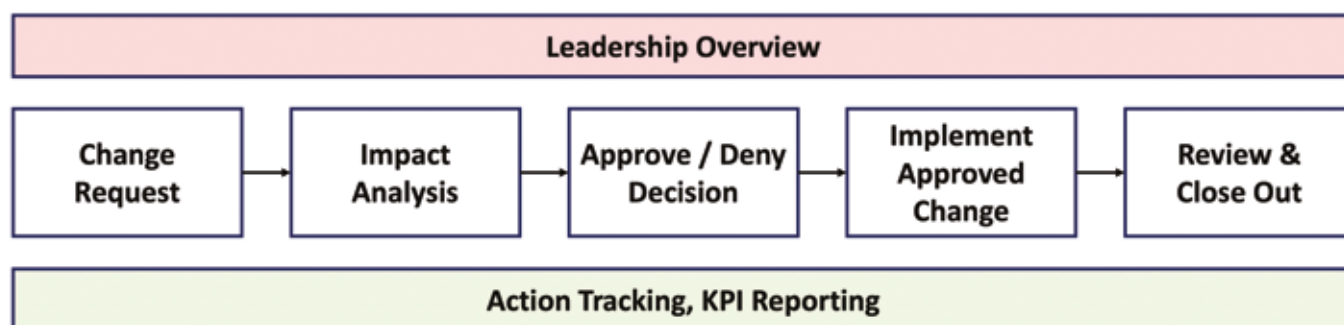
During some recent discussions, the topic of Management of Change was raised. Clearly, this is a critically important topic for industry and having a robust, accessible and well understood process for managing change regardless of scope or scale is vital for successful risk management.

What do you need to consider to manage change successfully? Regardless of whether your change management process is analogue or digital, there are five fundamental steps that should be followed: -

Report should also be assessed at this stage. This stage will generate actions. These need to be assigned an owner and tracked through to completion.

Approve / Deny Decision

One of the biggest challenges with any change management process is balancing the need for rigorous assessment and approval while avoiding a hugely bureaucratic process that is difficult to use and beset with delays and bottlenecks. The danger here is that either changes are not properly assessed, or the change process is bypassed completely! The personnel involved in this stage of the change management process (seniority, functional expertise etc.) should be



Change Request

A clear definition and understanding throughout the organisation of what constitutes a change underpins the entire process. It is therefore worthwhile investing time and effort to get this definition right, training it out across the organisation and regularly auditing the process to make sure the correct definition is being applied. Once it is established that a change is required, an owner for the change should be assigned. This is typically the person requesting the change, although it can be assigned to anyone within the organisation. The change should be clearly defined at this stage, along with justification for why the change is necessary and whether the change will be permanent or temporary. Getting the change properly defined at this stage allows a proper assessment of what it impacts on, who needs to be involved in the approval process and the degree of rigour of any risk assessment.

Impact Analysis

With the required change correctly defined, its impact can now be properly analysed. This may need the application of several different assessments, from simple risk assessment through to a multi stage hazard study. This stage should also consider potential impacts on occupied buildings, human factors, DSEAR / HAC, COSHH, PUWER, pressure systems and fire risk assessments to name but a few. An exhaustive list of the potential assessments that are applicable to your organisation and site should be defined within your management of change process and those selected recorded as part of the change documentation. The impact on operating permits or your site's COMAH Safety

commensurate to the potential risk(s) of the change being undertaken. This further emphasises the importance of properly defining the change at the beginning of the process. By doing this, bottlenecks in the approval process and 'signature chasing' are minimised allowing the change to be properly assessed and efficiently approved. It is however a good idea to have your EHS function involved in the approval process of every change to drive consistency. Implement Approved Change: If during the implementation stage it becomes necessary to deviate from the change that has been approved, this deviation must be fully documented, assessed and approved prior to start up to make sure it does not invalidate any of the completed impact assessments. Actions from the impact assessment process should be tracked and closed out. A pre-start up safety review should be considered to ensure everything is in place to ensure everything is ready for commissioning and start up.

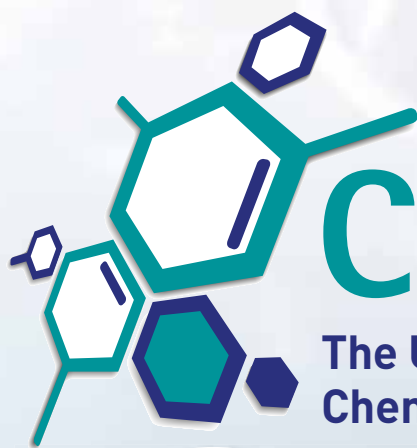
Review & Close Out

It is not uncommon for changes to remain 'open' for longer than they should after implementation. It is important to have a robust review and close out process to stop this from happening. This should ensure all actions are closed and records are updated to as built status for permanent changes, and all temporary changes are fully removed in a timely manner. Targets around closure should be set and tracked by senior site leadership as a process safety KPI.

Simon Harrison
info@6engineering.co.uk

10th & 11th May 2023 The NEC, Birmingham, UK

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Lankem introduces novel bio-based products for the industrial and coatings market

Our company strength is our chemistry and market knowledge of surfactants, especially for applications that fall within the industrial markets. The coatings industry is an important market for Lankem and falls within two main areas; coating additives, which include dispersing agents, defoamers and humectants and emulsifiers for emulsion polymerisation. With many years of research and development, we have products that perform to the absolute highest standards.

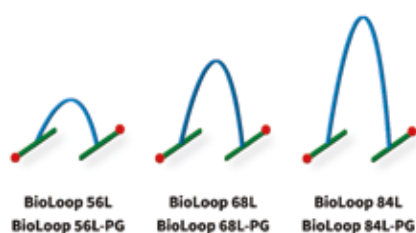
Our company philosophy is to continue to develop advanced products to help the formulator bridge the demands of modern requirements. Our latest BioLoop technology is both new and novel, helping to offer the formulator excellent sustainability profiling.

For many years we have been exploring the concept of engineering new surfactants using novel bio-based technologies. Sustainable products from renewable sources have been around for many years, but the majority have limited functionality in terms of performance compared to synthetic counterparts. Our remit was to develop a range of bio-based products that offer comparable performance against synthetic products across many applications.

The next generation of green surfactants

The new range of bio-based surfactants contain components that are from renewable sources. Unlike many bio-based surfactants, these products offer excellent surfactant properties and are ideal for green alternatives to conventional, synthetic nonionics, such as alcohol ethoxylates. The BioLoop has two soybean-hydrophobic sections that link together by a hydrophilic loop of polyethylene glycol derived from molasses. Unlike palm-based surfactants, the BioLoops contain soybean oil, a great sustainable source.

Simplified structure of the BioLoop surfactants



Increase in hydrophilic nature

Key Features

- Based on BioLoop technology
- Bio-based
- 100% renewable
- Ultra-mild
- No skin or eye irritancy
- Low ecotoxicity
- Biodegradable
- Good detergency
- A green alternative to alcohol ethoxylates

PG (Pure Grade) v Normal Grade

The normal grade of BioLoop surfactants, are aimed at standard industrial-based processes in which clarity in an aqueous medium isn't necessary. The PG versions that denotes our purified grades, are aimed at industries in which clarity in aqueous mediums is essential.

Typical Applications

Normal Grades

Oils and Lubricants
Emulsion Polymers
Agrochemical Additives
Textiles Auxiliaries
Hand and Floor Wipes

PG Versions

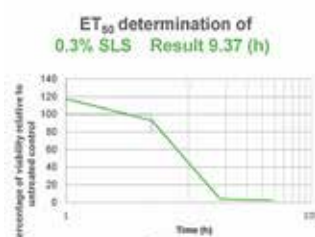
Personal Care
Cosmetics
Household Products

Mildness Studies

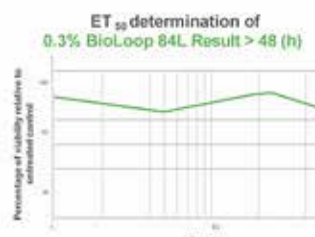
The ET50 Test Method

The in vitro test was successfully adapted from the widely used ET50 method using human reconstructed skin models. Formulations are applied to the skin model surface for defined time points, followed by the determination of any damage to the skin cells, using an indicator of intracellular metabolism. Test results express the ET50 value - the time taken for viability to drop to 50% of the untreated control. The results indicate that the BioLoops, in this instance BioLoop 84L, gave a result that showed extreme mildness.

A Conventional Surfactant - Sodium Lauryl Sulphate



A BioLoop Surfactant



sales.enquiry@lankem.com
www.lankem.com

Wastewater Treatment Chemicals

Creating sustainable solutions for wastewater treatment

Whatever your industry, it is important to understand your challenges and recognise the opportunities involved in creating sustainable solutions for wastewater treatment. Chemistries must treat severely contaminated water for reuse or safe discharge, addressing such issues as organics (COD), suspended solids, heavy metals, ammonia, and odours.

Alongside these chemistries, solutions should include on-site application expertise. This integrated approach, together with automated feed control, sophisticated monitoring with *highly developed* data analytics, offers potential users a diverse and innovative set of solutions for any water, wastewater, or process challenge.

Coagulants and Flocculants for Water Treatment

It is also important to have a comprehensive portfolio of coagulants and flocculants that aid in the clarification process. Whether users need coagulants or flocculants, liquid, emulsion, or powders, cationic or anionic products, they will want a cost-effective solution for their raw water and wastewater. Application expertise must range from operational optimisation to selecting and applying chemical treatment programs while providing lowest total cost of operation for solids separation and colour removal needs. Examples of relevant SUEZ products are:

KlarAid* coagulants – highly charged inorganic, organic and blended coagulants for clarification of industrial water and wastewater

KlarAid products are ready to use water-soluble coagulants, ranging from polymeric inorganic and organic coagulants to single container blends. They are designed to function in a variety of industrial water and wastewater treatment applications, including use as a primary coagulant for removal of colloidal turbidity and colour for raw water clarification, as a demulsifier to facilitate liquid solids separation in dissolved gas flotation units for primary wastewater treatment, and settling and filter aids used separately or in conjunction with organic flocculants.

The **KlarAid** product line encompasses a comprehensive portfolio of chemistries ranging from classic inorganics to modified natural products, such as amphoteric tannins and starches, to modern synthetic organic chemistries. They encompass relatively low to high cationic charge densities.

One of the highest costs in many water and wastewater treatment plants is sludge disposal. *It is vital that solutions providers* work with their customers to choose coagulants that can minimize sludge production, thereby reducing plant operating costs.

Novus* flocculants – high molecular weight polymers for use as clarification, flotation, and dewatering aids

The **Novus** product range covers both cationic and anionic, high molecular weight water-soluble polymers provided as liquid emulsions, providing the right balance of ease of use and cost-effectiveness. They are designed to function in a variety of industrial water and wastewater treatment applications.

The **Novus** product line provides a comprehensive portfolio with a broad range of charge and molecular structure, thereby producing products for both raw and wastewater clarification, flotation enhancement and sludge thickening and dewatering.

Metals Removal

As regulations become increasingly strict on metals discharge and as water reuse becomes more widely practiced, the removal of heavy metal contamination becomes more important. The right approach is to carefully diagnose the situation and determine the correct balance of solids separation and metals precipitation technology needed.

In addition to standard coagulants and flocculants, there are several proprietary metals precipitants in the **MetClear** product line. This combination of technologies will provide far lower residual metal concentrations, of all the standard heavy metals, than other traditional treatment approaches.

Foam Control

There is also a wide range of defoamers or antifoam products that can solve all foam issues. Appropriate representatives will approach foam problems in the same practical manner that they approach all water treatment needs. They will go onsite, assess the situation, and then carry out testing of the range of FoamTrol products to pick the best one for the wastewater. Following the visit, it is important that a detailed report of the antifoam evaluation be issued explaining the options available.

Angus Barnes, Growth Leader, Suez Water Technologies and Solutions angus.barnes@suez.com

Optimising Battery Performance with Hosokawa Micron Powder Processing Equipment

The global battery market is competitive and developing rapidly, thanks to the expanding electric vehicle market and unprecedented demand for consumer electronics and portables. As a world leader in powder processing technology, we are ideally placed to help existing and emerging battery producers to strengthen their competitive edge.

Battery manufacturers are under intense pressure to be cost competitive and reduce their carbon footprint as macroeconomic trends develop. End users want faster charging, a longer-lasting charge, and a longer useful battery life, while the OEMs want batteries to be smaller and more compact, with an increased energy density. And, of course, the batteries need to be reliable and safe.

High-quality processing and containment equipment are required for numerous steps of the battery production process, from drying and classification, to rounding, ultra-fine milling, mixing, and coating.

Drying slurries or filter cakes for precursors

For drying and milling precursor materials for the cathode, a continuous flash dryer is ideal, achieving end moisture levels below 1%. A continuous drying process is usually the best solution, but if even lower moisture levels are needed, or the required capacity is small, a batch dryer may be better. For difficult volatiles, a paddle dryer offers full vacuum at temperatures of up to 325°C, enabling extremely low moisture levels.

Creating 'active magic' for the best battery performance

For optimum battery performance, it is important for the active battery materials to have well-defined particle size distribution and small particles. Ultra-fine milling of the powders creates a smaller particle with a larger surface area, which enables the 'magic' to happen inside a battery. The result is a higher usable capacity, faster recharging, and longer battery life.

Common milling solutions for battery production are air classification mills and fluidized bed jet mills, which can achieve extremely fine and narrow particle size distribution. These mills can be used for cathode and anode materials.

The capability to spheroidize graphite is a game-changer. Graphite is naturally flaky with low bulk density, which decreases the battery capacity. Spheroidizing the graphite increases its bulk density and 'wettability', enabling the manufacturer to pack more material into the same volume for better battery performance. Natural graphite is cheaper to source, but synthetic graphite is already more spherical, so it requires less energy to round it off during milling, ultimately saving time and costs.

High-shear coating to improve conductivity

Reducing the particle size in the precursors to create a bigger surface area reduces their flow properties and causes 'sticking'. For the precise mixing of fine particles, battery manufacturers can use a high-shear mixer for batch or continuous mixing. These create a homogeneous material blend with a strong coating of carbon black and binders around the precursors for better conductivity. For even better battery performance, 'mechanical fusion' embeds the particles of the coating in the host particle.

Using more shear is always a trade-off and is not suitable for all products; it reduces the volume that can be handled, plus it increases energy consumption. It is a matter of finding the optimum level of shear for the customer's requirements. High shear is not always needed, however. A gentle, but highly efficient conical mixer can be used for batch homogenisation, for example, or lot adjustment after milling.

Safety first

Operator safety is an important consideration when handling battery materials. Downflow booths and horizontal laminar flow booths are relevant for the manufacture of solid-state batteries, which have to be produced in extremely dry air conditions, but where a higher level of OEB (Occupational Exposure Banding) is required to protect operators from breathing in or having direct contact with battery materials in a process system, a glovebox is perfect. Gloveboxes can also provide a controlled, CO₂-free, internal atmosphere to protect the product from deterioration.

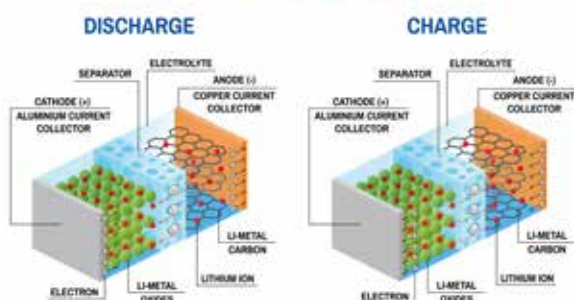


Glovebox

Hosokawa Micron Ltd.'s wide range of powder processing equipment puts it in a very strong position to offer suitable technology to manufacturers of all types of batteries as they continue to develop their products, now and in the future.

hosokawa.co.uk

LITHIUM-ION BATTERY



Lithium-ION battery discharging and charging using Li-metal oxide powder

Hazards32

18–20 October 2022, Harrogate, UK

Join the major hazards community at *Hazards 32* to review good practice, current thinking and lessons learned in process safety and hazard management, and explore some of the challenges and opportunities in process safety today.

Hazards 32 is an industry-focused event ideal for anyone who is active in process safety and risk management for chemical process facilities or other facilities dealing with hazardous materials.

It is an exciting chance to reconnect with fellow professionals, rebuild networks and share insight and experiences in person once again.

Key features

- Technical presentations from industry practitioners, regulators and researchers
- Facilitated discussion time and Q&A
- Inspirational plenary speakers
- Trevor Kletz Hazards Lecture
- Exhibition hall
- Social and networking opportunities

Speakers



Dame
Judith Hackitt
Trevor Kletz
Hazards Lecture



Jasper Clark,
Marsh Energy &
Power
Plenary Speaker
Embedding Good
Practice



Jane Lassey,
Health and Safety
Executive
Plenary Speaker
New Technologies



Peter Davidson,
Tank Storage
Association
Plenary Speaker
Leadership



Michelle Roberson,
Shell Group
Plenary Speaker
Energy Transition



Steve Elliott,
Chemical Industries
Association
Plenary Speaker
Cross-Sector
Learning

Find out more and register:

www.icheme.org/hazards32



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Ultrasonic flowmeter measurement solutions in the demineralisation plant

Non-invasive clamp-on ultrasonic flow measurement is proving to be the answer to the problem of unreliable measurement values from outdated measuring orifices on demineralisation lines.

Working independently of the conductivity of the medium flowing inside, the acoustic method is not sensitive to vibration, and because clamp-on transducers are mounted on the outside of the pipe, there is no need to disrupt operation while the measurement is installed.

The non-invasive measurement works, regardless of the conductivity of the medium, and there is no risk of contamination or leakage. What is more, plant operation is optimised thanks to reliable monitoring of the ion exchangers.

Ensuring a stable security of supply to customers

We were called in to assist a major German chemical manufacturer with flow measurement of demineralised water and an aqueous hydrochloric acid solution (<3%) on the cation exchanger. As production facilities were expanding, the amount of steam required was rising. The raw material for steam is demineralised water, and non-desalinated water would lead to calcification of the boiler in no time. To deal with rising demand, a new demineralised water treatment line was installed and put into operation.

Measuring orifices from the original 1980s demineralisation lines were installed for flow measurement, but a more contemporary vortex flowmeter was used on the new one. Unfortunately, this proved sensitive to vibration and often provided erratic measurement values. This is where non-invasive flow measurement proved to be the perfect solution.

Economical use of water is crucial for energy reasons alone

We also helped the same German chemical manufacturer with flow measurement of process water on a DN500 cast pipe in the inflow to a DI water system. A stable supply of water in a high and controlled quality is essential for the production of chemicals, steam and electricity. For reasons of economy, the pressures and flows of 900 pumps and drives must be brought to a desired level, consuming ~240,000 megawatt hours of electricity per year. The operating engineers of the water supply at the Dormagen site needed a reliable measuring method to record the quantity of process water in the feed to a DI water plant.

Following successful test measurements, a permanent clamp-on ultrasonic flowmeter was installed, which has been delivering reliable and trouble-free measurements ever since.

A proven solution

It is now widely recognised that non-invasive clamp-on ultrasonic technology is not only highly effective for measuring the flow of water, but notably for media that pose a particular risk due to their properties or that rapidly wear out the wetted inline measuring instruments.

Overall operating costs are low, and measurement is permanently stable and virtually maintenance-free.



Simon Millington
www.flexim.co.uk | sales@flexim.co.uk

Advancing home-grown batteries innovation

Nissan's plan to build a £1bn Gigafactory in Sunderland has been described as a major boost for electric vehicle (EV) production in the UK and signals that the country's focus on home-grown batteries innovation is starting to bear fruit. However, more investment is needed.

Partly driven by Brexit-related costs and a desire to reduce reliance on raw material imports from overseas, significant investment in innovation has already been made in the UK to enhance existing batteries technology and scale production to meet future EV demand.

With global demand for battery electric vehicles (BEVs) growing rapidly, the current focus is on refining existing lithium-ion battery technology to make it safer and lighter, and improve its energy density so it will last longer. However, a growing number of innovators are also developing alternatives to the dominant lithium-ion technology that could provide a more sustainable solution in the future.

In the push to net zero by 2050, the UK Government's decision to bring forward the proposed ban on the sale of all new petrol and diesel-engine vehicles to 2030, and its promise to invest a further £1bn in batteries innovation and its associated supply chain, has set a challenging pace for Britain's underdeveloped batteries industry. Price reporting agency, Benchmark Mineral Intelligence, has forecast that the UK needs at least 175 GWh of battery cell capacity by 2035 to supply around three million fully-electric vehicles.

To accelerate innovation activity in this area, the Faraday Battery Challenge has received £330m from the Government to sponsor world-class R&D programmes. The aim is to develop cost-effective, high-performance, durable, safe and recyclable batteries and position the UK as an industry leader. Among the innovations generated by the Challenge to date is a new type of sensor that can take samples of material from inside an operational battery, a novel solid-state electrolyte material and a rapid recycling method that is capable of stripping electrode materials up to 100 times faster than other methods.

In a recent announcement by UK Research & Innovation (UKRI), Innovate UK has confirmed that 17 R&D projects will receive £10m from the Faraday Battery Challenge to develop their innovations further and in some cases start production. The announcement demonstrates the vital role that Government is playing in channeling funding to projects capable of delivering a positive commercial outcome in the UK.

Patent filing data for 2016 reveals that the total number of patents published for battery innovations at the UK Intellectual Property Office (UKIPO) was 99. By 2019, the number had risen to 149 – an increase of 50%. This is likely to be an indicator of a much larger increase in filing, and so innovation activity. This is because many UK companies choose to file first at the UKIPO, but then allow their application to lapse without publishing it, in order to pursue an international (PCT) application instead. As such, only around 45% of UKIPO first filings end up being published by the UKIPO and the total number of filings made to the UKIPO in 2020 for batteries innovations is projected to have increased to around 400. While the growth in patents published by the UKIPO for batteries innovations could seem modest, the uptick in filing activity is indication of a fast-growing domestic batteries industry.

Among these patented innovations are technologies designed to extend the life of lithium-ion batteries and enable them to be reused or recycled. For example, the University of Cambridge is developing new electrode materials, with the aim of increasing the power output of lithium-ion batteries in order to extend their life. This is being achieved while ensuring they remain compatible with existing battery management systems. In addition, Siemens and the University of Newcastle are developing new battery analysis methods, capable of providing predictive models for heat degradation. Other innovators, including Dyson, are looking for ways to improve the energy density of lithium-ion batteries through improved cathode chemistry.

Recycling technologies are also generating a high level of commercial interest, with new companies, such as Technology Minerals, and existing companies, such as R S Bruce, already active in this space. Other innovators are paving the way for more recycling

activity – for example, Supac Ltd, based in South Wales, has developed a new container for the safe storage of disused lithium-ion batteries and other technology to facilitate the safe separation of battery components using pyrolysis.

With global demand for BEVs forecast to soar in the next decade and beyond, battery innovators are increasingly focused on finding alternatives for lithium-ion and cobalt, as both metals are finite resources.

Innovation in the area of solid-state batteries that use sodium as a replacement for more expensive lithium is developing strongly. In the UK, a number of innovation-focused companies are exploring ways to develop sodium ion cell capability and improve anode/cathode active material capacity. Lithium-sulphur is another exciting area of battery innovation. While much innovation in this area is focused on the US, some UK-based R&D programmes are also exploring the potential of lithium-sulphur technologies, which use a lithium metal anode and a sulphur-based cathode, to develop batteries that are lightweight, safe and potentially also rechargeable. Another small group of innovators are focused on the development of lithium-air batteries, due to their incredibly high theoretical energy densities.

The next few years are certainly going to be an exciting time for batteries innovation in the UK and around the world. There are many rich seams of research activity that are likely to generate patentable innovations in the next few years, and for those that get there first, there could be significant commercial reward. For spin-out and early-stage companies, securing patent protection can help to secure the funding needed to develop innovations and bring them to market as quickly as possible. Larger, more established companies, also need to keep a close eye on competitor activity and protect their innovations promptly to avoid them being copied or reverse engineered.

The UK's race to net zero is underway and today's investment in home-grown batteries innovation will play a critical role in determining where the country ranks as a global producer of BEVs in the future.



Dr Joanna Thurston, Withers & Rogers



Jo Thurston, partner and patent attorney at European intellectual property firm Withers & Rogers

** This article was first published in New Electronics"*

Supplying to the Chemical Industry

Knowing your local supply chains is important, and suppliers of expertise, solutions and great products are right here in the northwest. CNW members have a strong association with and many years of experience supplying to the chemical industry. The companies listed in this directory cover a wide range of products and services. They have established customers in the sector, with proven track records. Many will be well known, long-standing firms and there will also be new and innovative businesses that you may not have heard about. Effective supply partnerships, delivering success for all! For more details, the websites for the listed companies and organisations can be found at:

<https://www.cia.org.uk/chemicalsnorthwest/Membership/Our-Members/>

Chemicals Distribution, logistics & chemical handling

2M Holdings Ltd

Chemical distribution and related services of sample management, storage and blending. Provision of AdBlue, Samsol products, packed chlorine and TRIKLONE & PERKLONE chlorinated solvents. Markets served include: automotive, precision cleaning, coating, oilfield & refineries, flavours, fragrances, surfactants for personal care, household and industrial cleaning and pharmaceuticals.

Actikem Ltd

An ISO9001 certified business, specialising in a range of chemical processes and manufacturing services, including mixing, storage and re-packaging. We provide toll and custom manufacturing services for SMEs as well as blue-chip organisations, and supply customers with on-tap production facilities, offering them potential cost-savings and greater flexibility.

Brenntag UK & Ireland

Connects chemical manufacturers and chemical users in a value-adding partnership through tailor-made distribution solutions. Offers specific application technology, extensive technical support and value-added services (i.e. just-in-time delivery, product mixing, formulation, repackaging, inventory management and drum return handling). High safety standards and strives to make served industries sustainable.

F2 Chemicals Ltd

As a specialist in the handling of fluorine gas, F2 Chemicals Ltd offers a variety of organofluorine products all manufactured at our Preston plant. Our primary product is a range of high specification perfluorocarbons, such as octafluoropropane and perfluorodecalin, under the Flutec tradename, used in applications including medical, tracers, plasma-cleaning, cooling and cosmetics.

Holiferm Ltd

Holiferm uses patented gravity separation technology developed at the University of Manchester to create biosurfactants. These are not only more economically viable, but more environmentally friendly too. Our biosurfactants have applications in many products found around the home including cosmetics, skin care, shower gels and hand cleansers.

Hosokawa Micron Ltd

Integrated powder processing technologies including: size reduction, air classification, mixing, drying, containment equipment such as gloveboxes and downflow booths. Contract processing services for 1kg to multi-tonne lots. Remote monitoring solutions that include: condition monitoring, analytics for improving product quality and energy efficiency and on-line diagnostics for predictive maintenance and improved plant availability.

Itac

Itac specialise in developing high performance solvent-based adhesives and coatings. We design and manufacture bespoke adhesives and coatings formulations, enabling our customers to develop market leading products critical to countless end use applications. Itac also provide confidential toll manufacturing services allowing our clients to focus on their business objectives.

Kanon Liquid Handling Ltd

Design and manufacture of drum, IBC and container filling systems ranging from fully automated robotic systems to simple manual machines. Full range of marine, road and rail tanker loading/unloading and safe access equipment. Distributor for Mann-Tek couplings, with repair facility and 'return to base' option.

Suez Water Technologies and Solutions

Suez Water Technologies and Solutions is one of the world's leading providers of water treatment chemicals, services and equipment. Through focussing on customer service, value delivery and research and development of new products, we have been instrumental in helping our customers overcome the world's toughest water and process challenges.

Education, training & skills

All About STEM

Lots of different projects to bring exciting Science, Technology, Engineering and Mathematics to schools across the region, linking them with business and industry expert volunteers inspiring the next generation of STEM specialists. Building and maintaining relationships with our schools, businesses, industry, colleges and universities so that we can strategically match-make opportunities with need.

Catalyst Science Discovery Centre

An independent charitable trust playing a pivotal role in promoting science across the Northwest. Catalyst works in conjunction with industry partners to excite young people about all STEM subjects and careers available within the science sector. Companies can also sponsor a local school to visit and attend industry days.

Centre for Industry Education Collaboration

CIEC supports companies in making credible and sustainable links with primary schools, in order to inspire the next generation of scientists and engineers. We train STEM professionals to improve their communication skills, and develop industry-focused activities for use directly by teachers or by ambassadors visiting schools.

Chemistry with Cabbage

We work with students of all ages, demonstrating through practical experiments, the relevance of chemistry in solving problems. Research shows that children make career choices very early on, so capturing their imagination early is important. Chemical companies are welcome to support our hands-on work in primary schools.

EngineeringUK

Not-for-profit organisation promoting the contribution made by engineers to society. We partner business and industry, government and the wider science & engineering community, producing evidence of the state of engineering. Sharing of knowledge and inspiring young people to choose a career in engineering.

Lancaster University

Lancaster University's award-winning partnerships and engagement team facilitates business collaborations, including student placements, access to over £45m scientific facilities, training,

contract research, and multi-partner collaborative research projects. We liaise with all areas of the chemical industry, from multinational oil, chemical and pharmaceutical companies, to SMEs producing new and specialised products.

SEERIH

The Science & Engineering Education Research and Innovation Hub positively influences the experience of young people in science and engineering. Expertise in curriculum and teacher development, applied research and creation of innovative projects related to primary science and associated STEM disciplines. Inspiring excellence in teaching and learning in science education.

The Outward Bound Trust

An educational charity that uses the outdoors to help develop young people. Experts in the development of early talent and specialising in providing experiential learning and development programmes for apprentices and graduates. Identification, development and change of people behaviours in line with organisational needs.

TTE Training Ltd

Engineering training and apprenticeships focused on whole person development and bridging the sector's skills gap. The learning environment will be one which is welcoming, safe and inspiring, appropriate to the subjects and responsive to the needs of the learner.

Warrington & Vale Royal College

Delivering vocational, professional and apprenticeship qualifications across science and engineering. Home to a new Advanced Manufacturing & Engineering Training (AMET) centre and dedicated science laboratories. Continually building relationships with schools, businesses and industry to help bridge the skills gap. Bespoke course and packages available. www.wvr.ac.uk

Wirral Met College

Provision of education and training, supporting innovation and development. The College is pioneering SIP traineeship programmes with local employers, preparing young people for science apprenticeships. New STEM Centre opened in 2016.

Engineering products & services

Addison Project

Addison Project is a Multi-Disciplined Engineering Project Management & Design organisation, established in 1997, with offices located in Cheshire, Lancashire and Teesside. We have an in-house team of engineers and designers circa 130 people, catering for mechanical, civil, structural, EC&I, process engineering and a full range of CDM services.

Beamex

Beamex helps its customers to find a better way to calibrate, according to the most demanding requirements of process instrumentation. Beamex offers a comprehensive range of products and services – from portable calibrators to workstations, calibration accessories, calibration software, industry-specific solutions and professional services.

Know your supply chains

CDR Pumps UK

A leading independent Pump manufacturer. Since opening our doors 60 years ago, we have gone from strength to strength bringing you a company that has the product, service and knowledge to support the chemical, nuclear and pharmaceutical industries on a global scale. And small enough to give you the individual care and attention you need yet big enough to support multi-site, multi-national blue-chip chemical companies. Our global manufacturing facility in Milan is strategically located to support our customers across the world.

DHD Cooling Limited

Design, installation and maintenance solutions for industrial cooling. Our service extends to cooling system inspection, testing, service, maintenance and new equipment capability. Regulatory and reliability assessments, thermal performance improvements, turnkey projects and carbon footprint reduction.

Dron & Dickson

Dron & Dickson are recognised market leaders in the supply and maintenance of hazardous area electrical equipment. Our Engineering Services and Wholesale divisions offer bespoke solutions incorporating the very latest industry standard and safety legislation.

Flexim Instruments UK Ltd

We support UK clients with their measurement, commissioning, verification & maintenance needs. Offering clamp-on flow metering of liquids & gases; SIL 2 for safety critical duties; mass flow or concentration measurement options from outside the pipe; virtually zero maintenance; no cost escalation with exotic pipe, pressure or temperature; no outages for commissioning or maintenance; zero leak paths

HTS Engineering Group Ltd

Process safety and safety instrumented systems, delivered with a high level of engineering and expertise with cost efficiency. Four key engineering services that can be tailored individually or as one complete solution: process control & software engineering, engineering & design, site installation and inspection services.

Laker Vent Engineering Ltd

Supply, fabrication and installation of process and utility piping systems. Project management, detailing, procurement, on and off-site fabrication and installation of pipework and coded welding. Associated steelwork supporting and mechanical installation of plant and equipment. Testing and Handover. Pipework and steelwork is fabricated to specific customer-needs and conforms to all appropriate ISO, BS EN and ASME standards and specifications.

Lokring UK

Lokring UK offer technical engineering support and sales for Lokring technology across the UK. The Lokring "Cold Weld" pipe and tube joint reduces the need for hot work, NDT inspection and reduces on site resources. Code compliant with ASME B31. Lokring is a Safer, Faster, Lower Cost replacement for site welding and flanged fabrication.

Manntek AB

Supply of safety dry disconnect and safety breakaway couplings. Comprehensive range of specialist dry quick release couplings to suit 99% of known chemical applications. Bespoke solutions with a size range of 3/4" to 8" nb. Dry disconnect couplings are made to NATO standard Stanag 3756.

METTLER TOLEDO

Mettler Toledo manufacture & service weighing, analytical and inspection equipment used throughout the product cycle from Research & Development, through Scale-Up & Production to Quality Control, Storage & Despatch. We work with our customers to understand and achieve their business goals, including key areas of safety, quality, productivity and sustainability.

MCE Group

Offering valve service and overhaul in our state-of-the-art service workshops, or on site, using OEM parts, from single valves to complete outages.

European distributor for ValvTechnologies, providing severe service, zero-leakage isolation valve solutions, setting the standard for the next generation of valves for the chemical industry.

Michael Smith Engineers Ltd have been supplying pumps to the UK Chemical industry since 1971. We specialise in sealless pumps and our product range includes gear pumps, centrifugal pumps, high pressure pumps, piston pumps, side-channel pumps, vane pumps, AODD pumps and barrel emptying pumps with thermoplastic, metal or PTFE-lined wetted parts.

Perry Process Equipment Ltd

Buying and selling of high quality used processing plant and equipment. Savings of up to 70% on the cost of process equipment, full mechanical and electrical refurbishment and equipment immediately available from stock. Centrifuges, dryers, evaporators, filters, heat exchangers, mills, mixers, reactors, separators, tanks.

Pumptec Engineering Services

Specialises in supporting the chemical industry in the inspection, repair, overhaul and fitting of all types of rotating equipment. Our highly trained engineers can support your routine maintenance, call outs and shutdowns. Our Wirral based machine shop can complete overhauls on your pumps, fans and mixers.

ProDecon®

Providing industrial service solutions to the Oil&Gas, Chemical, Power, Pharmaceutical and Industrial sectors. Specialising in hazardous hydrocarbon and chemical environments. ProDecon® has a unique range of technical expertise, that enables us to support customers with restoring process performance and providing maintenance risk management through bespoke industrial cleaning solutions.

SABSCO (Steam and Air Blowing

Service Company) is the British subsidiary of the Solarca Group, with offices in Kent. They have been providing world-class steam/air blowing services on projects across the globe since 2003. With the addition of SABSCO, the Solarca Group gained a major competitive advantage: the ability to offer integrated chemical cleaning and steam/air blowing services. World-renowned in their field, they have been selected by leading engineering companies for large-scale steam/air blowing projects in every corner of the globe

Studley Engineering Ltd

A multi-disciplined mechanical and electrical engineering contractor, providing a comprehensive service to the process industries in disciplines including: steelwork, welding, maintenance, site services, pipework, tanks and vessels. Over time we have gained an enviable reputation as a reliable, responsive, motivated contractor that delivers safe, high quality, cost effective work.

Swagelok Manchester

Fluid system solutions, products, training and services. Supply of over 7000 fluid system components including: fittings, hoses, tubing, regulators, equipment servicing and custom fabricated solutions. Provision of practical information, know-how, tools and speciality services needed to purchase, manage and apply them successfully.

Yokogawa

Yokogawa is a leading provider of field instrumentation, safety systems, industrial automation and digital transformation solutions. IIOT, OT Cybersecurity and Alarm Management are specific areas of focus for Yokogawa's Advanced Solutions team with a number of major projects currently being delivered across Europe.

Engineering project management & energy

6 Engineering

Is a safety engineering consultancy for the major hazard industries specialising in process and functional safety. Our mission is to provide world class safety expertise, helping you to keep people and assets free from unnecessary risk. Our site engineers can be there to support you when you need us. See more at www.6engineering.co.uk

Atlas Copco Rental UK

Provides temporary cost and energy efficient solutions for long- or short-term demands, planned maintenance or unexpected emergencies. Our engineers design the most suitable temporary installation, utilising our fleet of state-of-the-art equipment which includes 100% oil-free Class 0 and oil-injected compressed air at medium or high pressure, generators for power, and nitrogen. Quality of service, environmental care and personnel safety are guaranteed by our triple ISO certification.

Axiom Engineering Associates Ltd

An award-winning company specialising in the provision of UKAS accredited inspection services, backed up by a mechanical and materials asset integrity section. Acting as the design and inspection authority to many blue-chip companies, working across a broad range of process sectors such as: chemicals, petrochemicals, bulk storage, power and pharmaceuticals.

Clarke Energy

Specialists in the engineering, installation and maintenance of reciprocating engine-based Combined Heat & Power (CHP) plants. Offering ranges from supply of an engine through to turn-key installation of a multi-engine power plant. Our facilities deliver fuel efficiency, dramatically lower energy costs and help reduce carbon emissions. Carbon dioxide can also be recovered.

Graham Hart (Process Technology) Ltd

Delivering high integrity heat transfer equipment for over 45 years. The company has a strong emphasis on Chemical/Process & Mechanical Engineering backed up by an advanced manufacturing facility.

Otto Simon Ltd

Diverse engineering consultancy and project delivery organisation. Initial consultations, technical and commercial due diligence and front-end design and definition. Feasibility studies through design, supply, erection, and commissioning services using in-house and licensed technology. Services for complete plants or upgrades. Procurement, construction management, start-up and operation & maintenance expertise.

PM PROJEN

A multi-disciplined engineering, design and project management business working across a range of market sectors for a diverse mix of clients from SMEs to multinational blue-chip companies. We are part of PM Group, a 2,200 strong, employee owned company operating across Europe, Asia and the USA.

Engineering, IT & process consultants

EJ Peak Technology Solutions

Process control, industrial automation systems and manufacturing analytics. A unique combination of automation projects, consultancy, and performance improvement services delivered by experienced teams. FEED, process control projects, legacy asset replacements, control room and operational technology, modern manufacturing analytics solutions.

Gexcon UK Ltd

Safety and risk management and advanced dispersion, explosion and fire modelling. Unique expertise and shared knowledge on how to prevent explosion accidents. Carrying out accident investigations and dedicated facilities for physical testing. Ventilation and dispersion modelling also available. Hazardous area classification and quantitative and qualitative risk analysis and assessment.

Siemens Digital Factory & Process Industries and Drives

Productivity and efficiency requirements continuously increase in the field of process automation. A comprehensive range of process automation and Drives products as well as an award-winning range of training and support services.

Environment, health & safety risk management

ABS Consulting

A global process safety consultancy and training services provider with regional headquarters in Warrington, UK. Our expertise in data-driven risk and reliability includes a range of capabilities: root cause analysis, incident investigation, organisational culture evaluation, risk management, process hazard analysis, bow-tie and data science techniques. Our approved process safety leadership training courses and proficiencies also include building risk assessments, HAZOP analysis, compliance auditing, asset integrity management competency assurance and management systems certification services.

BakerRisk Europe Ltd

Dedicated to help predict, prevent and mitigate hazards and explosions, fires and toxic releases. Specialising in process safety and risk management, we help clients understand their risks and offer cost-effective risk management solutions. Success is delivered through proven knowledge and experience, innovative research and unique engineering capabilities.

Chemical and Industrial Consultants Association

An association of independent consultants with extensive experience, many having worked in the chemical industry, across various fields. Provision of technical and business advice on almost every aspect of chemical manufacture, development, marketing and management.

IKM Consulting

With 25 years of civil & structural engineering and environmental consulting experience, IKM's portfolio in high-hazard and regulated industries is extensive. With offices in Runcorn and Grangemouth, IKM specialises in consulting services around asset integrity, secondary & tertiary containment, asset infrastructure inspections, environmental risk assessments and COMAH compliance.

RAS Ltd

Expertise that covers the full range of risk assessment and management services across; safety risk, business risk and environmental risk. Carry out Quantitative Risk Assessments and Predictive & consequence modelling, through 'softer' risks affecting an organisation's reputation.

RPS Group

Provision of specialist consultancy to help those with responsibility for health and safety achieve compliance. With particular expertise in the chemicals sector, we provide support from plant development through to operation. Core services include: ATEX/DSEAR, asbestos, BowTie analysis, CDM, COMAH support, fire safety engineering, functional safety, hazard identification, Legionella, occupation health and risk assessment/analysis.

SLR Consulting

A unique blend of leadership, management, consulting, engineering and training services is offered to the chemicals industry. A forerunner in sustainable process safety management combined with proven business improvement capabilities enables delivery of practical solutions to promote safety and efficiency in design, operation and maintenance of complex hazardous facilities.

Facilities, finance and other business services

Department for International Trade – Northwest

Operational support for British exports as well as facilitating inward and outward investment activity. Support is given to first-time exporters or established exporters requiring more help with accessing more difficult markets or putting strategic alliances in place. Access to expert advice, trade services, training and events.

Halton Borough Council

World renowned research facilities such as Sci-Tech Daresbury and The Heath alongside many companies at the cutting edge of science, technology and advanced manufacturing. We oversee capacity in terms of land, buildings, people and business support creating a world class location.

Pen Underwriting incorporating OAMPS

Specialist Insurance services to high hazard manufacturing and haulage industries. Motor fleets, property, liability and transit policies. We help clients minimise risk through proactive risk management and a range of training and response services to assist companies in planning for and dealing with incidents and emergencies.

Sci-Tech Daresbury

We are a national science and innovation campus, and enterprise zone providing a range of office, laboratory and workshop accommodation for technology companies (from a desk to large laboratory and office units). Companies have access to a range of facilities covering material analysis, virtual design & simulation, and rapid prototyping.

STFC Innovations Technology Access Centre

A unique, fully equipped space for innovation, research and development. Providing flexible access to laboratory space, "hot labs" and scientific equipment. Ideally suited to start-up companies, smaller and medium size enterprises and R&D team from established companies.

TW Languages Ltd

Provision of a professional and reliable multi-lingual translation service delivering high quality translations. We specialise in business, technical and scientific translations into 250+ language combinations. We provide certified translations for legal purposes. We are full members of the ATC & EUATC and ISO 17100 Translation Services certified.

Laboratory products, testing and services

XCellIR8 Ltd

A world leader in animal-free testing. Our GLP accredited laboratory provides groundbreaking in vitro safety tests for the chemical and personal care industries. We are passionate about delivering testing strategies that are both scientifically advanced and ethically sound. Our award-winning work is recognised at a regulatory level by the OECD and ECHA.

Legal & patents

Appleyard Lees LLP

Patent and trademark attorneys. Aim to obtain the best possible patent protection for clients. Experience of product clearance against competitor patents and in due diligence for mergers and acquisitions. Advice on licensing issues and collaboration agreements relating to IP.

Bawden and Associates

A legal firm providing professional services across all IP matters. Drafting and prosecution of patent applications, handling opposition and appeals in the EPO and in litigation in UK and international courts. Business led and strategic approach to generate assets of real commercial value.

RW Legal Ltd

Provision of pragmatic legal advice to companies in the chemical sector. Particular expertise in drafting and negotiating commercial contracts. Managing legal risk through early involvement to save time and resources in the long run. Competitive rates and flexible fees without sacrificing quality.

Squire Patton Boggs (UK) LLP

Global legal company providing legal, regulatory and advocacy assistance to the chemical and performance material industries. Expertise that emphasises areas that mean the most to industry such as environmental, mergers and acquisitions, commercial finance, construction, litigation, IP, public policy and international expansion.

Symmetry Law

Specialist law practice structured to provide "partner" level experts at "junior" level prices, with a focus on the 'high consequence' end of the spectrum. Legal services include: environmental, safety, regulatory, contracts, tax, construction, green incentives, litigation.

Withers & Rogers LLP

A leading UK and European intellectual property law firm with five offices including London and Munich. We offer a range of IP services including obtaining UK, European and worldwide patent or trade mark protection, the handling of contentious matters, advice surrounding licensing arrangements and issues including validity of patents and "freedom to operate".

WP Thompson

Intellectual property attorneys providing high quality advice to start-ups, SMEs or FTSE 100 companies. Team of experienced IP attorneys specializing in chemistry and life sciences, with first degrees and PhDs in these fields. Securing the most appropriate, cost effective and commercially valuable protection for your intellectual investment and innovation.

Know your supply chains

REACH and chemicals services

Dr Knoell Consult Ltd

An independent service provider for the chemical and related industries. Globally the Knoell group has over 450 employees covering all aspects of regulatory compliance for industrial chemicals, agrochemicals and biocides: e.g., strategic planning, dossier preparation, exposure assessment, SDS preparation, and from REACH to K-REACH!

GlobalMSDS

A complete safety data sheet/literature and regulatory service for your entire product communications in any language, style and format required. Hazmix is a new 'pay as you go' web-browser product that is setting a new standard in SDS authoring. A Solutions service that also provides technical advice.

Intertek Regulatory Services

Health, environmental and regulatory services for implementation of chemicals management. Worldwide registration of chemicals, food contact compliance and notification, global chemicals compliance, design/optimisation of toxicological and eco-toxicological studies, hazardous substance management, EU cosmetic and biocidal products compliance, classification & labelling, SDS consulting.

Yordas Group

Yordas Group is a leading provider of scientific, environmental, human health and global regulatory consulting services. They offer chemical regulatory support, expert scientific services and support on chemicals management and product stewardship, global hazard communication, hazard and risk assessment, analytical and (eco)tox testing.

Recruitment

Adepto Technical Recruitment

A specialist engineering, manufacturing and scientific recruitment consultancy that focuses upon the provision of permanent staff and contract resource to the Chemicals industry. Established in 2015, Adepto has quickly become the partner of choice for many blue-chip and SME manufacturers, engineering companies and consultancies due to our deep knowledge of the industry, credibility and professionalism.

Eleven Recruitment

Eleven Recruitment has been a specialist recruiter in the chemicals, energy and commodities sectors since 1999. We have a strong track record of sourcing mid and senior level talent, including C-Suite, with specialist knowledge and experience. We can provide both contingent and retained recruitment services or work with clients as an integrated recruitment partner.

Handley James Chemical

Mid to senior level appointments solely within the Chemical Manufacturing space. Over 30 years search experience. The company was built on the success of Stuart Tomkinson's successful 11-year recruitment career primarily within the chemical manufacturing arena. Focusing on providing the best talent in the chemical industry. We work closely with you, to understand your business, your culture and exactly what you are looking for from a recruitment partner.

Millbank

With over 30 years' experience providing recruitment solutions to major clients in the chemical sector, Millbank has an extensive database of experienced candidates and contractors ready to join projects across the region. A true recruitment partner, Millbank offers services ranging from contract and permanent placements through to fully managed services.

RMG

RMG is an award-winning headhunting consultancy with a difference - we make it our business to search and understand who's who in the Chemicals and STEM sectors and have the know-how to find talented people who will deliver lasting impact and add financial value to your organisation.

Science Recruitment Group

Experts in the recruitment of scientific, regulatory, quality, engineering and technical professional across all areas of the industry. Support in recruiting temporary, contract or permanent staff for your team.

Science Solutions Recruitment

Is a specialist science & technical recruiter with specific expert teams to service niche fields, including speciality chemicals, drug discovery, polymers, materials, cosmetics, personal care, household products, pharmaceuticals, biotechnology & medical devices.

TransitionPlus Ltd

Executive search for science-based organisations, talent development, outplacement and career transition support. Experienced chair, NED, coach and business development consultancy. The "Plus" is to ensure that considerable attention



A global leader in environmental and advisory solutions

We help businesses get the most from their assets by developing people, plant, and management processes to drive sustainable improvements in safety, environmental protection and productivity.

Find out more about how we can help improve your performance

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📍 www.slrconsulting.com