

integrated

ISSUE 13

**POWER PLANTS:
COMMISSIONING
LOSSES**

**MEET THE
AMERICAS**

**ELECTROLYSIS
SCALE-UP**



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Welcome to Issue 13 of Integrated, our magazine devoted to the specialty insurance lines marketplace. I hope you enjoy reading it.

During 2022 we witnessed the increasing effects of climate change. Major floods have struck Australia, South Africa, China, India and Bangladesh, extreme winter storms have swept across Europe, and rises in average temperatures have led to devastating forest fires in many other countries.

Closer to home, this has been a year of stability and growth at Integra. New colleagues have joined the team, more strategic partnerships have been added (South Korea, Canada and South Africa), and the launch of our subsidiary, Integra Risk Services, have all enhanced support for our clients worldwide.

We've been investing in a better future for Integra too. In line with many of our insured, broker and (re)insurer clients, I am delighted to say we have started work on building an ESG strategy and improving our ESG rating. Earlier this year, we appointed 'The Disruption House' to carry out an analysis of Integra's ESG rating and provide recommendations and protocols to enhance it. Integra is committed to making progress in this area, and ensuring our ESG goals are aligned with those of our clients.

This edition covers a wide span of subject matter, from articles on the 2022 Australia Floods and Growth in Hydrogen Electrolysers, to a focus on our 'Americas' team and an update on Integra Risk Services. As always, please feel free to share your topic ideas for future editions. We want to address the issues that matter to our stakeholders, from insurers, brokers and legal experts to the ultimate beneficiaries of the insurance product, the policyholders.

On behalf of the Integra team, thank you for your support and best wishes to you and your families for the festive period. Here's to a successful 2023!

Best wishes,

**Doug Horne, Global Head of
Marketing and Communications**

POWER PLANTS: LOSSES DURING COMMISSIONING



Derek Patterson

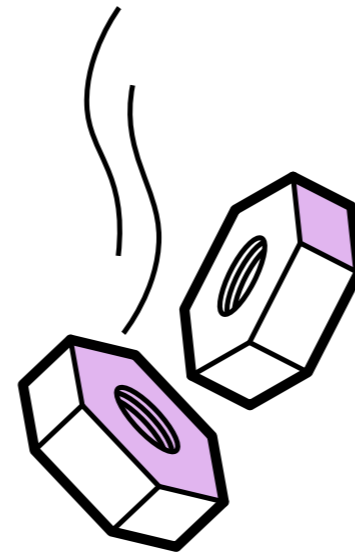
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Over the years, I have experienced many costly incidents associated with major power plants. Conventional and combined cycle plants, either with steam or gas turbine primary power sources, all share a vulnerability to expensive material damage and lengthy interruption to the restart of operations.

However, whilst it is the norm to minimise risk through careful coordination of the tie-in with the power grid and fuel supply sources, the operational readiness of power plants is often delayed by incidents that arise during the commissioning and testing phases. These stages in a plant's life cycle are critically important from a risk perspective, yet often they are often overlooked.

This article examines four of the main causes of loss in power plants:

1. FOREIGN OBJECT DAMAGE TO GAS TURBINES
2. CONTAMINATION OF PIPELINES
3. SHORT CIRCUITS ON ELECTRICAL EQUIPMENT
4. DESIGN DEFECTS



1. FOREIGN OBJECT DAMAGE (FOD)

The leading culprits of FOD damage are loose debris or unsecured nuts within the filter / air intake system. The filter house and air intake system for gas turbines should always be doublechecked for debris. All kinds of metal object, from the heads of pop rivets to small tools, can be left in the air intake system. Ingestion into the engine can result in a very expensive noise within the compressor, and chunks knocked off the fixed and rotating blades. If this happens, the removal of top casings becomes necessary to effect repairs. Another typical scenario is where nuts from bolts within the ducting are not spot welded after tightening. These can loosen and become sucked into the engine. So, it is especially important that the insured checks every nut is tack-welded.



2. CONTAMINATION

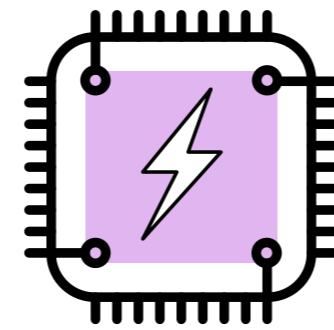
Contamination is the second most common cause of loss. It can result from the inadequate flushing of cooling water, lubricating oil and (in some cases) pneumatic systems. Typically, welding debris, plastic or other waste is not flushed properly from pipes and valves. The waste material blocks filters, reduces flow and pressure, and damages pumps, valves, bearings and other components. Sometimes, debris can block a pump and cause significant damage within just a few minutes.

Other examples:

- **Gas turbine fuel piping** – caused by weld or corrosion debris, especially if old pipes are used at a higher flowrate than before, or after a long period of non-use. I have seen several incidents of severe hot section damage from rust carryover, and witnessed tools and large pieces of steel left in pipework, and purging not done adequately.
- **Air piping** - especially purge air systems for the turbine and the air filter.
- **Boilers** - corrosion, tools, weld debris and dirt left in boiler pipework are all potentially harmful. Boilers are especially prone due to the large quantity of internal pipework.
- **Condenser leakage** - contaminating the boiler and turbine, especially in seawater-cooled condensers. This is not always taken seriously enough at commissioning stage.
- **Misconnected pipework** - I have seen drains connected to supply pipes and high-pressure pipes connected to low-pressure pipes. Proper checking should prevent this happening, but incidents still occur.
- **Contamination** - in my experience, the contamination of oil, fuel, water, steam, air and fuel piping and ducting are the most common and avoidable issues for turbomachinery during commissioning.

The operator should always have a system in place for checking the contractor on all pipe system flushing procedures.

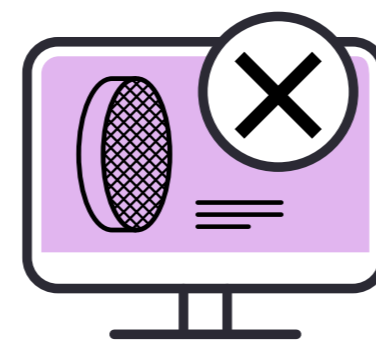
**A PROTECTION-SYSTEM FAILURE
CAN ALSO TRIGGER AN EXPENSIVE
SERIES OF FURTHER FAILURES.**



3. SHORT CIRCUITS

Short circuits are the root of many problems. Whilst a short circuit in a single component can normally be repaired fairly easily, it can often create a cascade of faults that affects multiple components. An especially vulnerable area is the backup system for emergency oil pumps and electrical protection. If an emergency pump circuit does not kick-in, entire systems could suffer serious harm (e.g. every bearing on a generator could be damaged). A protection-system failure can also trigger an expensive series of further failures.

The biggest areas of electrical risk are the cable terminations in the generator stepup transformers and other transformers. It is crucial that these terminations are completed by certified technicians qualified to work on specific termination types.



4. DESIGN DEFECTS

These can vary from major turbine defects to minor design faults:

- Poorly designed air filter systems
- Fundamental defects in turbine design (in this case, not much can be done other than monitor closely during initial operation)
- Badly supported or connected oil or gas pipework, leading to a fire
- Purging with a flammable, heavier-than-air gas which gathers in drains

Other turbine issues include:

- **Malsynchronisation** – from the incorrect connection of cables
- **Misalignment** - sometimes due to the combined effect of multiple causes. Likely contributors could be bad workmanship, inadequate (moving) foundations, low-quality design or poor insulation of bearings and casings causing thermal movement

In conclusion, many of the above risk factors can be eliminated or reduced by improved awareness and better coordination between the contractors, commissioning team and operations management. This is critical throughout the construction and commissioning of plants, and while planning and testing the appropriate procedures. We must also remember that the above does not address the risk of natural perils, with the most significant of these being flooding during or shortly after commissioning and testing.

**MANY RISK FACTORS CAN BE
ELIMINATED OR REDUCED BY
IMPROVED AWARENESS AND
BETTER COORDINATION BETWEEN
CONTRACTORS, COMMISSIONING TEAMS
AND OPERATIONS MANAGEMENT.**

INTEGRA RISK SERVICES: A YEAR IN RISK ENGINEERING



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After 24 years of adjusting complex claims, Integra has seen first-hand how the success of projects can be directly influenced by an effective programme of risk engineering activities. The launch of Integra Risk Services at the outset of 2022 enabled us to become involved in the risk engineering process more pro-actively, and offer our clients the benefit of more than two decades of experience in the field of specialty claims adjusting.

RISK SERVICES WORLDWIDE

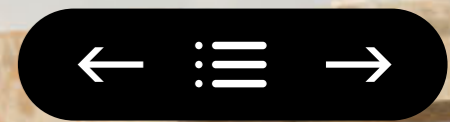
Following on from my article in Integrated 11 which outlined the importance of risk engineering, we have been busy practising what we preach by delivering risk engineering programmes and reviews across the globe, from Panama to New Zealand and all stations in between. Our work has spanned the Construction, Mining, Infrastructure and Energy sectors (both renewable and traditional).

Project appointments have included bridges in the UK and US, underground works in Chile, an airport in the Middle East, and plant and equipment in Australia and South Africa (in one of the world's deepest mines). We have also been engaged on a variety of power sector projects, including solar, waste and thermal plant, plus power transmission cables and battery storage in North America, the UK, Europe, Israel and the Middle East.

BENEFITS FOR INSURERS AND THE INSURED

Insurers have always wanted to do everything possible to assist the insured with their risk management. Risk engineering provides the perfect scenario by benefiting both parties equally, through the sharing of knowledge gained at other facilities, as well as the promotion of best practice and lessons learned. Combined, these help to reduce the chance of losses occurring in the future.

The concept is not a new one. The London Engineering Group first published their thoughts on a survey protocol in 1993 and refined this in subsequent updates in 2006 and 2015. At Integra Risk Services we focus on putting this into practice by collaborating with our engineering partners to ease the workload of time-pressured stakeholders.



EXPERIENCE AND EXPERTISE

We work with a wide community of engineers. As well as Integra's own staff, we collaborate with independent engineers, and those employed directly by our insurer and broker partners. Most engineers are inquisitive people and, once they are accepted by the project team as like-minded, experienced colleagues who are there to help, site personnel will open up and take great pride in discussing 'their' project. The huge advantage our engineers bring is their ability to discuss issues seen at other facilities in the same sector, anticipate potential problems based on losses we have handled and build these into their conversations with project teams.

**WE ARE NOW
DELIVERING ON OUR
PROMISE TO PROVIDE A
HIGHLY PROFESSIONAL RISK
ENGINEERING SERVICE ON
A GLOBAL SCALE.**

TIME OF ENGAGEMENT

Predominantly, our engineers visit projects at regular intervals or at key stages of construction/development in accordance with a risk engineering programme developed with the project's stakeholders.

On other occasions we are engaged extension, the reactivation of silent projects or even during the pre-placement of new risks.

Our involvement enables allows an independent view of the situation surrounding the project, the opportunity to gather information and clarify the risk management measures in place (or that could be actioned), and ultimately assist with proper negotiations.

Increasingly, we are seeing that insurers want to take a similar approach to lenders, with engineers engaged quarterly where the project budget allows. This gives them a more accurate measure of progress against plan and strengthens their relationship with the insured.

OPPORTUNITY FOR ALL STAKEHOLDERS

Integra Risk Services has been appointed on projects with placements subscribed by nearly all of the London market construction insurers, and we have provided services to construction insurers based in the US, Middle East, Asia and Australia.

Every project completed without an effective risk engineering plan is a missed opportunity for all stakeholders. Even if a project runs loss-free, the key players involved can benefit from going through the risk engineering process and applying the knowledge they have gained (both individually and corporately) to their next project. Meanwhile, failing to produce a plan can cause insurers to lose financially, as the allowance they set aside for risk engineering remains unutilised.

Experience tells us that in the world of risk engineering, managing the process and people will always be a challenge. However, I am very pleased to say that we are now delivering on our promise to provide a highly professional risk engineering service on a global scale, an invaluable product that solves significant logistical challenges for insurers, brokers and insured alike.

MEET THE AMERICAS TEAM...



Leo Dixon

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The Americas is the latest team featured in our 'Focus on the Regions'. The team is headed by Managing Director Phillip Moretti, whose role expanded this year to take on both North and South America including the relationships with our strategic partners. This includes our most recent partner, ClaimsPro in Canada, with whom we are already working on our first loss.



Phillip Moretti
Managing Director, Americas

Before joining Integra in 2019, Phil spent over 30 years in the insurance industry working for FM Global, Liberty Mutual and Zurich North America. During this time and his last three years at Integra he has handled large complex claims across sectors such as Construction, Oil & Gas, Petrochemicals, Property, Mining, Power Generation and Manufacturing.

Phil was a volunteer firefighter for 25 years, rising to the rank of Assistant Fire Chief. If he had the chance, he would invite George Bush to a dinner party to discuss the emotional and leadership aspects of dealing with 9/11 and its aftermath.



Keith Baker
Executive Adjuster

Having started his career in the residential and commercial construction space, Keith went on to join Schlumberger's Drilling and Measurement division. There he worked both onshore and offshore and gained experience in all aspects of well completion and production operations. In his adjusting career to date, he has handled claims in the Downstream, Midstream and Upstream Energy, Power Generation, Petrochemical, and Ports & Terminals sectors.

As a Texan, Keith's favourite cuisine is an old-fashioned barbeque. He also loves attending concerts, hunting, fishing and playing the drums. If he could invite anyone (past or present) to a party, it would be the late Canadian drummer Neil Peart, whom Keith considers one of the 20th century's greatest minds!



Mike Benvenuti
Adjuster

Mike is the newest member of the team, having joined Integra in May 2022. Much of his professional career has been spent in finance, accounting and project management roles. However, in 2006 he transitioned into the construction industry and later moved into insurance as a consultant to loss adjusting firms. There he handled losses involving Oil & Gas, Fuel & Heating, Mining, Fracking, Manufacturing and Construction.

Mike used to own a DJ business and played CDs and vinyls at parties and weddings. Later, he installed audio, video, security and networking equipment to help pay his way through college. This helped to shape his music preferences, which differ depending on his activity – sailing (Jimmy Buffett, Jim Croce), driving (ACDC, metal, country, current pop) and partying (90s rap).

SECTOR EXPERTISE IN CONSTRUCTION, ENGINEERING, POWER GENERATION, OIL & GAS, RENEWABLE ENERGY, MANUFACTURING & ENGINEERED LINES, MINING, SPECIALIST LIABILITIES AND TECHNOLOGICAL INDUSTRIES.



David Montgomery
Executive Adjuster

David joined Integra in 2021, following 30 years of working for domestic insurers and international loss adjusting businesses, focusing on Upstream and Mid-Stream Energy claims. He later added Renewable Energy experience involving wind turbines, solar farms and hydroelectric dams.

David is a car fanatic, especially 60s and 70s muscle cars. He particularly likes Pontiacs and currently owns a '69 Pontiac GTO convertible. Over dinner (preferably Asian cuisine) he would love to pick the brain of singer, songwriter and actor Jimmy Buffet, and listen to some of his great stories. David has been held at gunpoint more than once in his life.



Iain Mac Bean
Executive Adjuster

Iain is South African and has spent over 30 years working in the insurance industry. Over that time he has handled claims in the USA, UK, Caribbean, Central America, Middle East and Southern Africa. His broad range of sector experience includes Energy (with a focus on Renewables), Construction, Manufacturing and extensive CAT management experience.

Iain has a love for water and his ideal day would be spent sailing out to sea, beyond the sight of land. He predicts he will probably end up living on a boat on the eastern seaboard of the USA within the next five years. He also wishes he had more time to explore and experiment with new inventions.



Aaron Prefontaine
Executive Adjuster

Aaron began his career working at Suncor in the HR/ payroll department, before moving into systems integration. He later joined Marine Terminal Corporation/ Ports America to assist with US West Coast Port System development. After relocating to Houston in 2008, Aaron moved into the loss adjusting industry and joined Integra in 2017.

Aaron specialises in claims across the Energy (Midstream and Downstream) and Commercial Property sectors, and has handled complex commercial and pollution liability claims. In recent years, he has worked on some of the USA's largest Energy losses.



Andres Alvarez
Executive Adjuster

Andres graduated as an architect and joined a specialist firm of engineers and surveyors working closely with the insurance industry. He later moved into loss adjusting, initially handling losses in the Onshore and Offshore Oil & Gas sector before broadening his exposure to manage a diverse range of large and complex Property and Casualty losses resulting from CAT events across the Latin America region.

With his architectural background, Andres would love to have met the late Swiss-French architect, Le Corbusier (who was influential in urban planning), to understand how he conceptualised space to design buildings. Andres has recently taken up golf, and he likes to ride his Harley Davidson.



Patrick Hardy
Executive Adjuster

Patrick is an experienced property damage and business interruption adjuster based in Chile who joined Integra in 2015. He has handled losses across a wide variety of industries throughout the Southern American region.

Patrick likes most music genres, however his favourite is probably reggae which grew on him during the year he lived in Jamaica. Before becoming a loss adjuster, Patrick studied dentistry at university. Having been interrupted briefly by an earthquake which damaged the university campus, he started working for a loss adjusting firm as a translator/interpreter while the repairs were ongoing. He loved the work so much that he left dentistry and became a loss adjuster.



Mark Therrien
Executive Adjuster

Mark has spent over 25 years working in the energy and insurance industries, including the Downstream Oil & Gas, Power and Manufacturing sectors. He commenced his career as a Process/Systems Engineer designing processing units, utilities and offsite systems at M.W. Kellogg Company, before joining Phillips Petroleum as a Production Engineer. He later worked at Shell as an Energy Consultant, before moving into loss adjusting.

Mark's perfect day would consist of an early round of golf with friends, followed by a nap and ending with dinner and dancing with his wife. His favourite cuisine is Tex-Mex. If he could choose anyone famous to invite to dinner, it would be television host Steve Harvey for entertainment value.



Arturo Suaste
Senior Adjuster

Arturo graduated as an Automation and Control Engineer, specialising in boilers and pressure equipment. He began his career working as a Maintenance Manager on a governmental medical centre, where he gained significant experience of Power Generation and Machinery. Since becoming an adjuster in 2004, Arturo has handled large and complex Property, Power Generation, Oil, Gas and Petrochemical claims.

Arturo admires the Mexican scientist, Tessy María López Goerne, and would love to meet her to discuss her investigations and how she continues to lead her field of expertise, particularly after recovering from cancer and a stroke.



OFFICES IN HOUSTON, MIAMI, PITTSBURGH, MEXICO CITY AND SANTIAGO.



STRATEGIC PARTNERS IN CANADA, ARGENTINA, BRAZIL, ECUADOR, MEXICO, PERU AND URUGUAY.



EASTERN AUSTRALIA FLOODS: THE UNIQUE CHALLENGES OF A LARGE-SCALE, LONG-TAIL CAT



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The 2022 floods in eastern Australia were among the country's worst ever flooding disasters. Between late February and early March, south-eastern Queensland experienced intense, record-breaking rainfall caused by a slow-moving middle and upper trough system, moist winds and a surface trough.

HIGHEST FLOOD LEVELS FOR 130 YEARS

During w/c 22 February 2022, over 50 locations in south-eastern Queensland and north-east New South Wales experienced over 1,000mm of rainfall. In some areas, rainfall was at least 2.5 times the February monthly average (based on the 1961 to 1990 period), while other places received more than five times their average. Brisbane measured 80% of its annual precipitation in just three days. In the two previous wet years, soils had become saturated and river levels high. Further record rainfall in February 2022 resulted in flash flooding and riverine flooding. Some areas of south-eastern Queensland recorded their highest flood peaks since 1893.

CAT EVENT WITH OVER 230,000 CLAIMS

The Insurance Council of Australia (ICA) declared the event a CAT, which was further evidenced by 230,000 claims notified across Queensland and New South Wales. By September 2022, exposure to the event was reported to be AU\$6 billion, a record for the Australian insurance industry. As well as 22 deaths and widespread property damage, the flooding caused mass evacuations, transport network failures, business and school closures, and food shortages.



**80% OF ANNUAL
RAINFALL IN 3 DAYS.**

**AU\$6 BILLION OF FLOODING
CLAIMS.**

LOGISTICAL CHALLENGES

- ▶ **SCALE:** The floods submerged a huge area. Almost half of the east coast of Australia was underwater, affecting thousands of homes and businesses.
- ▶ **DURATION:** The worst of the flooding lasted for over two weeks. Conditions escalated and damage compounded over that period.
- ▶ **ACCESS:** Severe weather and floodwater made roads impassable and restricted other forms of transport to and from the affected areas.
- ▶ **RESOURCES:** Availability of people and equipment was limited due to previous bushfires and fallout from the ongoing Covid-19 pandemic restrictions.
- ▶ **COVID-19:** Australia's Covid restrictions on the free movement of people prevented overseas help from reaching flooded areas and closed Queensland's neighbouring state borders.
- ▶ **SUPPLIES:** Even before the event, Australia's construction industry had been struggling with cost, supply chain and staffing issues.



**INSURED LOSSES
OF AROUND
AU\$5.65 BILLION.**

INSURER AND LOSS ADJUSTING ISSUES

- ▶ **VOLUME OF CLAIMS:** After six weeks of rainfall, around 230,000 insurance claims were notified, including over 96,000 in the peak period (25 to 28 February 2022), of which about 80% were household properties. According to the ICA, as of 30 November 2022, insurers have already closed 70% of claims and paid out AU\$3.59 billion, leaving around AU\$2.04 billion outstanding for the 30% yet to close.
- ▶ **LOSS MITIGATION:** Poor site accessibility made it difficult to mitigate losses. Rising water levels exacerbated damage and prevented mitigation.
- ▶ **BANDWIDTH:** Multiple incident sites spread over a wide area and a long-tail event required significant insurance industry resources.
- ▶ **DEMAND FOR EXPERTISE:** Many claims required technical input, so hydrologists, loss adjusters and other specialists were in high demand and short supply.
- ▶ **POLICY LIABILITY DECISIONS:** Covid-19, the lack of resources industry-wide and access issues made it difficult to determine extent of liability. Uniquely in Australia, most policies contain sub-limits for flooding or exclude flood cover altogether. The causation investigations to determine the origin of the water (flood or storm) conducted by hydrologists and subsequent debates around the water's origin often prolonged the process.
- ▶ **LOCAL AUTHORITIES:** Some local and regional authorities opposed the rebuilding of damaged properties in flood zones. Sometimes, authorities had to be consulted on the terms, timings and amounts of claims payments, all of which delayed the indemnification of policyholders.



THE INTEGRA SOLUTION

Integra adjusters quickly had eyes 'on the damage' using IRIS (Integra Remote Inspection Solution) to gain remote access to multiple sites and assess the extent of damage to commercial properties within hours of being instructed. The use of virtual technology allowed us to deploy our most suitably qualified and experienced adjusters, despite many being thousands of miles away and unable to attend in person due to Australia's closed international borders and stringent Covid-19 travel restrictions.

Our locally-based teams and partners were able to visit sites, meet the insured and provide face-to-face support and customer service. We also worked proactively with insurers to attend 'at-risk' sites and used IRIS, drones and other technologies to review water levels and impacts on insured property, even before some claims were submitted.

Integra provided a mix of specialist skillsets and fielded a highly qualified team of chartered loss adjusters and chartered engineers who worked hand-in-hand with other stakeholders to manage expectations early and ensure timely claims management and resolution. All of this helped the insurers to mobilise and prioritise their resources, and fast-track smaller claims.

THE FUTURE: LARGE-SCALE, LONG-TAIL CATS

The 2022 eastern Australia floods have shown that an effective response to CAT events requires appropriate skills and resources at scale, many of which are not always in plentiful supply locally. Where the best expertise is based overseas and international borders are closed or restricted, insurers and loss adjusters must have contingencies in place (including appropriate technologies) to get on-site inspections underway as quickly as possible.

Of one thing we can be certain, as climate change is set to make all forms of extreme weather more commonplace in the future, insurers and loss adjusters must prepare to handle the significant losses associated with large-scale, long-tail CAT events on an increasingly frequent basis.

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HYDROGEN ELECTROLYSIS: HOW SCALE IS IMPACTING THE INSURANCE MARKET



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September 2022 saw the world's largest hydrogen electrolyser unit delivered to a site in Norway for validation and testing. As the hydrogen economy expands, we are likely to see ever-larger electrolyser units developed in a bid to win economies of scale and produce hydrogen more cost-efficiently. But, what does this mean for the insurance market, and what lessons can we learn from the past?



**ENVIRONMENTAL
FOCUS HAS IMPROVED
EFFICIENCY THROUGH
CHANGES TO EQUIPMENT
DESIGN AND SIZE.**

ELECTROLYSIS TECHNOLOGIES

Until recently, the predominant electrolysis technology used for producing hydrogen was alkaline-based, and electrolytes contain up to 30% potassium hydroxide by weight. Generally, such units have a maximum stack size of approximately 6MW and their origins can be traced back to the early electrolysis innovations of 1789. But while the technology is well-proven, it also suffers from low energy efficiency and only performs at its best under constant conditions.

The second most common technology is Proton Exchange Membrane (PEM) electrolysis. This technique was invented in the early 1950s and developed in the mid 1960s. Typically, PEM units are produced to a maximum stack size of 2MW,

although this has been increasing in recent years. The technology benefits from higher efficiencies, smaller size and the ability to operate effectively under changing loads. Looking forward, we can expect PEM electrolysis to be the preferred technology to couple to renewable electricity supplies for the production of green hydrogen.

Alongside PEM, technologies such as Solid Oxide and Anion Exchange Membrane electrolysis bring additional benefits for large-scale hydrogen production from renewable power sources. However, these are at much earlier stages of development and are unlikely to become mainstream until some time in the future.

LARGER ELECTROLYSERS

In the past, hydrogen production by electrolysis has not been widely adopted at scale because it is significantly more expensive than thermochemical methods. However, a recent focus on environmental issues has led to a reassessment of the process and a new emphasis on improving its efficiency through changes to equipment design and size.

Over the last three years, various large electrolyzers based on both alkaline and PEM technologies have been brought to market. Units have grown in size, from 8MW to 10MW, and from 20MW to the latest 30MW unit in Norway. We can expect future demand to drive further expansion, with a 100MW PEM unit already underway in Egypt.



**ELECTROLYSERS
HAVE GROWN
IN SIZE, WITH A
100MW PEM UNIT
UNDERWAY IN EGYPT.**

THE CHALLENGE FOR THE INSURANCE MARKET

As equipment develops to meet the needs of a growing hydrogen market, we will see new materials, designs and manufacturing techniques employed. Margins may be reduced, either to increase efficiencies or cut cost. Physical dimensions could alter significantly and operating characteristics differ dramatically to those experienced previously.

While equipment designers and manufacturers may profit generously from these developments, failure is always a risk. Manufacturers, developers and insurers must strike a balance to ensure that entrepreneurial, trade and insurable risks are shared appropriately.

LESSONS OF THE PAST

The ongoing development of hydrogen electrolysis is not significantly different to the technological advances made in other fields in the past, such as combustion gas turbine generator-based power plants and wind power.

Back in the late 1980s, combustion gas turbine-based power plants were an oddity, with small units of limited capacity used for peak lopping purposes only. But the 1990s saw numbers rise significantly as a greater demand for 'clean' power from gas and various manufacturers pushed the boundaries of materials choice, equipment sizing and cooling technologies. Units grew in size beyond the 20–40MW range and are now approaching 500MW. Today, equipment is configured in combined cycle with steam-raising plant and steam-driven generator sets, and combustion gas turbine-based technology forms one of the world's major power generation methods. Whilst development in this field continues at pace, we should not forget that its technological advancement has thrown up a number of challenges over the years.

At the turn of the 21st century, typical wind turbine generator output was in the order of 500KW–1.0MW per unit. Since then, turbines have grown enormously, so that today there are several land-based units of 5.0MW or greater. Meanwhile, the industry's move to offshore has resulted in turbines as large as 20MW and introduced a completely different set of risks. As wind power technology has up-scaled, manufacturers and operators have had to resolve numerous technical issues caused by factors such as larger blade size and heavier loadings.

PUSHING THE BOUNDARIES OF TECHNOLOGY

The hydrogen economy as a whole includes various elements of mature technology which have been used successfully in similar industries over the years. Gas compression, cooling and storage are all fairly well known from the LNG industry, and green power sources are also widely understood. Although the choice of materials used will be affected by the unique characteristics of the gas, we can find similarities across a number of other industrial processes. However, there are areas of hydrogen production where known technologies are being pushed to new boundaries.

The underwriting of developing technology risks is not new, but it does need to be managed accordingly. Looking to the past and focusing on what has happened in similar industries will help us shape a successful way forward for insurers of the growing hydrogen economy.

THE CYBER RED QUEEN EFFECT¹



Gareth Cottam

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Since the 1990s, a digital arms race has been underway, with each side developing in sophistication and refinement. Today, cyber criminals have honed their business models into well-oiled machines that run like legitimate businesses, with office space and 24hr telephone lines manned by call centre staff. However, their end-goal of receiving a significant ransomware payout is unchanged. Similarly, law enforcement and cybersecurity professionals continue to improve their techniques. In the case of the Colonial Pipeline attack in the USA in May 2021, the FBI was able, for the first time, to track down the recipients of cryptocurrency (Bitcoin) ransom payments.

In recent years, victim organisations have suffered the inconvenience and reputational damage of having their entire company taken offline. Often, they are unable to access files, issue invoices, or use their emails for several days and sometimes weeks, which can result in considerable business interruption losses. In other instances, weakness in their supply chain is responsible for triggering contingent business interruption losses.

1 "The 'Red Queen effect': to stay in a (competitive) place you have to run very hard, whereas to get anywhere you have to run even harder."

The Red Queen's advice in Lewis Carroll's 'Through the Looking Glass'

SUPPLY CHAIN ATTACKS

By hitting a supplier downstream in the supply chain, attackers give themselves the option of extorting multiple companies. This was demonstrated by several high-profile ransomware attacks in early 2021.

A prime example is Quanta's data breach, which allegedly involved the key intellectual property of Apple. This incident also showed how the tech industry can face significant risks when it relies on a few key suppliers. As well as Apple, Quanta supplies Dell, HP and other large tech companies, so any breach of Quanta's customer data would be highly valuable for attackers. Another example occurred earlier in the year (Feb 2022), when Toyota Motor suspended 14 Japanese factory operations and lost the output of around 13,000 cars, after a supplier of plastic parts and electronic components was hit by a suspected cyber-attack.

More recent instances, in the latter half of 2022, included the Optus and Medibank cyber-attacks in Australia. These

very public attacks caused ripples throughout the Asia Pacific region. They highlighted that, even if an attack happens in another country, the parent company may suddenly have regional or global exposure. This is especially important to consider where companies have subsidiaries in particularly litigious jurisdictions.

Therefore, for Risk Managers, it is no longer simply about ensuring the robustness of their own company's cybersecurity policies and measures. They must also make certain their suppliers maintain equally high standards of cybersecurity.

Cyber-attacks continue to evolve as hackers look for new ways to extort monies from victim organisations. As the Covid-19 pandemic compelled employees in many largely unprepared organisations to work from home, 2020 saw a shift towards stolen data and ever-increasing psychological pressures on victim organisations to pay ransoms.

A NEW ERA OF CYBER-THREAT

Looking ahead to 2023, as geopolitical tensions continue to rise and globalisation starts to wane as a direct result of the pandemic and Russia's invasion of Ukraine, it is likely that countries will adopt increasingly different and localised IT systems and IT regimes. These trends set the stage for an unprecedented era of cyber-attack.

Inevitably, systemic risk is at the forefront of everyone's mind. Chief Information & Security Officers (CISOs) and IT security professionals are already 'putting out fires' in a responsive manner and their ability to access strategic business partners will vary depending on the maturity of their company's cybersecurity strategy. CFOs are trying to wrap their heads around the enterprise risk that a multi-jurisdictional cyber event and subsequent business interruption loss could have on their EBITDA. Risk Managers are trying to comprehend the technical complexity of threats which they often have limited exposure to and experience of.

KEY CHALLENGES FOR CISOS



Hybrid/home workforce



Growing frequency and sophistication of attacks



Increasing prominence of IoT (Internet of Things)



Emerging technologies like quantum computing and AI



Phishing emails



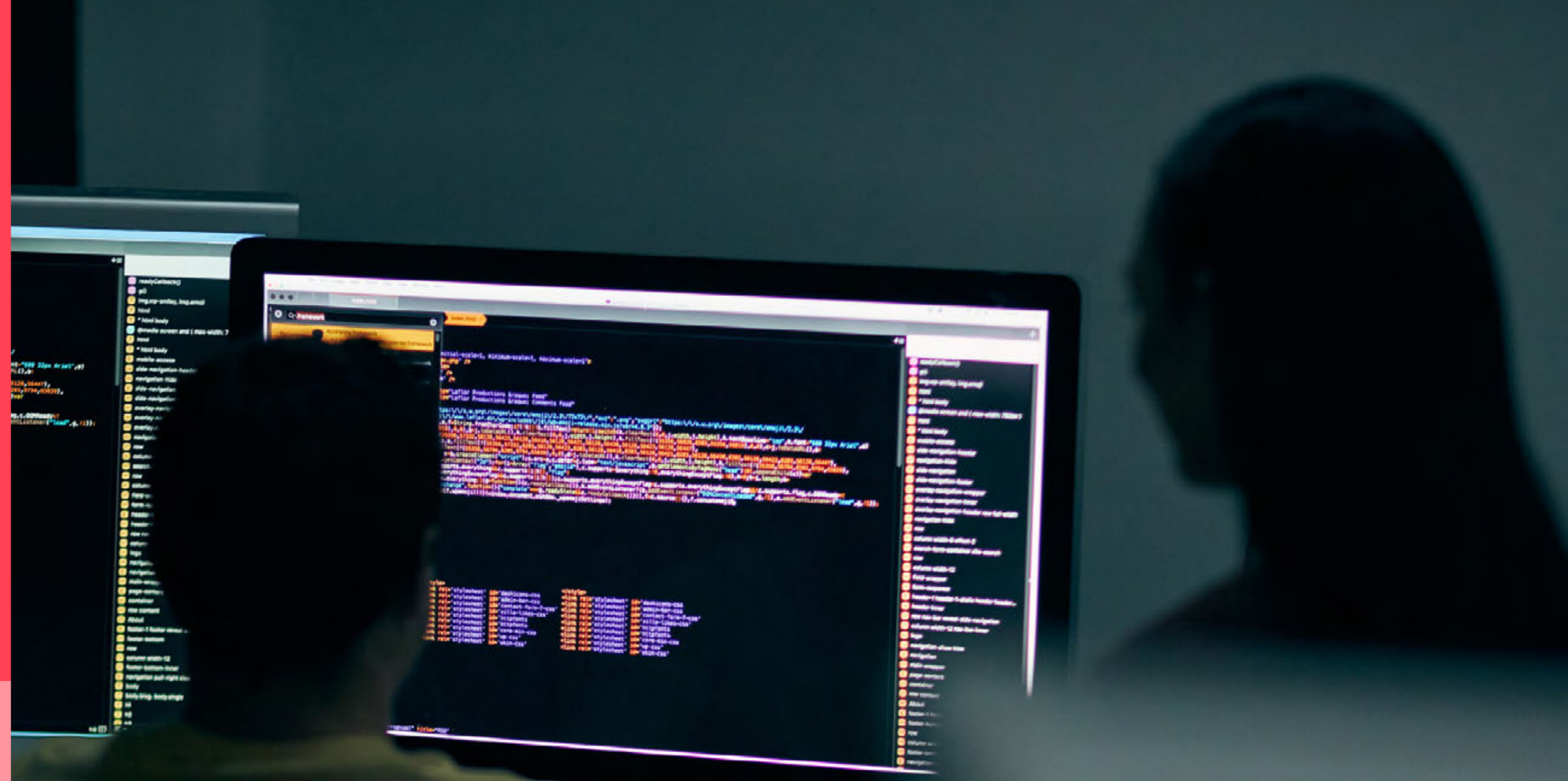
Skills gaps and talent shortages



Lack of business buy-in, budget constraints



Human error



"IN 2020 THE AVERAGE RANSOM PAYMENT VALUE WAS US\$312,493, A 171% INCREASE IN FOUR YEARS." *

*The Cost of Ransomware Attacks; Why and How You Should Protect Your Data. Rachel Ackerley August 10, 2021.

The focus of any victim organisation's response to cyber incidents should be on three core elements: **containment, mitigation and recovery.**

Speed of response is critical, particularly at the outset of a cyber incident, as is the fast-moving engagement of experts to ensure containment and facilitate fast rectification. This helps to reduce BI losses. Based on the losses on which Integra is appointed, we can testify that these costs can be considerable, even if the timeframe involved seems relatively minor.

Moreover, it is important to measure these costs and quantify the period of outage. But this demands technical experts who can support the measurement of BI and incident response costs. With our in-house technical expertise, Gerard Ward, and my background in forensic accounting, Integra can assist throughout the process to ensure a smooth claim management is achieved.

The key question for insurers is whether their policies are keeping pace as the risk they are covering continues to evolve. Are they able to modify their policies at the same speed as the threat actors are evolving their tactics to extort monies from victim organisations?



INTEGRA ON THE ROAD



Doug Horne

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2022 saw the return of many tried and tested conferences around the world. In the second half of the year, Integra had the pleasure of supporting some of these events, both through attendance and giving presentations to delegates on topical issues and trends.



ASIA POWER FORUM, SINGAPORE

The Asia Power Forum returned to Singapore for the fourth time in September, following cancellations in 2020 and 2021 due to Covid. As with previous years, the event ran over two days, with an afternoon primer session designed for young professionals and new market entrants on day one, followed by the main forum session which ran for the whole of the second day.

The event, which has become increasingly popular with the insurance community, featured speakers from Europe, the United States and Asia, and attracted over 440 registered delegates from across the globe. Tony Chapman, Managing Director of Integra Asia, and a member of the organising committee remarked:

“As always, the committee try to make the event topical on the issues of the day. As well as themes around conventional power, there were sessions on the current supply chain challenges, inflation issues and the pivot towards renewable power systems in Asia.”

Integra colleagues from Singapore, Australia, the Middle East and UK attended, together with representatives from several of Integra’s strategic partners, including Nagamatsu (Japan), lasco (Korea), Malayan (Malaysia) and Mehta & Padamsey (India).



ONSHORE ENERGY CONFERENCE, LONDON

This year’s Onshore Energy Conference (OEC) took place in London in November and focused on the dramatic and fundamental developments underway in global energy. The event’s packed agenda explored how these changes are having a profound effect on the power generation and energy industries.

Topics covered included the potential for hydrogen and nuclear to be remedies for the ongoing global energy crisis, how ESG can become a pathway to achieving net-zero, and the global drive to decarbonisation. The conference also featured interesting keynotes from Myles Allen (about the role of carbon capture technology in realising net-zero emissions) and journalist, author and broadcaster Tim Marshall (about the power of geography and how it dictates the future of the world).

Integra’s Szen Ong hosted a breakfast briefing that discussed how the onshore energy sector can learn lessons from the offshore energy industry.



NEW ENGLAND RENEWABLE ENERGY CONFERENCE (NEREC)

In October, Integra supported the New England Renewable Energy Conference in Connecticut USA, an annual event for subject matter experts within the renewable energy space. During the conference, Integra’s Szen Ong spoke about floating offshore wind and the risks and losses arising from subsea cabling.



IN-HOUSE PRESENTATIONS

At Integra, we take pride in sharing insightful data and information. Over the last 24 years our adjusters have accumulated a wealth of experience in handling multiple specialty claims. Their learnings provide a set of unique perspectives, many of which are of great value to our clients and industry partners.

Throughout the second half of 2022 we have conducted a number of presentations to industry bodies, insurers and brokers, either at client locations or Integra offices. Subject matter covered has ranged from causation trends for claims handled and lessons learned from specific projects, to industry topics such as BI and DSU, construction contracts and many more.

To find out more about these presentations and other topics covered by Integra, or to request your own specific talk, please contact me at Doug.Horne@integratechnical.com

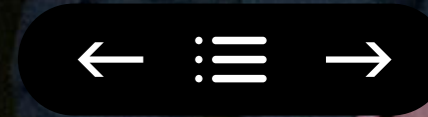


AN OPPORTUNITY TO GATHER AS ONE

After a two-year hiatus, 2022 saw the return of Integra's annual client dinner in London. Over 80 guests from the UK, Europe and US descended on The Great Hall at Lincoln's Inn. Following a welcome from Integra Chairman Ewan Cresswell, guests settled down to enjoy good food, fine wine and lively conversation with friends from across the market. Throughout the meal, Peter Lunzer entertained everyone with anecdotes about the history and production of the various wines which were sampled over dinner.

Prior to the Asia Power Forum, the Integra team hosted a dinner at Nicola Le Restaurant in Singapore. Colleagues from Integra and representatives from our strategic partners were joined by insurer claims personnel and underwriters, and a very enjoyable evening was had by all.

Finally, the entire Integra Australia and New Zealand team gathered face to face for the first time since 2019. An internal workshop was followed by a drinks reception at the Tank Bar in Sydney. After so long apart, this was a great opportunity to introduce the wider team to over 60 clients, partners and friends from across the market.



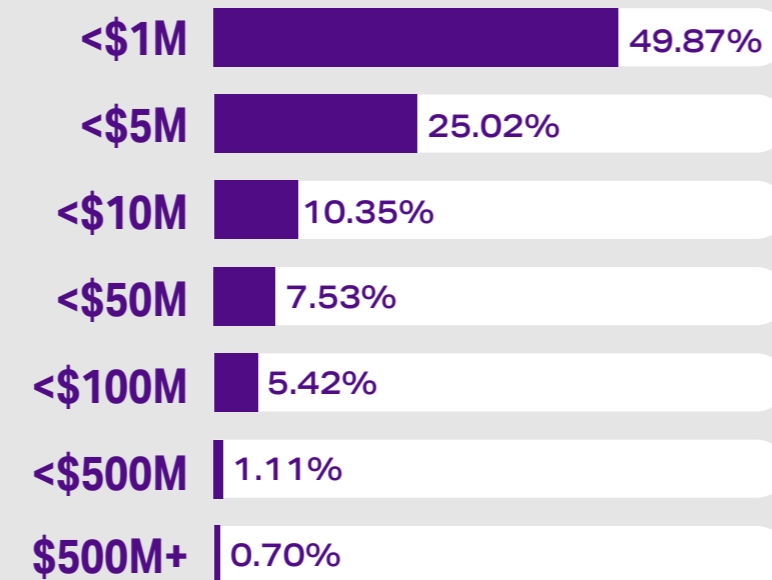
GROWTH FOR INTEGRA

2022 has been another exciting year for Integra. Take a look at our stats* or visit integratechnical.com

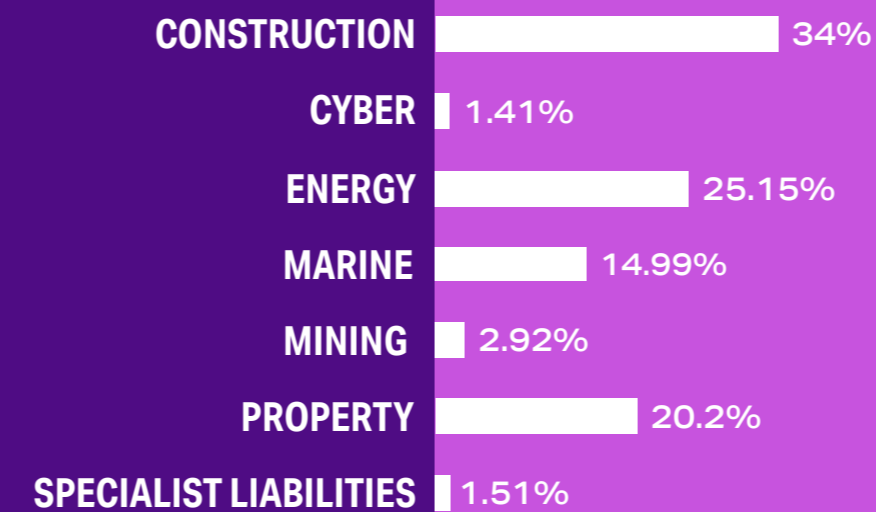
*Stats from 01.01.22 to 18.12.22

1034 NEW CLAIMS RECEIVED IN 2022

CLAIM VALUES IN 2022:



NEW CLAIMS BY SECTOR IN 2022

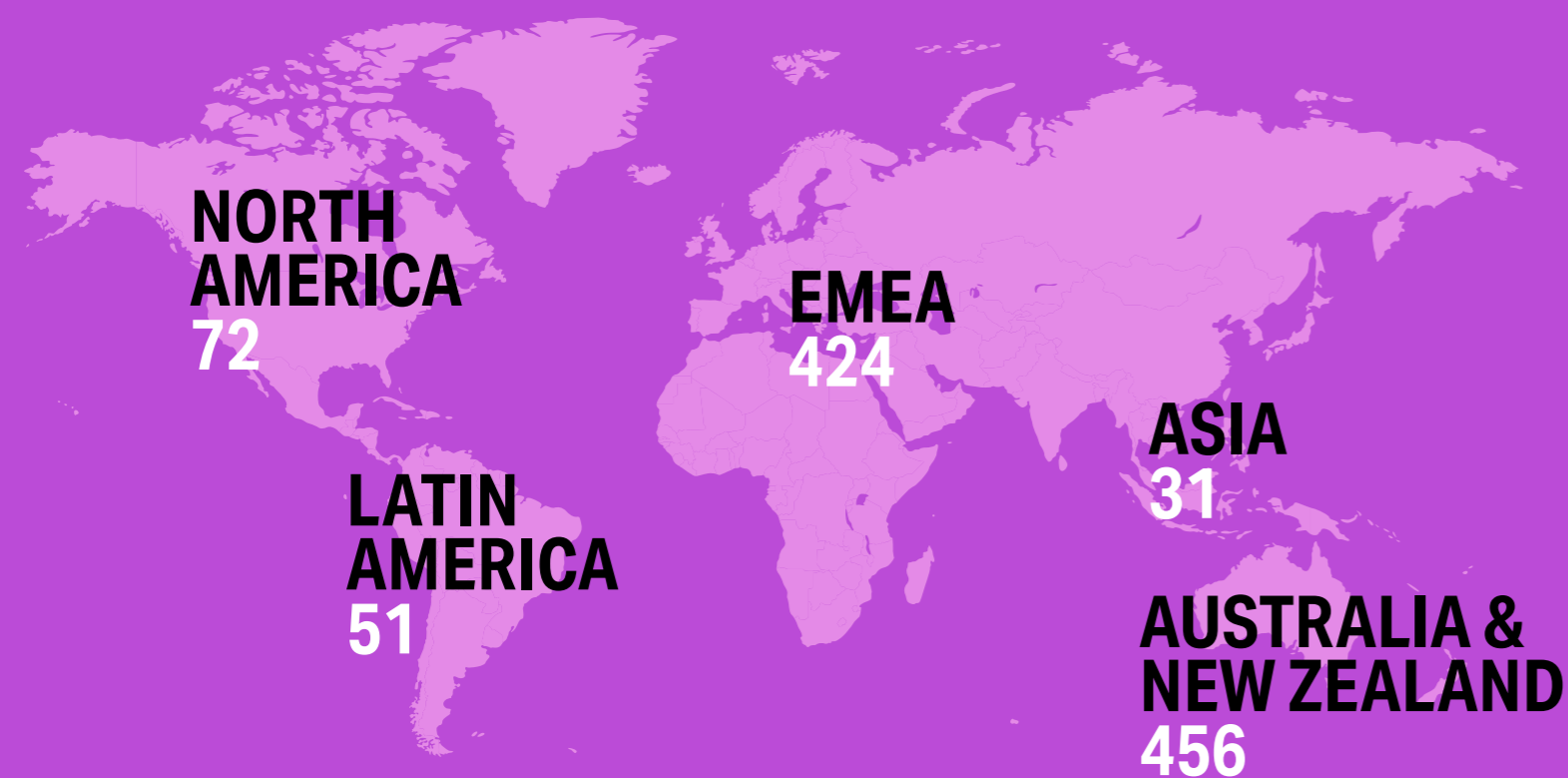


OUR PEOPLE



INSTRUCTIONS BY REGION 2022

TOTAL: 1034



- LAUNCHED JANUARY 2022
- PROJECTS DELIVERED - 22
- PROJECTS IN PROGRESS - 14
- PROJECTS IN PIPELINE - 12
- # OF COUNTRIES - 19

AUSTRALIA, BANGLADESH, CHILE, GEORGIA, GERMANY, GREECE, ISRAEL, ITALY, KSA, KUWAIT, MONTENEGRO, NEW ZEALAND, NIGERIA, PANAMA, POLAND, SOUTH AFRICA, UAE, UK AND USA

15 OFFICES **70 COUNTRIES WITH STRATEGIC ALLIANCE LOCATIONS**

3 NEW ALLIANCES IN:
SOUTH AFRICA--CANADA--KOREA



integrated

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This publication is for the benefit of insureds, insurance brokers, insurers and other stakeholders involved in the services that are provided by Integra Technical Services Ltd. It is not legal advice and is intended only to highlight general issues relating to its subject matter but does not necessarily deal with every aspect of the topic. Produced by Integra Technical Services, 6th Floor, 117 Houndsditch, London EC3A 7BT.



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