integrated

Bringing clarity to complex insurance claims

Issue Seven 2019

FLOATING RENEWABLE ENERGY ASSETS

HIGH GRADE ORE
AND A QUESTION OF INDEMNITY

INDUSTRIAL INTERNET OF THINGS:
THE INSURANCE CONUNDRUM

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Hybrid solutions are now being introduced into many islands. As well as the usual risks relating to solar, renewables and diesel generation, developers and operators will need to consider additional risks associated with transport, labour, geographical and social risk.

PAGE 18

We would like to thank Barry Davies(Environmental Resources Management Limited), Michael Hook (Strainstall), Frank Rose (Strainstall) and Brad Ebel (MDD Forensic Accountants) for their invaluable contribution to this issue of **integrated**.

We are grateful to Equinor for use of the images on the front cover and on pages 10, 11 and 12. Illustrations © Equinor

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integra
TECHNICAL SERVICES

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Welcome to Issue Seven of **integrated**, our magazine devoted to the specialty insurance lines marketplace and sharing knowledge, experience and insight to improve claims management. We hope you enjoy reading this issue and, as always, would welcome your feedback and ideas for future articles.

2019 has witnessed a number of high profile mergers and acquisitions in the specialty insurance market, whether it be two insurers, two brokers or two loss adjusting companies coming together. These firms are all hoping to gain advantages from having greater resource and wider reach than they've ever enjoyed before, but it is notoriously challenging to merge two into one.

As a consequence we're expecting to see some of the risks we've worked on for many years being placed by different brokers with different (re)insurers leading the claims, as well as existing (re)insurers having different line sizes, and those in positions of influence (Claims Agreement Parties) changing from some of the players we've seen in the past. In an environment where customer satisfaction is being measured more frequently than ever, it's going to be fascinating to see how these new relationships are tested when it comes to the handling of a complex loss.

We are looking forward to supporting both new and old stakeholders, walking them through issues such as causation, interdependency, the interpretation and application of series loss clauses and many others, in the future. As you will see from the article on page 14, we have, ourselves, been quietly making strides to increase our resource and reach as we aspire to be the first choice loss adjusting firm in the classes of business we serve.

In 2020 we will continue to expand our team and invest in their development – including our World Class Loss Adjuster Programme and other in-house training, CILA examinations and working with more senior colleagues.

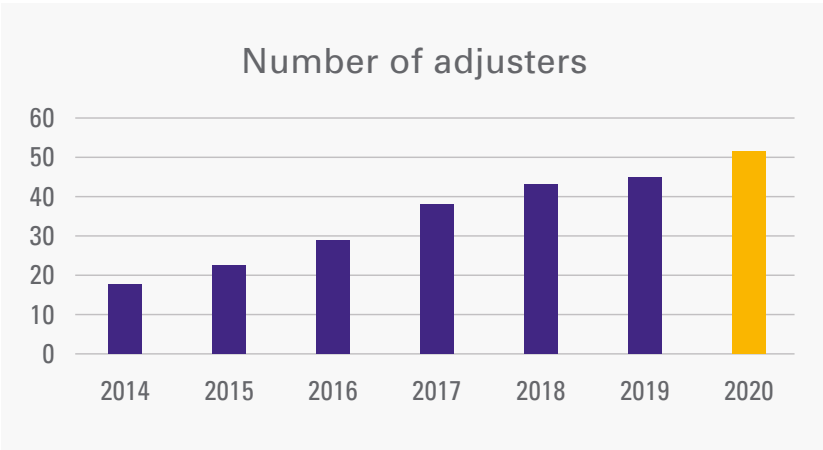
We will, also, be introducing new elements to our service proposition including a 'First Notification of Loss' app and Claims Insights Database –new developments that we are extremely excited about.

To our long-standing stakeholders ((re)insurers, brokers and risk managers) thank you for your continued support this year and to those of you who are new to instructing Integra Technical Services, your support has been gratefully received and we hope to work with you again in 2020.

Leo Dixon BSc (Hons)
Chief Executive Officer
Integra Technical Services Limited

BROADER APPEAL

Figures released by Integra Technical Services show that their appeal has broadened as they continue to add additional resources and new lines of business.



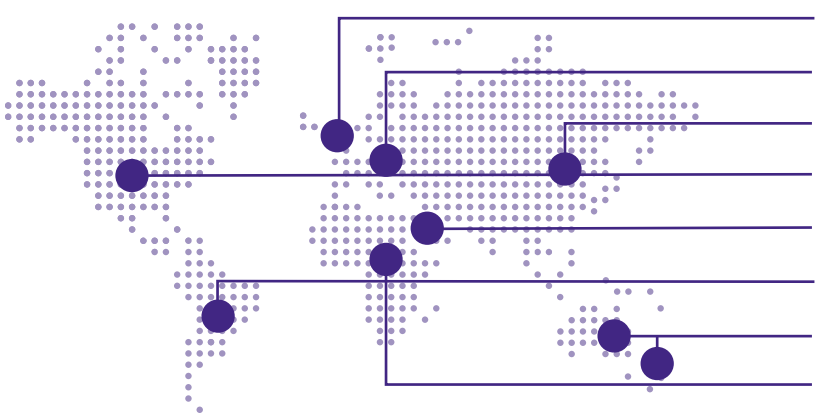
As the article on pages 14 explains Integra Technical Services have just come to the end of a five year business planning cycle that has seen them double the number of loss adjusters and add four new lines of business to their proposition. This growth story is going to continue into the next five years as they make great strides to achieve their aspiration of being the first choice adjuster in every sector they serve. **See Ewan Cresswell and Leo Dixon interview on page 14**

"The number of claims we adjust with a value over USD50million has in fact increased. But our broader proposition is resonating with our clients. More lines of business, a larger and more diverse team and, importantly, a service offering that is tailored to meet the demands of less complex and lower value claims"

Leo Dixon
Chief Executive Officer

Integra Technical Services H2 2019 New Instructions

In the second half of 2019 Integra Technical Services received new instructions in 30 countries of the world



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Clyde's Power Hour

2019 saw global law firm Clyde & Co launch a new quarterly seminar series - Clyde's Power Hour – for the power and energy insurance markets in Southeast Asia. The final event of the year took place on 31 October with Alistair Lamb (pictured above), Managing Director, Asia for Integra Technical Services speaking about:

1) Claims trends in Asia in the downstream energy and power sector, including:

- **Slowdown in power and downstream energy claims, but renewables slowly increasing**
- **Transformer, generator and hydro losses at the forefront of power claims**
- **Lack of OEMs, repairers and experts causing problems**
- **Larger turbines, transformers etc. posing logistics issues for remote sites**

2) Asian Predictions for 2020:

- **Coal and gas power will remain dominant but renewable energy projects booming**
- **Energy and petrochemical demand continue to increase**
- **Refinery upgrades to meet changing demand (changing feedstock, environmental, IMO 2020)**
- **Power/downstream claims expected to remain flat**
- **Ongoing attritional losses due to poor maintenance**
- **Questions remain over the impact of the 'hardening' insurance market on power/downstream claims**

To discuss the points or obtain the slides please contact: alistair.lamb@integratechnical.com

40% IN 2018 AND 2019 INTEGRA TECHNICAL SERVICES ADJUSTED CLAIMS IN

78 COUNTRIES

(40% OF ALL THE COUNTRIES IN THE WORLD).

MIRACON 19

Integra Technical Services sponsored the Mining Insurance and Risk Association's (MIRA) second global conference, which provided the opportunity for stakeholders in the mining risk and insurance industry to convene, connect, and collaborate on the top issues facing the industry. 172 delegates attended the two day event at the Fairmont Hotel in Toronto on 4 and 5 November 2019 with the sustainability theme encompassing some of the biggest issues in the mining industry today including social, environmental, and energy sustainability, tailings disposal, loss lessons, and business interruption exposures.

Leo Dixon, Chief Executive Officer of Integra Technical Services is a MIRA board member and treasurer and reported on a vibrant conference with as many as eight risk managers or other mining company representative speakers giving an insight into their responsibilities, ambitions and challenges.

FURTHER EXPANSION AT INTEGRA TECHNICAL SERVICES

Integra Technical Services has added six more loss adjusters to their team bringing the total to 44, and including a new USA Managing Director. These new recruits bring expertise that includes civil engineering and infrastructure, control of well, midstream and downstream energy, power generation, fracking and shale, mining, manufacturing, investigative accounting and specialist liabilities.

In addition, they have announced new Operations, Finance and Support team appointments in the UK, Australia and the Middle East boosting the team to 15.

"AFTER CONSULTATION WITH OUR CLIENTS WE'VE EXPANDED OUR TEAM IN AREAS WHICH CONTINUE TO EXPERIENCE A HIGH DEMAND FOR LOSS ADJUSTING SERVICES. WE'RE DELIGHTED THAT OUR AMBITION AND WORKING ENVIRONMENT CONTINUE TO ATTRACT MARKET LEADING TALENT."

Leo Dixon,
Chief Executive Officer,
Integra Technical Services

Fraser Galbraith
London
Engineering Adjuster

Civil & environmental engineer working on construction & engineering, energy and renewables claims.

Ghassan Abumarar
Dubai
Engineering Adjuster

Industrial & environmental engineer working on construction & engineering, energy and renewables claims.

Keith Baker
Houston
Executive Adjuster

Control of well, downstream and midstream energy, power generation, boiler & machinery and ports & terminals.

Don Gibbs
Pittsburgh
Investigative Accountant

Review and analysis of property, business interruption and extra expense claims.

Phil Moretti
Houston
Managing Director - USA

Downstream and midstream energy, power generation, mining and manufacturing.

Vincent Skipper
London
Specialist Liability Adjuster

Personal injury, public / products liability and professional indemnity lines of business.

Tricia Flynn
London
Operations Assistant

Supporting the Europe, Middle East and Africa and USA teams.

Tammy Smith
London
Operations Administrator

Supporting the Europe, Middle East and Africa and USA teams.

Gretta Fernandes
Dubai
Business Administrator

Supporting the Middle East business.

Shikha Aggarwal
Auckland
Administration and Operations Officer

Project management and execution of company policies and data management for the Australian and New Zealand businesses.

FOCUS ON

INTEGRA'S INTERNATIONAL REACH

Integra Technical Services offer a local service in 21 countries of the world.

Alongside their owned offices in Australia, Chile, Germany, Mexico, New Zealand, Singapore, United Arab Emirates, United Kingdom and United States of America they have strategic alliances with leading independent loss adjusters:

acglobal

With offices in Turkey, AC Global offers a fast, efficient and consistent service from an operating platform consisting of chartered loss adjusters, consulting engineers, approved contractors and specialist suppliers.

BELL Bell Survey Ltd. Established 1976

Bell Survey Ltd was established in 1976 and is one the most dynamic and leading surveyors, adjusters and inspectors in Thailand.

Cooper BROS

The Cooper Brothers group of companies provides high quality loss adjusting and surveying services, with offices in Argentina, Brazil, Ecuador, Peru and Uruguay.

HANLAY & COMPANY (PVT) LTD.

Hanlay & Company (Pvt) Limited is Pakistan's leading Loss Adjustment and Risk Assessment firm, providing services to the Insurance and Risk Management Industry since 1963.

labb Loss Adjusters Bureau

LABB LLC takes the leading position in Russia in providing independent insurance loss adjusting services with offices in Russia, Ukraine and Uzbekistan.

Spectrum Adjusting, based in Canada, is a firm of highly skilled claims management and loss adjustment professionals specialising in managing and settling large complex losses.

INDUSTRIAL INTERNET OF THINGS:

TWO SIDES OF THE SAME COIN

Gerard Ward, Cyber & Technology Loss Adjuster at Integra Technical Services, sets out the challenges presented for the insurance markets by the era of Industry 4.0, also known as the Industrial Internet of Things (IIoT). This is particularly relevant because, from January 2020, Lloyd's and many other insurers have stated there first-party property damage policies will confirm whether they provide coverage for cyber risks or not.

THE ERA OF IIOT

Traditionally cyber security for ***Information Technology*** (IT) and ***Operational Technology*** (OT) have been two distinct specialities. While both aim to maintain robust and resilient systems, their priorities are often different: IT computer programs operate predominantly on information, whereas OT controller programs operate on the basis of physics in support of mechanical motion.

Data security for IT systems is measured against the CIA triad (Figure 1), with confidentiality at the apex, followed by data integrity and availability. But this CIA triad is inverted for OT systems which underpin process industries and critical infrastructure, and where system failure risks human injury or loss of life. Consequently OT systems prioritise availability and integrity before confidentiality.

OT security has historically relied on air-gapped networks separated from the Internet to provide availability. Yet increasingly enterprises are implementing IIoT solutions that fuse IT and OT and using the Internet support automated control decisions that optimise asset performance and business value. However, the more system connection points, the greater the complexity; and the risk that the networked surface could suffer security and quality failings.

IIoT use cases are extensive: they range from Australian miners using autonomous trucks to haul extracted material from pits (and autonomous trains to transport it to ports); to firms such as Ocado and Amazon using IIoT robotics in warehouses to pick and pack goods. As 5G is rolled out the increase in data speed, bandwidth, and reduction in data latency will spur further IIoT uptake.

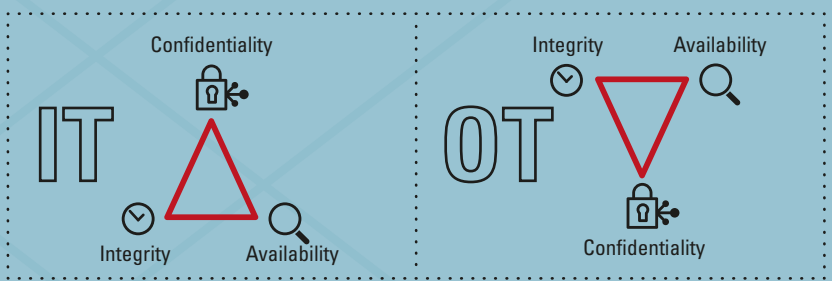


Figure 1: IT Security Triad supporting OT

In August 2019 Cisco released a report estimating the projected uptake of IIoT type technologies will by 2022 account for approximately 7 billion of the 14.6 billion IoT connected devices.

The influential US based National Institute of Standards and Technology (NIST) has developed a conceptual utility architecture which illustrates the role of IIoT systems in managing distributed energy resources (Figure 2). In this implementation IIoT optimises performance of the distribution grid via a connection between an industrial facility microgrid and a utility-managed distributed energy resource (DER) system.

SP Group forecasts a 12.4% compounded annual growth in demand for DER technologies, which are expected to reach US$169 billion in value by 2025.

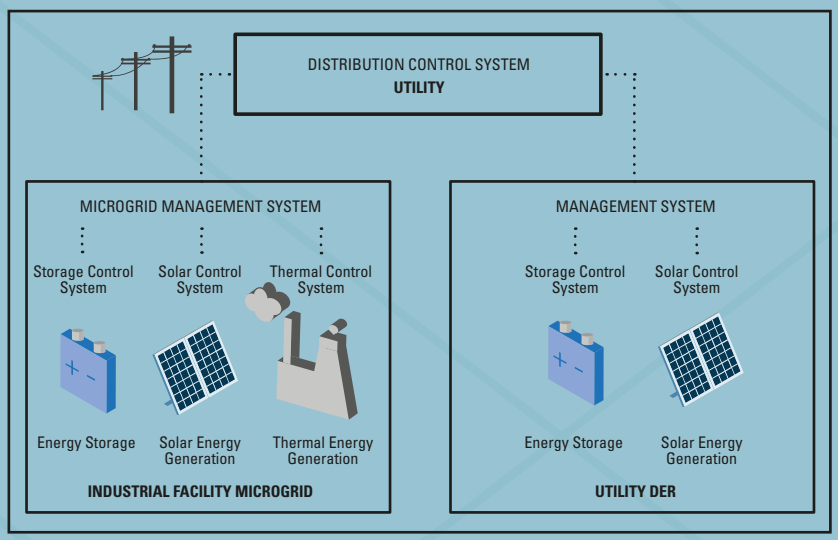


Figure 2: Example DER Infrastructure (source: NIST)

THE INSURANCE CONUNDRUM

As a way of limiting exposure to physical damage caused by data risk, some first-party property damage policies rely on exclusions such as CL380 and NMA2915. Other insurers confirm affirmative cyber through their property and casualty policy wordings. To remove ambiguity and ensure absolute clarity for insureds, from January 2020 Lloyd's first-party property damage policies will need to explicitly state whether or not data-related damage is included, a trend being adopted by many (if not all) other insurers.

This represents a significant change for insurers who are considering confirming cyber coverage. The sheer ambition and scale of the industrial use cases, and their expanded reliance on data – coinciding with the growing extent of IIoT implementation – increase risk.

Autonomous systems may encounter situational outliers that were never envisaged by the machine learning (ML) tools or artificial intelligence (AI) smarts. In these situations data failings resulting from a breach or error can be amplified. With OT components relying on AI, failings in AI-determined safety systems can have severe consequences.

While risk managers and underwriters have many frameworks and standards against which to measure organisational IT and OT risk, the standards available for IIoT are, at best, limited. The source for figure 2 above was released by NIST in August 2019 as a discussion paper. This paper calls for industry participants to develop scenarios which can inform reference design and support a best practice guide for improving IIoT data security in DERs.

The scenarios described are complex, with analysis and visualisation capabilities comprising security information and event management (SIEM), workflows, graph analytics, dashboards, predictive analytics, machine learning and other technology layers. And further demonstrating that IIoT standards need to catch up with implementations, the international standards organization ISO – authors of the IT security 27000 series widely favoured by business - currently have under development their IIoT security standard 30166.

In a modern manufacturing plant the controllers for steam, chilled water, electrical and fuel efficiency are managed by OT systems. But the energy management system determining the optimal operating strategy will be a networked and interconnected IIoT implementation. The challenge for insurance risk pricing is that while the core OT and IT components are mature technologies, the integration and interconnection elements are not.

When IIoT incidents occur, the right claims management solution can rapidly and accurately pinpoint root cause to either IT or OT components within the IIoT implementation. But it needs the support of specialist skills and a clear organisational structure. Integra Technical Services has assembled experts who can collectively investigate the relevant people, procedures, operations, information systems and environment, to accurately determine cause and consider a policy response. Identifying the prospects for recovery and betterment forms a key part of this root cause analysis.

KEEPING THE TIGER IN THE CAGE

Barry Davies is a Chartered Psychologist and an Associate Fellow of the British Psychological Society. He is a Principal Consultant within the human factors team of Environmental Resources Management Limited (ERM), a leading global provider of environmental, health, safety, risk, social consulting services and sustainability related services. He specialises in helping firms to understand the limitations of human performance in safety critical industries.

HUMANS ARE AMAZING (BUT HAVE LIMITATIONS)

Human's brains are amazing but they're also lazy, picky and pre-historic, and they like to play tricks. Armed with this knowledge it should be possible to design out the potential for human error in safety critical systems.

Yet some 70-90% of incidents arise from human error or organisational failure, rather than mechanical or technical reasons. We know more about human performance now than we ever done but fail to use this knowledge effectively.

Psychology and physiology can be used to help understand human errors and design them out of the process. Especially in industries where the limitations of human performance can be safety critical - oil and gas, petrochemicals, mining, mass transit and railways to name but a few.

If we recognise that early on when designing or creating new things, we can work with engineers to design error traps out of the system. And conversely we can design in mechanisms to control or prevent human failure. We need engineering solutions to behavioural problems, not behavioural solutions. We need to design out the failures, that means asking three big questions.

one:

IS THE ROLE OF THE HUMAN FEASIBLE?

Can we actually do the thing we're supposed to be doing? And have we factored in the right resource level?

A four man boat is not much use if it takes five men to carry it. If an oil platform that is supposed to be entirely automated takes more people to maintain than would be needed to run it manually, it has failed the feasibility test - the greatest risk in offshore operations is getting people to and from the asset. If the construction of a high-rise building has been based on it being built in countries where the average temperature is 16˚C, and then we ask workers to build it in temperatures that vary between -10˚C and 36˚C we should not be surprised when they have problems. Learning memory and reasoning deteriorate by 28% when the temperature drops below +10˚C.

two:

IS IT USABLE?

Are we giving people procedures, processes and equipment that they can actually use to do what they are being asked to do? Ergonomics matter – optimising the man-machine interface.

Equipment, procedures and processes need to be designed in a way that people can use them. For example, if you have machinery with buttons being used in a cold climate, have you left enough space between the buttons so that someone can press the right button when wearing thick gloves?

Faced with a choice of pressing a green button or a red one with no further instruction, we'll always press the green one if we want something to happen (proceed, action, initiate, etc.) We're conditioned to think red means 'stop' or 'cancel' or 'alarm'. When faced with a car park ticket machine with a red button and a green button you would expect the green button to provide the ticket and not the red one, as it doesn't conform to our stereotypes or expectations.

Any piece of machinery that needs a handwritten note explaining how to use it has failed the usability test.

three:

IS IT RELIABLE?

What can go wrong? Can we predict that and design it out of the system? We need to perform a human error review which looks at all the tasks and the threats and consequences that go with them.

As an example, picture a tiger in a cage in a zoo. The tiger is a hazard and as long as it is in the cage it should not pose a danger. If the tiger gets out of the cage, it may injure people or itself. We have to consider how the tiger can get out of the cage and design controls to prevent its escape – and how these controls can be defeated either deliberately (violation) or inadvertently (mistakes, slips and lapses). For example, we should think about having a self-closing door mechanism, however that can be defeated by the keeper using a door wedge. Why might a keeper use a door wedge? They may have been issued with a wheel barrow and the change management analysis missed how the keeper gets the barrow through the door and so on.

ENGINEERING SOLUTIONS

Often these kinds of solutions appear to be just common sense, but in that case why aren't they always implemented in the first place? Pointing out the obvious is all very well, but this needs to be backed-up with sound psychological evidence associated with the predictability of human error, cognitive biases and performance shaping factors (e.g. influences such as temperature, lighting noise, fatigue, etc.).

Speed limit signs indicating 20 mph limits don't usually result in average speed reduction – on their own. Speed zones where the signs are supported by engineering controls, such as sleeping policemen and lane narrowing, do work. It's the engineering behind the visual cue which makes the solution effective. You can tell people after an incident to do better next time but without appropriate barriers or engineering controls you're setting them up (or their colleagues) to fail next time around.

Thinking carefully about human behaviour alongside those design solutions can help you determine the right control and management strategies. They reduce risk, prevent claims and improve safety. They keep the tiger in the cage.

FLOATING RENEWABLE ENERGY ASSETS

FLOW is a relatively new concept when compared to tidal, but one that could open up vast opportunity to increase global renewable energy production. To help understand more about the risks and opportunities, **integrated** spoke with Michael Hook and Frank Rose from Strainstall, a world leader in developing innovative monitoring solutions that enhance the safety and performance of assets, including for the oil, gas and renewable energy sectors.

The UK tops the world ranking of countries producing offshore renewable energy with an installed capacity of 8.3GW (source: 2019 International Renewable Energy Agency Statistics). The Department for Business, Energy and Industrial Strategy said in March 2019 that offshore wind's share of electricity rose from 1% in 2010 to 6% in 2017, and it is expected to hit 10% next year.

There is probably a good reason, the UK has a relatively shallow foreshore of less than 50m which is perfect for fixed-bottom platforms that up to now have been the prevailing offshore windfarm installation method. But now floating offshore assets, both wind and tidal, are starting to emerge from the pre-commercial (R&D) stage in readiness to scale up to commercial production levels.

NEW OPPORTUNITIES

Going further away from the shoreline is going to enable operators to access stronger and more reliable wind resources. According to a report by Wind Europe in June 2017 up to 80% of potential offshore wind sites globally are in waters more than 60m deep. And it's widely suggested that the floating wind market is potentially eight times bigger than the fixed offshore wind market.

Illustration © Equinor

Country/Region	Share of offshore wind resource in +60m depth	Potential for floating wind capacity
Europe	80%	4,000 GW
USA	60%	2,450 GW
Japan	80%	500 GW
Taiwan	-	90 GW

Source: Wind Europe Floating Offshore Wind Vision Statement, June 2017

Moving into deeper waters away from the shoreline – or especially expanding in ocean-bordering locations such as the US or Asia, which have steeply shelving foreshores and in some cases high seismic risk – floating platforms are the only cost-effective way of proceeding. And they present some equally compelling construction cost and environmental benefits due to the less-invasive nature of the installation.

In October 2017 the world's first floating offshore windfarm started delivering electricity to the Scottish grid. Hywind is located about 15 miles from Peterhead in Aberdeenshire, Scotland and is positioned in water depths of up to 129m.

LEANING ON THE OIL AND GAS EXPERIENCE

As floating offshore wind emerges, it is leaning heavily on the experience, knowhow and supply chains available from the more mature oil and gas sector. Some of the most advanced development in floating offshore wind is coming from oil and gas producers themselves; with a view to gaining carbon credits and diversifying their own production mix while at the same time leveraging their existing knowledge and delivery infrastructure.

Norwegian oil and gas producer Equinor (previously known as Statoil) is perhaps the best-known example. Not only do they own a 75% stake in Hywind, their Hywind Tampen project is expected to be operational by the end of 2022. Located in 260-300m water depths this floating offshore wind farm will provide 35 percent of the annual power demand of Snorre A and B and Gullfaks A, B and C oil and gas platforms. This will help to optimise the output from the oil and gas assets – i.e. use less of their own recovered oil and gas in production – as well as offset their carbon output.

ASSET LOAD MEASUREMENT AND MONITORING

Even for an oil and gas giant, though, resilience and efficiency are key factors in developing successful wind assets. Even though floating wind, and to a lesser extent, tidal, lean on established offshore design concepts including examples such as semi-sub technology proven in oil and gas, their different use raises questions about fatigue and performance, for example the higher centre of gravity and thrust created by the turbines.

The machinery needs to be able to withstand whatever the waves and weather can throw at it. And weather patterns, wind strength, storm surges and wave sizes are becoming less predictable. What starts out as a location with a maximum 1-in-50 wave of 14 metres may turn out to be a lot more aggressive in 20 years' time than the developers are anticipating now.

On the efficiency side, offshore renewable machinery (fixed or floating) is complex, expensive, and typically designed for up to 20 year lifecycles. If anything, cost is even more of a driver for renewable development than it was for oil and gas, due to the demands of levelized cost of energy (LCOE) – an economic assessment of the average cost of building and operating an asset divided by its total energy output over its lifetime.

Against this background, asset load measurement and monitoring equipment has a vital role to play in protecting the structural integrity of offshore assets – whether platforms, turbines, sub-stations, mooring lines or other machinery. Tools such as strain gauges (sensors which convert mechanical forces into measurable electrical signal data), often used in Load Cells, monitor fatigue and performance over the entire design lifecycle of the assets and are typically used to assess a number of different loads, including mooring loads. The output is a complex data configuration, including environmental, oceanographic, their correlations to mooring line tensions and other measures.

Illustration © Equinor

In the pre-commercial phase renewable developers naturally and deliberately put a lot of emphasis on this monitoring process; mainly because it has commercial value. By validating design loads against actual loads before you start commercial production, you might be able to value-engineer in the commercial stage (e.g. reducing steel could cut capital expenditure and as a secondary benefit potentially reduce operational costs). Or, as has also happened in oil and gas, monitoring tools can sometimes justify life extensions for assets which have borne a lighter load in production than they were designed for.

The load monitoring tools are designed for the entire lifecycle not just the development phase – so they can be used – but there are still questions whether they will. In oil and gas it would be unthinkable for mooring loads not to be closely monitored in production, especially given the risk of environmental catastrophe that could ensue from a break. But could cost pressure prompt renewable producers to consider scaling down monitoring once they've scaled up production?

KEY RISKS

Value-engineering decisions taken with the objective of bringing down LCOE might have broader risk implications. We can all appreciate the risk of a turbine or even the sub-station becoming disconnected due to failure of the mooring system, but perhaps the failure of one mooring system could damage multiple assets and cause a more catastrophic property damage and supply interruption incident - especially as floating assets move into more aggressive wind and tidal locations.

A good example is off the West Coast of Ireland and a project known as AFLOWT (Accelerating market uptake of FLoating Offshore Wind Technology), which is designed to demonstrate the survivability and cost-competitiveness of floating offshore wind technology. Funded by the EU's Interreg North West Europe programme to accelerate uptake of floating offshore wind, it aims by 2022 to have a full-scale floating wind turbine deployed for testing. The seas off the west coast have some of the strongest wind resources in the world with waves of 14m or more not being unusual.

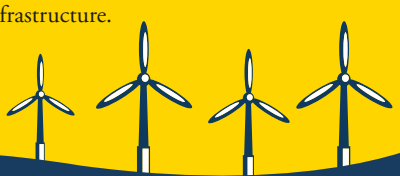
Being further offshore and in challenging conditions brings many other cost and risk challenges, not least asset maintenance. Getting to the offshore assets and then the health and safety risks involved in checking equipment. Like other engineering machinery, asset measurement and monitoring systems are being digitised. This is going to enable remote monitoring that will help reduce some of these risks and costs.

DATA

Digitisation, also, brings other benefits and is opening up broader data discussions. So far there has been little data sharing by renewable producers, due mainly to its proprietorial value at this early stage of the industry's development. The progress of oil and gas was undoubtedly accelerated by wide data sharing. The same could eventually be achieved in renewables, with more widespread use of the output from monitoring tools. It's a question that will undoubtedly continue to be debated.

FINAL THOUGHTS

Insurance represents a major cost for renewable energy operators. Close and effective asset monitoring and measurement can help to reduce key risks and could become even more important as assets move into more challenging sea and weather conditions. In the end, though, the national energy security argument is perhaps the most compelling argument of all. As renewable energy becomes a more important part of the supply mix, countries will need to be sure of the security and reliability from there offshore wind assets. If they are closely monitored that can help control downtimes and reduce or eliminate risk to the primary energy infrastructure.



BENEFITS OF ASSET MONITORING

1. SAFETY
ASSURING SAFE OPERATIONS BY ENSURING ASSET PERFORMANCE

2. DOWNTIME COST
MITIGATING RISK OF NON-PRODUCTIVE TIME BY PREDICTING ISSUES BEFORE THEY HAPPEN

3. CAPITAL EFFICIENCY
IMPROVE THE CHANCES OF ASSET LIFE EXTENSION

4. ACCESSIBILITY
OPEN THE DOOR TO NEW INACCESSIBLE SITES

5. DATA
CONTINUAL IMPROVEMENT WITH DATA INSIGHTS

ABOUT **STRAINSTALL**

Strainstall is a world leader in the development of innovative monitoring solutions that enhance the safety and performance of assets. Drawing on more than 50 years' experience, they develop and apply innovative technology, including load, strain and stress measuring techniques, within a wide range of sectors including marine, offshore, civil engineering, nuclear and aerospace. Their systems are proven to perform year on year in hostile and hazardous environments.

Strainstall has been part of James Fisher and Sons plc since 2006. James Fisher is a leading provider of specialist services to the marine, oil and gas and other high assurance industries worldwide.

Strainstall

MEET **MICHAEL HOOK**

Michael is responsible for the development and growth of the Strainstall range of surface and subsea load monitoring and instrumentation equipment for use within the renewable sector with a focus on Floating Offshore Wind, Wave & Tidal. Prior to joining Strainstall in January 2019 he was General Manager of Sustainable Marine Energy Limited, a turnkey supplier of integrated tidal energy generation systems.

MEET **FRANK ROSE**

Frank's background is in Marine Technology, Mechanical and Electrical Engineering, including CFD, FEA and Naval Architecture. His main areas of responsibility have included bid preparation, engineering design, materials specification, bid management, cost control, reporting and planning, commissioning and offshore installation.

Michael Hook

Frank Rose

BEING FIRST CHOICE

Integra Technical Services has long held a reputation for successfully adjusting the largest and most complex specialty insurance claims. Increasingly they are extending this reputation into less complex and lower value claims as they stride toward their vision of being the first-choice loss adjusting firm in every sector they serve.

In 2015 Integra Technical Services set course on an ambitious growth strategy. Five years on and they have doubled their team of loss adjusters to 44; expanded their capabilities and added new lines of business that include marine cargo, upstream energy, ports and terminals and cyber risks; simultaneously strengthening their teams in North America, Middle East, Asia, Australasia and the UK.

Today, new lines of business now account for one third of all new instructions *(figure 1)*.

New instructions were once dominated by large and complex losses – in 2015 67% of those assignments had a value ***over*** USD50 million. Today over half of all new instructions relate to claims with a value below USD50 million - in fact one in eight are ***below*** USD1 million *(figure 2)*.

Leo Dixon, Chief Executive Officer confirms "the number of claims we adjust with a value over USD50 million has in fact increased. But our broader proposition is resonating with our clients. More lines of business,

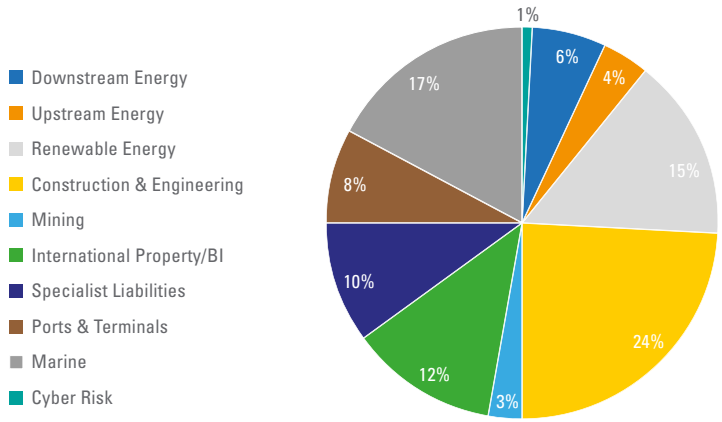


Figure 1: Breakdown of new instructions by line of business

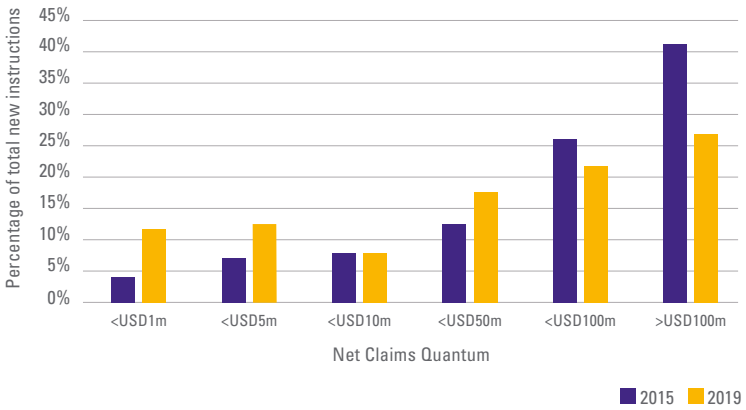


Figure 2: Comparison of new instructions by claim size

a larger and more diverse team and, importantly, a service offering that is tailored to meet the demands of less complex and lower value claims".

Lines of business such as renewables, marine and ports and terminals generate high volume repetitive low value claims involving for example damage to gearboxes, transformers, vessels hitting port/harbour walls etc. Hitting key claims milestones, keeping to the timetable and short form reports are all important features in claims of this nature. Ewan Cresswell, Chairman, is keen to point out that "whilst we have adapted our service, we still maintain the principles that have helped build our reputation – our impartiality, ability to manage stakeholder relationships and approaching each new claim situation looking for an early solution".

It is a feature of the industry that the experienced loss adjusters needed to manage complex specialty claims are in short supply. To achieve their growth targets Integra Technical Services have adopted a rounded strategy to develop the next generation of quality loss adjusters. A recruitment strategy that focuses on: 1) the 'rainmakers', specialist adjusters that have an established reputation; 2) younger adjusters that have high potential; and 3) engineers and other appropriately qualified individuals with a proven transferrable expertise who want to move into loss adjusting.

As Ewan explains "we are really looking for the best of the characteristics of the adjusters that helped forge our reputation, but in younger less experienced individuals that we believe will respond to the opportunities we offer".

New joiners have repeatedly spoken about a learning environment that enables them to thrive and take ownership of their career – creating their own networks, achieving formal loss adjusting qualifications and broadening their experience. According to Leo "we don't have any career development barriers or constraints, instead we give people as much variety and experience as possible. If you come in as a civil engineer, we look to see how we can get you involved in handling engineering claims. If you specialise in renewables, well how about handling oil and gas claims as a complementary skill set?"

Only a small percentage of the incidents notified to the (re)insurance markets truly warrant the appointment of a 'world class loss adjuster' with a genuine market leading reputation. On the whole, most claims require a loss adjuster that can lead all stakeholders through the adjustment process and project manage claims to a successful conclusion. Leo believes "the loss adjusting firms of the future will have high quality adjusters who can apply a clear strategy, prepare robust adjustments and deliver first class service on claims no matter what class of business. They will then bring in the right people at the right time to support the process – be that a turbine specialist, a metallurgist or other consultant to complement the team".

This is a key driver behind the development of the Integra World Class Loss Adjuster programme that will be launched in 2020 – fast tracking the development of their team using the insights from their own world class adjusters, as well as experiences from risk managers, insurance brokers and (re)insurers.

With these solid fundamentals in place, Integra Technical Services are aspiring to be the first choice loss adjuster in every sector they serve. This will require a consistent service delivery, whether that's in downstream energy, renewable energy or construction from London, Sydney, Dubai or any of their international bases.

Ewan feels strongly about their relentless obsession with every detail of the service to create the highest quality service experience: "we want the journey to claim settlement to be a good one every time. That means managing expectations, maintaining our impartiality and upholding relationships, as well as making sure we play our role to help (re)insurers deliver their service promise speedily and effectively."

By employing the right people and providing them with the training and environment to succeed Integra Technical Services are making great strides towards achieving their ambitions.

Leo Dixon

Ewan Cresswell

MEASURE NOISE AND TEMPERATURE

Running noise and temperature logs can be costly but if there's an underground blowout they can be vital in determining whether the insurance claim is admissible. Control of Well Insurance (also known as Operators Extra Expense or OEE) is a specialist insurance policy purchased primarily by oil and gas companies. It covers the costs associated with regaining control of a well, re-drilling the well or restoring it to operation following a blowout.

WHAT IS A BLOWOUT?

Blowouts can be triggered by imbalances in the drilling fluid (mud); by natural fluid flows within the formations; or by extraneous events such as equipment failure. Sometimes a pressure control problem can be managed or mitigated by swift onsite action before a blowout occurs. Sometimes it will even resolve itself without intervention, at least temporarily.

According to Keith Baker, Executive Adjuster with Integra Technical Services in North America "minor pressure situations occur frequently, but only around 1% are estimated to become a full blowout." When it does result in a blowout it is a serious event, economically and environmentally. It can result in severe property and equipment damage and sometimes even human cost: serious injury or loss of life.

A blowout can be big or small. It can start off with something as tiny as a three-quarter inch flange being torn away by the force of escaped fluid. Or it could be a huge explosion, like the natural gas leak in Uzbekistan in 1966 which the Soviet authorities eventually sealed off by detonating a nuclear bomb underground. Or think of the famous pictures of gushers from the early days of oil exploration. More likely, it will be something in between.

Whatever the size, they usually end up being noisy, wet, dangerous, scary and stressful for everyone involved. And it can often result in fire, triggered by the combination of hydrocarbons and stray sparks.

UNDERGROUND BLOWOUTS MORE COMPLEX

Keith explains "there are two main types of blowout: surface and underground. A surface blowout is usually plain for all to see, and not difficult to prove in terms of meeting OEE insurance policy conditions. An underground blowout, however, is more complicated."

It usually results from an uncontrolled flow of fluid from a (deep) high pressure zone in the well up to a (shallower) low pressure zone via the wellbore. So it's not usually as visible as a surface blowout. And when considering the potential for an insurance claim the onus falls on the well operator to prove that conditions in the well satisfy the insurance policy definition.

"One way of proving loss causation is by running noise and temperature logs in the wellbore when problems present themselves" says Keith.

A true underground blowout will result in a marked increase in noise at both the 'source zone' – where the fluid release originates, at the bottom of the bore – and the 'thief zone' – the zone further up the bore where the fluid escapes. In both places a blowout will result in a marked departure in temperature versus the expected standard gradients. Temperature increases with depth but in a predictable way. Keith suggests "any unexpected blips in that gradient often represent a clear smoking gun from a policy coverage perspective: evidence that a real blowout has occurred".

According to Keith "most large well operators will run these logs when issues arise, but they can be costly

> **"NOISE AND TEMPERATURE LOGS CAN PROVE AN INSURANCE CLAIM"**

and for the smaller operator on tight margins they might be considered a cost too far, given all the other health and safety costs that are part and parcel of running a rig. Perhaps more needs to be done to make engineers in the field aware of their importance in proving an insurance claim, as they are vital and often feature heavily in our discussions onsite."

"If they don't exist then we will look for secondary indications such as fluctuating casing pressure when the well is shut-in. If insurers and the insured do not share an agreed understanding of the incident, often independent drilling engineers are engaged to provide their opinion whether or not a underground crossflow (blowout) existed."

Aside from this much of the negotiation centres on getting the well back up and running. If they can, the operator will want to get business back up and running as fast as possible, which often will mean continuing to drill at the blowout site. In many cases there is no reason why they shouldn't. But if the well is repaired for on-going use, there can sometimes be a grey area as to whether the post-incident wellbore has any 'betterment' (e.g. consisting of additional casing in the well). As Keith clarifies "let's assume a well had three casing strings before the blowout and as a result of the incident the operator added a fourth string as part of the pressure mitigation. That might have been necessary and defensible from an engineering perspective, but in the insurer's eyes this would constitute betterment and thus need to be deducted from the claim".

In the end the loss adjuster needs to keep a clear head: following up on logs and other data and evidence to prove the blowout, and encouraging resolution where there are differences of opinion – whatever the scale of damage and however difficult the conditions.

Blowout *noun*
(blow·out | blō-,au̇t)

An unexpected release of fluid – hydrocarbons, drilling fluid (mud), or water – up a wellbore as a result of the loss of hydrostatic balance in the well.

WHAT DOES OEE INSURANCE COVER?

Typically, an unintended and uncontrollable flow of fluids (mud, oil, gas, water) through the wellbore from one subsurface zone to another, which cannot be controlled by the Blow Out Preventer (BOP) or other rig equipment. A kick, or sudden influx of gas or fluid into the wellbore that can be controlled by increasing mud weight and/or mud flow would not be considered an insured event.

POWERING REMOTE ISLANDS

THE HYBRIDISATION OF EXISTING DIESEL-POWERED GENERATION WITH WIND TURBINES, SOLAR PHOTOVOLTAICS AND BATTERY ENERGY STORAGE SYSTEMS OFFER SMALL REMOTE ISLANDS A MORE RELIABLE, COST EFFECTIVE AND CLEANER SOURCE OF POWER.

Estimates suggest that some 700 million people live on islands, with many countries in regions such as Asia and the Pacific being considered island nations. The Philippines and Indonesia are great examples, between them the two countries have around 25,000 islands, of which almost 17,000 have permanent habitants. Like other island-rich territories they face challenges with the process of generating power consistently and economically for populations which are often sparse and widely distributed. Fraser Galbraith, Engineering Adjuster with Integra Technical Services, explains "usually it is not economically viable to justify connecting a small island to the main grid via submarine or overhead cables. Most small islands are served by micro-grids powered by imported diesel and bunker (freighter) oil generators".

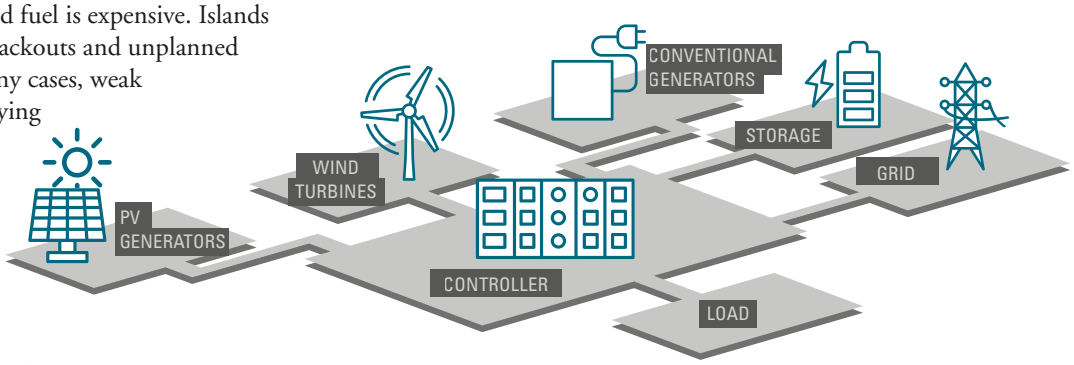
That approach comes at a financial and environmental cost, not least that imported fuel is expensive. Islands often suffer from rolling blackouts and unplanned power outages with, in many cases, weak daytime demand not justifying a 24/7 service. A typical island will have only 4-5 hours of electricity a day: not ideal when services like refrigeration, internet and mobile phone use depend on 24-hour power. In many village locations, electricity is critical to the production of clean water.

Unsurprisingly, renewable energy is a huge part of the solution: solar, onshore wind and combined hybrid solutions. Offshore wind is not generally part of this picture, even though (i) there's plenty of it and (ii) it's popular in other Asian countries such as China and Taiwan.

The micro-nature of energy provision that we are talking about – small, isolated communities generating power locally – means that only smaller-scale modular solutions are feasible. Small solar panels and onshore wind turbines with diesel generators continuing to make a contribution – but in a more limited and less economically demanding way. Fraser suggests "the ideal world sees solar being used during the day; with support from wind to meet heavier demand with diesel generators and battery storage used to top up and stabilise the micro-grid".

According to Phil Durrant, Managing Director Europe, Middle East & Africa at Integra Technical Services "hybrid solutions are now being introduced into many islands. As well as the usual risks relating to solar, renewables and diesel generation, developers and operators will need to consider additional risks associated with transport, labour, geographical and social risk".

Example Hybrid Plant



TRANSPORT

One of the most significant challenges is transporting the machinery. As Fraser points out "the road infrastructure on many islands is not well developed, and often renewable energy machinery (especially wind) is cumbersome, sensitive and easily damaged". Transportion to the construction site can be a significant operational headache, given the practical risks posed by the existing infrastructure.

LABOUR

Because the island economies largely focus on traditional sectors such as farming and fishing, hi-tech construction experience associated with a renewable energy plant may not be available in local island labour markets. Even the relatively small turbines and sub-stations used in these island contexts require specialist construction and project management skills. It is usually possible to import specialised labour, but at a cost, which is what the small island co-operatives who are looking to implement the solutions are trying to avoid.

Phil suggests that "solar panels are different: they are easy to install, often plug-and-play. Which of course also makes them easy to steal". We will touch on this in more detail below.

GEOGRAPHY

Geographical remoteness complicates the insurance requirement and brings loss adjusting challenges in the event of a claim. Assuming Delay in Start-Up (DSU) cover has been purchased, geographical remoteness may be a limiting factor when it comes to mitigating the loss in terms of the impact the insured event has to the critical path.

Manufacture often occurs a long way from an island (e.g. China or Germany) and in a highly scheduled, build-to-order production model. If something gets damaged, then there will be delays while a manufacturing slot can be found for the replacement. It's not economic or practical to rely on storing back-up parts in close proximity to the site/plant. And then there is shipping: although the land-based wind turbines that are suitable for these island installations are not huge (compared to, for example, offshore turbines) they are still substantial. Shipping is really the only feasible logistical solution, so chartering time and cost also have to be built in.

Fraser suggests "overall there's a good chance if any damage occurs delays will then be long – and thus consequential in insurance terms. Damage to even a small part could result in a delay of 1-3 months, and a full turbine replacement 6-12 months. This is a headache not just for the EPC contractor or operator but for the DSU insurer and the loss adjuster too".

The geography of the islands also makes them vulnerable to seismic activity and climate effects. Earthquakes, tsunamis and floods are all realistic threats. Both solar panels and wind farms are vulnerable to flooding, unless deliberately sited on higher ground which is by definition even more remote than the coastal regions; and thus comes with both a higher construction cost and risk of damage in transit. Earthquakes and tsunamis, of course, can result in catastrophic damage to the plant in even the best-intentioned location.

SOCIAL FACTORS

Phil points out that "surprisingly insurers are receiving more claims from social factors than from the other risks – wilful damage, vandalism, theft of machinery, even arson". Wind farms, even small ones, are arguably noisy and ugly. Despite the economic and development benefits they bring, they aren't universally popular with local residents and are prone to being vandalised. And because the particular wind turbines that are economic for island co-operatives are on land, they're easily accessible.

According to Fraser "solar panels can easily be stolen and be operated functionally by the person stealing them. And often are". This raises a whole set of questions for the loss adjuster in assessing claims – for example whether appropriate security precautions were taken in line with the policy terms and conditions.

According to Technavio, the global hybrid power systems market will experience a compound annual growth rate of over 8% from 2019 to 2023, growing by some USD231 million. Small island grids are likely to become more commonplace bringing economic and environmental benefits, alongside some unique risks.

HIGH GRADE ORE AND A QUESTION OF INDEMNITY

WHEN A MINE SUFFERS BUSINESS INTERRUPTION THE ISSUE OF HIGH GRADING CAN COME INTO PLAY. THE QUESTION IS WHETHER INSURERS SHOULD ACTUALLY BENEFIT.

Mining Business Interruption insurance and the principle of indemnity is no simple matter. Take the case of a mine that has a 20 year life span and a one year interruption. It could be argued that nothing has actually been lost as over time the mine will recover the lost production. But in simple terms insurance is there to insure the lost opportunity within a defined period. Essentially protecting earnings and cash flow, allowing the mine to secure their assets, workforce and share price until they get back into full production.

Brad Ebel, Partner/President of MDD Forensic Accountants explains "when the insured loss is calculated insurers will take many different factors into account, from the obvious variable cost savings such as drilling, blasting, chemicals and fuels to vehicle maintenance, wear and tear and labour. If the mining production is only partially affected they will also consider the shortfall in terms of the average ore grade".

So take the example of a mine with two stopes, one has a six year reserve with a mined mineral grade of 2% and the other a six month reserve with a mined mineral grade of 6%. From each stope the mine is extracting 50 tonnes per day, which is producing 4 tonnes of mined mineral. An insured loss reduces the mill capacity by 50% for six months.

On the face of it that means a 2 tonnes per day loss of production. But miners are paid metal bonuses and measure their performance on metal production. They are not necessarily aware of any potential impact on the insurance payout. Instead they take a decision to exhaust the high grade ore stope. The effect is to reduce production by just 1 tonne per day (see Table 1).

HIGH GRADING - THE LOSS

Description	t/day	MM grade	MM t/day
FORECASTED PRODUCTION			
Stope 1 - Six year reserve	50	2%	1
Stope 2 - Six month reserve	50	6%	3
	100	4%	4
ACTUAL PRODUCTION			
Stope 1 - Six year reserve	-	-	-
Stope 2 - Six month reserve	50	6%	3
	50	6%	3
VARIANCE			1

Table 1: High Grading – The Loss

Phil Durrant, Managing Director Europe, Middle East & Africa at Integra Technical Services suggests that "this can cause a difference of opinion between the insured and their insurers. The insurers might take the position that the mine has produced ore and as a consequence earned revenue. If insurers don't take credit it for this revenue generation it would mean the mine has been double paid for the ore".

Brad suggests "the insurers are correct, but the mine would lose the sales of that ore or some version of it outside the indemnity period and usually pretty quickly. Typically the high grading activity involves manipulating how they manage their ore piles or their developed stopes and they are going to experience the impact of that loss period high grading as reduced production often within a year after the indemnity".

To avoid these arguments a High Grade Ore Clause has been developed by some of the leading insurance brokers. This essentially changes the loss calculation to apply the average ore grade that would have been processed were it not for the insured loss. Taking the example set out earlier, the lost production would be 2 tonnes per day (Table 2).

Clearly, the application of the clause is going to depend on different mine circumstances. As Brad explains "if a mine had an equal mix of high grade and low grade and you have 20 year reserves of each then the application of the clause would unfairly benefit the insured". Phil concludes "perhaps this is something that should be evaluated when placing the insurance as it would appear to be a sensible clause for many circumstances and would help to reduce polarisation of opinion when adjusting an insurance claim".

HIGH GRADING - APPLYING THE CLAUSE			
Description	t/day	MM grade	MM t/day
FORECASTED PRODUCTION			
Stope 1 - Six year reserve	50	2%	1
Stope 2 - Six month reserve	50	6%	3
	100	4%	4
ACTUAL PRODUCTION			
Stope 1 - Six year reserve	-	-	-
Stope 2 - Six month reserve	50	4%	2
	50	4%	2
VARIANCE			2

Table 2: High Grading – Applying The Clause

INTEGRA TECHNICAL SERVICES

Specialists in the settlement of specialty insurance claims in defined industry sectors and involving property damage, business interruption, delay in start up and specialist liabilities

CONSTRUCTION & ENGINEERING • CYBER RISKS • DOWN-STREAM ENERGY • INTERNATIONAL PROPERTY/BI • MARINE • MINING • PORTS AND TERMINALS • RENEWABLE ENERGY • SPECIALIST LIABILITIES • UPSTREAM ENERGY

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LONDON, **UK** PERTH, ADELAIDE & SYDNEY, **AUSTRALIA** SANTIAGO, **CHILE**
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MEXICO CITY, **MEXICO** DUBAI, **UAE** HOUSTON & PITTSBURGH, **USA**

COUNTRIES HANDLED CLAIMS (2018/2019)
78

STRATEGIC ALLIANCES
ARGENTINA / BRAZIL / CANADA / ECUADOR / PAKISTAN / PERU / RUSSIA / THAILAND / TURKEY / UKRAINE / URUGUAY / UZBEKISTAN

CREATING THE RIGHT TEAM FOR YOUR ASSIGNMENT

INTEGRA HAVE **44 LOSS ADJUSTERS**

OF THAT NUMBER

14 ARE **CHARTERED LOSS ADJUSTERS** **18** ARE **ENGINEERS** **2** HAVE **LAW DEGREES**

IN ADDITION TO WHICH WE HAVE A MASTER MARINER 2 ARCHITECTS 4 SURVEYORS AND A MASTER OF INFORMATION SECURITY AND DIGITAL FORENSICS