We are all leaders when it comes to safety

Building a robust safety culture across the offshore wind industry.

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Introduction

This year marks 35 years since the Piper Alpha disaster killed 167 workers off the coast of Aberdeen. Although explosive and hazardous substances such as oil and gas are absent in offshore wind operations, many of the dangers associated with offshore remain. Lifting operations and manual handling are still the most common processes where incidents at work occur; falls from height, trips and exposure to noise and vibrations remain the most common source of workplace injuries and fatalities across all industries.

The offshore wind industry has implemented many of the lessons learned by the oil and gas industry and upholds a good safety record, but as the industry grows, so does the potential for incidents. New technology, even that created to design out risk, such as drones, can present new or unfamiliar hazards.

This paper explores the challenges currently faced by the offshore wind industry – skills shortages, rapid industry expansion and the application of new technologies – and the implications they present for the health, safety and wellbeing of its workforce. With reference to the aviation and health sectors, it examines how ‘non-technical’ skills have a critical role in keeping workers safe and well and advocates for a whole-industry approach to creating a culture of health, safety and well-being driven by safety leadership. It includes an account of the Thrive safety leadership programme, attended by all Ørsted personnel working on the Hornsea Two offshore wind farm, with testimony from Ørsted on its impact on safety outcomes on the project.

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Skills shortages

There are skills gaps across the UK economy, notably in engineering and technology, which are already impacting on the offshore wind industry. In its 2022 report, The Energy Transition and Jobs, Price Waterhouse Cooper (PwC) anticipates a demand for 41,000 additional jobs in the sector by 2026.[1]

In a recent paper, Professor in the Power Conversion group in the School of Electrical and Electronic Engineering at the University of Manchester, Mike Barnes, outlines strategies to address the skills shortage faced by the sector.[2] Professor Barnes suggests that workers in the existing oil and gas sector are clearly candidates for upskilling and re-training for roles in renewables, but, as PwC notes, of this pool of 270,000, around 20 per cent are expected to retire by 2030. While recruiting those with relevant skills, expertise and experience in working offshore seems like a 'no-brainer', as in the nuclear industry, this is an aging workforce: the average age of the core of offshore workers is 44.1 years old.[3] Thirty-five per cent of the oil and gas workforce is aged over 50.

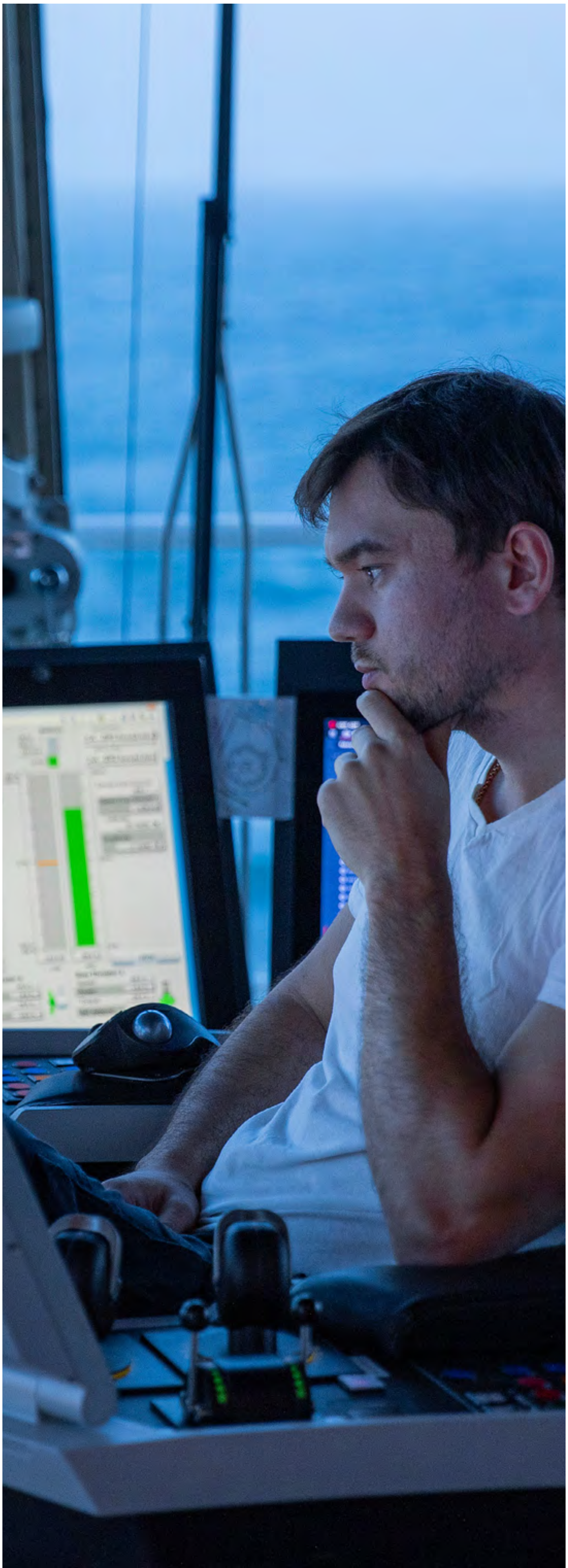
Recruiting new talent to the industry also presents challenges. In research conducted by the Learning and Work Institute, young people surveyed said they felt inspired to pursue a career that can help the UK to reach Net Zero and are strongly motivated by a desire to combat climate change and a passion for sustainability.[4] However, desire doesn't seem to translate into reality. Less than one in five (16%) of those surveyed said that they wanted to pursue a green career having learnt about green skills at school or college, and even fewer (13%) said they have been inspired by their teachers.

Clearly there is work to do to encourage young people into the industry. Higher-level digital skills such as robotics, data analytics, programming and cybersecurity are increasingly important, alongside the more familiar HR, marketing and business administration.
Savvy recruiters recognise addressing diversity issues is one way to access a wider talent pool. Currently women make up just 18 per cent of the offshore wind industry workforce. Last year the Offshore Wind Industry Council (OWIC) and the University of East Anglia (UEA) announced a new joint research project to tackle gender imbalance in the sector.[5] 'Clearing the Pathway for Women in Wind' is part of the Offshore Wind Sector Deal agreed between industry and Government which includes a commitment to ensure women make up at least 33 per cent of the workforce by 2030.

Of course, training takes time and while long experience is not necessarily an indication of ability, expertise or good judgement, apprentices and younger workers are likely to be new to the workplace and less familiar with potential risks which can make them more vulnerable.[6]

In the meantime, staff shortages inevitably affect existing employees. The 2022 Open University Business Barometer report highlights the effect of skills shortages on UK staff morale and wellbeing across all sectors. Almost three-quarters (72%) of organisations say staffing shortages increase workloads for other staff.[7]

Retraining workers who are moving out of oil and gas and recruiting young talent needs to be part of a longer-term strategy to ensure a sustainable talent pipeline which attracts the skilled personnel the industry needs. Shortfalls in skilled staff is not compatible with a robust safety culture and ensuring workforce wellbeing. Inevitably the impact hits – not just the bottom line – but worker safety.



Courtesy of Ørsted

Rapid industry growth

'The UK has a third of Europe's wind resources, and at some point soon we will begin to make serious money out of this. My calculations reckon it will be the sort of scale that we had in oil and gas in the 1970s and 1980s.'

Alastair Dutton, consultant on the World Bank's offshore wind development program and founding Chair for GWEC's Global Offshore Wind Task Force.

In 1991, the first offshore wind farm began operating in Denmark: 11 turbines with a total capacity of five megawatts, established by Dong Energy. Just over 30 years later and the windfarm at Dogger Bank, due to come online this summer, will generate 3.6 gigawatts at full capacity by 2026, three times the typical output of a nuclear plant.

From offshore wind to solar energy, the proportion of the UK's energy mix from renewables has been increasing significantly. The UK is a global leader in offshore wind and home to Hornsea Two, currently the world's largest offshore windfarm. The Government's British Energy Security Strategy for low-carbon energy technologies sets ambitious targets and will rely on wind power to meet them.

The industry is under multiple pressures. In 2021, G+ members' data showed a decrease in the total recordable injury rate (3.15) and lost time injury frequency (1.52) on the previous year across the industry. However, these rates do reflect the huge increase in the number of recorded working hours as total injury numbers rose from 95 to 106. Not surprisingly, the huge increase in the number of working hours recorded in that year meant there was also an increase in the number of recordable injuries on the previous year.[8]

It is reasonable to believe that increased competition and attempts to cut costs to remain competitive could lead to compromises in safety as was seen in offshore energy in the 1980s. The sector needs to recognise that pushing the technological envelope and increasing capacity requires approaches to health and safety to keep pace.

Renewable energy sources could be perceived to be, by their nature, benign, but the absence of combustive substances such as oil and gas does not negate the dangers of high hazard offshore environments. Norway's 'Piper Alpha', the capsize of the Alexander Kielland rig in the North Sea, in March 1980, resulted in the death of 123 employees.

While growth is desirable an associated rise in risk is inevitable. Lord Cullen led the 13-month government inquiry into the Piper Alpha disaster which included 106 recommendations, all of which were – eventually – accepted by the industry. In a keynote speech at the 2013 Oil and Gas UK conference, Lord Cullen was clear that amongst all the lessons which could be learned from the failings of the oil and gas industry, establishing a robust safety culture was paramount.

'I was conscious that no amount of regulations can make up for deficiencies in the quality of management of safety. That quality depends critically on effective safe leadership at all levels and the commitment of the whole workforce to give priority to safety.

I saw those factors as intertwined with each other, and together making a positive learning culture and all that entails in the way of values and practises. It is essential to create a corporate atmosphere or culture where safety is understood to be and accepted as the number one priority.'

A key lesson from the Piper Alpha incident was the importance of a safety culture with commitment from management and supervisors to build safer norms of behaviour across the organisation. If the offshore wind industry is to avoid the economic, reputational and human cost of major incidents, then safety has to sit at the centre of business planning and investment decisions.

Courtesy of Ørsted

New technologies – not-so-new risks

In 2020, the rate of lost time to injuries in offshore renewables was four times as high as in offshore oil and gas. Long hours, stress and fatigue are as prevalent in the wider energy sector now as thirty years ago. A recent paper by the International Associations Drilling Contractors (IADC) highlights research that offshore workers are 15 times more likely to take their own lives than those onshore.[9]

The union Prospect has voiced concerns about the impact of fatigue and stress on offshore workers which not only pose a health risk in themselves, but can potentially increase the risk of incidents, ill health and injury.[10]

'[However], we know from our members that long hours, fatigue and stress are rife in renewables. Staff working offshore are likely to be on shifts and can work up to 12 hours for days and days on end, all while away from home. Cost pressures mean work must be completed within small timeframes, which is exacerbated by weather conditions or having many different companies working on the same project.'
Prospect's Deputy General Secretary, Sue Ferns

So far, so seventies. However, employers are now expected to have a duty of care regarding the mental health and well-being of their workforce. The HSE stresses that The Health and Safety at Work etc. Act 1974, applies as much to employers' legal duties to assess risk to someone's mental health as much as their physical health.

Automation and using AI offer an opportunity to design out risk using robotics to undertake hazardous, expensive and time-consuming activities such as surveying turbines. While such technology can mitigate risk to life, manual handling and ergonomics-related incidents are one of the biggest causes of lost time incidents in the offshore wind industry.

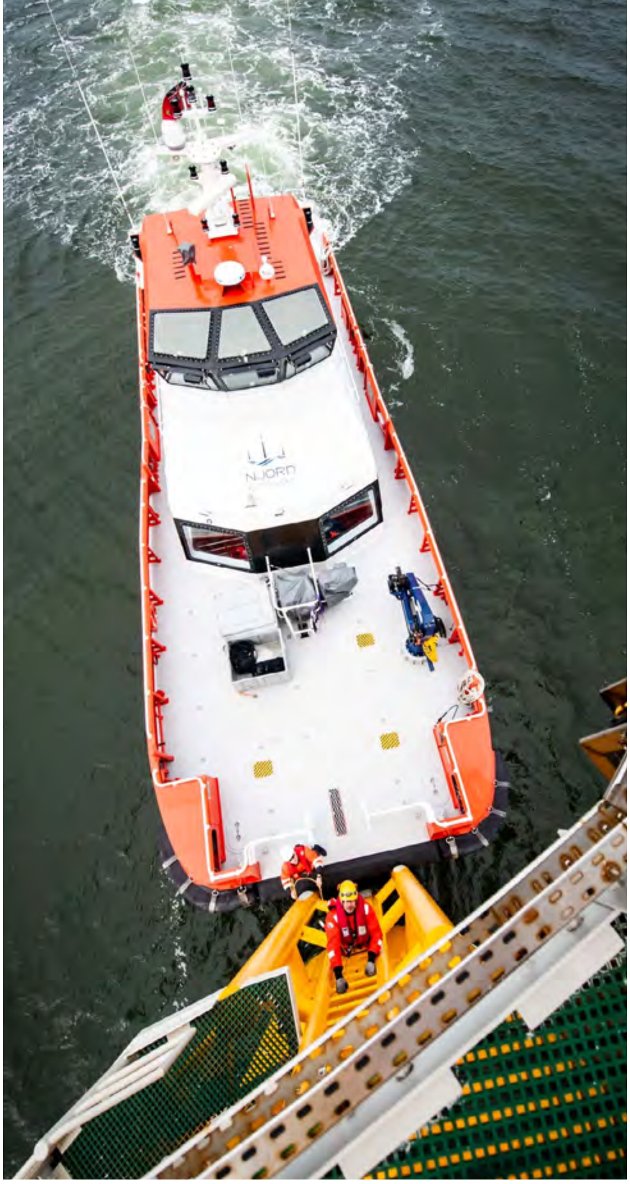
In a debate in the House of Commons in March, the MP for East Lothian, Kenny MacAskill, raised the issue of the application of health and safety legislation in the light of an incident 98 miles off the coast of Aberdeen, in which employee Jason Thomas, aged 50, went missing from a mobile offshore drilling unit which was being towed to Dundee.[11]

MacAskill exposes how the failure of legislation to keep pace with technology could potentially allow responsibility for investigations to fall between regulators and ultimately fail to hold operators to account in the event of an incident.

'There is a legislative gap because technology has moved so fast and nobody anticipated it. We now, however, have a situation, which I think is accepted by employers and employee representatives, where those working in the sector are not getting the proper coverage that should apply.'

'HSE legislation has rightly been extended to cover workers' rights, but it is incomplete and, as a result, workers are at greater risk. Mobile drilling units such as Valaris 121 are classified as a ship or a vessel when towed, meaning that they fall outwith HSE jurisdiction and within that of the Maritime and Coastguard Agency.'

MP for East Lothian, Kenny MacAskill, speaking in the House of Commons in reference to the offshore wind industry.



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There were 538 safety incidents globally in the offshore wind sector in 2021.[12] Many of the risks associated with working on rotation are less easily mitigated by technology. Physical and social isolation, managing shift patterns, separation from family and associated stress can all impact on mental wellbeing. Lack of sleep and fatigue are a key risk and any health and safety management strategy for the offshore workplace needs to address sleep disorders.

Technology does not always provide the safety panacea we might wish. Early-stage adoption of new technologies can present different risks and the safe implementation of new technologies depends on the qualifications and competencies of operators. Meanwhile, incidents such as trips, slips and falls remain a danger which can still be injurious or fatal especially in high-hazard environments.

Focusing on solutions

‘Making it easy to do the right thing, even when no-one is looking.’

Courtesy of Ørsted

There is an abundance of academic research informed by analysis of major industrial incidents in the 1980s which shifted the emphasis of inquiry from technical failure of equipment and/or individual workers, to that of organisational culture. The concept of 'safety culture' refers not just to safety-related attitudes, behaviours and perceptions, but also to the values and assumptions people hold about the organisation they work for. A wealth of evidence shows that this encompasses not just how a company applies safety regulations, but how staff feel listened to, supported, invested in and valued.

Research conducted by Dr Rhona Flin of the Aberdeen Business School, Robert Gordon University, Scotland, has focused on how 'non-technical skills' play a key role in workers' attitudes and behaviours in relation to safety. The term was first used by the European Civil Aviation Regulator with regard to airline pilots' behaviour on the flight deck. The recovery of the cock pit voice recorder from the sites of aviation disasters gives investigators unique insight into the sequence of events.

Analysis led to the conclusion that the human factors which might be at play were not solely an error of judgement or a lack of skill or aptitude, but were much more complex. Good communications skills, working well as part of a team, well-judged decision-making and being able to manage stress and fatigue, were found to be just as critical to outcomes as being technically competent.

One crucial factor was being comfortable speaking up or raising a safety concern, particularly with a more senior colleague, and, conversely, management recognising and acknowledging such a challenge. Aviation researchers identified a culture where co-pilots and air crew would be reluctant to challenge or raise a concern with the pilot. Dr Flin has applied her findings to the healthcare sector where, similarly, operating theatre staff would be hesitant to raise a concern with the surgeon. The result of a culture which does not enable workers to speak up is possibly best exemplified by the catastrophic sequence of events which led to the Chenobyl disaster in 1986.

While having sanction to speak up is part of the story, feeling confident to do so is critical. Being able to communicate effectively is a key skill. A failure of communication between staff at a shift change on the Piper Alpha platform meant workers were not aware that a key piece of equipment should not be used. This resulted in the gas leak which ignited and led to the explosion.

While good non-technical skills enhance a worker's technical skills, poor non-technical skills can increase the chance of error and an adverse event. Training in these skills is now well established in the aviation industry via Crew Resource Management training programmes and has been adopted in other industries.[13]

The safety culture of an organisation cannot rely solely on ensuring compliance with regulation or demanding technical competence. It is the combination of individual and group values, attitudes, perceptions and patterns of behaviour which determine a culture. Once an organisation's commitment to a positive safety culture is established, procedural compliance, competence and positive safety behaviours should follow.

Case study

Ørsted is a world leader in offshore wind with an ambition to build enough renewable energy to supply green power for 30 million people by 2025. In 2020 Ørsted invested £1.4 million to create a purpose-built facility in partnership with ATT, the Thrive Safety Leadership Centre.

Hornsea Two, the world's largest installed windfarm, became fully operational In August 2022. All personnel working on the Hornsea Two offshore wind farm project were inducted through Thrive. Ørsted is now embarking on the Hornsea Three offshore wind farm. All personnel working on the project will also be inducted through Thrive.

Set in a wind power industry environment, the themes and issues raised at the one-day programme at Thrive are designed to resonate with staff across the whole organisation from office-based support functions to the operational front-line. A hard-hitting, multi-media scenario examines the build-up to a fatal incident on a load-out operation and its consequences. High-quality production values and industry-leading audio-visual technology deliver a powerful immersive experience for participants.

In part two of the day, the Practical Safety Leadership skills workshop is a theory-light, practical-heavy exploration of the critical role of communication in workplace safety. Participants gain a new understanding of their own behaviour and its impact on colleagues, and the practical communications tools to take back into the workplace.

It is well-recognised that learning is not purely a cognitive process and emotions are an integral and valuable part of learning and can be leveraged to heighten engagement and motivation. Similarly, contextualising learning to the real world enables participants to better understand, transfer and apply their knowledge in day-to-day life.

Dr Natasha Sigala is a Senior Lecturer in Neuroscience at the University of Sussex. She was ATT Director Adam Christopher's guest on a recent ATT podcast and spoke about how when experiences contain emotion, the memory traces created by the sensory cortex are strengthened and contain more detail.[14]

'When you are immersed into something, you're more likely to learn better and retain that ability for a longer period of time.'

By placing participants in a recognisable scenario and engaging them at an emotional level Active Training Team's safety leadership programmes deliver greater impact, deeper learning and long-term retention. Active Training Team encourage a 'vertical slice' of an organisation or project workforce to attend programmes together, so everyone from senior management to back office staff to frontline workers have a common understanding that they are encouraged to challenge behaviour they believe to be unsafe and, critically, accept challenge if they receive it.

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The outcomes

Jason Ledden was Senior Construction Project Manager for Hornsea Two and Project Manager of the Thrive facility build. He says Thrive is designed as a legacy project for the wind farm industry, enabling other companies and sectors to induct their personnel through the programme.

'We hope that other industries will utilise this new exciting resource which aims to bring about behavioural changes in attitudes towards safety.' **Jason Ledden, EPC Deputy Director for Hornsea Three**

Thrive has received a number of awards including the Humber Renewables Awards' 2022 Excellence in Renewable Skills and Training Award, The Energy Institute's 2021 Health & Safety Award and the Gold Award for Best Training Event at EVCOM London Live and Film Awards. It has created over 60 jobs in the area and become an integral part of the industrial renaissance of the Humber. But it is the overwhelmingly positive feedback from participants which sets it apart in terms of safety leadership training.

'The bit that's different is the engagement of emotion – that is just in a different league. It connects people with the serious impacts of getting things wrong in a way that is very difficult to do with traditional desktop training.' **Head of UK Region, Ørsted**

'This programme works because it brings together the best human elements, it's a hearts and minds approach. Thrive changes your perspective and mentality – it's a lightbulb moment that will keep coming back to participants.' **Lead QHSE Manager, Hornsea Two**

This 'hearts and minds approach' combined with active learning which keeps participants engaged and aids recall, aims to affect behaviours which can positively impact on the health, safety and well-being of all personal working in high-hazard environments.

As well as Ørsted, Thrive is now being used as a safety leadership learning resource by other organisations in the renewables sector such as RWE, Siemens Gamesa, SSE, Scottish Power, Siemens Energy, Ocean Winds and Equinor.

Conclusion

The recent report by the Intergovernmental Panel on Climate Change (IPCC) cited the actions required to make the target of just 1.5C of global warming achievable are: investment in wind and solar, energy efficiency, stopping deforestation and reducing methane emissions.[15]

Solar and wind power have the potential to cut 8bn tonnes from annual CO2 emissions in the next seven years: the equivalent of the combined emissions of the US and European Union today. If the UK government is to meet its target of a four-fold increase in offshore renewable energy by 2030, the rate of offshore wind turbine installations will need to more than double.

The offshore wind industry is expanding globally and rapidly, presenting opportunities and challenges. For the offshore wind sector to maintain the reputation to attract sustainable investment and the best talent to meet skills needs, ensuring the safety, health and well-being of staff is critical.

As Lord Cullen noted over a quarter of a century ago, regulations go so far, but it is the decisions, behaviours and actions of individuals in relation to those regulations which ultimately set the culture of an organisation. This goes far beyond compliance.

Technology has a role in designing out risk, but if the sector accepts that work or out-of-work pressures, fatigue and poor mental well-being can be risk factors in themselves, then safety strategies have to address these issues in a way that a drone or a robot cannot.

As evidenced in the aviation sector and medical environments, not feeling able to speak up for fear of reprisal, castigation or looking foolish, presents perhaps the greatest risk of all.

Oil production is in decline. The UK's future energy sovereignty and wealth will come from renewables, and the North Sea holds the majority of Europe's offshore wind resources, with the potential to deliver more value than oil and gas, and much more safely. The offshore wind industry is faced with a seminal opportunity: to lead on the journey to Net Zero; to create good jobs and economic renewal in areas of industrial decline; and to set the benchmark for all high-hazard industries which genuinely puts safety leadership at the heart of everything it does.

'I have come to the frightening conclusion that I am the decisive element. [...] In all situations, it is my response that decides whether a crisis is escalated or de-escalated, and a person is humanised or de-humanised. If we treat people as they are, we make them worse. If we treat people as they ought to be, we help them become what they are capable of becoming.'

Dr Haim G Ginott (1922–1973) clinical psychologist, psychotherapist and author of Between Parent and Teenager, Teacher and Child, and Between Parent and Child.

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About the author

Dermot is co-founder and director of Active Training Team. He has over 20 years experience of designing and delivering innovative and impactful immersive safety leadership training programmes. Dermot works closely with ATT clients such as Ørsted to create world-leading centres which are safety legacies for industry.

About Active Training Team

Active Training Team (ATT) are innovators in safety leadership. Our unique programmes equip people with the critical skills to become safety leaders and the practical communication tools to make a difference.

Using a blend of film, live action and facilitated discussion, ATT creates realistic active learning environments that bridge the gap between theory and the reality of life in the workplace. ATT's immersive approach heightens emotional and sensory experiences, positively impacting on learning, memory, recall and subsequent behaviour.

ATT designs and delivers award-winning safety leadership centres and mobile programmes at scale across the construction, transport and energy sectors. Clients include Ørsted, Tideway, TRU/Network Rail and Scottish Power. ATT aims to set the benchmark in safety leadership and welcomes the opportunity to work with organisations which share this aspiration.

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