

G+ Global Offshore Wind Health & Safety Organisation

2020 incident data report



G+ Global Offshore Wind
Health & Safety
Organisation

www.gplusoffshorewind.com

About the G+ Global Offshore Wind Health & Safety Organisation

Offshore wind power is the primary technology helping to meet the global low carbon challenge. With costs falling, deployment of offshore wind and employment in the sector are rising dramatically. This places an obligation on operators to observe the very highest standards of health and safety.

G+ is the global health and safety organisation for the offshore wind industry. The Energy Institute provides the secretariat and supports the ongoing work of the G+.

We bring together business leaders, health and safety experts and organisations operating in the offshore wind industry to drive good practice and promote world-class safety performance across the sector.

Through an evidence-based approach, we ensure key emerging risks are mitigated through co-operation and shared learnings, aiming for the highest levels of health and safety standards being pursued throughout the life cycle of offshore wind farms.

We engage on important industry matters by facilitating discussion and bringing together industry stakeholders to speak with one voice for the offshore wind industry.

The G+ has four main strands of work: incident data, good practice guidance, sharing learnings through Toolbox and a safe by design programme.

For more information, please visit www.gplusoffshorewind.com

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Introduction from the chair:

It gives me great pleasure to welcome you to the 2020 incident data report for the Global Offshore Wind Health and Safety Organisation (G+). 2020 was an extraordinary year dominated by the global challenges presented by the Covid 19 pandemic, and in particular the impact that had on both the economic and operational environment in which we found ourselves. I am very proud of how quickly our industry adapted within this new reality, and particularly proud of how as G+ member companies, we continued to keep at the heart of our operations the fundamental aim of driving world-class safety performance across the whole offshore wind sector.

The G+, its members and the whole offshore wind supply chain have continued to openly collaborate to ensure our workforce has been kept safe while ensuring the continuation of our activities. I cannot be prouder of the professionalism shown by offshore wind workers, or more grateful for the support our industry has received from the medical and healthcare community during these times. Despite the challenges, the offshore wind industry has continued to thrive. Our construction activities have increased, with hours worked up by almost 50%, demonstrating the commitment to driving the global expansion of our industry has remained strong.

G+ continues to demonstrate global leadership in offshore wind health and safety. With our industry thriving, the G+ has established itself in new regions by working collaboratively with local regulators, organisations, and the wider supply chain. To help new markets learn from the incidents experienced by others, we have been actively working on translating and adapting our good practice guidelines to increase adoption and use internationally.

In 2020, for the first time, G+ members experienced fewer than 100 recordable injuries, decreasing our recordable injury rate¹ to 3.75, representing a 32% on year reduction. 2020 also saw the highest yearly improvement in the recorded number of high potential injuries and incidents. These results cement our firm belief that collaborative work is fundamental in bringing about safety improvements.

Lifting operations remain an area of concern and the G+ has been tirelessly working with the supply chain and several organisations to address specific incidents. Our efforts are translating into a continuous reduction in the number of high potential incidents reported during lifting operations. In 2020, we also experienced a significant reduction in emergency response and medical evacuation injuries. We are determined to continue collaborating across the board to further improve.

Despite the achievements, the G+ is aware of the potential risks to our industry that emerge from the expansion of offshore wind activities further out from shore. In recognition of the increasing operational need of helicopter use in further offshore wind farms, and in collaboration with HeliOffshore, the G+ published guidance on [safe helicopter operations](#).

I am delighted to announce that, for the first time, the 2020 G+ incident data report has come to life through Toolbox, an incident learning app hosted by the Energy Institute. Throughout the report, links to incidents that occurred within our industry will be provided. By doing this we hope that readers can better understand the incidents that occur within the offshore wind industry, and gain insight into what we have learned from these incidents. These learnings, and openly sharing these with the wider energy industry, helps us in delivering a truly global and integrated safety culture.

2021 will be an exciting year for the G+. While the world slowly moves back into normality, the offshore wind industry is going to continue on its path of providing the world with clean energy to meet global commitments to curb carbon emissions. Therefore, as we continue expanding globally, the G+ will work tirelessly to ensure health and safety remains front and central in all we do.

Tove Lunde

Chair - G+ Global Offshore Wind Health and Safety Organisation
Head of Safety, Security and Sustainability, New Energy Solutions, Equinor



Overview of G+ member sites

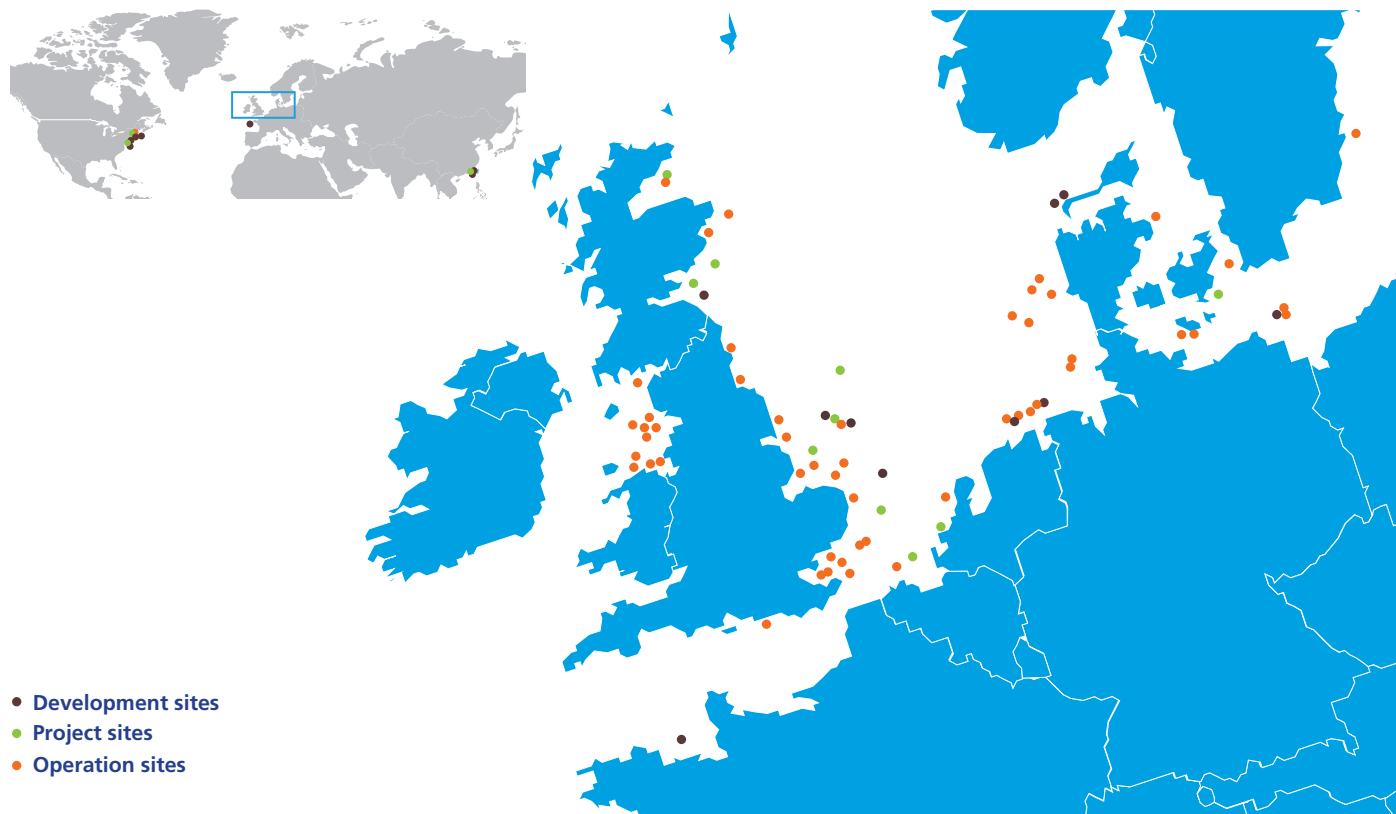


Figure 1: G+ member sites

G+ member companies submit incident data on a quarterly basis, which are then anonymised for analysis by the Energy Institute and published each year for wider review and scrutiny. Throughout the year, quarterly reports are issued to the G+ Board and European Focal Group for detailed review and interrogation, and key risk areas identified and used to inform the G+ work programme. Deep Dive data meetings are also held quarterly, drawing on the expertise within G+ member companies, to scrutinise the performance of the industry and to identify risk areas that need particular focus and attention. An annual data reporting review meeting is also held to assess the whole process and implement improvements. Each year, the template used for data collection is reviewed, streamlined, and enhanced in line with industry feedback and with the purpose of continually improving the process. A full list of the incidents included in the G+ report is published on the G+ website. The G+ incident data report includes information submitted by G+ members.

2020 highlights

2020 Key facts and figures

Key facts

743	Reported incidents and injuries ²
0	Fatalities
43	total lost work day injuries
20	incidents resulting in an emergency response or medical evacuation
386	incidents occurred on operational sites ⁴
306	incidents occurred on construction sites ⁵
43	incidents occurred on development sites ⁷

Top three work process

94	incidents during lifting operations ³
60	incidents during manual handling
57	incidents during access/egress

Incident areas

241	Incidents occurred in a turbine ⁶
232	Incidents occurred on vessels ⁸
207	Incidents occurred onshore ⁹

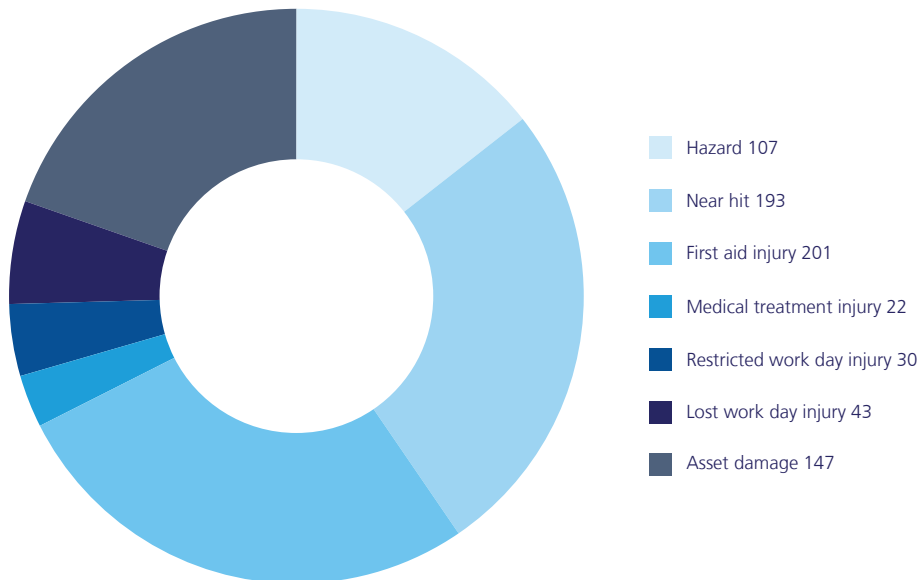


Figure 2: 2020 incident consequence summary.

² Throughout this report, injuries will denote the number of injured people and incidents will denote the number of occurrences that led to or potentially led to an injury. Injuries are defined as a person requiring first aid, medical treatment, restricted work day, or lost work day.

^{3,4,5,6,7,8,9} See Annex A for the definitions of these terms

Safety statistics for 2020¹⁰

	2014	2015	2016	2017	2018**	2019	2020
Hours Worked*	23,710,000	21,220,000	21,726,000	26,815,000	25,359,000	22,374,000	25,318,000
Fatalities	0	0	0	0	0	0	0
Lost work day injuries	44	41	43	49	39	62	43
Restricted work day injuries	14	32	35	30	34	23	30
Medical treatment injuries	85	53	42	78	45	38	22
Total	143	126	120	157	118	123	95
Total recordable injury rate (TRIR)	6.03	5.94	5.52	5.85	4.65	5.50	3.75
Lost time injury frequency (LTIF)	1.86	1.93	1.98	1.83	1.54	2.77	1.70

The number of hours worked in 2020 increased compared with 2019. This was in the main, due to hours worked in projects under construction, which increased by almost 50%, from 10.1 million hours to 14.9 million hours.

2020 saw the lowest number of recordable injuries on record, falling below 100 recordable injuries for the first time. This is testament to the hard work of G+ members in ensuring learning and remedial action are taken on board from the 2019 incident profile and facilitating collaboration across a wide range of organisations on key areas, such as operations carried out on board vessels. The resultant reduction in incidents made 2020 the year with the lowest TRIR on record.

- Lost work day injuries have decreased, resulting in a low LTIF, the second lowest on record.
- Restricted work day injuries have increased from 2019 to 2020 but remain lower than their historic average per hours worked.
- Medical treatment injuries have been steadily decreasing since 2017. 2020 has become the year with the lowest number of medical treatment injuries on record.

TRIR

The number of recordable injuries (fatalities + lost work day injuries + restricted work day injuries + medical treatment injuries) per 1 000 000 hours worked.

LTIF

The number of recordable injuries (fatalities + lost work day injuries) per 1 000 000 hours worked.

*Hours worked rounded up to the nearest 10,000

¹⁰Safety statistics previous to 2019 reflect the number of incidents, not injuries.

High potential incidents and injuries

The G+ defines high potential incidents and injuries, as events that had the potential to cause, or caused, a fatality or a life-changing injury. In 2020, G+ members recorded 198 high potential incidents, the lowest since 2015 (2019 saw 237). Two incidents caused multiple injuries, making the total high potential injuries and incidents 204. The analysis in this section is focused on the 204 injuries and incidents.

In 2020 there was a 19% decrease in the number of high potential incidents and injuries from 2019. That improvement was largely the result of reduced high potential near misses during lifting operations, which decreased 43%, and high potential lost work day injuries during vessel transit, which were reduced to 0. The improvements made within these work processes are a testament to the benefits of the work undertaken by G+ members on these areas, building on past learning and experience. Demonstrated by two current G+ workstreams focusing on further improving the safety of CTV operations and routine lifting activities.

Disappointingly, the G+ dataset showed an increase in high potential hazards during working at height, working with electrical systems, during climbing and rope access. The G+ is currently working within new markets to share knowledge and experience that can create a steep learning curve to enable new markets to avoid incidents that occurred during the early stages of offshore wind in Europe. To facilitate this, G+ Good Practice Guidance has been translated into multiple languages and 2020 has seen the development of the G+ self-assessments forms, assessing the level of compliance of sites across the globe against the G+ good practice guidelines.

From 2020, the G+ has been sharing learnings from incidents with the global energy industry via Toolbox. Toolbox holds incident lessons and safety information to help frontline workers get home safe. Please follow the links to view learnings of incidents while [working at height](#) and [working with electrical systems](#).

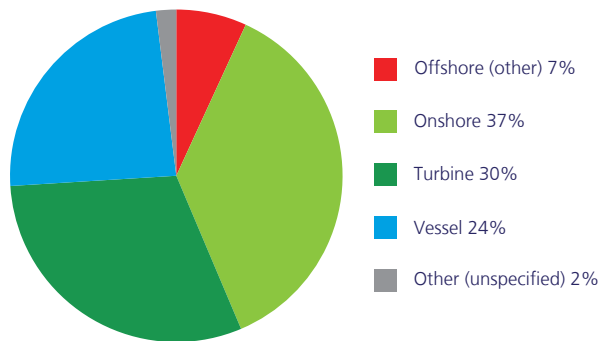


Figure 3: High potential incidents and injuries – area summary

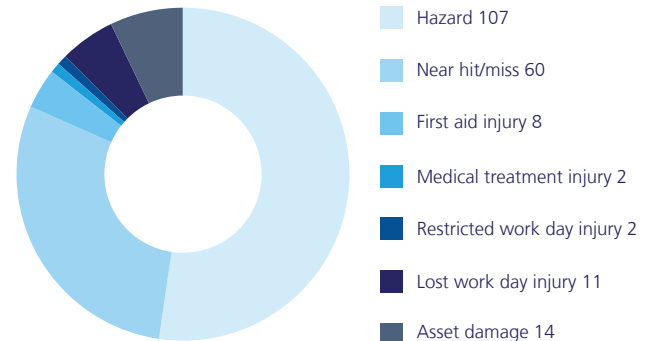


Figure 4: High potential – incident actual consequence

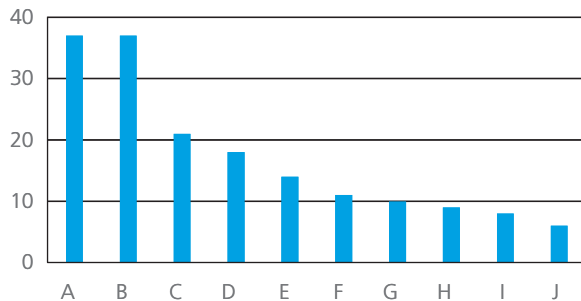


Figure 5: High potential – Top 10 work process breakdown

Key	
A	Working at heights
B	Lifting operations
C	Electrical systems (working with)
D	Access/egress
E	Routine maintenance
F	Transfer from/to vessel
G	Climbing/rope access
H	Vessel operation (including jack-ups and barges)
I	Transit by vessel
J	Communications

Incident area analysis: crew transfer vessels (CTVs)

CTVs were the main incident area in 2020, with 79 incidents, as well as being in the top three areas for the number of high potential incidents. CTVs are used to transfer personnel to and from offshore wind farms. Therefore, incidents involving CTVs can impact many individuals. In 2020, one incident involving a CTV caused three first aid injuries. Despite remaining the area with most incidents, 2020 did see an overall 16% reduction in incidents occurring onboard a CTV compared with 2019, and a subsequent 36% reduction in injuries suffered onboard CTVs.

Learnings from two CTV incidents can be found via these links: [Rigger gets hit by fender during vessel transfer](#) and [Vessel collision with wind turbine monopile](#). In recognition of the importance CTVs play in the offshore wind industry, the G+ created a new workstream in 2021, working with the Workboat Association and vessel contractors to improve CTV onboard safety. The workstream will not be completed until the end of the year, but it is hoped that it will positively impact the safety statistics from 2022 onwards.

Most incidents during CTV operations occurred during transit, where 27% of the incidents were high potential. Incidents during transit can potentially be quite severe due to the momentum force on a moving vessel. Positively, in comparison to 2019, in 2020 there were a reduced number of incidents and injuries during vessel transit (-33%). Measures such as constant overview on the bridge and mandatory use of seatbelts during transit have positively contributed to injury reduction.

In 2020, 18 high potential incidents occurred onboard CTVs, the lowest on record. There was a 48% yearly decrease in the UK, and zero incidents recorded in Germany.

The G+ held its first-ever multi-regional online Stakeholder Forum in 2020. During this event, participants fed back on the benefits of the G+ Good Practice Guideline on small service vessels, which is available in five languages. To address the areas raised requiring improvements, the 2021 G+ CTV workstream is focussing on factors such as fatigue, manning levels, and vessel suitability.

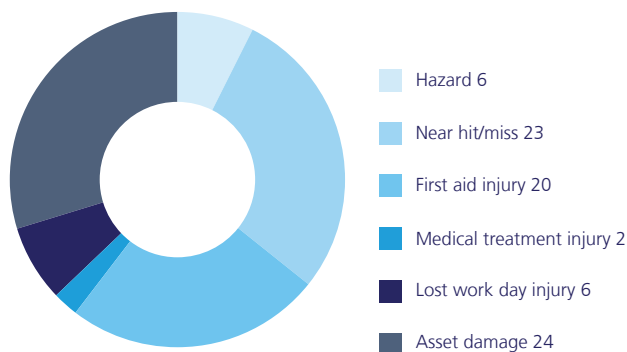


Figure 6: CTVs – actual incident consequence

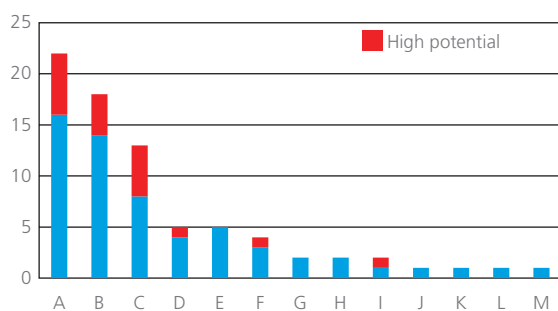


Figure 7: CTVs work process breakdown with high potential incidents and injuries identified

Key	
A	Transit by vessel
B	Vessel operation (including jack-ups and barges)
C	Transfer from/to vessel
D	Walking from A to B
E	Manual handling
F	Lifting operations
G	Electrical systems (working with)
H	Vessel mobilisation/demobilisation
I	Access/egress
J	Hot works
K	Catering/cleaning
L	Davit crane operations
M	Surveys (geophysical, environmental, meteorological)

Incident area analysis: Nacelle

The nacelle is the area with the greatest number of accumulated historical incidents from 2014 to date. In 2020, the nacelle was the second highest area per number of incidents and injuries, amounting to 78. This was a year-on-year reduction of 18%, and the lowest since 2017. Focusing on recordable injuries, despite increased working hours in 2020, G+ members reported 17 recordable injuries, the same as in 2019.

Most incidents that happened within the nacelle occurred while personnel were undertaking routine maintenance¹¹ tasks. Notably, incidents during lifting operations and working at height in the nacelle decreased by 33% and 80% respectively from the previous year. These improvements are the result of improved turbine design, improved maintenance practices to decrease exposure to hazards, as well as standardisation of procedures within the turbine.

High potential incidents that occurred within the nacelle in 2020 (16) were the lowest since 2015 (33), with lifting operations within the nacelle experiencing the best improvement in terms of safety with incident numbers decreasing by 75% in 5 years, as a result of workflow optimisation.

Contrary to the general improving trend in incidents in the nacelle, lost workday injuries increased by 33% as a result of manual handling incidents, which were the largest on record.

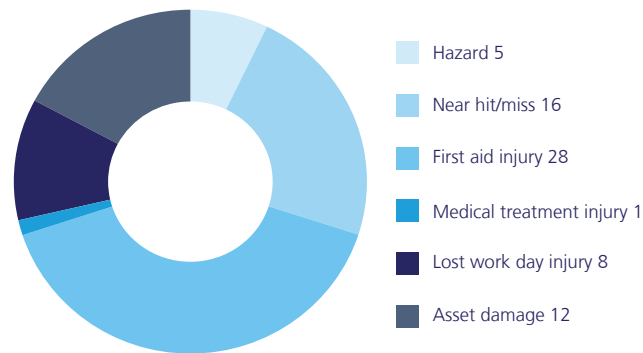


Figure 8: Nacelle – actual consequence

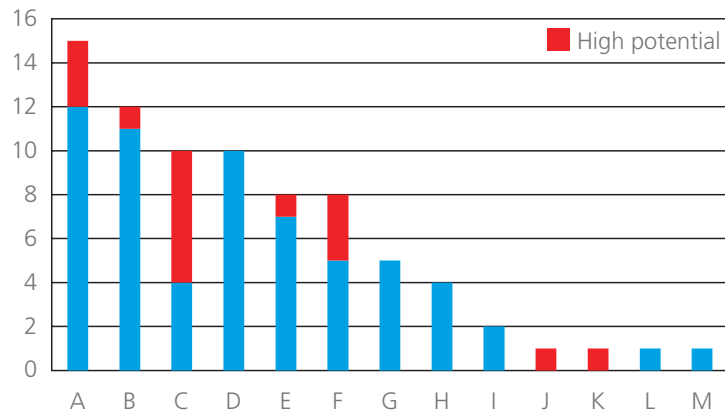


Figure 9: Nacelle – work process breakdown with high potential incidents and injuries identified

Key	
A	Routine maintenance
B	Manual handling
C	Electrical systems (working with)
D	Hand tools/power tools (working with)
E	Walking from A to B
F	Lifting operations
G	Catering/cleaning
H	Access/egress
I	Replacing major components
J	Communications
K	Working at heights
L	Confined spaces (working in)
M	Climbing/rope access

¹¹Learnings from a hand injury during routine maintenance in the nacelle can be viewed via this [link](#).

Emergency response or medical evacuation (ERME)

In 2020, 20 incidents required an ERME, with one incident involving the medical evacuation of five people. Despite having an incident with multiple evacuations, 2020 experienced a 41% decrease in the number of ERME.

The share of ERME's classified as high potential was 38%, which is the lowest share since 2015. This is the result of improvements in a range of work processes which previously had accounted for at least one or two high potential ERME incidents yearly.

In 2019, the G+ published its good practice guidance on [integrated offshore emergency response](#). Furthermore, acknowledging the increasing use of helicopters within the offshore wind industry, in 2021 the G+ published, in collaboration with HeliOffshore, the good practice guidelines for [safe helicopter operations in support of the global offshore wind industry](#).

Learnings from an incident that required an emergency response can be found via this [link](#).

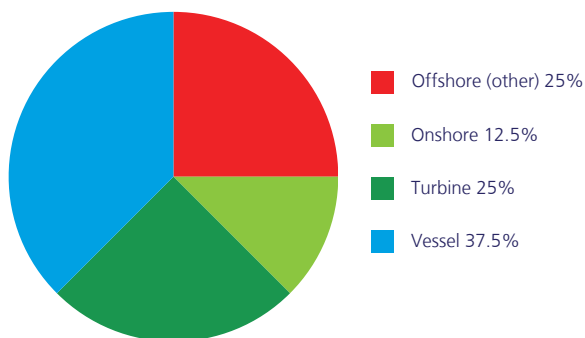


Figure 10: incident area from which ERME took place

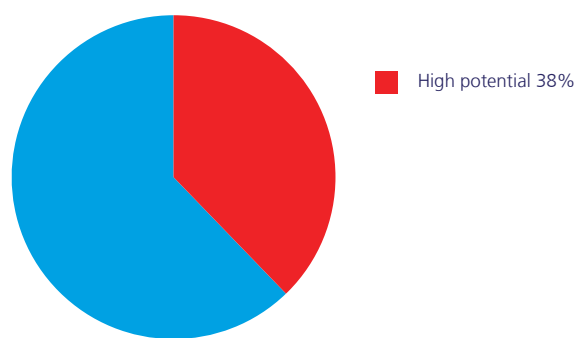
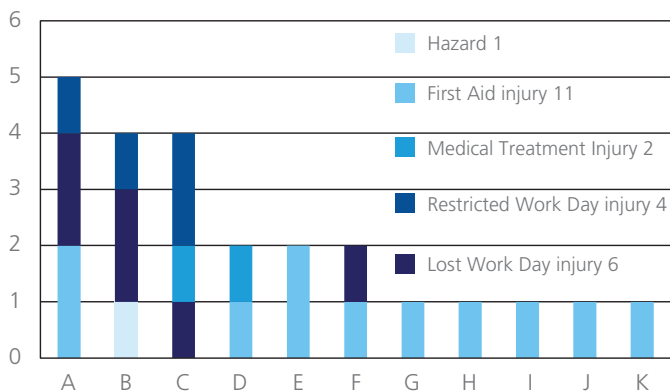


Figure 11: Percentage of ERME incidents that were classified as high potential



Key	
A	Lifting operations
B	Access/egress
C	Manual handling
D	Electrical systems (working with)
E	Surveys (geophysical, environmental, meteorological)
F	Vessel operation (including jack-ups and barges)
G	Transit by vessel
H	Walking from A to B
I	Hand tools/power tools (working with)
J	Routine maintenance
K	Painting/blasting

Figure 12: Work process breakdown of ERME by actual consequence of the incident

Lost work day injuries

A total of 43 lost work day injuries were reported in 2020, representing a 31% decrease from 2019, and making 2020 the second-best performing year in terms of lost time injury frequency.

40% of lost work day injuries occurred within the wind turbine generator, predominantly within the nacelle, while 38% occurred within a vessel. Ten incidents that caused a lost work day injury were high potential, which was the lowest number of high potential incidents that caused a lost work day since 2017 (11).

Most incidents that caused a lost work day injury occurred while conducting manual handling activities. These have increased on 2019, with over 50% leading to back injuries. Together with the University of Portsmouth, the G+ is currently working on a guidance document for assessing the specific physical requirements of offshore wind farm technicians. These physical capacity assessments help to ensure that an employee is physically capable of completing the tasks of the job to at least a minimum acceptable standard and provide employees, and potential employees, with physical fitness targets to reach and sustain. The assessment also includes recommendations on how to correctly, efficiently and safely undertake manual tasks. The implementation of such a guideline to inform the medical assessment and to be aligned with adequate training is recommended.

In 2020 the G+ published a [case study](#) to provide a summary of key learnings and requirements for effective prevention of manual handling injuries. The case study is based on the analysis of incidents, assessment of a sample of activities, a systematic review of regulatory requirements, and observations of good practice and stakeholder engagement.

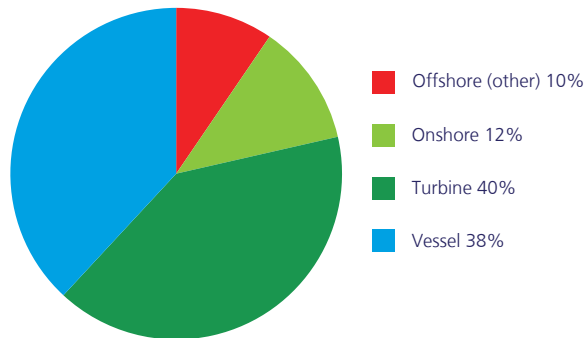
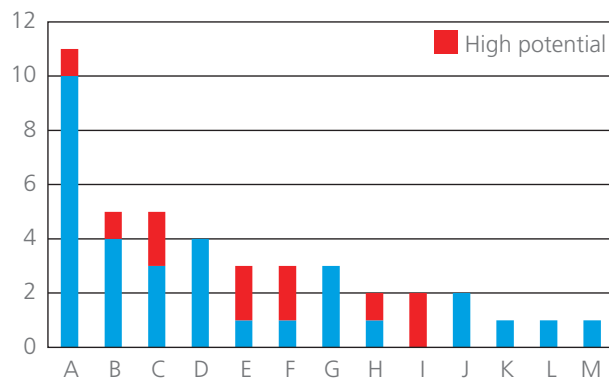


Figure 13: Lost work day injuries – incident area breakdown



Key	
A	Manual handling
B	Access/egress
C	Lifting operations
D	Walking from A to B
E	Transfer from/to vessel
F	Vessel operation (including jack-ups and barges)
G	Hand tools/power tools (working with)
H	Climbing/rope access
I	Electrical systems (working with)
J	Catering/cleaning
K	Transit by vessel
L	Cable pull/winching operation
M	Routine maintenance

Figure 14: Lost work day injuries – work process breakdown with high potential injuries identified

Incident data summary: Work Process

The G+ data reporting mechanism has 38 work process categories. Figure 15 shows the top 10 work processes, with the proportion of high potential incidents identified. Lifting operations, manual handling, and access/egress were the top three work processes in which incidents occurred, following a similar pattern to previous years.

Focusing on access and egress, 2020 showed a 37% decrease in access and egress incidents compared with 2019. The reason behind this is largely because through analysis of the G+ dataset, the G+ identified a sizable number of access/egress incidents occurred while walking from one point to another after accessing or egressing an asset. As such, to improve the granularity of its dataset, the G+ incorporated the work process 'walking from A to B' to extract those incidents from the access/egress category for further analysis.

Incidents that occurred while using tools¹² decreased by 6% in 2020, while injuries occurring as a result of using tools decreased by 21%, mostly driven by a decrease in incidents occurring in the onshore civil works area. Yet, an upturn on injuries while using tools was experienced in the transition piece. The G+ will monitor this area to extract learnings.

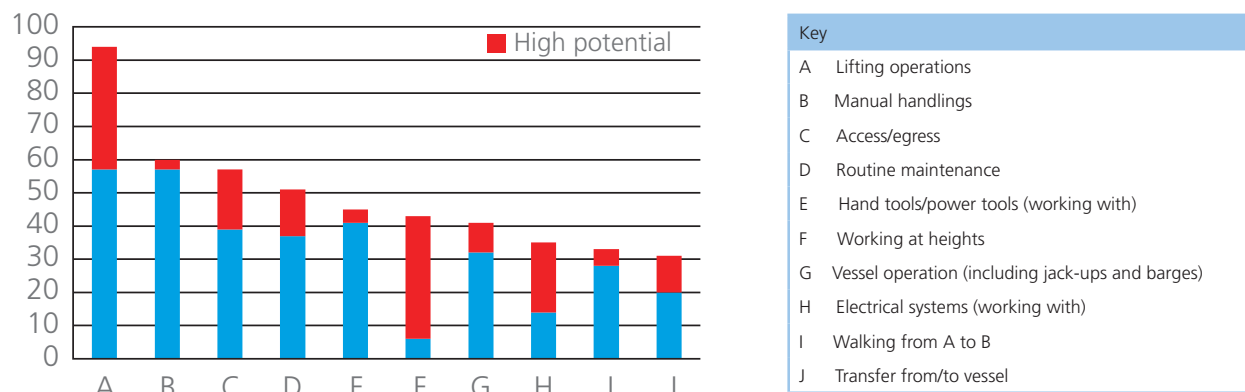


Figure 15: Work process – top 10 work process with high potential incidents and injuries identified

¹²Learnings from an incident while using tools can be found via this link

Work process analysis: Lifting operations

Lifting operations was the work process with the greatest number of reported injuries and incidents in 2020. Recordable injuries during lifting have been declining since 2018. Despite being the work process with the highest number of high potential incidents and injuries in 2020 (37), in terms of the number of high potential incidents during lifting operations, 2020 was the year with the lowest number (33) on record. Given these improvements, the G+ is focused on creating safer environments during lifting. Analysis of the G+ dataset indicated that across the industry, incidents were occurring during small routine lifts. In response, the G+ is currently developing a workshop on material handling, focusing on behavioural aspects and planning of routine lifts. Further, the G+ is currently collaborating with IMCA on the development of guidelines for lifting operations, with the aim of improving lifting from different angles.

2020 saw the lowest number of lifting operation incidents that occurred in relation to CTVs on record. These statistics reinforce the commitment of the G+ and its members to continue collaborating with industry, such as the Workboat Association, as well as vessel owners, to further improve the safety of offshore wind activities globally.

Learnings from lifting operations incidents with offshore wind can be found on Toolbox, such as [dropped gas cylinder](#) and [accidental lever operation leads to heavy load drop](#).

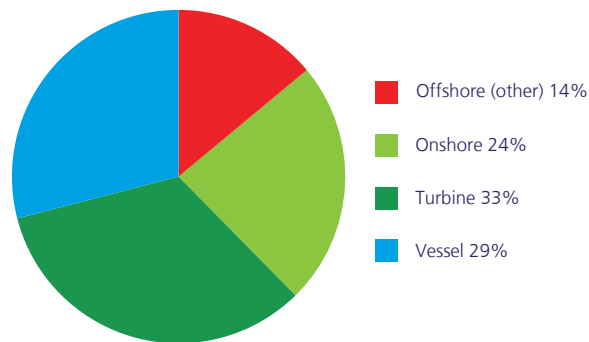


Figure 16: Lifting operations – incident and injury area summary

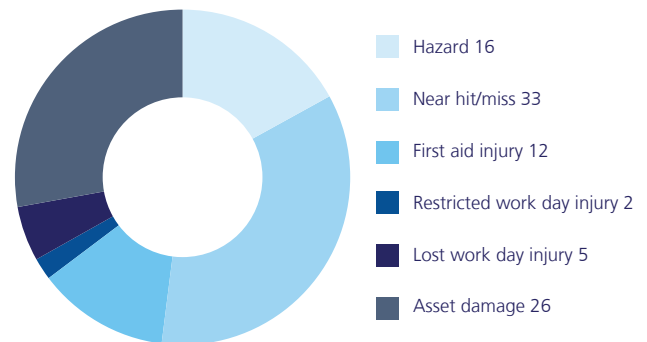


Figure 17: Lifting operations – incident consequence

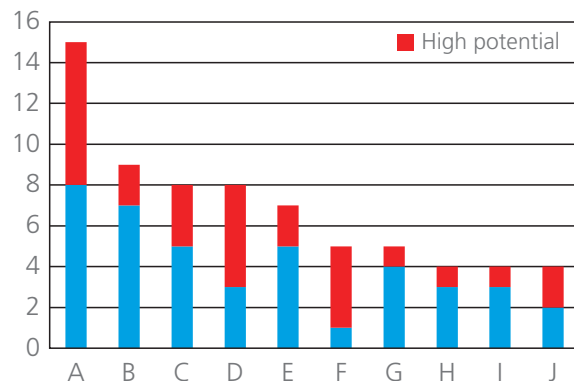


Figure 18: Lifting operations – incident area breakdown with high potential incidents and injuries identified

Key	
A	Vessel: jack-up vessel/barge
B	Turbine: transition piece/boatlanding
C	Turbine: Nacelle
D	Offshore: civils works
E	Onshore: harbour, quay, pontoons
F	Onshore: substation (other)
G	Offshore: substation (other)
H	Vessel: crew transfer vessel (CTV)
I	Vessel: SOV
J	Turbine: hub and blades

Work process analysis: Manual handling

Manual handling was the second highest work process by reported incidents in 2020 (60) albeit that there was a 22% decrease compared to 2019. The number of lost work day injuries increased though, with 55% of lost work day injuries during manual handling being back injuries.

Most injuries that occurred during manual handling were first aid injuries (35). Although manual handling first aid injuries decreased 33% compared to 2019, the number of first aids was above those suffered between 2014 to 2018. During the G+ Stakeholder Forum, attendees discussed how manual handling activities could become safer for offshore wind technicians. Most participants agreed that improvements with site-specific job planning, the use of technology, and training would all benefit this work process. As such, the G+ will explore how to introduce this feedback into current workstreams and explore how our dataset can be used to inform training and future work.

Toolbox focusses on lessons learnt from incidents that caused or had potential to cause life-changing injuries or fatality. Manual handling injuries tend not to fall under this category. Therefore, the G+ has added a section to share [safety releases](#) within its website, where incidents related to manual handling can be found.

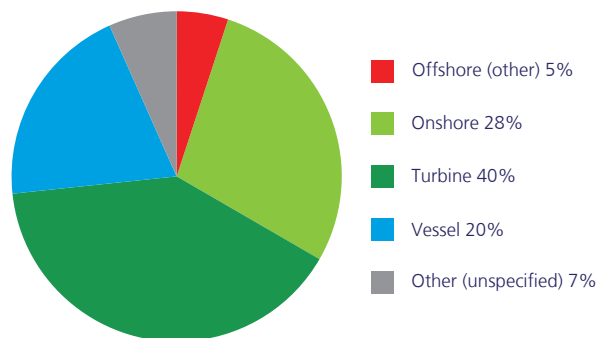


Figure 19: Manual handling – incident and injury area summary

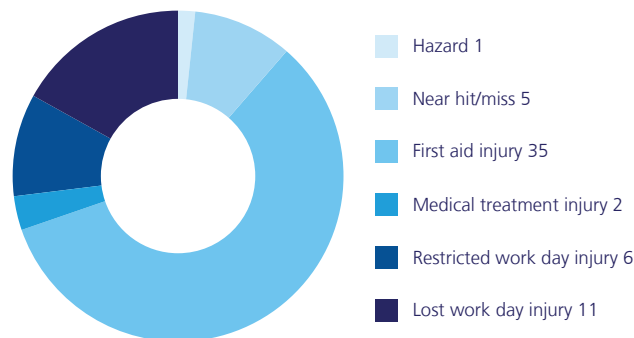


Figure 20: Manual handling – incident consequence

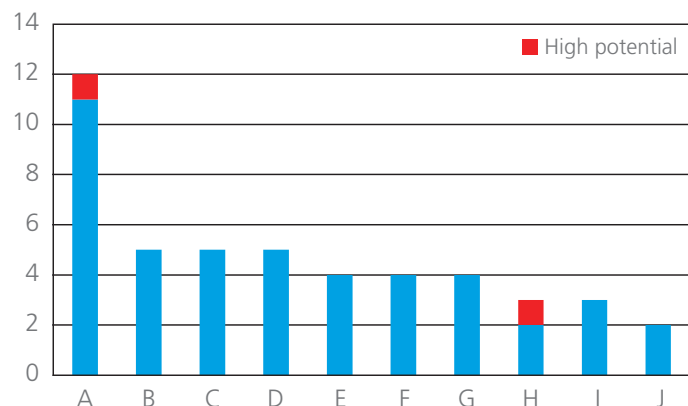


Figure 21: Manual handling – incident area breakdown with high potential incidents and injuries identified

Key	
A	Turbine: Nacelle
B	Vessel: crew transfer vessel (CTV)
C	Onshore: substation (other)
D	Onshore: warehouse/workshop
E	Other - unspecified
F	Onshore: Civils works
G	Turbine: hub and blades
H	Turbine: transition piece/boatlanding
I	Turbine: foundation external
J	Onshore: office/office surroundings

Dropped objects incidents

In 2020 there were 76 incidents involving a dropped object, which is an 18% improvement compared with the previous year. However, one incident caused 5 injuries. 2020 has seen a 42% decrease in near misses due to dropped objects making 2020 the year with the lowest on record for this near miss category.

28% of dropped object incidents were classified as high potential, which is the lowest on record. These statistics evidence the positive work done by industry on improving health and safety, such as setting exclusion zones during lifting operations, improvement of procedures, tethering, and sharing of learnings¹³.

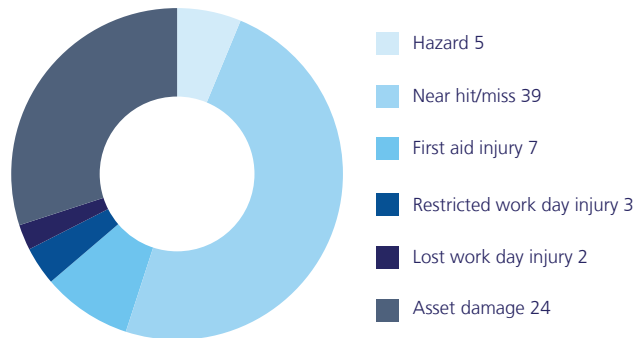


Figure 22: Dropped objects – incident consequence

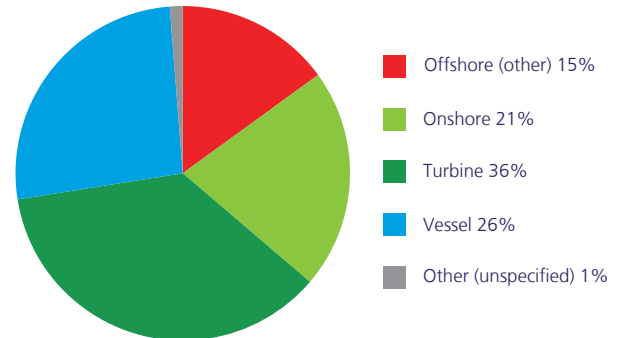


Figure 23: Dropped objects – incident and injury area summary

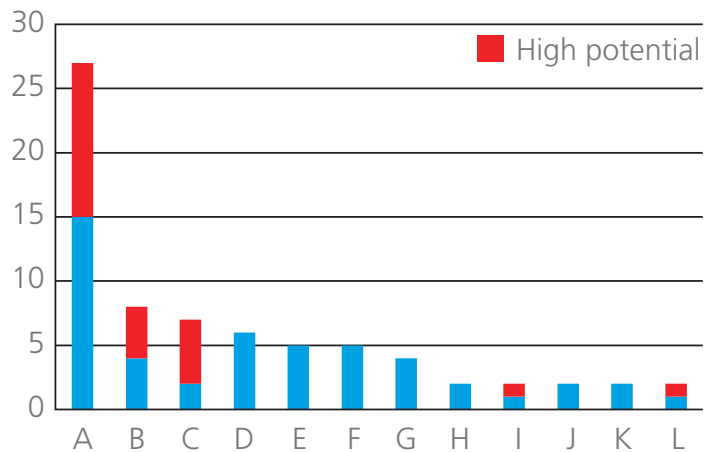


Figure 24: Dropped objects – work process breakdown with high potential incidents and injuries identified. Work processes with 2 or more dropped objects.

Key	
A	Lifting operations
B	Routine maintenance
C	Working at heights
D	Surveys (geophysical, environmental, meteorological)
E	Civil works offshore including trenching
F	Hand tools/power tools (working with)
G	Manual handling
H	Transit by vessel
I	Davit crane operations
J	Operating plant and machinery
K	Vehicle movement on site
L	Access/egress

¹³An animation of a dropped object incident based on a real event can be found via this [link](#).

Construction and operational sites

G+ member offshore wind farms comprise projects that are in either the development, construction, operational or decommissioning phases. These are defined as:

Construction/project site: Construction and commissioning.

Operation site: Site in operation, producing power. (Note: Turbines will often be commissioned and handed over to ops. as soon as they are built. In case a site has both project and operational activities the incident should be evaluated to determine what activity was performed and classified accordingly).

Decommissioning: Wind farm decommissioning activity.

A breakdown of the incident data by top 10 work processes of operational offshore wind farms and sites under construction is shown in Figure 25. Despite the differing nature of activities undertaken on each site type, three of the top four work processes per number of incidents in both site types coincide: lifting operations, manual handling, and access/egress. With operation sites having routine maintenance, and construction sites working at height as their other main work process.

32% of all incidents during construction were high potential, which is a 5 percentage points increase from 2019. This difference was driven by increased high potential hazards reported in the Netherlands and Taiwan during construction. However, working hours in both countries doubled and almost quadrupled, respectively.

In operational sites, high potential incidents represented 24% of reported incidents in 2020, 6 percentage points below 2019, as a result of lower high potential incidents occurring during lifting operations and vessel transit.

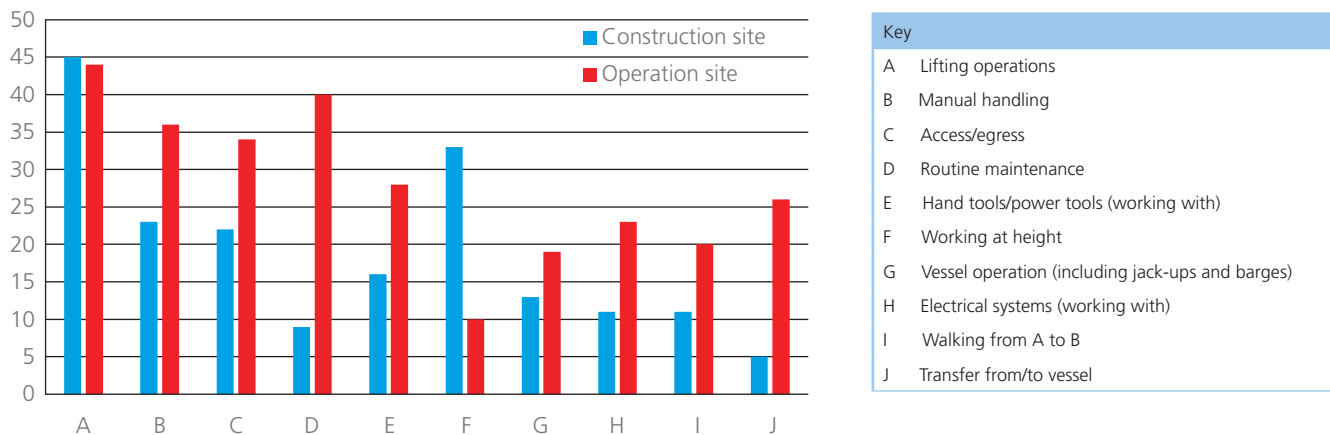


Figure 25: Work process – construction/operation site breakdown

To improve the analysis and interpretation of data, the G+ began collecting data on hours worked per site type in 2019. Figure 26 shows that in 2020, construction sites had a lower TRIR and LTIF than operational sites, as was the case in 2019. Positively, TRIR and LTIF have decreased in both site types, being a testament to the positive work of the G+ and its members.

	Construction	Operations
Hours worked	14,926,757	7,966,355
TRIR	2.0	7.5
LTIF	0.8	3.8

Figure 26: Worked hours – construction/operation site breakdown

Country profiles

G+ collates incident data from sites situated in Denmark, France, Germany, the Netherlands, Sweden, Taiwan, United Kingdom, and the United States. The incident profile of different countries, in which the G+ operates, varies in accordance with the activities that take place in each country. However, examining the top three work processes by the number of incidents in different countries – Figures 27 to 34, it can be seen that manual handling was the most common top three work process¹⁴.

To further analyse country profiles, please explore our dataset on the G+ [website](#).

	Number of sites	Asset damage	First Aid injury	Hazard	Lost Work Day injury	Medical Treatment Injury	Near hit/miss	Restricted Work Day injury	Total	Hours (million)*	LTIF/TRIR
Denmark	10	4	23	1	1	1	7	2	39	1.7	0.6 / 2.3
France	1	13	2	0	0	1	1	0	17	0.2	NA / 5.9
Germany	12	8	21	5	13	4	19	10	80	2.4	5.4 / 11.2
Sweden	2	1	0	0	0	0	4	0	5	0.1	NA / NA
Taiwan	3	2	9	36	0	1	7	0	55	1.9	NA / 0.5
The Netherlands	4	0	20	20	5	2	3	4	54	1.3	3.7 / 8.2
UK	47	119	118	36	23	11	149	13	469	15.8	1.5 / 3.0
United States	8	0	8	9	1	2	3	1	24	1.6	0.6 / 2.5

*Hours worked in offices with multiregional operations cannot be attributed to a specific country.

Figure 27: Country profiles – actual consequence, worked hours, LTIF and TRIR

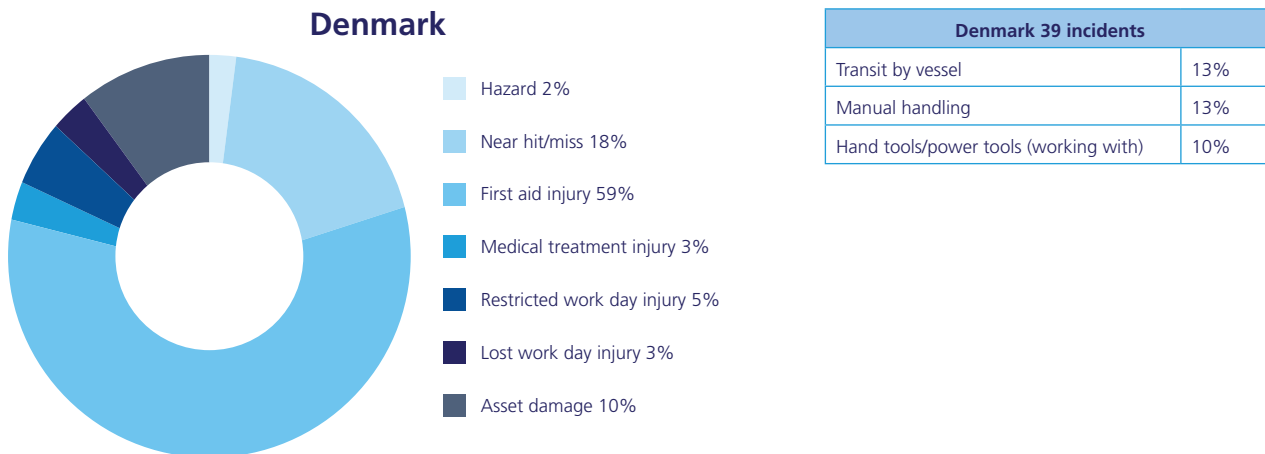
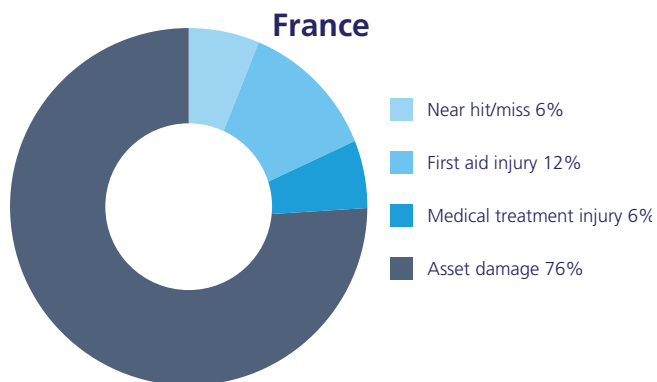


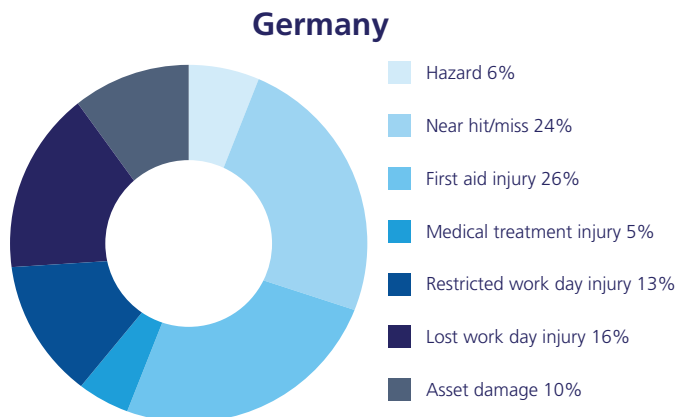
Figure 28: Denmark's incident consequence profile and top three work processes

¹⁴Only profiles of countries with over 10 incidents will be shown



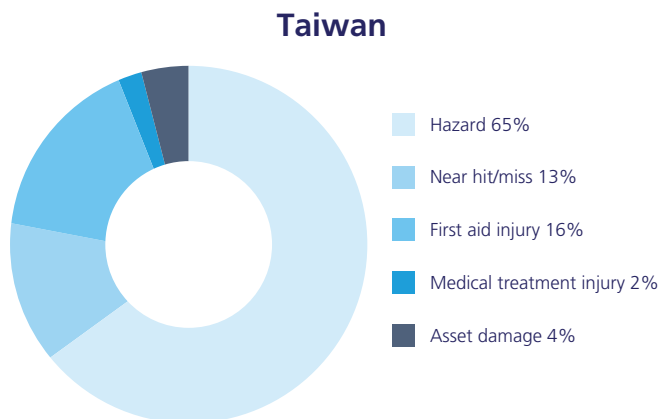
France 17 incidents	
Vessel operation (including jack-ups and barges)	35%
Lifting operations	24%
Surveys (geophysical, environmental, meteorological)	12%
Routine maintenance	12%

Figure 29: France's incident consequence profile and top three work processes



Germany 80 incidents	
Manual handling	15%
Transfer from/to vessel	14%
Electrical systems (working with)	10%

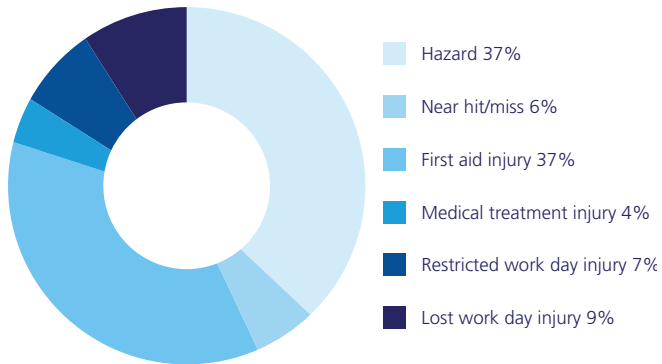
Figure 30: Germany's incident consequence profile and top three work processes



Taiwan 55 incidents	
Working at heights	31%
Climbing / rope access	15%
Lifting operations	13%

Figure 31: Taiwan incident consequence profile and top three work processes

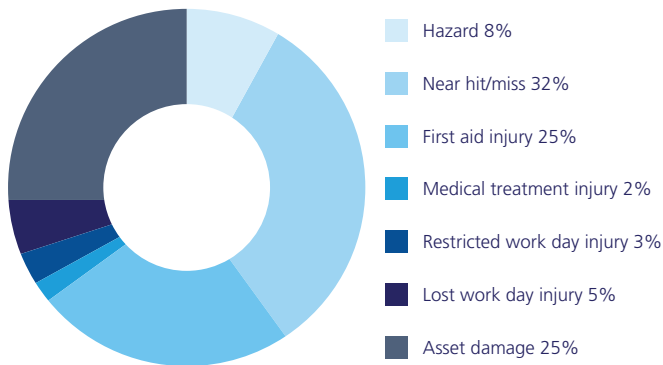
The Netherlands



The Netherlands 54 incidents	
Lifting operations	24%
Access/egress	20%
Working at heights	9%

Figure 32: The Netherlands' incident consequence profile and top three work processes

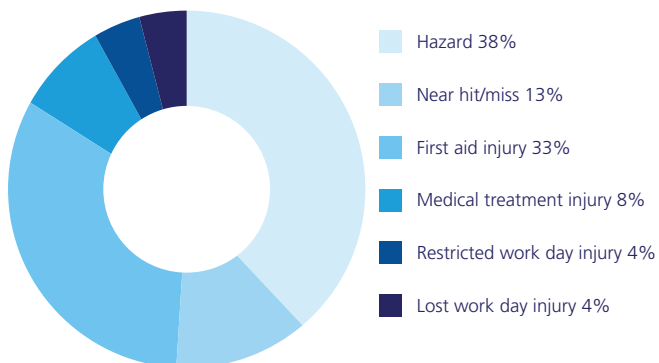
UK



UK 469 incidents	
Lifting operations	13%
Routine maintenance	8%
Manual handling	8%

Figure 33: United Kingdom's incident consequence profile and top three work processes

United States



United States 24 incidents	
Catering/cleaning	21%
Walking from A to B	17%
Working at heights	13%
Vessel operation (including jack-ups and barges)	13%

Figure 34: United States' incident consequence profile and top three work processes

COVID-19 and rescues at sea

2020 was a year marked by the global pandemic, COVID-19. Many activities were largely halted globally, with the exception of key industries such as the energy industry. The G+ and its members, using the best available science, communicating with regulators, and sharing information swiftly, adapted their activities to allow business continuity and become as COVID-19 secure as possible.

The G+ has been holding regular COVID-19 calls since the start of the pandemic in March 2020 to share information and good practice between members and associates on COVID-19. Also, relevant public information sources, approaches from the regulators and work undertaken by other organisations like SafetyOn, Energy Institute, [IOGP- IPIECA](#) have been shared and discussed. Lessons learnt have been shared with the wider energy industry via various channels including [Toolbox](#).

In August 2020, the G+, in partnership with ORE Catapult, KTN, and the Workboat Association, held a challenge on innovative solutions found for offshore wind workforce during the pandemic. The five winners of this challenge showcased their solutions to improve operational safety during COVID-19 at a G+ webinar with global attendance¹⁵.

Social distancing severely reduced the number of persons that could be transported to and simultaneously work on offshore wind projects. Despite these limitations, hours worked offshore increased, and COVID-19 infections at work were contained due to strict test and trace systems, isolation, and establishment of working bubbles.

RESCUES AT SEA

It is clear that the offshore wind vessel fleet plays an important role in aiding third parties at sea. On a continuous basis, G+ members collaborate with maritime authorities to perform rescues of vessels at sea. Rescues can involve putting the safety of staff at risk. Thankfully, vessel crew in the offshore wind industry are well trained on emergency response, which permits these actions to be taken with the best safety planning possible. The G+ thanks offshore wind crew and staff for their efforts in saving lives at sea.

¹⁵ Webinar recording accessible via this [link](#).

Conclusions and next steps

The publication of the G+ incident data is a crucial step in ensuring information is provided transparently and openly. With this approach, genuine improvements can be made to the offshore wind industry's health and safety performance. Whilst the key headlines from these data are presented in this report, the G+ encourages further analysis of the data and welcomes queries from interested stakeholders.

Despite the pandemic challenges faced in 2020, the offshore wind industry has continued to steadily grow, while striving to keep our workforce safe. In fact, our industry became a safer place to work in 2020. And for the first time, we have integrated the shared learnings from incidents via Toolbox, adding further context and understanding to the data.

Incident data remains a key driver of the G+ workstreams. The G+ will collaborate with its partners using learnings from this report, to redouble efforts to address manual handling injuries. Along with our incident data, the G+ combines the expertise from its members to guide its work in a proactive way, such as envisaging future safety issues relating to floating offshore wind or shed light on issues that can affect the safety of our industry such as employee wellbeing and mental health.

With expanding operations in the Asia Pacific and North American regions, the G+ will utilise its know-how and its regionalised datasets to develop and adapt good practice guidelines that can suit all regions. In 2021, the work programme of the G+ will continue to demonstrate the G+'s global leadership in offshore wind health and safety.

Annex A – Glossary

Throughout the report some terms are used to mean a group of work processes or incident areas. The definitions to these terms are as follows:

¹ TRIR	total recordable injury rate
³ Lifting operations	Lifting operations comprise the following work processes: lifting operations and rigging/sliding/banking. They do not include davit crane lifting operations or cable pull/winning operations.
⁴ Operational site	Site in operation producing power
⁵ Construction site	Site under construction and commissioning.
⁶ Turbine	The turbine includes internal and external foundations, hub and blades, nacelle, service lift, tower, transition piece/boat landing areas, external and internal foundations, helicopter area and yaw gear space.
⁷ Development site	Development and consenting phase of the project
⁸ Vessels	Vessels include accommodation vessels, cable installation vessels, crew transfer vessels (CTVs), diving vessels, fast rescue crafts (FRCs), guard vessels, jack-up vessel/barge, service operation vessels (SOVs), survey vessels and tugs.
⁹ Onshore	Onshore areas include public roads/areas, car parks, harbour/quay/pontoons, excavations and civil works, administration, offices, warehouses and workshops, substations, and WTG assembly.
Offshore	Offshore areas include offshore accommodation platform, offshore meteorological mast, and offshore substation areas.

The following incident consequence definitions have been used in the G+ dataset:

Fatality	An incident that involves death as a result of a work-related incident or occupational illness. Deaths that occur after an incident but are a direct consequence of an incident are to be included.
Hazard	A hazard is a condition or a situation where there is a potential to cause an incident. It is important to remember that nothing has happened, and no impact/harm has occurred. Only hazards which are considered to be of high potential are included.
Near hit	A near hit or miss is any incident which could have resulted in a work-related accident but did not, either by chance or timely intervention.
First aid	An injury which requires simple treatment that is self-administered or by a first aider, doctor or nurse but does not result in lost time or long-term medical care.
Medical treatment injury	An incident not severe enough to be reported as a fatality, lost work day incident or restricted work day incident, but which is more severe than requiring simple first aid treatment.
Restricted work day	An incident that does not result in a fatality or a lost work day but does result in a person being unfit for the full performance of the regular job on any work on any day after the occurrence of the occupational injury.

Lost work day incident	Non-fatal incident that involves a person being unfit to perform any work on any day after the occurrence of the occupational injury. 'Any day' includes rest days, weekend days, leave days, public holidays, or days after ceasing employment.
Asset damage	An event where there is damage to plant, equipment or facilities (no injury to persons).
High potential incident	High potential incidents are incidents or near misses that had the potential to cause a fatality/lifechanging injury

The following statistical definitions have been used in the G+ incident data analysis:

Total recordable injury rate (TRIR)	The number of fatalities, lost work day incidents, restricted work day incidents and medical treatment injuries per million hours worked.
Lost time injury frequency (LTIF)	The number of fatalities and lost work day incidents per million hours worked.

The following abbreviations have been used throughout the report:

CTV	crew transfer vessel
ERME	emergency response or medical evacuation
FRC	fast rescue craft
G+	G+ Global Offshore Wind Health and Safety Organisation
IMCA	International Marine Contractors Association
SOV	service operation vessel
WTG	wind turbine generator

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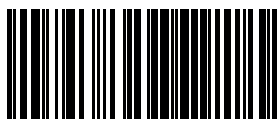
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