G+ Global Offshore Wind Health & Safety Organisation

2019 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**

Contents

Introduction from the chair:

It gives me great pleasure, in my first year as Chair of the G+ Global Offshore Wind Health and Safety Organisation, to introduce to you the 2019 G+ incident data report. Collaboration across the membership in gathering and sharing data on safety incidents is the cornerstone to the work of the G+. It underpins everything we do as an organisation, developing good practice, informing our Safe by Design programme and driving our learning initiatives.

As installed capacity increases around the world, and the global workforce grows, so too does the potential for exposure to the hazards associated with operating in offshore environments. Our fundamental aim is to drive world class safety performance across our sector, through collaboration, through honesty, openness, and inclusiveness, and through continuous improvement to our ways of working and our culture. In 2019 the G+ has created a new regional Focal Group in the Asia Pacific region, increasing collaboration with international regulators, wider industry organisations and the wider supply chain. We have also taken early steps to similarly increase profile, presence, and activity in the United States.

Whilst we continue on a general trend of improvement in our safety performance, 2019 does show an increase in the reported number of injuries, especially those relating to lost workdays. We are therefore disappointed with our 2019 incident data. Especially following the significant progress made the previous year. The difference is in part driven by a change in the metrics used to collate and analyse the data, but is nonetheless still a focus of discussion and attention, with members scrutinising reported incidents to establish if appropriate G+ guidance was in place and if being followed. We have also been working with the wider supply chain to ensure the lessons learned from these incidents are made available to as wide an audience as possible, primarily through the Toolbox Incident learning App hosted by the Energy Institute.

In addition we have established the G+ Operations Group, a focal point for Operation Directors to be able to meet and share learnings and experience across operational sites, complementing the existing G+ Safety Champions group which is for Project Directors of sites under construction. 2019 saw data collected and presented in a way that enables us to report on working hours per site type, allowing comparison between construction and operational sites. In the spirit of openness and inclusivity, this information, and all the information gathered across multiple years, is available for interrogation and scrutiny on the G+ website, for all interested parties. Feedback on the data is always valued and helps inform our regular review of the data collection and reporting process. 2020 is already another exciting year for the G+. We continue to work tirelessly to improve the industry's safety performance, building our international collaboration and embracing new regions, cultures, and rapidly developing technologies. We do this all in the midst of a global pandemic. I am sure, like me, you are full of admiration and respect for the professionalism and example being shown by the medical and healthcare community, and also wider essential workers, including many of our own colleagues. I am very proud of the work our industry is doing to provide energy in these difficult times. I would like to thank all those who contribute to our work, and also to invite you, if not already involved, to join us in our efforts to continuously improve the health and safety performance of our industry.

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

Overview of 2019 incident data report: sites and method of work

Overview of G+ member sites

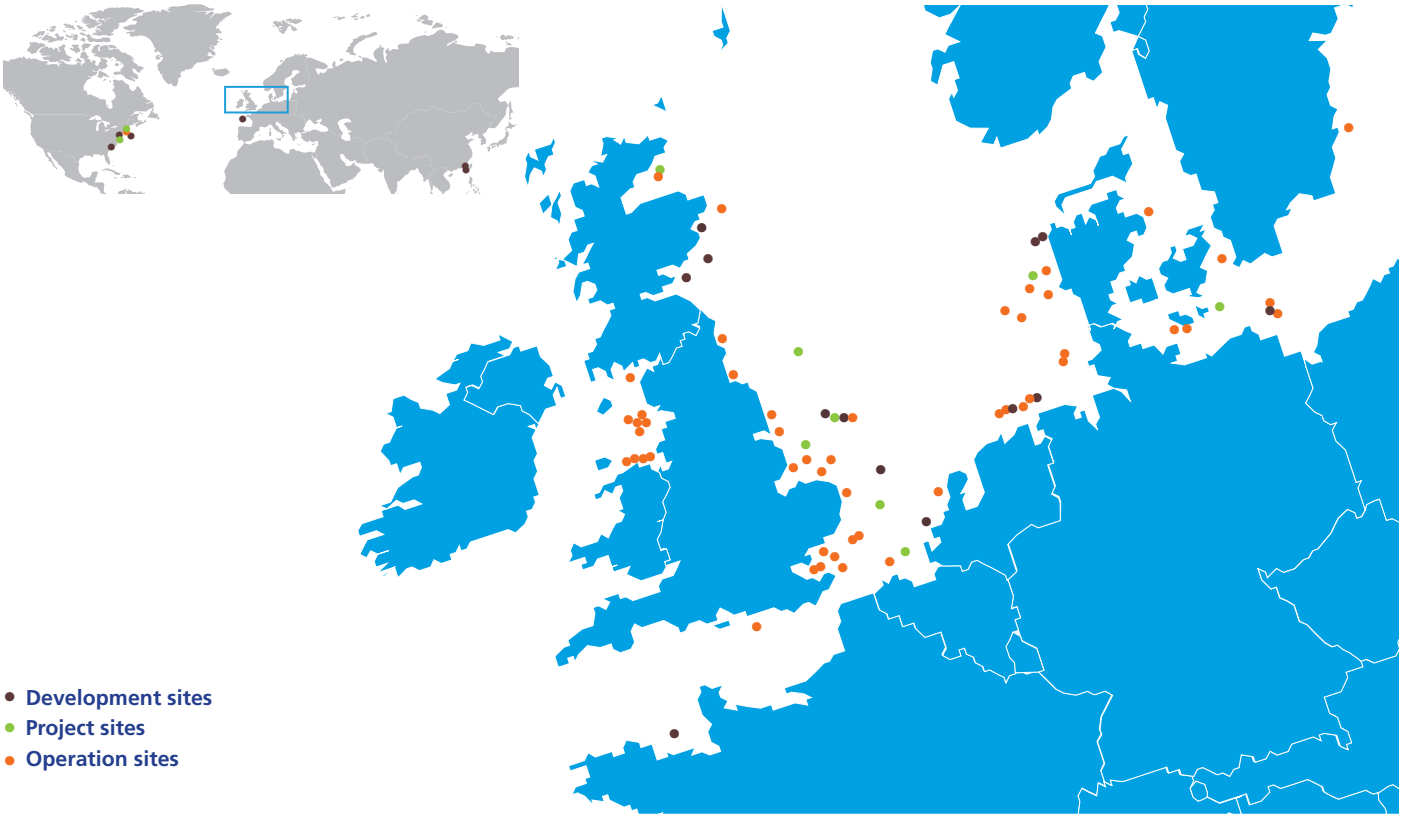


Figure 1: G+ member sites

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 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. G+ associates have not submitted incident data in 2019 to avoid duplication.

2019 highlights

2019 Key facts and figures

Key facts

865	reported incidents
0	**fatalities**
62	total **lost work day** injuries
41	incidents resulting in an **emergency response** or **medical evacuation**
463	incidents occurred on **operational** sites[2]
376	incidents occurred on **construction** sites[3]
26	incidents occurred on **development** sites[5]

Top three work process

93	incidents during **lifting operations**[1]
91	incidents during **access/egress**
76	incidents during **manual handling**

Top incident areas

291	incidents occurred in a **turbine**[4]
245	incidents occurred on **vessels**[6]
274	incidents occurred **onshore**[7]

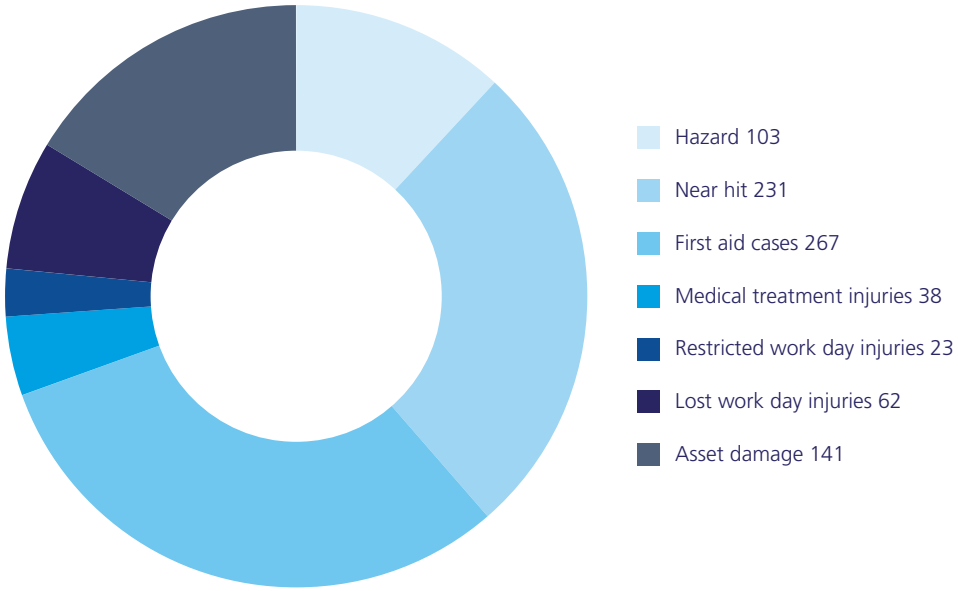


Figure 2: 2019 injury consequence summary

[1, 3, 4, 5, 6, 7] See Annex A for the definitions of these terms.

Safety statistics for 2019[8]

	2014	2015	2016	2017	2018**	2019
Hours Worked*	23 710 000	21 220 000	21 726 000	26 815 000	25 359 000	22 374 000
Fatalities	0	0	0	0	0	0
Lost work day injuries	44	41	43	49	39	62[8]
Restricted work day injuries	14	32	35	30	34	23
Medical treatment injuries	89	54	42	78	45	38
Total	147	127	120	157	118	123
Total recordable injury rate (TRIR)	6,20	5,98	5,52	5,85	4,65	5,50
Lost time injury frequency (LTIF)	1,86	1,93	1,98	1,83	1,54	2,77

The working hours of G+ members have varied through the years, peaking in 2017 and decreasing thereafter. This variability has been driven by the number of sites under construction as construction generates significantly more working hours than operation. The number of recordable injuries seems to have peaked in 2017.

There has been an increase in the total number of recordable injuries compared with the previous year, however this number still follows the trend from previous years.

- Lost work day injuries have increased in 2019.
- Restricted work day injuries have reduced on the previous year.
- Medical treatment injuries continue on a downwards trend, making 2019 the year with the lowest number on record.

Improvements in the G+ reporting protocol have enabled the G+ to provide further granularity on its data. This variation has impacted the number of lost work day injuries in 2019, which has increased the LTIF, making 2019 the year with the highest LTIF on record. The G+ is working with its members to extract learnings from lost work day injuries and take actions to reduce these in the future.

From 2019 the G+ has focussed its attention on high potential hazards. Therefore, all metrics presented and discussed will not include non-high potential hazards.

TRIR

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

LTIF

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

*Hours worked rounded up to the nearest 10 000

** Hours worked and restricted workday injuries for 2018 have been updated to reflect newly obtained data. Both updates have had a minor impact on 2018's TRIR and LTIF.

[8] Safety statistics previous to 2019 reflect the number of incidents, not injuries.

High potential incidents

In 2019 there were 252 high potential incidents, continuing a decreasing trend since 2016 (344). Improved reporting has allowed the G+ to focus its efforts on areas where high potential incidents are more likely to occur, such as working at height, transfer by vessel and access/egress. However, there are a number of different variables that have also contributed to this improvement.

High potential incidents are defined, by the G+, as incidents that had the potential to cause a fatality or a life-changing injury. Lifting operations and working at height are the two main work processes where most high potential incidents occur. Both work processes have seen a decline in comparison with 2018, 2 % and 6 % respectively. The main areas where these incidents occurred were Wind Turbine Generators (WTGs) and vessels, mostly crew transfer vessels (CTVs).

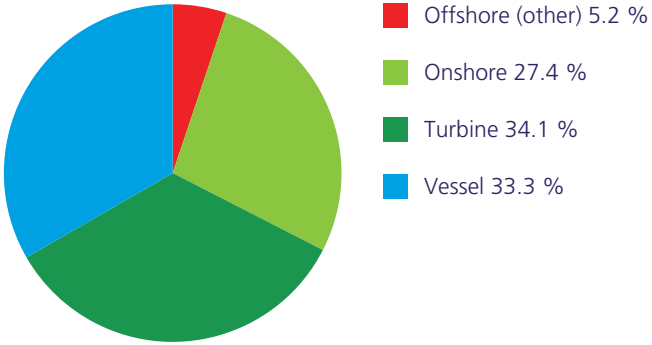


Figure 3: High potential – incident area summary

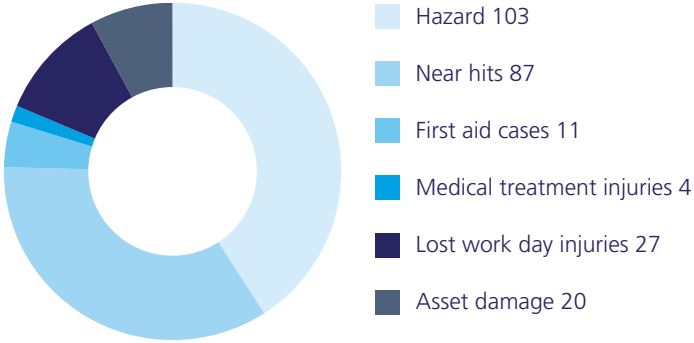


Figure 4: High potential – actual incident consequence

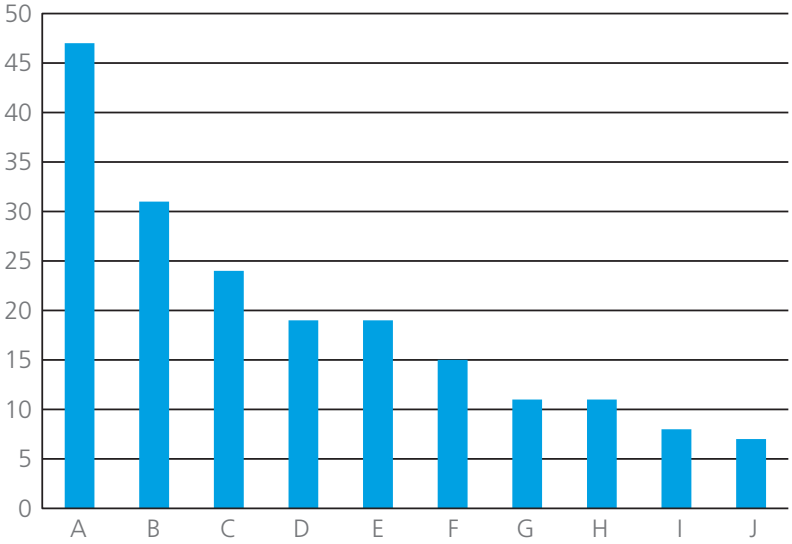


Figure 5: High potential – Top 10 work process breakdown

Key	
A	Lifting operations
B	Working at heights
C	Transit by vessel
D	Routine maintenance
E	Access/egress
F	Vessel operation (including jack-ups and barges)
G	Transfer from/to vessel
H	Electrical systems (working with)
I	Operating plant and machinery
J	Civil works onshore including excavations

Incident area analysis: crew transfer vessels (CTVs)

CTVs are the area with the highest number of high potential injuries (47), the highest number of emergency response or medical evacuation injuries (20), and the highest number of overall injuries in 2019 (108). CTVs are used to transfer personnel to and from offshore wind farms on a regular basis. Therefore, incidents involving CTVs can impact a large number of individuals. In 2019, one CTV incident alone resulted in 15 lost work day injuries. In this case, injured personnel required medical evacuation, and this was also classified as high potential. As a comparison, in 2018, G+ members experienced a total of just five lost work day injuries in CTVs with two being classified as high potential.

To deliver and promote good practice globally, the G+ has translated the second edition of its good practice guideline *The safe management of small service vessels used in the offshore wind industry* into French, German and Mandarin, and will continue to work closely with contractors in developing and improving guidance in this area. A key focus area for the G+, in more recent years, has been working with other trade organisations and associations. Working together enables lessons learnt from incidents to be promulgated more widely across the industry, to avoid duplication and ensure that the best placed organisation undertakes the remedial actions that are required. The G+ works closely with the Workboat Association, who we know has had a strong focus on sharing lessons learnt from incidents that have occurred in 2019, and we continue to do this in 2020 and beyond.

The work process breakdown of incidents occurring on CTVs are presented in Figure 7. Most incidents occurred during transit, where 67 % of incidents were classified as high potential incidents. This is above the share of high potential incidents which occurred during vessel operations (32 %) and lifting operations (47 %).

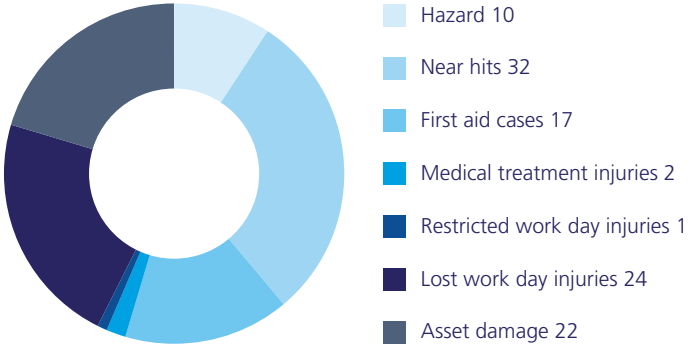


Figure 6: CTVs – actual incident consequence

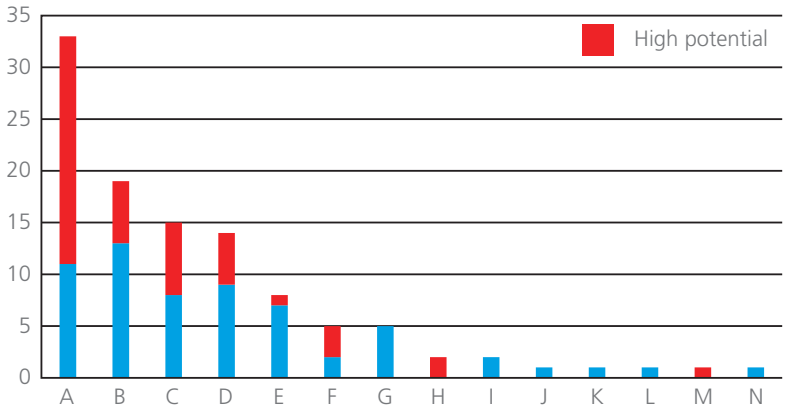


Figure 7: CTVs work process breakdown

Key	
A	Transit by vessel
B	Vessel operation (including jack-ups and barges)
C	Lifting operations
D	Transfer from/to vessel
E	Manual handling
F	Vessel mobilisation/demobilisation
G	Access/egress
H	Working at heights
I	Training/drills/team building events
J	Hand tools/power tools (working with)
K	Diving operations
L	Communications
M	Chemicals and hazardous substances (working with)
N	Routine maintenance

Emergency response or medical evacuation (ERME)

In 2019, 41 ERME incidents were reported, which is an increase of 32 % compared with 2018. The share of ERME incidents classified as high potential in 2019 was 66 %, which is an increase over 2018 (39 %). The increase in these figures, when compared with 2018, can be attributed to the injuries that occurred in the CTV incident referenced earlier, and has reinforced the commitment of G+ members' to work closely with wider stakeholders in improving vessel transfer safety and the overall performance of the industry in this regard. More widely, most ERME incidents occurred on board vessels (61 %), followed by WTGs (19.5 %), onshore (9.8 %), and offshore (9.8 %). 54 % of the reported ERMEs were required as a result of incidents causing lost work day injuries.

With the expansion of offshore wind activities into further from shore sites, the G+ has recognised the growing potential risks. In 2019 the G+ published the good practice guidelines: *G+ integrated offshore emergency response*, developed to consolidate a consensus approach to manage emergencies and identify contingency measures to enable an appropriate response if an emergency was to arise. The G+ is also currently working on a helicopter good practice guidance that is due to be published later this year.

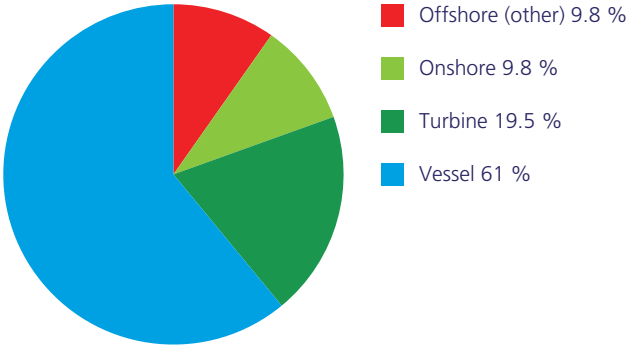


Figure 8: Incident area from which the ERME took place

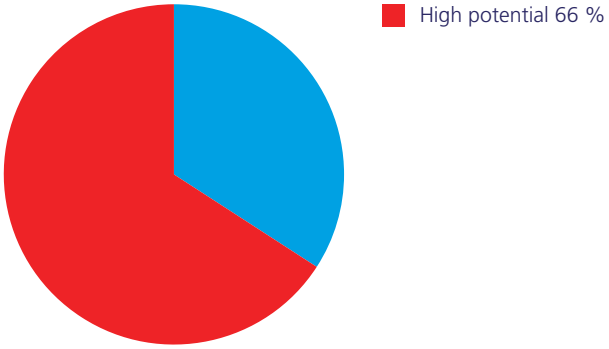
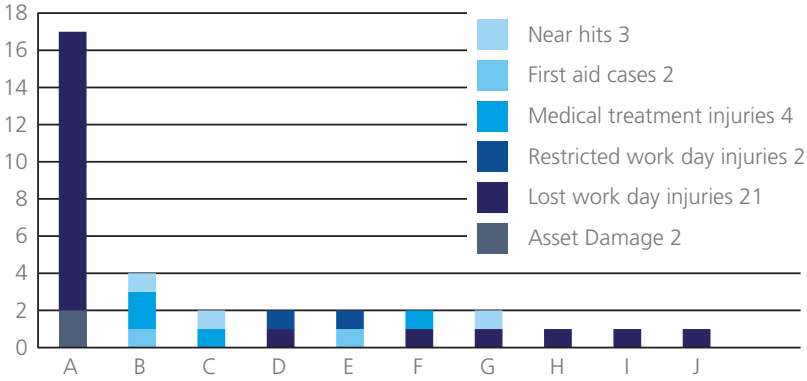


Figure 9: Percentage of ERME incident that were classified as high potential



Key	
A	Transit by vessel
B	Vessel operation (including jack-ups and barges)
C	Chemicals and hazardous substances (working with)
D	Operating plant and machinery
E	Manual handling
F	Hand tools/power tools (working with)
G	Lifting operations
H	Davit crane operations
I	Routine maintenance
J	Working at heights

Figure 10: Top 10 Work process breakdown of ERME by actual consequence of the incident

Lost work day injuries

A total of 62 lost work day injuries were reported in 2019. 45.2 % of these were reported on board vessels – mostly on CTVs, 24.2 % on WTGs, 27.4 % onshore and 3.2 % offshore. 44 % of lost work day injuries were categorised as high potential. The main work processes, where lost work day injuries occurred, were during transit by vessel, accessing/egressing and during lifting operations.

The maturity of the G+ dataset allows the provision of information in a more granular way. In 2019, 17 lost work day injuries occurred within only two incidents, which had a significant impact on the data. Furthermore, the G+ has also identified an increase in the number of activities in which there has been two or less lost work day injuries. In order to identify in which activities to focus our efforts, these activities have been matched against the wider G+ data to investigate in which of these activities G+ personnel have suffered a sizable number of injuries that required first aid, medical treatment or caused a restricted work day in 2019. Findings show that there are three work activities matching these criteria:

Transfer from/to vessel. The G+ has previously produced a safe by design workshop and report on marine transfer/access systems. This has been followed-up by further work from International Marine Contractors Association (IMCA) and more recently by the Carbon Trust Offshore Wind Accelerator (OWA). The G+ is also in the process of launching a new good practice guideline on transfer.

Climbing/rope access. The G+ has previously undertaken a detailed ergonomic assessment of ladder climbing with the University of Portsmouth. Additionally, a key workstream for 2020/21 is on medical fitness.

Civil works onshore including excavations. The G+ Focal Group will investigate what the G+ could add to this area to improve health and safety.

The results highlight that the G+ has identified and worked to improve the safety of some of the presented activities, but as an industry health and safety leader, the G+ needs to remain vigilant and continue to work in these areas to make our industry healthier and safer.

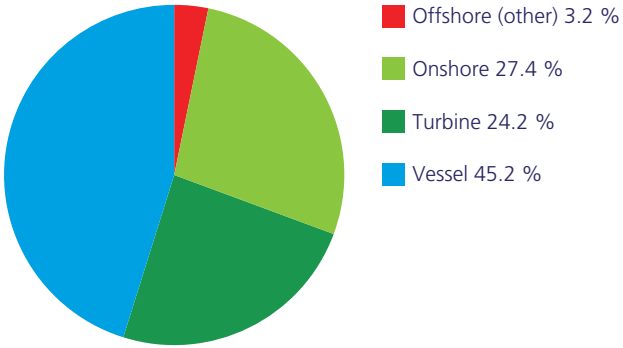
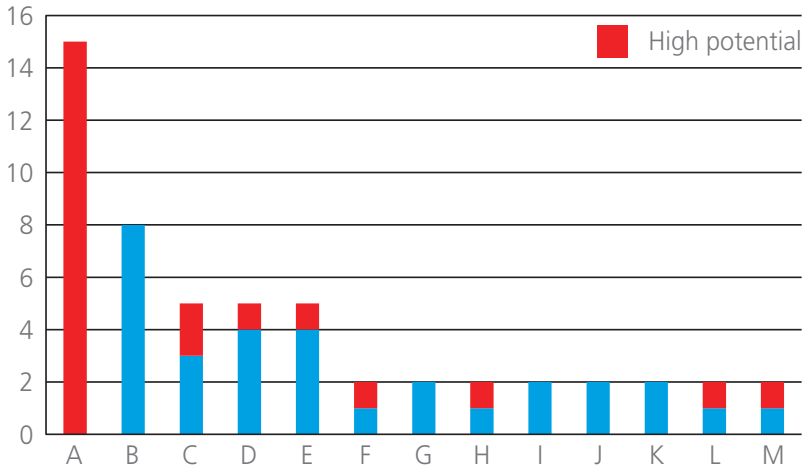


Figure 11: Lost work day injuries – injury area breakdown

Lost work day injuries (continued)



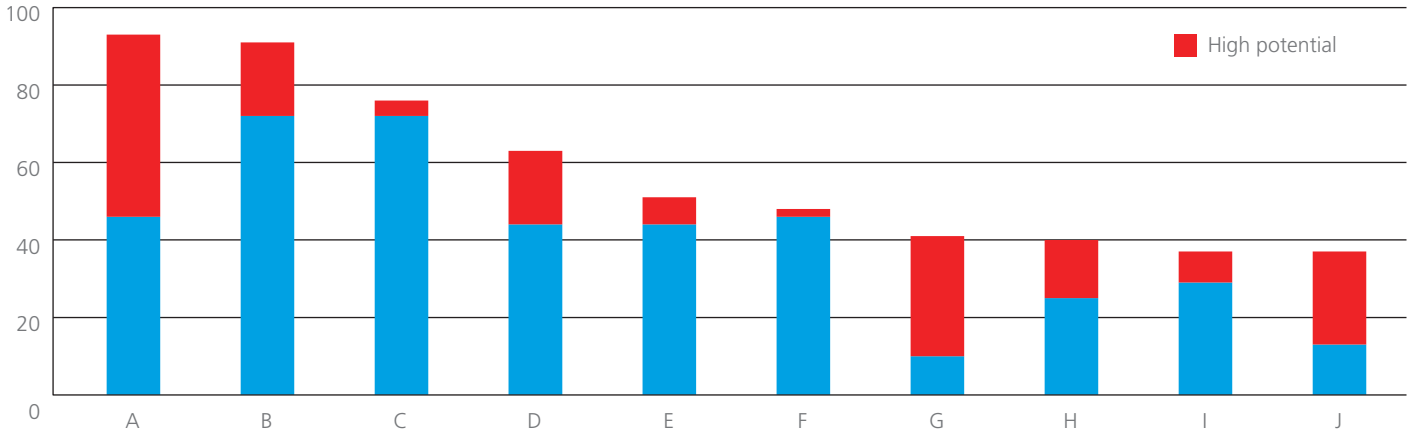
Key	
A	Transit by vessel
B	Access/egress
C	Lifting operations
D	Hand tools/power tools (working with)
E	Manual handling
F	Transfer from/to vessel
G	Commuting
H	Climbing/rope access
I	Davit crane operations
J	Routine maintenance
K	Catering/cleaning
L	Civil works onshore including excavations
M	Office work

Figure 12: Lost work day injuries – work process breakdown with high potential injuries identified. Work processes with 2 or more lost work day injuries

Incident data summary: work process

The G+ data reporting mechanism has 36 work process categories. Figure 13 shows the top 10 work processes, with the proportion of high potential incidents identified. Lifting operations and access/egress are the top two work processes in which incidents occurred, following a similar pattern to 2018. The number of lifting operation incidents have increased by 31 % when compared with 2018. However, there has been a decrease in the share of high potential incidents and recordable injuries during lifting operations of 2 % and 11 % respectively.

The work process with the third highest number of incidents is manual handling, with 76 incidents occurring in 2019. There has been a significant increase in the first aid cases reported in 2019 during manual handling, making 2019 the year with the highest number of manual handling injuries recorded. The G+ has released a case study on reducing manual handling and ergonomics related incidents in the offshore wind industry, but the data shows that further work is needed in this area.



Key					
A	Lifting operations	E	Civil works onshore, including excavations	I	Operating plant and machinery
B	Access/egress	F	Hand tools/power tools (working with)	J	Transit by vessel
C	Manual handling	G	Working at heights		
D	Routine maintenance	H	Vessel operation (including jack-ups and barges)		

Figure 13: Work process – top 10 work processes with the highest number of incidents reported with high potential incidents identified

Work process analysis: access/egress

Access/egress is the work process with the highest number of recordable injuries in 2019, with a total of 17. Over half of the injuries related to access/egress occurred within WTGs and the most common was first aid. Reported incidents during accessing and egressing have increased by 17 % in comparison to 2018, mostly driven by an increase in reported near hits within WTGs. These results align with the recommendations from the G+ safe by design report on *WTG access and egress* on the importance of an increased reporting culture. The number of lost work day injuries occurring during accessing and egressing has increased with respect to 2018 (4), with most injuries occurring onshore (38 %).

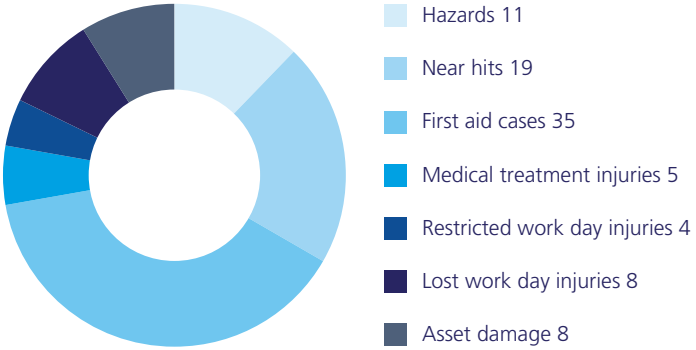


Figure 14: Access/egress – actual incident consequence

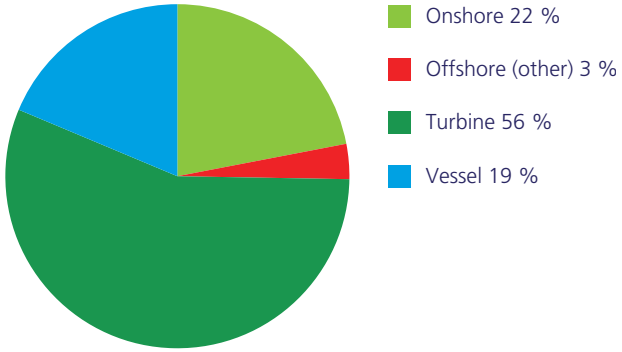
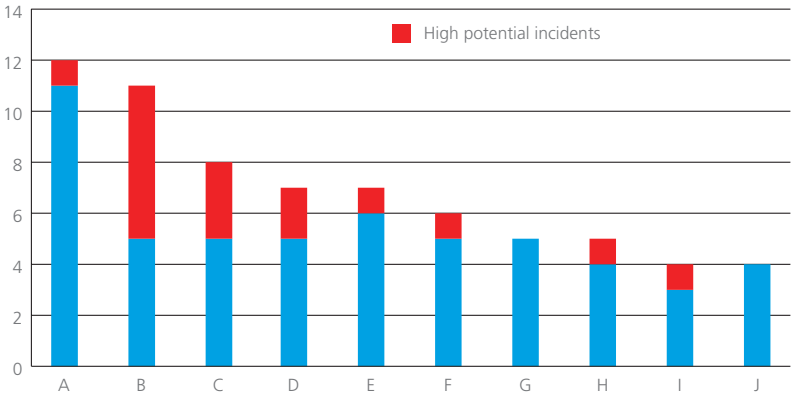


Figure 15: Access/egress – incident area summary



Key	
A	WTG : Nacelle
B	WTG : Tower
C	WTG : Hub and blades
D	WTG : Transition piece/boat landing
E	Onshore: Office/office surroundings
F	Vessel: Jack-up vessel/Barge
G	Vessel: Crew transfer vessel (CTV)
H	WTG : Service lift
I	WTG : Foundation external
J	Onshore: Car park

Figure 16: Access/egress incident area breakdown with high potential identified

Work process analysis: working at height

Working at height is the work process with the second highest share of high potential incidents. From the 41 reported incidents while working at height, 76 % were high potential incidents. When compared with 2018, 2019 saw a decrease of 7 % in the number of incidents when working at height and 6 % decline in the number of high potential incidents within this work process. 51 % of working at height incidents occurred onshore, 27 % within WTGs, 22 % within vessels, which is different to historical area profiles. This is due to an increase in simultaneous construction activities in the onshore construction area.

Being aware of the challenges of working at height, the G+ released the second edition of their good practice guideline: *Working at height in the offshore wind industry*. It is likely that a third edition will be released in 2020 due to the transfer section of the document becoming a document in its own right.

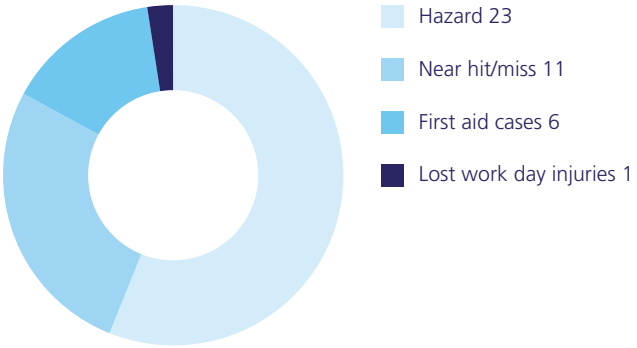


Figure 17: Working at height – incident consequence

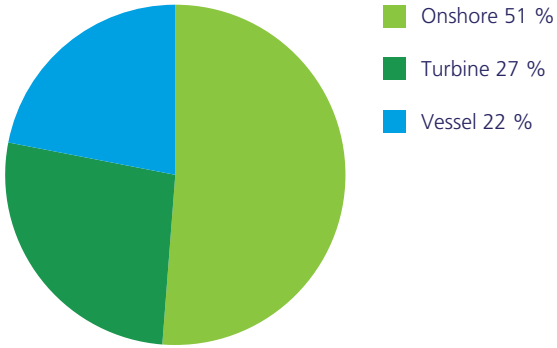
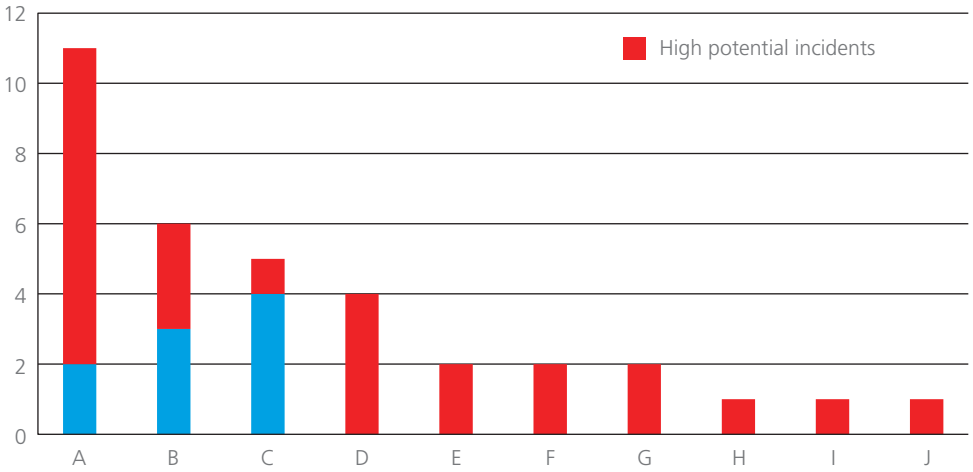


Figure 18: Working at height – incident area summary



Key	
A	Onshore: Civils works
B	Onshore: WTG assembly
C	WTG: Nacelle
D	Vessel: Jack-up vessel/Barge
E	Onshore: Car park
F	WTG: Tower
G	Vessel: Crew transfer vessel (CTV)
H	Vessel: SOV
I	Vessel: Accommodation
J	WTG: Foundation external

Figure 19: Working at height – incident area breakdown with high potential incidents identified

14

Dropped object incidents

In 2019 there were 92 dropped object incidents, representing an increase of 44 % from 2018. We believe this has been driven by an increase in reported near misses, which speaks for an ever-improving reporting culture within the wind industry. Despite the overall increase in reported incidents, the number of these which were classed as high potential incidents decreased compared to the previous year, with 38 % of dropped object incidents classified as high potential in 2019, compared to 61 % in 2018. This reduction demonstrates the work done by G+ members to ensure adequate exclusion zones are set in areas where objects can fall, together with an improvement of the procedures followed to carry out simultaneous operations at different heights.

48 % of dropped objects occurred in WTGs, 24 % on board vessels, and 24 % onshore. 72 % of all dropped objects were classified as near hits, 14 % were first aid cases, 8 % led to asset damage, 3 % were medical treatment injuries, 2 % hazards, and 1 % lost work day injuries. Most dropped objects occurred during lifting operations, manual handling, and routine maintenance, mostly on CTVs or the WTG transition piece. To further reduce the risks of dropped objects, the G+/DROPS Reliable securing booklet for offshore wind was published in 2019.

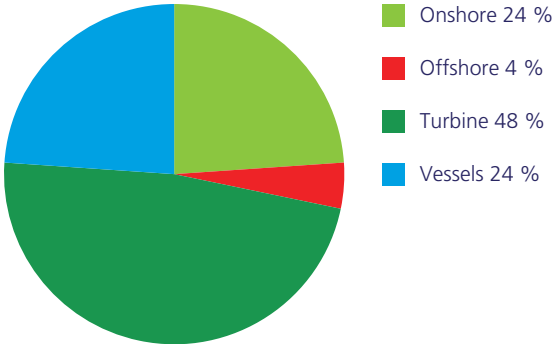


Figure 20: Dropped objects – incident consequence

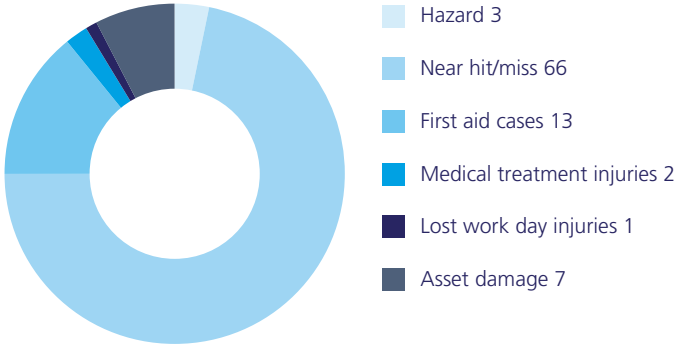
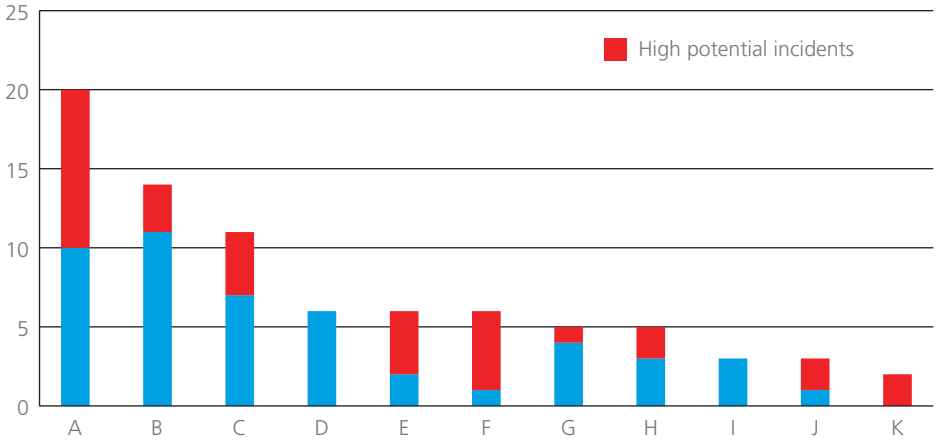


Figure 21: Dropped objects – incident area summary



Key

A	Lifting operations
B	Manual handling
C	Routine maintenance
D	Hand tools/power tools (working with)
E	Working at heights
F	Access/egress
G	Transfer from/to vessel
H	Climbing/rope access
I	Transit by vessel
J	Cable pull/winching operation
K	Replacing major components

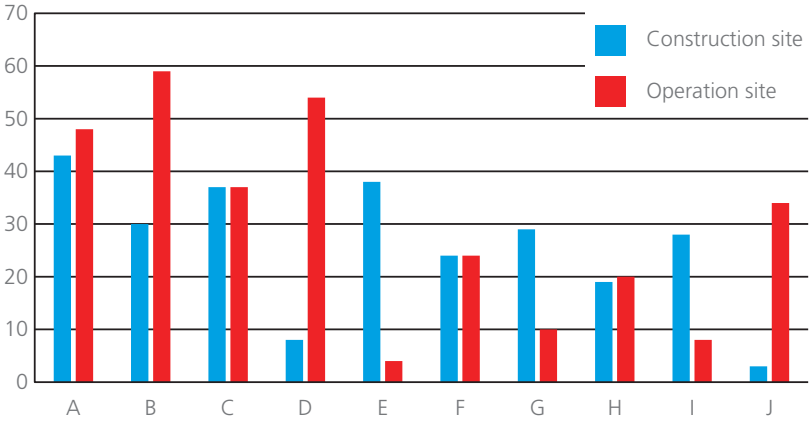
Figure 22: Dropped objects – works process breakdown with high potential incidents identified

Construction versus operation

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

- **Development site:** Development and consenting phase of the project.
- **Construction site:** Construction and commissioning.
- **Operation site:** Site in operation producing power. (Note: WTGs 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 is 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 23. The differing nature of the incident profile of both site types is due to the scope of activities undertaken on each. In construction sites, most incidents occurred during lifting operations, onshore civil works, and manual handling. In operational sites most incidents occurred during accessing and egressing -mostly within WTGs, during routine maintenance, and lifting operations. The percentage of high potential incidents as a share of construction sites has decreased from 44 % in 2018 to 26 % in 2019. While in operational sites there has been an increase in the share of high potential incidents from 28 % in 2018 to 32 % in 2019.



Key	
A	Lifting operations
B	Access/egress
C	Manual handling
D	Routine maintenance
E	Civil works onshore including excavations
F	Hand tools/power tools (working with)
G	Working at heights
H	Vessel operation (including jack-ups and barges)
I	Operating plant and machinery
J	Transit by vessel

Figure 23: Work process – construction/operation site breakdown

In an effort to improve the analysis and interpretation of data, in 2019 the G+ began collecting data on hours worked per site type. This shows that in 2019 construction sites had a lower TRIR and LTIF than operational sites. Indeed, construction sites have experienced a lower number of incidents causing a lost work day, a restricted work day and a medical treatment.

	Construction site	Operational site
Hours worked	10 127 000	9 175 000
TRIR	3,9	8,7
LTIF	1,9	4,6

Figure 24: Worked hours – construction/operation site breakdown

16

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 of the activities that take place in each context. However, examining the top three work processes by number of incidents in different countries – Figures 25 to 30, similarities on country profiles become visible[9]. For instance, Denmark, Taiwan, and the UK share some of their top three work processes. On the other hand, the Netherlands and the US show distinctive incident profiles.

To further analyse country profiles, please explore our dataset on the G+ website.

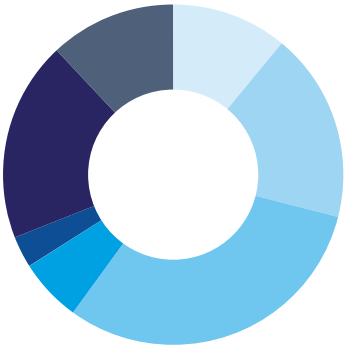
Country	Number of sites	Asset damage	Hazard	Near hit/ miss	First aid cases	Lost work day injuries	Medical treatment injuries	Restricted work day injuries	Total	Hours (million)*	LTIF/TRIR
Denmark	10	2	7	12	34	9	3	5	72	1.5	5.8/11
Germany	11	12	11	18	32	20	6	3	102	2.2	9.2/13.4
The Netherlands	3	0	9	2	6	0	1	1	19	0.7	NA/3.1
Sweden	2	1	0	1	2	1	1	0	6	0.1	11.5/23
Taiwan	1	1	11	1	4	0	0	0	17	0.4	NA/NA
UK	41	125	62	197	181	31	23	14	633	13.5	2.3/5.0
United States	5	0	3	0	8	1	4	0	16	1.2	0.8/4.1
France	1	0	0	0	0	0	0	0	0	0.1	NA/NA

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

Denmark 72 incidents	
Access/egress	8 %
Lifting operations	10 %
Manual handling	8 %
Office work	13 %

Figure 25: Denmark's incident consequence profile and top three work processes

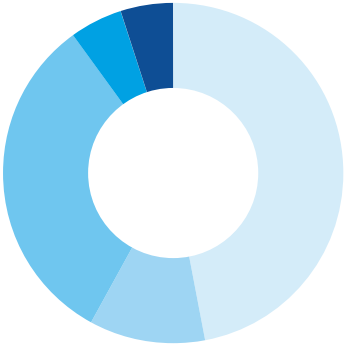
[9] Only profiles of countries with over 10 incidents will be shown



Hazard 11%
Near hit/miss 18 %
First aid cases 31 %
Medical treatment injuries 6 %
Restricted work day injuries 3 %
Lost work day injuries 19 %
Asset damage 12 %

Germany 102 incidents	
Lifting operations	9 %
Manual handling	9 %
Transit by vessel	19 %

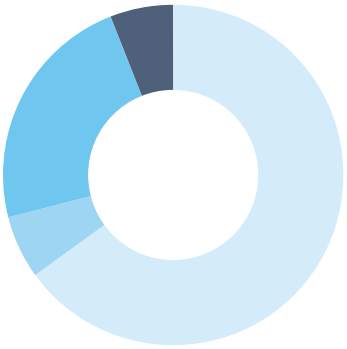
Figure 26: Germany's incident consequence profile and top three work processes



Hazard 47 %
Near hit/miss 11 %
First aid cases 32 %
Medical treatment injuries 5 %
Restricted work day injuries 5 %

The Netherlands 19 incidents	
Catering/cleaning	21 %
Hand tools/power tools (working with)	16 %
Office work	16 %
Working at heights	16 %

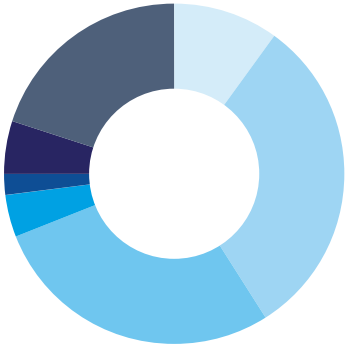
Figure 27: The Netherlands' incident consequence profile and top three work processes



Hazard 65 %
Near hit/miss 6 %
First aid cases 23 %
Asset damage 6 %

Taiwan 17 incidents	
Access/egress	12 %
Lifting operations	18 %
Manual handling	12 %
Working at heights	29 %

Figure 28: Taiwan incident consequence profile and top three work processes



Hazard 10 %
Near hit/miss 31 %
First aid cases 28 %
Medical treatment injuries 4 %
Restricted work day injuries 2 %
Lost work day injuries 5 %
Asset damage 20 %

United Kingdom 633 incidents	
Access/egress	12 %
Lifting operations	11 %
Manual handling	9 %

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

Hazard 19 %
First aid cases 50 %
Medical treatment injuries 25 %
Lost work day injuries 6 %

United States 16 incidents	
Catering/cleaning	13 %
Manual handling	13 %
Surveys (geophysical, environmental, meteorological)	13 %
Vessel operation (including jack-ups and barges)	19 %

Figure 30: United States' incident consequence profile and top three work processes

Conclusions and next steps

The publication of the G+ incident data is a crucial step in ensuring information is provided in a transparent and open way. 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.

Collating working hours by site type will help the G+ to further understand incident profiles during the offshore wind farm lifecycle and to assist with identifying what remedial action might have the greatest impact. We hope to be able to integrate the shared learning from incidents via Toolbox with the incident data report in 2020 to add further context and understanding to the data.

Learnings from this report are shared across G+ member companies to contribute to the evolution of G+ work programmes. The G+ believes it will be important in 2020 to focus on the high potential hazards to minimise incidents that have the potential to have a serious impact on the workforce.

We hope to build on the data collected from Asia Pacific and the US, through the G+ increasing global presence and to continue to adapt and improve our good practice guidelines to suit those regions.

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]**Lifting operations**	Lifting operations comprise the following work processes: lifting operations and rigging/slinging/banking. They do not include davit crane lifting operations or cable pull/winching operations.
[2]**Operational site**	Site in operation producing power
[3]**Construction site**	Site under construction and commissioning.
[4]**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.
[5]**Development site**	Development and consenting phase of the project
[6]**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.
[7]**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/life-changing 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
DROPS	Dropped Objects Prevention Scheme
ERME	emergency response or medical evacuation
FRC	fast rescue craft
G+	G+ Global Offshore Wind Health and Safety Organisation
GWO	Global Wind Organisation
IMCA	International Marine Contractors Association
LTIF	lost time injury frequency
SOV	service operation vessel
TRIR	total recordable injury rate
WTG	wind turbine generator

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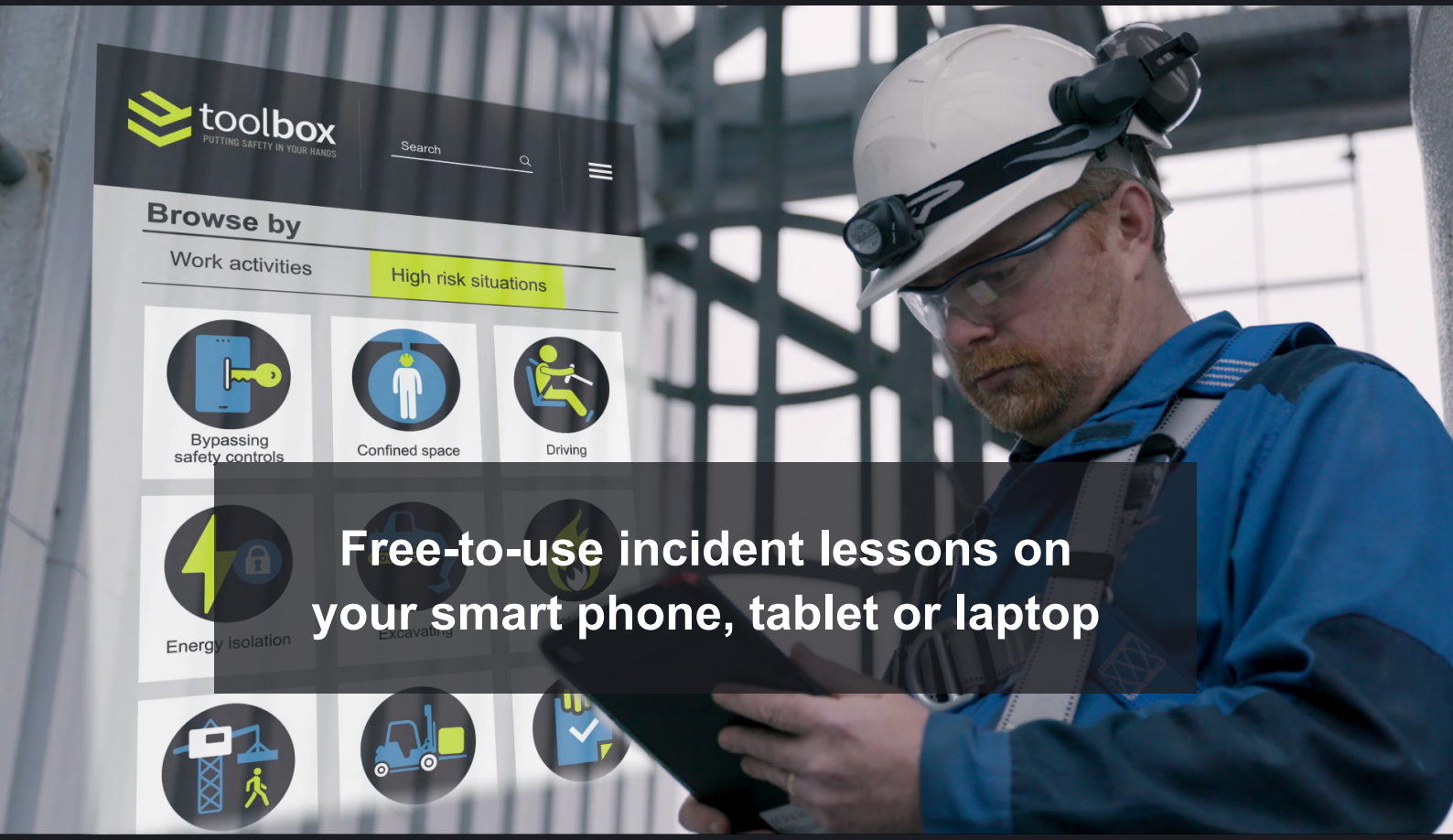

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energy institute

61 New Cavendish Street
London W1G 7AR, UK

+44 (0)20 7467 7100
info@energyinst.org

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