Promote and enable the safe, effective use of powered access worldwide

IPAF GLOBAL SAFETY REPORT 2023

www.ipaf.org/accident

Contents

Foreword

Robust data from which to draw both warnings and positives

Powered access is one of the safest – if not the safest – ways to work at height. When you consider the millions of hours worked annually using mobile elevating work platforms (MEWPs), mast climbing work platforms (MCWPs) and construction hoists, the number of incidents is really quite low – though for anyone involved in accidents, the outcome can be catastrophic.

IPAF has been gathering powered access incident data for more than 10 years, and I'm pleased to say that reporting has increased again across 2022 as a whole – we are increasingly confident in the set of statistics we have to review each year and from which we are able to draw conclusions based on trends changing over time. In this edition of the IPAF Global Safety Report, we have decided to focus most closely on year-on-year change and also statistics concerning lost-time incidents (LTIs).

This allows us to prioritise as an industry the most common causes of serious injuries and fatalities, and to focus our attention and efforts at hazard and risk awareness and management on those most frequent types of incident that too often end in catastrophe when things go wrong. What can be done to reduce or even eradicate such incidents? What more as an industry can we do to prevent electrocutions, falls from the platform, MEWP overturns or entrapment incidents?

We can never allow ourselves to be complacent. Even while, statistically speaking, our industry becomes safer year on year, we cannot accept that accidents will happen when using powered access equipment. There are known ways to manage and avoid risks for all of the most common types of incident. We hope that by highlighting the sometimes stark warnings that the data analysis in the following pages raises, we will all pull together in order to shift the dial through safety, awareness campaigns, training and familiarisation, developing or improving standards and industry good practices, and publishing new technical guidance.

This edition of the IPAF Global Safety Report will be the last that is published during my tenure as Chair of the IPAF International Safety Committee (ISC). It has been heartening to see how well received the report has been over the past couple of years; I feel we have set a very good template for sharing this analysis back to the industry with the implicit challenge to face up to some of the concerning trends that we identify. We all must keep banging the drum for better and wider incident reporting worldwide, including minor incidents and near misses, which we know are so very valuable for helping analyse trends and preventing the more serious accidents occurring.

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I would like to thank all my colleagues on the ISC, the IPAF team that assists us in verifying and analysing the reports gathered through the portal and in producing this report. I would also like to thank all of those who have engaged with IPAF incident reporting over the years, without whose valuable input we would simply not have such a worthwhile database to work from.

As well as being a very useful document in itself, this report is an excellent benchmark for the industry as a whole and solid starting point from which all those involved with IPAF in whatever capacity can continue to strive to promote and enable the safe, effective use of powered access.

Mark Keily
SHEQ Director, Sunbelt Rentals Ltd, and Chair of IPAF's International Safety Committee

Introduction

Bringing our collective influence to bear on the key challenges to industry safety

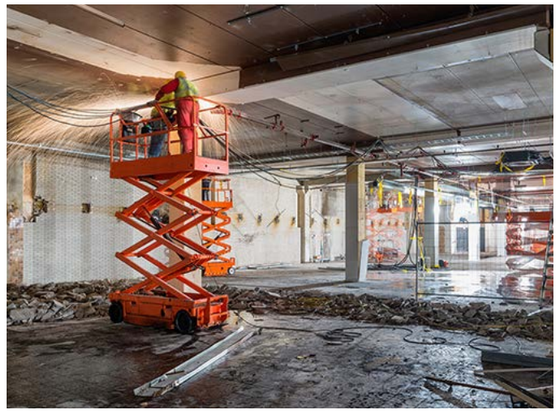
While our industry is undoubtedly getting safer even as it continues to expand around the globe, some key challenges to our proud safety record remain. As the following pages demonstrate, the most common types of incidents involving powered access remain unchanged over the latest ten-year period: Falls from the platform, overturns, hit by vehicle or machine, entrapment, electrocutions.

Reporting has improved once again over the past year, while fatalities remained largely unchanged. This is encouraging to some extent, but we must all surely do more to drill down into the underlying reasons why accidents are occurring and collectively implement strategies to continually reduce accidents globally.

IPAF continues to study all the reports gathered through its online reporting portal and to use the analysis to tailor the work we do: Last year IPAF implemented its Don't Fall For It! safety campaign to tackle the most persistent causes of accidents – falls from the platform; this year IPAF launched High Voltage! aimed at shifting the dial on the number of electrocutions that are occurring, particularly in the USA.

As with Don't Fall For It! IPAF continues to develop relevant and comprehensive technical guidance, with an entirely new document entitled The Safe Use of MEWPs in the Vicinity of Power Lines published earlier this year to underpin the key safety messages in High Voltage! and to address some of the trends we are seeing around electrocutions and electric-shock incidents.

And we continue to strive to make this report as clear and accessible as possible, to maximise the value of the analysis to all end-users. As with last year's report, there is a special section looking at data as it relates to rental activity. Since the earliest days of IPAF incident reporting, IPAF's rental company members have supported the project enthusiastically, so it is important we give something back, and to make this report as relevant as possible is just one way of doing that.



IPAF now offers a customisable data dashboard to all those companies that are reporting into the portal. This allows health & safety professionals within reporting companies to benchmark safety performance against their industry sector, or to look at trends by specific country, region or globally.

In response to what some of the latest rental activity data is telling us, IPAF has launched a campaign to promote safe loading, unloading and transportation of MEWPs. The data still showing that delivery drivers and others involved in this type of activity are indicated disproportionately at risk of being involved in an accident, often with life-changing consequences.

In addition, and for the first time, this year's report has two special new sections. One looks at activities involving contractors – end-users in construction, facilities management, arboriculture and so on. We hope this will help to supplement the work we're already doing to engage with contractors in key end-use sectors including construction and tree-care and helps to both highlight risks and raise awareness of the resources IPAF offers, free of charge to all users, to mitigate these.

> **We try to delve into the latest statistics and set out some lessons to draw that can help make using these capable, versatile but sometimes complex machines as safe as possible.**

The other new section looks specifically at incidents involving 1b-type machines – vehicle or trailer-mounted, or tracked – which the latest data analysis shows are becoming more prevalent in our industry. As a result, there are more incidents being logged via the IPAF portal involving these machines. We delve into the statistics and set out some lessons to draw that can help make using these capable, versatile but sometimes complex machines as safe as possible.

IPAF continues to empower all operators and supervisors to report quickly, easily and, if so wished, anonymously via its ePAL app for operators and managers of powered access. We hope this can unlock much more widespread reporting of accidents, as well as those minor and near-miss incidents that often go under-reported. The ePAL app is free to download for Apple or Android devices, and at the time of writing has received more than 400,000 first-time downloads worldwide since we launched it in the second half of 2021.

I would like once again to thank all those who continue to lend their assistance and expertise to helped make this report possible: The IPAF International Safety Committee – and in particular Mark Keily, who after two years as inaugural Chair will soon step down to make way for Alana Paterson, his capable and talented Vice Chair – the dedicated IPAF team, and of course all those who continue to input reports into the IPAF portal. Only by gathering this invaluable data from all corners of the globe, wherever powered access is used, can we continue to produce this report, and to drive forward all of the initiatives IPAF leads on to make our industry as safe as it can be,

Peter Douglas
CEO & Managing Director of IPAF

Executive summary

Reporting is on the rise, and signs of a decline in fatalities

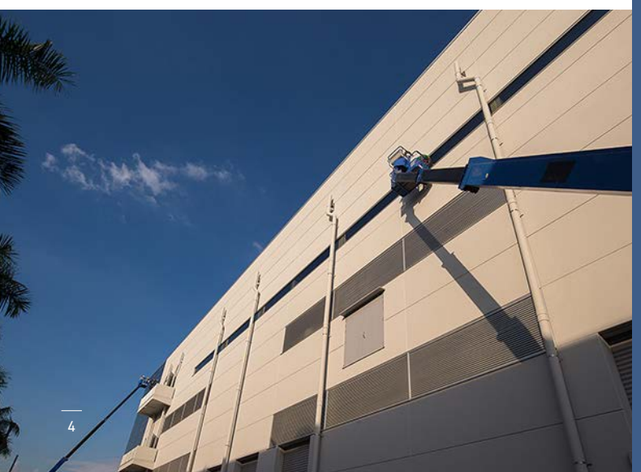
During 2022, overall incident reporting was again up year on year, and the number of fatalities were down when comparing 2022 data to 2021. This continues an encouraging trend, though a concerted industry focus will surely be required to continue to make steady progress in reducing the most common types of incidents involving MEWPs, MCWPs and hoists.

In 2022, there were 759 reports from 34 countries, up by 15% and 21% respectively. There were 831 people involved in incidents, which resulted in 102 deaths, a decline of around 19% on 2021, when there were 126 fatalities worldwide. In terms of incidents resulting in major injury or death, falls from the platform remained the most common underlying cause, with overturns second. Hit by machine, vehicle or object was third, entrapment fourth and electrocution and electric shock fifth. Mechanical failure was in joint seventh with falls from height (no machine involved).

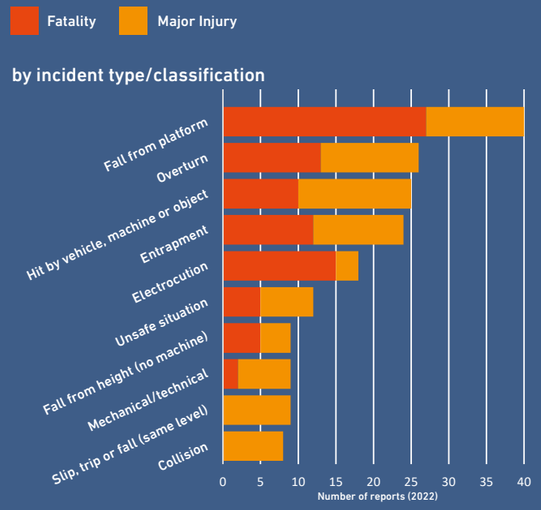
The number of countries from which reports were received rose from 28 in 2021 to 34 in 2022, verifying a significant increase in the total number of reporting countries worldwide. IPAF country or regional councils have mandated accident reporting in the UK, Ireland, and the UAE, and all three countries have seen increased reporting over recent years. More than 60% of reports were received from the UK in 2022, with just under 20% from the US, and the Republic of Korea, with a powered access market around the same size as the UK's, in third.

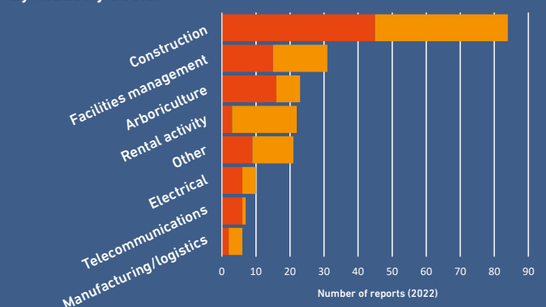
In 2022, the top sectors from which reports were received were rental activity, construction and facilities management – the same as 2021. There was an increase in the number of reports involving rental activity and a slight decrease in facilities management incidents. There were 45 fatalities and 39 major injuries in construction – a significant fall in the number of fatalities on 2021, when there were 55 deaths. Rental activity resulted in three fatalities in 2022 , the same number as in 2021, with both years seeing 19 major injuries reported. In facilities management there were 15 fatalities in 2022, down on 2021's figure.

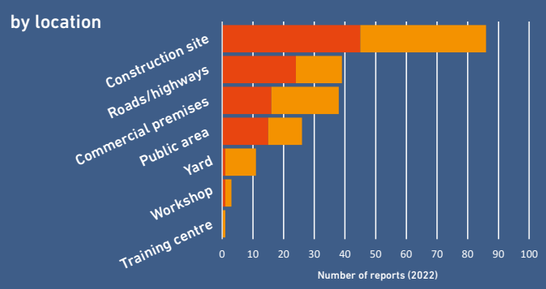
The top three MEWP categories involved in reports were 3a-type machines on 217 incidents (26%), followed by 3b types on 197 (24%), and 1b vehicles on 152 (18%). Compared to 2021, 3a MEWPs saw 60 more reports, to replace 3b machines as being involved in the most reports.



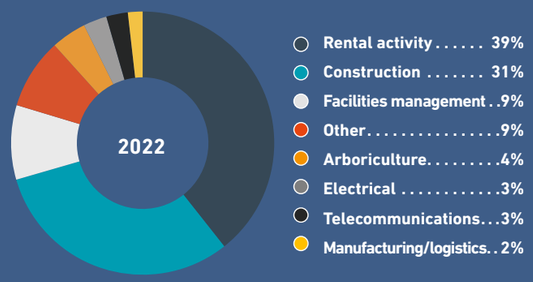
Lost-time incidents



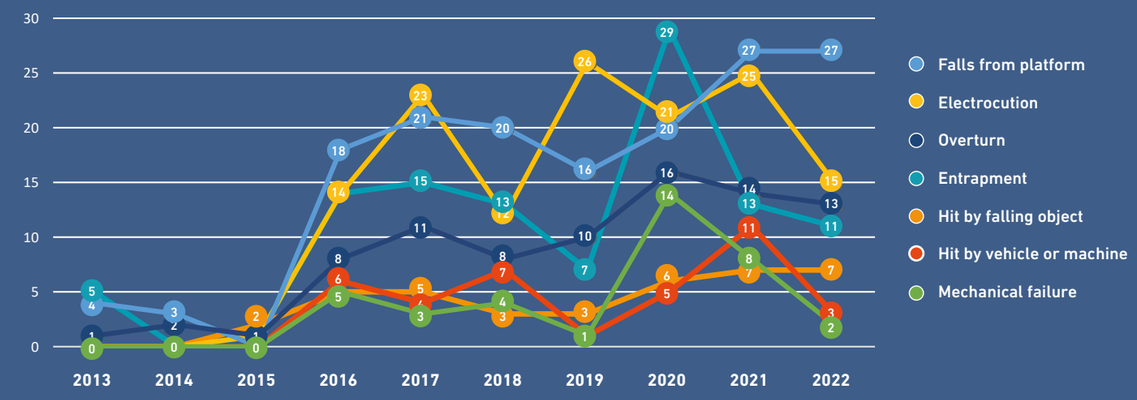




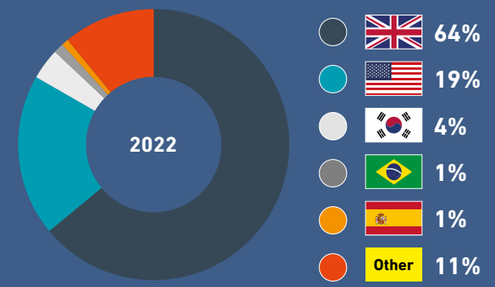
Reports by industry sector



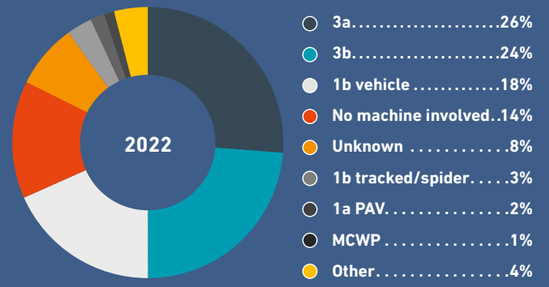
Top seven fatal incident trends



Reports by country



Reports by machine type



Analysis & outcomes

When we look at the data from 2022 and the key trends and changes from 2021, it is clear that there are some very encouraging signs indeed. For one, reporting has increased, both in terms of the number of reports received in total and countries reporting; up from 692 reports from 28 countries in 2021 to 831 (and counting) from 34 countries worldwide in 2022. This is extremely helpful when collating and analysing the incident database and shows our wider industry is becoming increasingly engaged with and inputting into the IPAF portal.

The roll-out of the ePAL app, which is well on the way to half a million first-time downloads, offers operators and managers an easy, on-the-spot way to report accidents and near-misses directly into the portal, while reporting companies can also benefit from new customisable dashboards to benchmark their own safety performance. The fact that there are now more countries than ever before where IPAF members are mandated to report all incidents into the portal has also clearly had a positive impact, with the three countries where it is a requirement of membership seeing increased reporting over the past three years.

The other key statistic is that, while reports have increased, the number of deaths reported has fallen significantly year on year. In 2021 there were 126 deaths reported, the same as in 2020. However, in 2022, that number was 102, representing a 19% decrease in deaths. This means the effective fatality rate among reported incidents has reduced by around one fifth. While it may be the case that further incident reports and in particular fatal accidents may yet be received to add to last year's data (for instance from statistics released by national health and safety bodies such as OSHA in the USA), it's cause for cautious optimism that deaths involving powered access do seem to be decreasing.

It is not yet possible to directly measure the impact of industry safety campaigns and the introduction of new safety and technical guidance or updates to training may have had on this. But it is nonetheless encouraging to think that campaigns such as IPAF's Don't Fall for It! or High Voltage! along with key technical guidance documents covering topics such as using MEWPs in public areas or to control trees and vegetation, working in the vicinity of power lines or avoiding trapping and crushing incidents may have helped to save just one life, or reduce the risk of an avoidable accident leading to a life-changing injury, since they have been published (see www.ipaf.org/resources).

Of course, there is much more to do, and this begins with continuing to drive for higher levels of and more detailed reporting; metrics across the board are largely heading in the right direction, but IPAF needs to see reporting from every country where powered access is used, including near misses, involving all different types of end-users and machines, including MCWPs and construction hoists. IPAF continues to work with the rental industry, equipment manufacturers, contractors and other bodies to build engagement with incident reporting through both the ePAL app and online via the portal: **www.ipafaccidentreporting.org**.

Electrocution

24 Reports ↓ | 5 Countries = | 30 Persons Involved ↓ | 15 Fatalities ↓

Total reports received by the IPAF portal in 2022

Shifting the dial on safety issues involving power lines

Looking at the data IPAF has been collating over the past 10 years, since 2016 there have been upticks in reports of incidents involving electrocutions and electric shocks. Likely in part owing to wider reporting, electrocutions have steadily become one of the top two most common causes of serious injury and death when using MEWPs. Can we, as an industry, shift the dial on electrocutions?

Working in the vicinity of energised power lines can expose workers to health and safety risks. Contact or arcing with power lines can be fatal whether the lines are carrying 750,000 volts or 110 volts. If a MEWP or platform occupant contacts energised power lines, it can cause instant death, electric shock or injuries either directly or indirectly from electricity.

An electric shock can also occur without direct contact with the power line. If a MEWP exceeds the minimum approach distance (MAD) stipulated by the energy supply authority. This can happen when exclusion zones are breached, and the risk of arcing increases as the power line voltage increases and can also be impacted by environmental factors such as humidity.

Workplace safety culture, behaviour and attitude play a big part in reducing risk. Ignorance or lack of awareness can lead to complacency and violations, which in turn increases the risk of contact with or arcing from power lines. In 2023, IPAF published a comprehensive guidance document, The Safe Use of MEWPs in the Vicinity of Power Lines, and launched its High Voltage! safety campaign – both of which are aimed at reducing electrocutions. IPAF also offers guidance for the Safe Use of MEWPs to Manage Trees and Vegetation, which offers information on how to reduce the likelihood of incidents of electrocutions and shocks occurring during this type of work.

People involved by machine category

1b

2022	67% | 20
3-year total	55% | 59
10 year total	53% | 113

3b

2022	10% | 3
3-year total	31% | 34
10-year total	31% | 65

3a

2022	7% | 2
3-year total	4% | 4
10-year total	6% | 12

1a

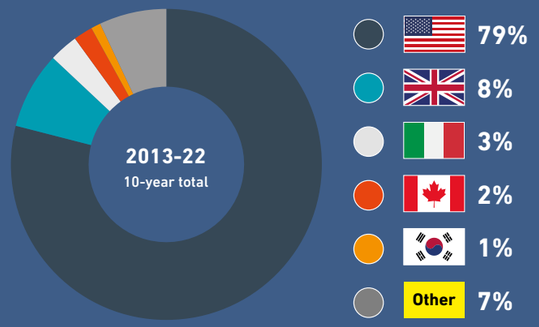
2022	3% | 1
3-year total	2% | 2
10-year total	1% | 2

Other*

2022	13% | 4
3-year total	8% | 9
10-year total	9% | 21

* **2022** – *unknown, no machine involved*
3-year total – *unknown, no machine involved*
10-year total – *unknown, no machine involved*

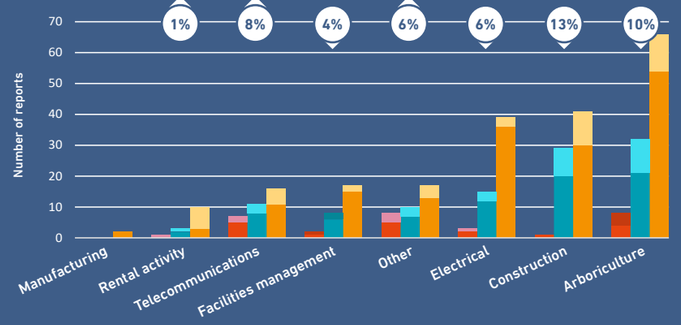
Reports by country



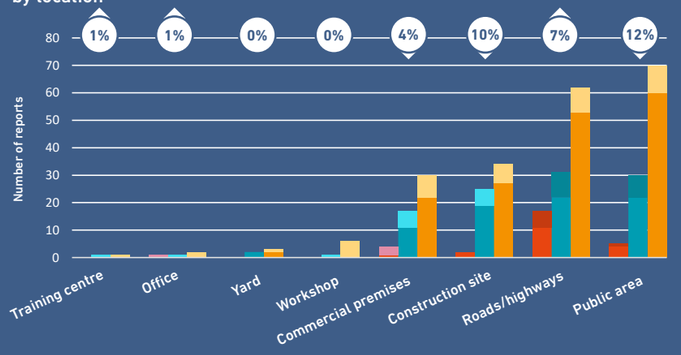
Lost-time incidents

2022: lost-time incidents / total incidents
3-year total: lost-time incidents / total incidents
10-year total: lost-time incidents / total incidents
% All reports % change 2021-22

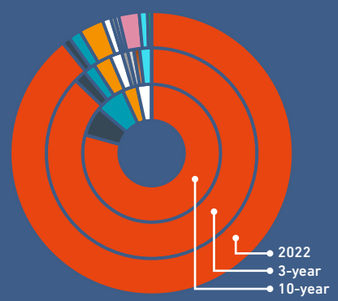
by industry sector



by location



by machine configuration



- Elevated
- Set up/stowing
- Unknown
- Not in use
- Travel in lowered position
- Load/unload
- Manually manoeuvring machine
- Maintenance
- Travel in elevated position

People involved by industry sector

Construction

2022	3% | 1
3-year total	27% | 29
10-year total	19% | 41

Other

2022	23% | 7
3-year total	10% | 11
10-year total	10% | 21

Arboriculture

2022	27% | 8
3-year total	30% | 32
10-year total	31% | 66

Facilities management

2022	7% | 2
3-year total	7% | 8
10-year total	8% | 17

Rental activity

2022	3% | 1
3-year total	3% | 3
10-year total	5% | 10

Manufacturing

2022	0% | 0
3-year total	0% | 0
10-year total	1% | 2

Electrical

2022	10% | 3
3-year total	14% | 15
10-year total	18% | 39

Telecomms

2022	27% | 8
3-year total	9% | 10
10-year total	8% | 17

Analysis & outcomes

IPAF's global data indicate that non-electrical workers – those not directly employed or subcontracted by energy supply authorities – are more likely to be killed or injured in an electrocution or electric-shock incident. The data also show that those who work in arboriculture, construction and electrical work are most at risk. Insufficient planning is often thought to be a major cause of non electrical specialist contractor incidents.
The real standout statistic is that incidents of this type are nearly always fatal.

The most likely locations to be seriously injured or killed via electrocution are in public areas or alongside roads, as well as on construction sites. In the three-year reporting period (2020-22) there were 94 reports from 11 countries, involving 108 people and resulting in 63 fatalities. The fatality rate is down slightly (by -3%), but the latest data still indicate that incidents involving electrocution are nearly always fatal.

There were 82 reports in this period from the USA (76%), in addition to 10 reports submitted from the UK (9%) and two from Canada (2%). The USA's regional electrical infrastructure is normally worked on when power lines are still live. Electrical contractors and subcontractors will often use insulated aerial devices (IADs) to carry out service, repair and maintenance work. This may be one of the reasons that the majority of reports of this type of incident received into the IPAF portal since 2015-16 have been of incidents in the USA.

Across 2022, there was a reduction across most key measures: 24 reports (-37%); five countries reporting; 30 people involved (-29%); and 15 fatalities (-40%). To see fatalities reducing in this way is encouraging, though IPAF would still like to see reports from a broader range of countries, and of minor or near-miss incidents, as the current data is probably not a true reflection of the actual number of incidents.

The USA was once again the country from which most reports arose, probably related to the sheer number of MEWPs in the country. The Occupational Safety and Health Administration (OSHA) is the regulatory body in charge of investigation of incidents and injuries in the workplace in the USA.

At 16 reports of electrocutions/shocks in the USA across 2022, that amounts to 67% of the total received. Telecommunications accounted for eight reports (27%) – this may be slight surprising to some people, as the most common industries in which electrocutions more typically occur are arboriculture and construction. In terms of machine type, 1b MEWPs were involved in 18 incidents (60%).

Electrocutions/electric shocks gradually increased from 2015 to 2017. Numbers then fell in 2018 to hit their lowest point for three years. After a rise in 2019 there was a reduction in 2020, likely owing to the pandemic. In 2021 numbers rose again, before a decline in 2022.

RESOURCES

- Safe Use of MEWPs in Public Areas
- IPAF Site Assessment (for MEWP Selection) Training Course
- Street Smart safety campaign
- Safe Use of MEWPs to Manage Trees and Vegetation
- IPAF MEWP Rescue Plan Toolbox Talk
- The Safe Use of MEWPs in the Vicinity of Power lines
- IPAF Avoiding Contact with Power Lines Toolbox Talk

Electrocution

191 Reports
14 Countries
213 Persons Involved
139 Fatalities

Total reports received by the IPAF portal 2013-22

Caution is key when dealing with this invisible hazard

Our industry is still seeing people being injured or killed when operating MEWPs in the vicinity of power lines. Consider - Rarely does an incident of this nature not result in serious injury or death. Is there a common cause with this type of incident – an operator not knowing that they are working within a power line exclusion zone, for instance while working among dense foliage clearing trees or undergrowth? Or is it that clear guidance around planning and operating powered access in the vicinity of power lines hasn't been readily available for those planning and operating powered access and other plant machinery?

While IPAF has not conducted investigations into deaths and serious injuries resulting from electrocutions or shocks, industry experts point out that incidents normally occur when there is a lack of planning, including:

- Incorrect MEWP selection (insulated or non-insulated);
- use of untrained operators;
- lack of machine-specific familiarisation;
- failure to identify the presence of power lines within or adjacent to the work area.

Risk control

Always try and eliminate hazards with risk-control measures. The person carrying out the risk assessment must be trained, competent and have suitable knowledge, experience, and qualifications to carry out the task. The best way to eliminate the hazard and reducing the risk is by preventing people, plant, equipment, and materials from coming close enough to an energised power line, allowing either direct contact or arcing to occur.

Planning

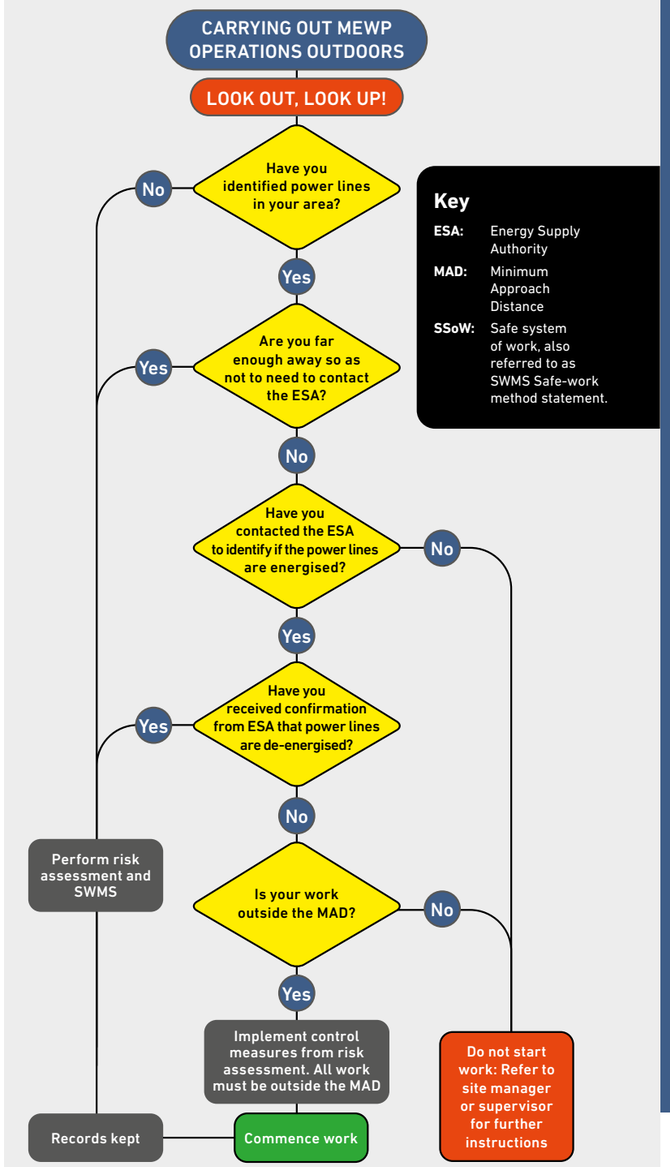
Most injuries or deaths from electrocutions can be traced back to inadequate or poor planning. The planning stage of any work that involves working near to electrical infrastructure must be completed by a competent person and communicated directly with those possible exposed and distributed to all involved. Planning should include/consider:

- Risk assessments and method statements;
- mapping the location of the work to be carried out;
- taking pictures of the task and the surrounding landscape;
- access/egress to site;
- specialist vehicles and equipment, including Insulated Aerial Devices (IADs).
- training levels of all staff involved;
- use of spotter/banksman;
- communication system between the operator and the spotter;
- emergency procedures and rescue plan;
- engineering control or warning measures, such as devices that detect electricity.

The flowchart, above, can be used can be used as a simple step-by-step process, above right, if working in the vicinity of power lines:

Exclusion zones

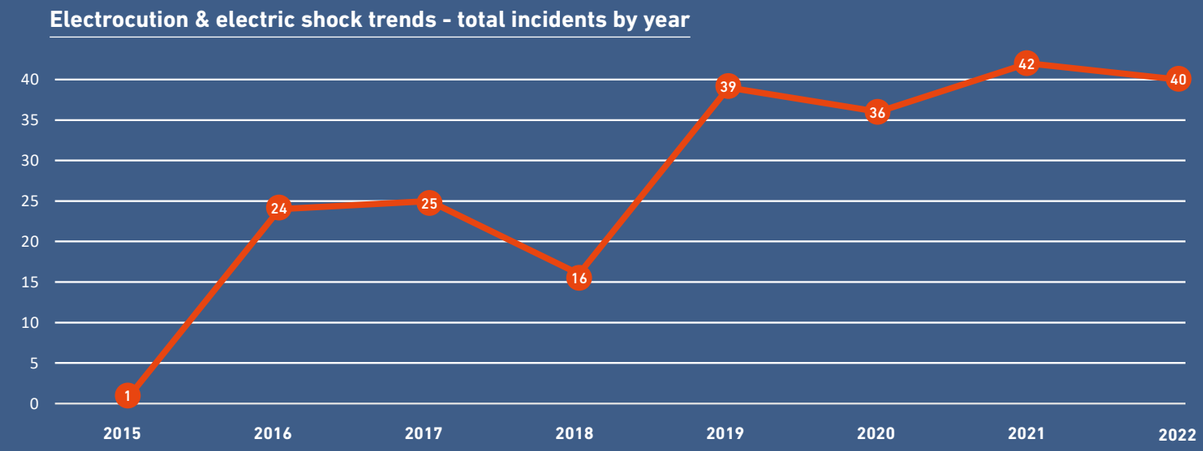
An exclusion zone is the prescribed area around live electrical power lines. An operator must not operate a MEWP in such a way that any part of the machine can enter the exclusion zone. Specific distances must be obtained from the electricity supply authority. Exclusion zones can also vary according to the voltage and type of power lines. Consider:

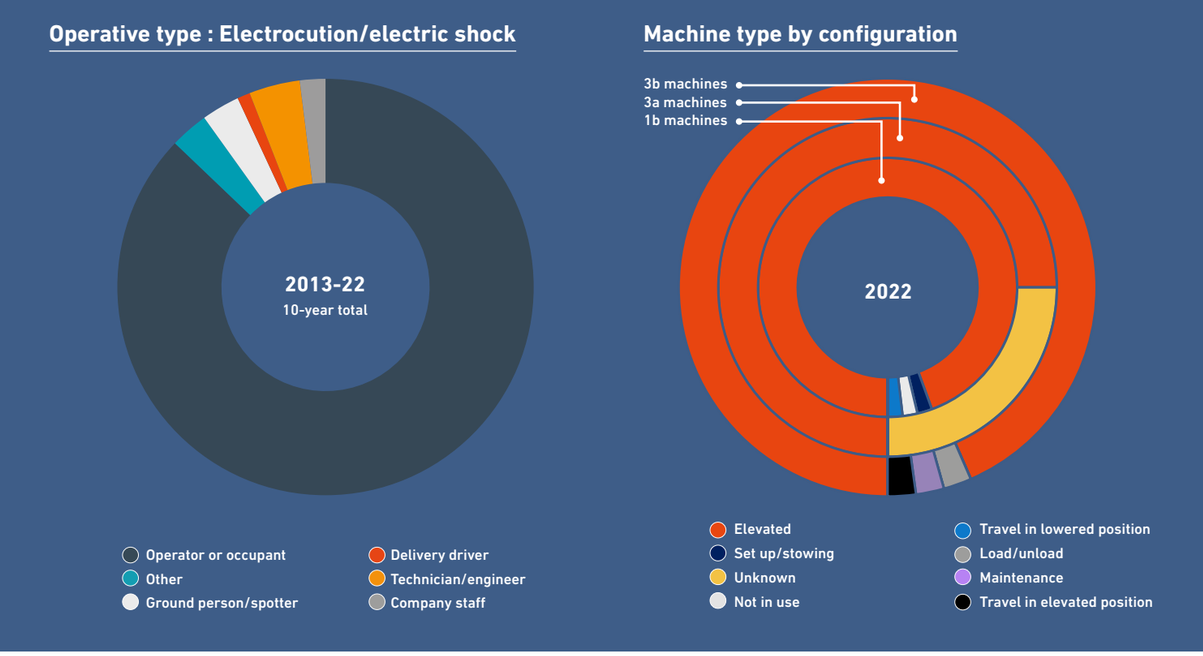


- De-energising the power line; and
- isolating and earthing the line for the duration of the work; or
- having the power line routed away from the work area.

Where elimination is not possible, minimise risks by substituting the hazard or work practice with something safer, for example by:

- Making sure to factor in the MEWP's outreach capability, when calculating the exclusion zone, and that the MEWP cannot extend or swing into the exclusion zone while being operated.
- Ensuring drivable MEWPs are not driven into the exclusion zone inadvertently.
- Using non-conductive tools and plant such as IADs.
- Using ultrasonic devices to warn of proximity to power lines.





Operating

Make sure operators are familiarised with the MEWP and have carried out pre-use checks. They must not attempt to use a MEWP they are not familiar with. They must always operate in a safe manner and be aware of surroundings:

- Look up before elevating the platform.
- Look around before moving the platform at height.
- Look down before lowering the platform.

Never take short cuts and always wear the personal protective equipment (PPE) and personal fall-protection equipment (PFPE) that has been supplied and as indicated by risk assessment. If there is a fault, always stop work, isolate the MEWP, tag and report the issue.

Summary

Plan the work well in advance of carrying out the task and inspect the work area thoroughly to identify the presence of power lines.

Carry out a thorough risk assessment and create a strategy for working well away from power lines. Never encroach into an exclusion zone.

Let others know of the presence of power lines by clearly marking the work area. This will make it easier to ensure that all operatives are aware of the risk and take the necessary safety measures.

Use IADs where indicated by risk assessment to minimise the risk the possibility of electrocution and electric shocks. Note that additional training and familiarisation may be required if using IADs.

Consider using a spotter to help ensure that the MEWP doesn't contact with any electrical lines overhead. Spotters can help warn MEWP operators of hazards on the ground when operating in the elevated position and can also warn when an operator risks manoeuvring the machine in such a way that could increase the risk of inadvertently entering the exclusion zone.

Falls from the platform

39 Reports = | 10 Countries ↑ | 51 Persons Involved ↑ | 27 Fatalities =

Total reports received by the IPAF portal in 2022

Will there be a reduction in the number of falls from MEWPs?

The 2022 IPAF Don't Fall For It! safety campaign's focus was to send a clear message that falls from height were still the main cause of fatalities in the powered access industry. Now we need to look back and compare the statistics from 2022 against 2021.

In 2021, IPAF received 39 reports from seven countries, there were 44 people involved and 27 fatalities. In 2022, IPAF received reports from 10 countries, there were 51 people involved and 27 fatalities. The total number of reports in 2022 was 39, the same number of reports as were received in 2021.

One of the standout statistics from 2022 compared to 2021 was the number of countries from which reports were received. This increased by 43%, which is really encouraging. Another point to note was that, although the number of people involved in falls from height increased by 14% compared to the previous year, the number of fatalities remained the same as in 2021.

The USA provided 24 reports (62% of the total received) and the Republic of Korea provided 15 reports (38% of the total). Construction accounted for 41% of reports (21 in total) in 2022 compared to 39% in 2021. The number of reports from facilities management rose from eight reports (18%) in 2021 to 12 (24%), this could be a result of more companies reporting, which would give a more complete picture of the actual numbers of incidents occurring.

A 1b is still the most common type of MEWP for incidents to occur on – 1b machines were involved in 59% of all incidents, in 2022 this percentage decreased slightly to 45%. 3a incidents in 2021 were at 9% and in 2022 this number increased significantly to 29%. Falls from the platform were still the biggest cause of deaths in 2022, with 27 fatalities and 13 major injuries.

People involved by machine category

1b

2022	45% | 23
3-year total	46% | 61
10-year total	38% | 111

3b

2022	12% | 6
3-year total	15% | 20
10-year total	19% | 55

3a

2022	29% | 15
3-year total	18% | 24
10-year total	29% |84

1a

2022	2% | 1
3-year total	3% | 3
10-year total	3% | 9

Other*

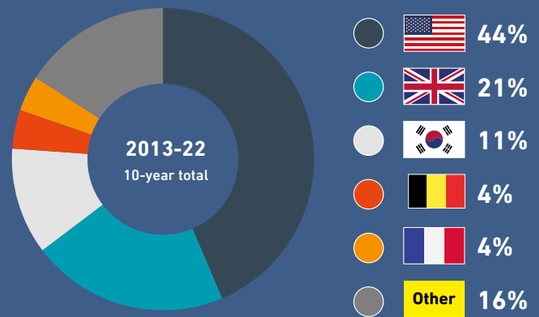
2022	12% | 6
3-year total	18% | 24
10-year total	11% | 30

* **2022** – *Unknown*

3-year total – *Transport Platform, Unknown, MCWP, Goods Hoist, 2a*

10-year total – *unknown, transport platform, no machine involved, MCWP, goods hoist, 2a*

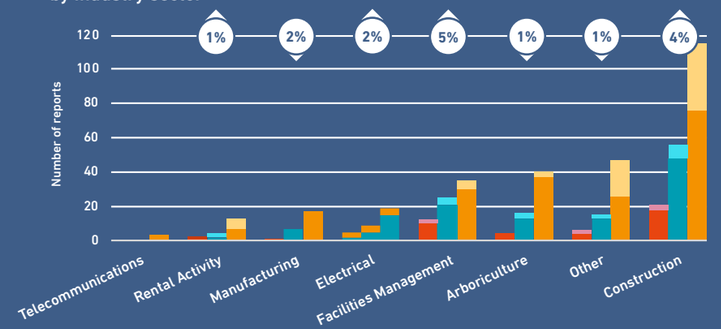
Reports by country



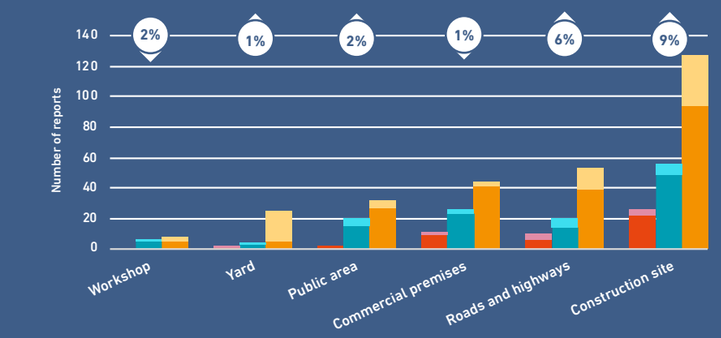
Lost-time incidents

2022	3-year total	10-year total	
lost-time incidents	lost-time incidents	lost-time incidents	% All reports % change 2021-22
total incidents	total incidents	total incidents	

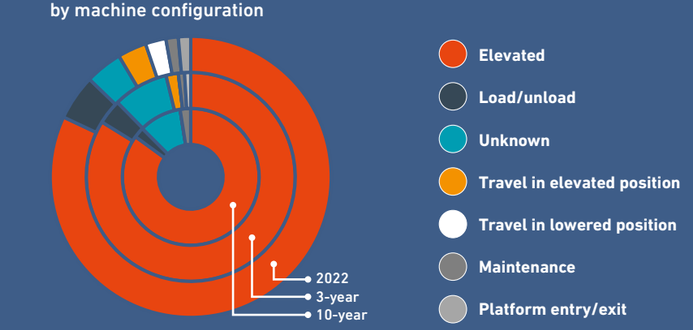
by industry sector



by location



by machine configuration



People involved by industry sector

Construction

2022	41% | 21
3-year total	42% | 56
10-year total	40% | 115

Other

2022	12% | 6
3-year total	11% | 15
10-year total	17% | 47

Arboriculture

2022	8% | 4
3-year total	12% | 16
10-year total	14% | 40

Facilities management

2022	23% | 12
3-year total	19% | 25
10-year total	12% | 35

Rental activity

2022	4% | 2
3-year total	4% | 4
10-year total	4% | 13

Manufacturing

2022	2% | 1
3-year total	5% | 7
10-year total	6% | 17

Electrical

2022	10% | 5
3-year total	7% | 9
10-year total	6% | 19

Telecomms

2022	0% | 0
3-year total	0% | 0
10-year total	1% | 3

Analysis & outcomes

After launching its Don't Fall For It! campaign in 2022, what does IPAF's analysis indicate will be the trends in 2023 and beyond? IPAF continues to drive the message to all MEWP users to work safely and always report fatalities, major and minor injuries as well as near misses.

In 2021 there were 27 falls from the platform resulting in a fatality, and 11 major injuries. There were 39 reports in 2022, resulting in 27 deaths and 13 major injuries. Among the most common LTIs by industry in 2022 were: Construction (13 deaths, five major injuries); facilities management (five and five major injuries); arborists (four deaths); and electrical (two deaths). In 2022, the most common LTIs by location were: construction sites (13 fatalities and nine major injuries); commercial premises (six fatalities and three major injuries); roads/highways (five fatalities and one major injury); and public areas (two deaths).

Work at height must be thought through and carried out safely – but is the message getting through? It is encouraging that IPAF is receiving more reports, from more countries, than ever before, and that while the number of reports went up last year on the previous year, the number of reports of people being killed remained static. There needs to be an industry-wide crackdown on boom-type MEWP occupants not wearing or correctly using a full body harness and fall-restraint lanyard, as this would surely be a game-changer in preventing the majority of falls from the platform.

Who is responsible for ensuring this? The operator, supervisor, manager, or employer? The answer is that everyone involved in the task is responsible for working safely at height. If we all adopt a zero-tolerance attitude to safety short cuts such as not wearing PFPE, incorrect MEWP selection or allowing untrained or unfamiliarised operators to use more complex MEWPs, we could see a drop in numbers of the this type of incident. IPAF urges all users of powered access to continue reporting incidents, including near misses, to assist in tailoring training, technical and safety guidance. Remember – planning for work with a MEWP is critical and should include:

- Risk assessments and safe systems of work followed;
- correct MEWP selection to prevent overreaching and standing on guardrails;
- zero tolerance of behaviour safety violations.;
- a rescue plan implemented and communicated to all prior to work commencing;
- use of trained and familiarised operators;
- use of trained managers and supervisors;
- occupants to wear correct PFPE (full body harness and adjustable fall-restraint lanyard, clipped to the designated anchorage point) in boom-type MEWPs (and in other types as identified by risk assessment);
- machine set up to prevent overreaching and standing on guardrails;
- proper supervision of MEWP operations;
- refresher training and task familiarisation.

RESOURCES

- IPAF Don't Fall For It! Safety Campaign
- IPAF Safe Use of MEWPs in Public Areas
- IPAF H1: Fall Protection in MEWPs leaflet
- IPAF E2: Exiting the Platform at Height leaflet
- IPAF Use Personal Fall Protection Equipment (PFPE) Toolbox Talk
- IPAF Training
- IPAF MEWP Catapult Effect leaflet
- IPAF Harness Training Courses

Overturns

40 Reports ↑ | 6 Countries ↓ | 44 Persons Involved ↓ | 13 Fatalities ↓

Total reports received by the IPAF portal in 2022

What has caused an uptick in overturns since 2020?

MEWP overturns can result in serious injury or fatalities to platform occupants. We need to try and understand what the underlying reasons are for the fact that the number of fatalities has remained relatively high since 2022.

Stability issues and overturns are usually among the top five causes of lost-time incidents (LTIs) whenever IPAF is compiling this report each year. In 2022 there were 40 reports from six countries, the number of countries from which reports were received was down 10% on the previous year. There were 44 people involved and 13 fatalities, with the other 13 sustaining major injuries. Fatalities showed a 7% decrease compared to the previous year. The USA once again submitted the most reports, followed by the UK and the Republic of Korea. Construction, facilities management and arboriculture were the main industry sectors for overturns.

There were 12 fatalities involving overturns with elevated MEWPs and 21 major injuries. However, there was also one report of a major injury resulting from a MEWP overturning in transit.

People involved by machine category

1b

2022	45% | 20
3-year total	34% | 46
10-year total	34% | 79

3b

2022	12% | 5
3-year total	26% | 35
10-year total	27% | 62

3a

2022	27% | 12
3-year total	28% | 38
10-year total	28% | 63

1a

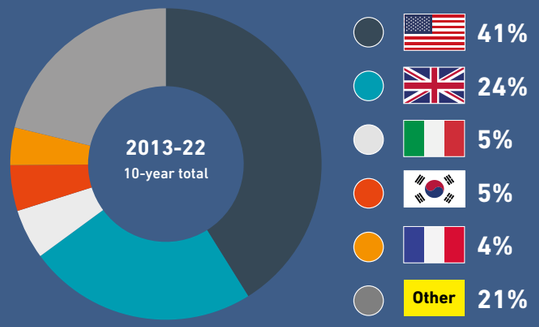
2022	0% | 0
3-year total	2% | 2
10-year total	1% | 3

Other*

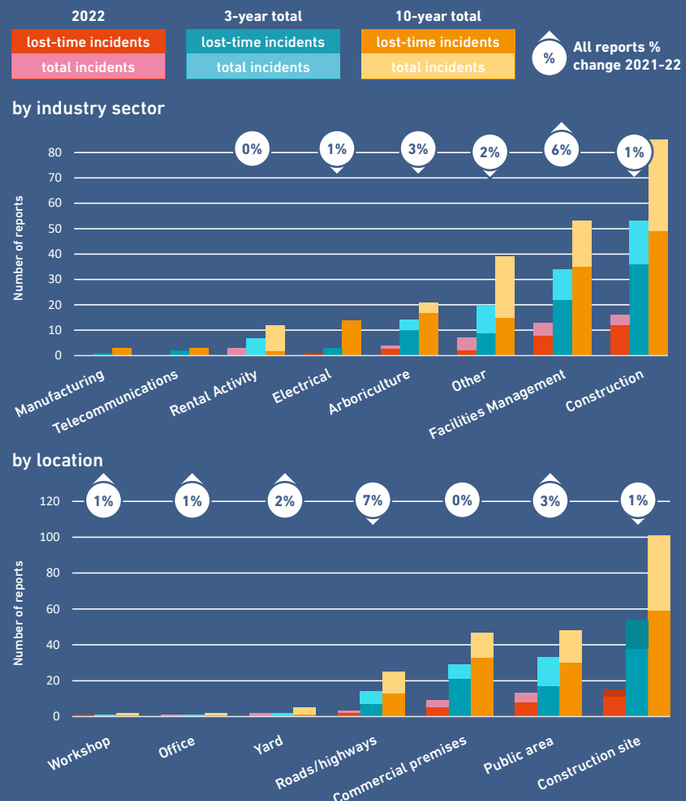
2022	16% | 7
3-year total	10% | 13
10-year total	10% | 24

* **2022** – *telehandler, unknown*
3-year total – *unknown, telehandler, MCWP, goods hoist*
10-year total – *telehandler, unknown, MCWP goods hoist, no machine involved*

Reports by country



Lost-time incidents



People involved by industry sector

Construction

2022	36% | 16
3-year total	40% | 53
10-year total	37% | 85

Other

2022	16% | 7
3-year total	15% | 20
10-year total	17% | 40

Arboriculture

2022	9% | 4
3-year total	10% | 14
10-year total	9% | 21

Facilities management

2022	30% | 13
3-year total	25% | 34
10-year total	23% | 53

Rental activity

2022	7% | 3
3-year total	5% | 7
10-year total	5% | 12

Manufacturing

2022	0% | 0
3-year total	1% | 1
10-year total	1.5% | 3

Electrical

2022	2% | 1
3-year total	2% | 3
10-year total	6% | 14

Telecomms

2022	0% | 0
3-year total	2% | 2
10-year total	1.5% | 3

Analysis & outcomes

Over the latest full year of reporting, IPAF received 40 reports from six countries for MEWP overturns. There were 44 people involved and 13 fatalities. It is encouraging to note that fatalities are down on the previous year, by almost 8%, although there may still be some reports to be collated and added to the yearly totals.

In the same reporting period, IPAF received 19 reports, or 43% of the total, from the USA, with nine (20%) from the UK and eight (18%) from the Republic of Korea. Accident reporting is mandated as a condition of IPAF membership in the UK, which may serve to skew the seemingly high proportion of reports being received from the UK. In the same one-year period, overturns were most common on construction sites , with 16 incidents (36%), followed by 13 in facilities management (30%), and after "other" (16%), arboriculture was fourth with four reports or 9% of the total in 2022.

When looking at incidents by machine type, there has been a significant reduction in the number of 3b (boom-type) machines involved when compared to 2021 – just five reports (12%) across this year compared to 14 (31%). There were also 20 reports, involving 1b (vehicle, trailer-mounted or spider-type) MEWPs, which amounted to 36% of all of this year's reports, up from 16 reports (36%) in 2021. Then came 3a vertical type MEWPs on 12 reports, which was the same percentage of the total (27%) as the previous year.

MEWPs overturning owing to instability is preventable with proper planning and safe operation. Planning for MEWP operations originates from a risk assessment, which in turn develops into a safe system of work (SSoW). Before operating a MEWP, a ground assessment survey should be carried out, this is normally part of the risk assessment. If the ground is uneven or soft there is a risk of a MEWP overturning. If there is any doubt about the ground's capability to support the MEWP, work should not proceed.

Care must be taken when assessing the ground for the total weight of the MEWP but also for point load pressure when a boom is extended and slewing. Ground collapsing under wheels, jacks or spreaders increases the likelihood of overturn.

The IPAF Spreader Pad Calculator is an interactive tool designed to offer guidance to operators and those involved in determining the size of spreader pads to be used when setting up a boom-type MEWP where the weight will be fully supported on the outriggers, also known as jacklegs.

After the gross vehicle weight of the MEWP has been entered, the spreader pad calculator will display the minimum area of the spreader plate and identify minimum sizes of spreader pads required for differing ground types and strengths.

RESOURCES

- IPAF Back to Basics safety campaign
- IPAF MEWP Ground Conditions Toolbox Talk
- IPAF Site Assessment (for MEWP Selection) Training Course
- IPAF Andy Access safety posters
- IPAF Never Attach a Banner to a MEWP Toolbox Talk
- IPAF management training
- IPAF Spreader Pad Calculator
- IPAF operator training

Entrapment

18 Reports ↑ | 9 Countries ↑ | 21 Persons Involved ↑ | 11 Fatalities ↓

Total reports received by the IPAF portal in 2022

Safe systems of work help guard against crushing risk

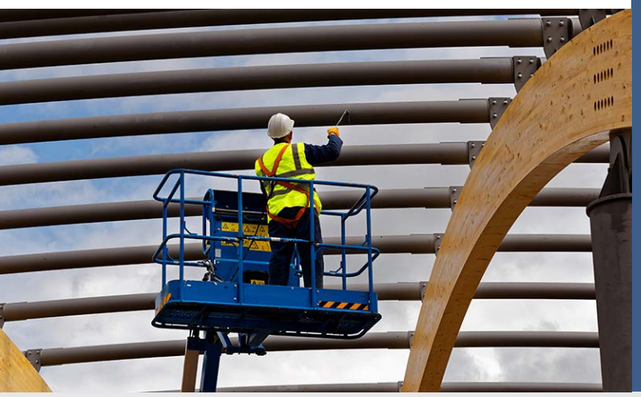
Entrapment is when one or more MEWP occupants become trapped between the controls, guardrails or other part of the MEWP and an immovable external object or structure. Entrapment is consistently one of the top four causes of injuries and fatalities when operating MEWPs.

Despite the efforts of MEWP manufacturers and specialist safety product suppliers, it often proves very difficult to "design out" this type of incident, which tends to be caused in a number of ways:

- Contact with overhead obstructions in the path of the MEWP;
- leaning over the platform guardrails;
- losing control of the platform controls;
- lighting conditions making overhead obstructions difficult to see;
- operator becoming distracted while approaching an overhead obstruction;
- uneven ground causing vertical movements to the platform;
- objects on the ground in the path of the MEWP;
- operator overlooking risk to occupants in the platform,

IPAF has been collecting data on entrapment for more than 10 years. In the most recent 10-year period, there were a total of 127 reports from 17 countries and among those there were 108 fatalities

In the period 2020-22, there were 63 incidents involving entrapment from 16 countries. There were 67 people involved in entrapment incidents and there were 53 fatalities.



People involved by machine category

1b

2022	9% | 2
3-year total	12% | 8
10-year total	11% | 14

3b

2022	33% | 7
3-year total	40% | 27
10-year total	44% | 58

3a

2022	48% | 10
3-year total	33% | 22
10-year total	36% |47

1a

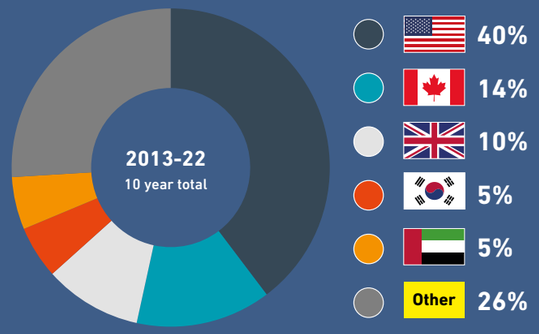
2022	0% | 0
3-year total	0% | 0
10-year total	0% | 0

Other*

2022	10% | 2
3-year total	15% | 10
10-year total	9% | 12

* **2022** – *unknown, goods hoist*
3-year total – *unknown, goods hoist*
10-year total – *unknown, telehandler, goods hoist*

Reports by country

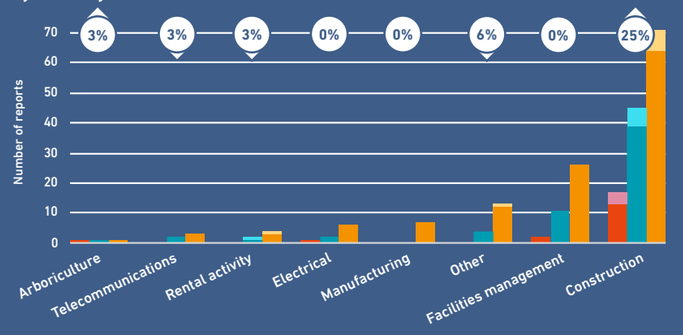


Lost-time incidents

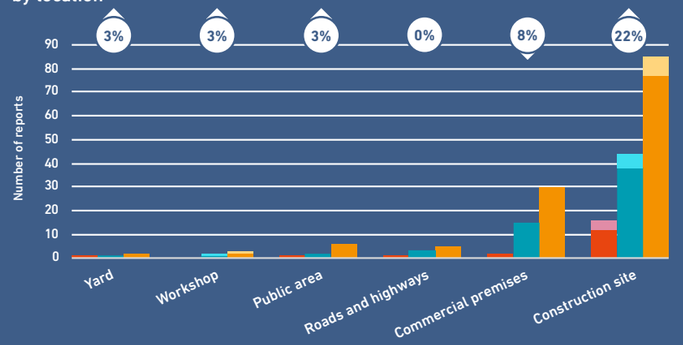
2022	3-year total	10-year total
lost-time incidents	lost-time incidents	lost-time incidents
total incidents	total incidents	total incidents

% All reports % change 2021-22

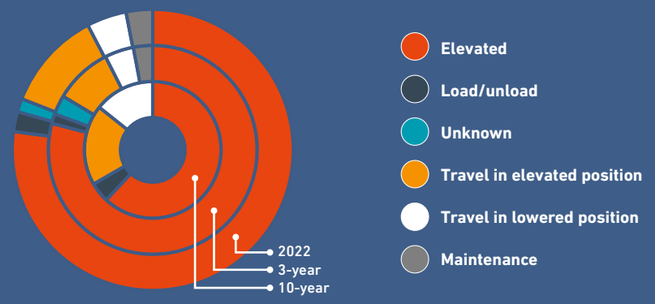
by industry sector



by location



by machine configuration



People involved by industry sector

Construction

2022	80% | 17
3-year total	67% | 45
10-year total	54% | 71

Other

2022	0% | 0
3-year total	7% | 4
10-year total	10% | 13

Arboriculture

2022	5% | 1
3-year total	1% | 1
10-year total	1% | 1

Facilities management

2022	10% | 2
3-year total	16% | 11
10-year total	20% | 26

Rental activity

2022	0% | 0
3-year total	3% | 2
10-year total	3% | 4

Manufacturing

2022	0% | 0
3-year total	0% | 0
10-year total	5% | 7

Electrical

2022	5% | 1
3-year total	3% | 2
10-year total	5% | 6

Telecomms

2022	0% | 0
3-year total	3% | 2
10-year total	2% | 3

Analysis & outcomes

In 2022, IPAF received 18 reports of entrapment, up 29% on the previous year. Reports were received from nine countries, and there were 21 people involved, leading to 11 fatalities – down two compared to 2021 – meaning the rate of fatalities was down slightly year on year.

There were three reported entrapment fatalities in both Canada and Italy, representing 27% of the total worldwide. There was one fatality (9%) in the UK in 2022. The majority of entrapment incidents occurred in construction, with 14 reports (78%), while facilities management saw two reports (11%) and arboriculture one (6%). When broken down, construction suffered nine fatalities and four major injuries. Facilities management saw one death and one major injury, while arboriculture saw one fatality and no major injuries.

By machine type, 3b was the most common MEWP involved in entrapment incidents over the past 10 years, though just looking at 2022 in isolation shows a spike in 3a machines, involved in 10 of the reports (48%). It remains to be seen whether this will be a long-term trend. Most entrapment incidents occurred in the elevated position, through two deaths occurred when MEWPs were travelling in the lowered position.

MEWP operatives need to be aware of their surroundings whether travelling in the stowed position or driving/operating in the elevated position, as there is still potential for entrapment to occur. Operators should be aware that the risk of entrapment or crushing can be increased in the stowed position, owing to higher drive speeds. Entrapment can be prevented by proper planning of MEWP operations and using MEWPs in a safe manner. Carrying out a thorough risk assessment and survey identifying potential entrapment areas at the workplace is crucial. The operator also has a part to play and should remain vigilant and maintain all-round observation at all times.

Planning for work with MEWPs includes the development of safe work procedures, competent, trained staff, and correct machine selection and familiarisation. If the risk assessment identifies a risk of entrapment, a MEWP with a secondary-guarding system should be considered – however, secondary-guarding systems should only be used as an aid to safe use, and cannot completely eradicate the risk from entrapment or crushing.

A secondary-guarding system is a device that is fitted to alert the operator and in some cases the ground rescue person that an operator is trapped or the platform is approaching an overhead obstruction. Operators must look all round the MEWP for potential entrapment areas, consider the movement they are going to perform and evaluate if there is a potential risk of entrapment to occupants of the platform.

Operators are taught to look up before they elevate any MEWP, they should also look down before they lower, and crucially, look around before and throughout any driving manoeuvre. Supervision by a banksman, marshal or spotter may be appropriate. Never elevate people in the platform from the ground controls, as the risk of entrapment is increased.

RESOURCES

- IPAF Back to Basics safety campaign
- IPAF Walking the MEWP Toolbox Talk
- IPAF Avoid Overhead Obstructions Toolbox Talk
- IPAF MEWP Rescue Plan Toolbox Talk
- IPAF/CPA Good Practice Guidance for Reducing Trapping/Crushing Injuries to People in MEWPs

Mechanical failure

64 Reports ↓ | 12 Countries ↓ | 76 Persons Involved ↑ | 2 Fatalities ↓

Total reports received by the IPAF portal in 2022

What causes MEWPs to suffer technical failure?

In 2022 there was some positive news concerning MEWP mechanical and technical failures: The number of fatalities reported as arising from mechanical or technical failure was down more than 75%. There were 64 reports from 12 countries, with 76 people involved in these incidents and two fatalities.

In the period 2020-22, MEWP mechanical and technical failures appear to be high, mainly due to a spike in 2020. It was never typically one of the most common causes of accidents when using MEWPs, and following a relative spike in reports in 2020 and 2021, the number decreased in 2022.

This is likely in part down to wider and more accurate reporting, but also increased pressure on maintenance regimes, higher utilisation rates and longer retention of older machines owing to persistent issues with lead times from some MEWP manufacturers are likely to be behind the seeming rise in this type of incident, as indicated by the latest IPAF Rental Market Report.

Mechanical and technical failures can occur in different ways. It is possible for operators to inadvertently damage MEWPs if they have not been properly trained or familiarised on the MEWP operating systems. Always report any incident when there is contact with structures, other machines, or during the load or unload process to the owner of the equipment. This should trigger a safety inspection.

Maintenance regimes should be proportionate to the conditions and usage to which MEWPs are being subjected. If machines are to be used in especially adverse conditions, then the competent person should be notified, and maintenance routines should be tailored accordingly.

People involved by machine category

1b

2022	30% | 23
3-year total	29% | 56
10-year total	27% | 108

3b

2022	18% | 14
3-year total	26% | 52
10-year total	28% | 113

3a

2022	42% | 32
3-year total	31% | 60
10-year total	32% |131

1a

2022	2% | 1
3-year total	1% | 1
10-year total	3% | 13

Other*

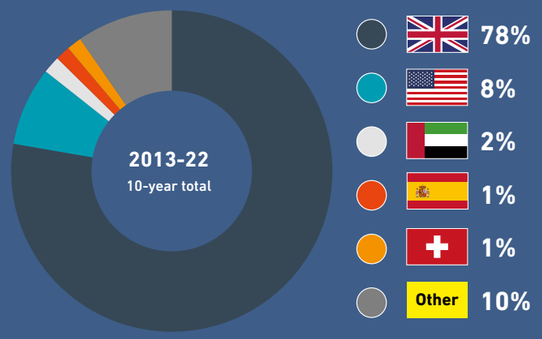
2022	8% | 6
3-year total	13% | 27
10-year total	10% | 39

* **2022** – *telehandler, MWCP, unknown*

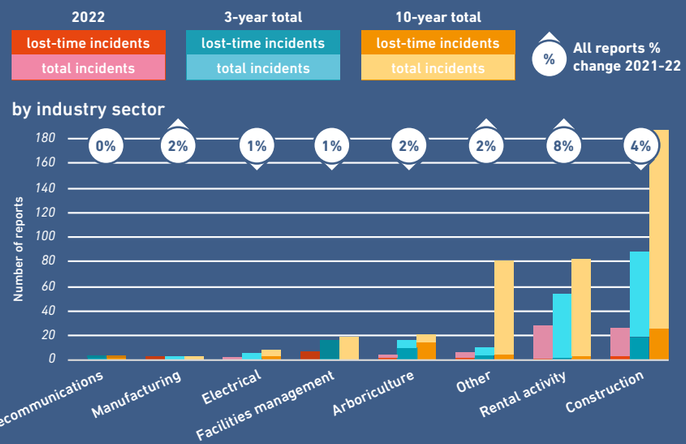
3-year total – *personnel hoist, unknown, MWCP, telehandler, no machine involved, 2b*

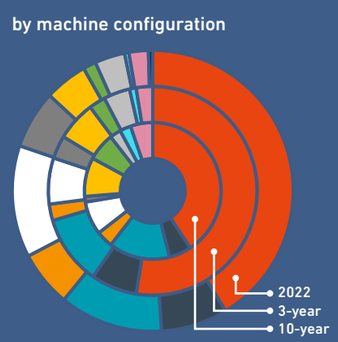
10-year total – *2b, telehandler, MWCP, unknown personnel hoist, no machine involved*

Reports by country



Lost-time incidents





- Elevated
- Load/unload
- Unknown
- Travel in elevated position
- Travel in lowered position
- Maintenance
- Not in use
- Manually manoeuvring machine
- In transit
- MCWP erection and dismantling
- Set up/stowing
- Platform entry/exit

People involved by industry sector

Construction

2022	34% | 26
3-year total	45% | 88
10-year total	46% | 187

Other

2022	8% | 6
3-year total	5% | 10
10-year total	20% | 81

Arboriculture

2022	5% | 4
3-year total	8% | 16
10-year total	5% | 21

Facilities management

2022	9% | 7
3-year total	8% | 16
10-year total	5% | 19

Rental activity

2022	37% | 28
3-year total	27% | 54
10-year total	20% | 82

Manufacturing

2022	4% | 3
3-year total	2% | 3
10-year total	1% | 3

Electrical

2022	3% | 2
3-year total	3% | 6
10-year total	2% | 8

Telecomms

2022	0% | 0
3-year total	2% | 3
10-year total	1% | 3

Analysis & outcomes

Incidents involving MEWP mechanical and technical failures reduced by 2% in 2022, in total there were 64 reports submitted from 12 countries. There were 76 people involved in these incidents, which was up by 12%, and two fatalities, which was down by 75% year-on-year.

Examining the data on the number of countries from which reports were received, Poland, the UK and Switzerland all submitted two reports each where powered access equipment suffered either a mechanical or technical failure. Comparing to 2021, we see there were a similar number of reports but eight fatalities. Seeing a big drop in the number of fatalities between these two years is certainly encouraging and it is hoped this trend will continue in the years ahead.

The construction industry has always been the most common place for incidents of mechanical and technical failures occurring on MEWPs. In 2022 there were 19 reports of mechanical or technical failures in the construction industry, which accounted for 30% of the total number of reports received. Arboriculture accounted for three reports (5%). Collisions with plant and equipment or objects falling on to MEWPs can cause damage to MEWPs, which can lead to breakdowns and the need for component replacement. Setting MEWPs up in areas where they are segregated and creating drop zones to prevent falling objects contacting MEWPs will undoubtedly prolong the life of the equipment and reduce the cost of servicing, inspections, and repairs. In 2022, the most common type of MEWP to suffer mechanical and technical failures was 3a, with 32 people involved in incidents using 3a machines. These MEWPs are commonly used in construction and the arboriculture industry, mainly because of their ability to drive from site to site and ability to be driven at height.

Telehandlers (fitted with platforms/baskets) accounted for four reports (5%). All platforms/baskets should be integrated, meaning the operator is able to control movements from within the platform. Telehandlers fitted with non-integrated platform or basket attachments pose an increased overall risk of a serious accident occurring.

Owners of MEWPs need to ensure the equipment is safe for their employees to use. The setting up of a regular inspection and maintenance and following the manufacturer's instructions on service and maintenance throughout the lifetime of the machine is critical. Manufacturers specify the service and maintenance intervals and what items need to be checked, measured, or replaced; this information can be found in the MEWP's service and maintenance and operation manuals.

Operators should always carry out pre-use checks - both visual and functional - before each work shift. If planned maintenance is not carried out, it could lead to breakdowns and undue component wear. Defective MEWPs can cause catastrophic failures and consequently death or serious injury to platform occupants. Owners of equipment should always follow the manufacturer's instructions on service, inspection, and maintenance requirements.

RESOURCES

- IPAF Guidance on Buying a Pre-Owned MEWP
- IPAF Pre-use Inspection Toolbox Talk
- Andy Access: Pre-use inspection!
- MEWP manufacturer's owners guidance/handbook, service instructions and safety bulletins
- IPAF MEWP Demonstrator training course

Hit by vehicle or machine

38 Reports = | 7 Countries ↓ | 44 Persons Involved ↑ | 3 Fatalities ↓

Total reports received by the IPAF portal in 2022

Risk awareness around roads and public areas

Being hit by a vehicle or machine is consistently one of the most common types of incidents involving MEWPs. These types of incidents tend to be on construction sites, rental premises, public areas and roads and highways where there is a higher risk of impact.

In 2022, there were 38 reports submitted, no change on the previous year. There were incidents reported in seven countries in 2022. There were 44 people involved in these incidents and there were three fatalities, up 5% on the previous year. There is grounds for encouragement here that industry guidance, such as IPAF's comprehensive document The Safe Use of MEWPs in Public Areas, published in 2022, could be having an impact in terms of driving home key safety messages and highlighting the associated hazards and risks.

There were 24 reports of this type of incident received from the UK in 2022 – 55% of the total number of reports received. Next was the USA with 14 and Singapore with two. In terms of raw numbers the most incidents involving MEWPs being hit by vehicles or machine are reported from construction sites, which can be very busy places with lots of simultaneous operations going on.

Facilities management sees a disproportionate number of this type of incident, second only to construction. This could be down to the fact that facilities management work is more likely to be done in public areas or adjacent to roads, and such locations usually require management of vehicular, machine and pedestrian traffic.

People involved by machine category

1b

2022	11% | 5
3-year total	24% | 25
10-year total	23% | 47

3b

2022	43% | 19
3-year total	41% | 43
10-year total	41% | 83

3a

2022	23% | 10
3-year total	23% | 24
10-year total	23% |46

1a

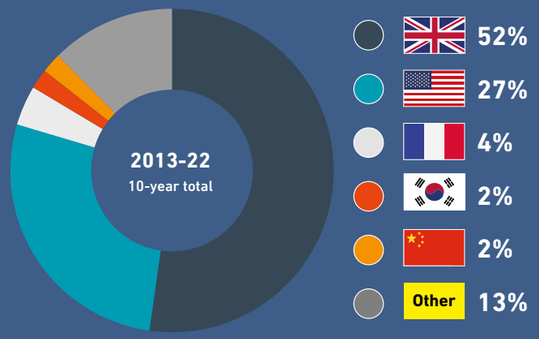
2022	0% |0
3-year total	0% | 0
10-year total	1% | 1

Other*

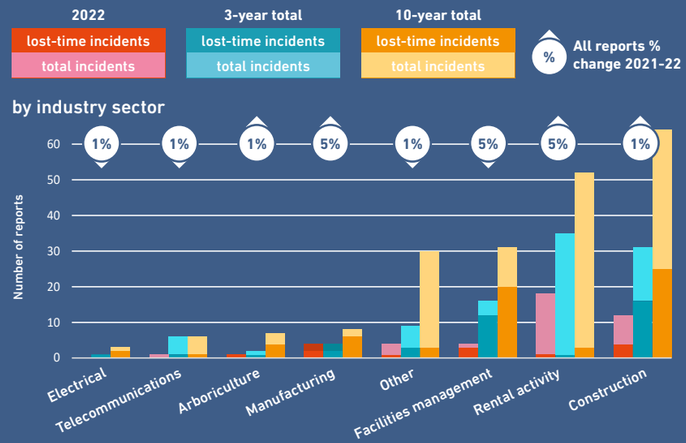
2022	23% | 10
3-year total	12% | 12
10-year total	12% | 24

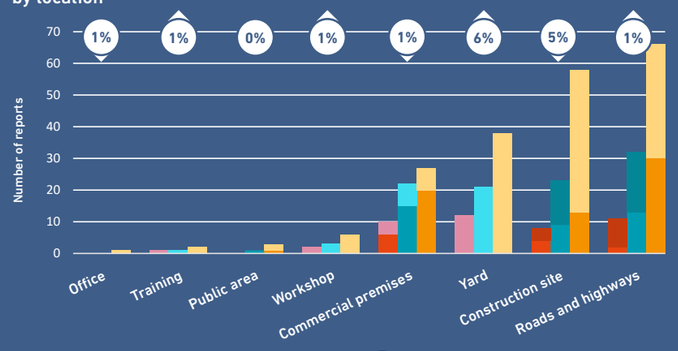
* **2022** – *unknown, no machine involved*
3-year total – *unknown, no machine involved*
10-year total – *unknown, no machine involved, telehandler*

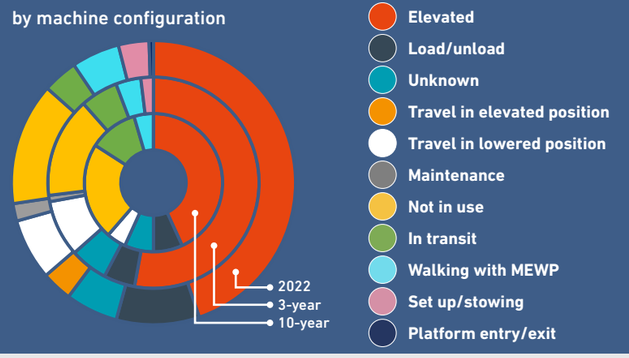
Reports by country



Lost-time incidents







People involved by industry sector

Construction

2022	27% | 12
3-year total	30% | 31
10-year total	32% | 64

Other

2022	9% | 4
3-year total	9% | 9
10-year total	15% | 30

Arboriculture

2022	2% | 1
3-year total	2% | 2
10-year total	4% | 7

Facilities management

2022	9% | 4
3-year total	15% | 16
10-year total	15% | 31

Rental activity

2022	42% | 18
3-year total	33% | 35
10-year total	25% | 52

Manufacturing

2022	9% | 4
3-year total	4% | 4
10-year total	4% | 8

Electrical

2022	0% | 0
3-year total	1% | 1
10-year total	2% | 3

Telecomms

2022	2% | 1
3-year total	6% | 6
10-year total	3% | 6

Analysis & outcomes

In terms of MEWP category, 3b types are consistently the most likely to be hit by a vehicles or machine over the past 10 years, followed by 3a and 1b (vehicles). These are most commonly the types of machine used for work alongside roads, while any machine with an articulated boom has additional risk during slewing or rotation movements of protruding into live traffic, if they have been improperly segregated from active highways.

In terms of LTIs by category, hit by vehicle or machine incidents resulted in three fatalities and nine people with major injuries. When looking at LTIs by industry, there were four major injuries in construction, two deaths and one major injury in facilities management, and two major injuries in manufacturing & logistics. When considering LTIs by location, there were three deaths and three major injuries on commercial premises, four major injuries on construction sites and two incidents resulting in major injuries on highways. In terms of LTIs by machine configuration, there were three fatalities and eight major injuries involving machines in the elevated position and one major injury involving a machine in transit.

When MEWPs are used on sites with other moving vehicles or machines, used in public areas or on or near to roads, this increases the likelihood of impact by other equipment such as other MEWPs, plant equipment or vehicular traffic. Any collision that occurs is likely to result in major injuries or fatalities. Always plan the task thoroughly, conduct a full site risk assessment, and set up an appropriate exclusion zone and traffic control.

Incidents have occurred where self-propelled MEWPs have been hit by vehicles or objects while travelling to the work area. It is important that travel routes are planned in advance and any hazards identified. For any hazards that are present, appropriate control measures should be put in place. Use a banksman or spotter, cones, barriers, signage and traffic-management systems as identified by the risk assessment.

MEWPs that are incorrectly positioned are at increased risk of being struck by passing traffic, other plant and equipment or objects. Remember segregation is key to ensuring the MEWP is in a safe and controlled area, and that this area should be sufficient in size to safely contain the rotation, slew, raising and lowering of the platform without any part of the MEWP extending outside the exclusion zone into an area where it can be struck by any passing vehicles or other mobile plant.

1b vehicle or trailer-type MEWPs are generally driven on public roads to and from location. If tasks are not adequately planned and machinery not positioned correctly this can cause death or serious injury not just to MEWP occupants, but also to members of the public, ie occupants of other vehicles, or pedestrians.

The risks may be increased during the load/unload process and the set-up phase of operations wherever this is done in proximity to other equipment, passing vehicles, or pedestrians.

RESOURCES

- IPAF Safe Use of MEWPs in Public Areas
- IPAF Street Smart safety campaign
- IPAF Site Assessment (for MEWP Selection) Training Course
- IPAF Plan Ahead safety campaign
- IPAF Operating MEWPs Alongside Roads Toolbox Talk
- IPAF MEWP Catapult Effect leaflet
- Andy Access: Be Street Smart!

Type 1b MEWPs

Are incidents involving static booms increasing?

This section focuses on 1b type MEWPs, over the latest ten-year period. 1b MEWPs include vehicle or van-mounted, towable/trailer-mounted or tracked/ spider-type machines. The reason IPAF has added this category focus is largely down to a significant increase in reports of incidents involving this type of machine over the most recent three-year period, with reports up by almost 90%, the number of people involved almost doubling and fatalities increasing by around two-thirds.

These rises may be down to an increase in reporting and also increasing use of this type of equipment across a range of end uses, but they are nonetheless concerning.

In the most recent ten-year period, IPAF received 957 reports from 31 countries. There were 1019 people involved with incidents involving 1b type equipment and 242 fatalities. The majority of reports were received from the UK, where 542 such incident occurred – 53% of the total; 46 (5%) reports were submitted from the Republic of Korea; and 272 (27%) were submitted from the UK.

Construction is by far the most common industry sector for incidents involving 1b-type MEWPs, at 264 reports or (26%) of the total. There were 183 reports (18%) involving rental activity, and 165 (16%) related to arboriculture.

Vehicle-mounted MEWPs were cited in 789 reports, which was (82%) of the total received, while 1b tracked were mentioned in 133 reports (14%) and 1b towable in 35 reports (4%).

People involved by machine category

1b (all)*

2022	20% | 187
3-year total	25% | 507
10-year total	21% | 1019

**1b vs all machine types*

1b vehicle

2022	81% | 152
3-year total	84% | 427
10-year total	83% | 844

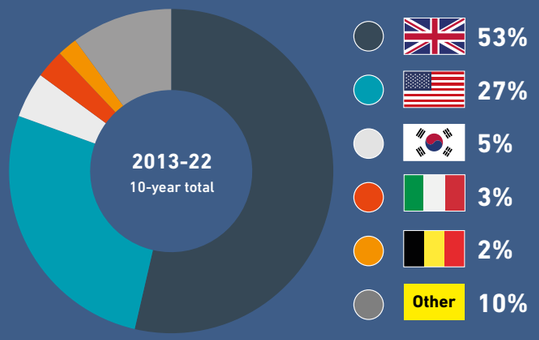
1b spider

2022	14% |25
3-year total	13% | 68
10 year total	13% | 137

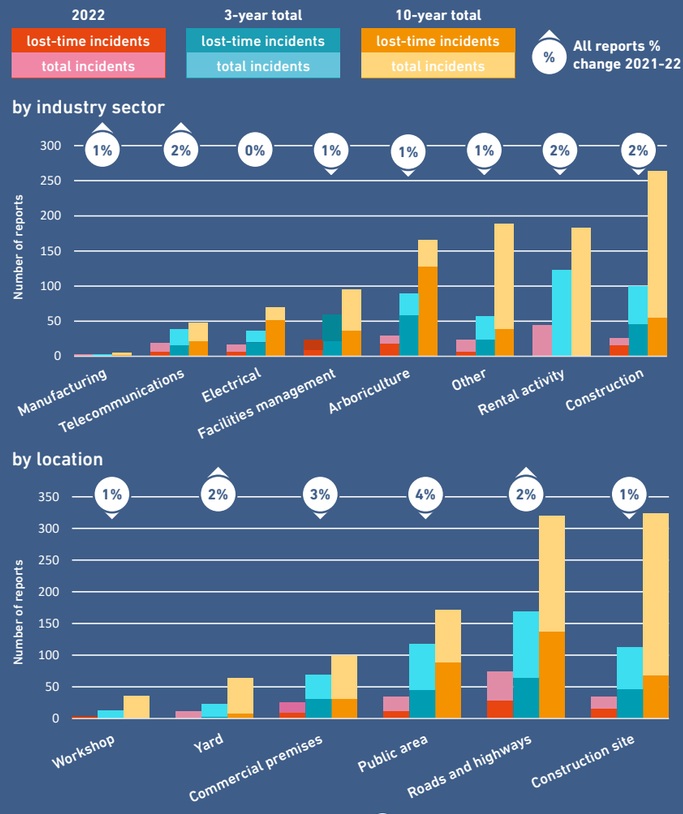
1b towable

2022	5% | 10
3-year total	3% | 12
10-year total	4% |38

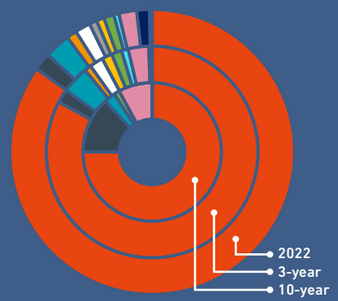
Reports by country



Lost-time incidents



by machine configuration



- Elevated
- Load/unload
- Unknown
- Travel in elevated position
- Travel in lowered position
- Maintenance
- Not in use
- In transit
- Walking with MEWP
- Set up/stowing
- Platform entry/ exit
- Manually manoeuvring machine

People involved by industry sector

Construction

2022	14% | 26
3-year total	20% | 100
10-year total	26% | 264

Other

2022	13% | 24
3-year total	11% | 57
10-year total	18% | 189

Arboriculture

2022	16% | 29
3-year total	18% | 90
10-year total	16% | 165

Facilities management

2022	13% | 24
3-year total	12% | 59
10-year total	9% | 95

Rental activity

2022	24% | 45
3-year total	24% | 123
10-year total	18% | 183

Manufacturing

2022	1% | 3
3-year total	1% | 3
10-year total	1% | 5

Electrical

2022	9% | 17
3-year total	7% | 36
10-year total	7% | 70

Telecomms

2022	10% | 19
3-year total	7% | 39
10-year total	5% | 48

Analysis & outcomes

The data from the 10-year period tells us that the most common sources of lost-time incidents (LTI) involving 1b MEWPs are 1b vehicles in the arboriculture industry working on or near to highways in the elevated position with occupants falling from the platform. Many of these incidences occurred in the USA, but we have to take into consideration that the MEWP fleet size in the USA is far bigger than any other country in the world.

In the reporting period 2020-22 we saw 452 reports from 27 countries (up 175%). There were 507 people involved and 129 fatalities. Portal users submitted 211 reports (42%) from the UK, 154 reports from the USA (30%) and 46 from the Republic of Korea (9%). By industry sector there were 90 reports (18%) from arboriculture and 100 reports (20%) from construction.

In terms of LTI incidents by category across the ten-year period, falls from the platform led to 63 fatalities and 18 major injuries, electrocution resulted in 79 fatalities and seven major injuries, and overturns gave rise to 18 fatalities and 19 major injuries. In arboriculture there were 100 fatalities and 28 major injuries, while in construction there were 39 fatalities and 17 major injuries. By location, 99 fatalities and 39 major injuries occurred on or near highways, 46 fatalities and 22 major injuries happened on construction sites and 70 fatalities and 19 major injuries were reported in public areas. The three-year data showed similar trends, however electrocutions killed more people during this period than falls from the platform.

LTIs by machine configuration over the latest three-year period showed 110 fatalities and 49 major injuries with machines in the elevated position, five deaths and three major injuries when configuration was unknown, and four fatalities and two major injuries during set up or stowing. In 2022, there were 157 reports from 15 countries, with 187 people involved and 47 fatalities. Fatalities were down by 8% year on year. In most other respects, the same trend patterns occurred in 2021-2022 period as in the three and 10-year periods.

Always set up on a firm surface and use plates/pads under outriggers or jack legs of the correct size, thickness and rigidity to spread the load and reduce the ground pressure. You should also ensure the outrigger foot is centred in the middle of the spreader pad and not towards a corner. Operators need to monitor the outrigger foot position while operating to ensure it stays in the centre of the spreader pad.

Tracked MEWPs are also commonly used in the arboricultural industry, as these MEWPs can be tracked across rough terrain to the site location. There is a higher incidence of 1b-type MEWPs to be impacted from falling objects, which can result in multiple types of damage to critical components. If any defects are found, the person who discovers a suspected issue should always isolate, tag and report them.

RESOURCES

- IPAF Safe Use of MEWPs in Public Areas
- Loading and unloading MEWPs on the Public Highway
- Safe Use of MEWPs to Manage Trees and Vegetation
- IPAF Operating MEWPs Alongside Roads Toolbox Talk
- Andy Access : Use a Spotter
- IPAF MEWP Catapult Effect leaflet
- IPAF Spreader Pad Calculator
- The Safe Use of MEWPs in the Vicinity of Power lines

Why it's so important to keep end-users in sight

In last year's report, IPAF added a section looking at incident data as it relates specifically to rental activity, offering rental companies a chance to benchmark their own safety protocols against wider industry or sector-specific trends. This year's report extends that focus to key end-users.

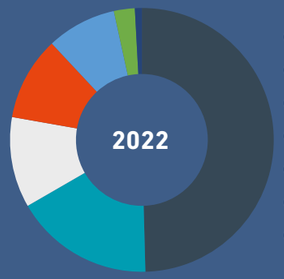
By providing data analysis focusing on reports of incidents involving contractors, the report offers insight into the types of incident that are occurring, to raise awareness of specific risks and also informs the work that IPAF continues to do to engage with contractors and end-users, developing training, creating safety campaigns, technical guidance and a host of supporting materials.

In terms of location, most incidents logged in 2022 occurred on construction sites, accounting for 50% of the total, with public areas and roads combined amounting to 20%, yards and commercial premises 10% and 17% respectively. Construction accounts for almost half of all reports (46%), with facilities management (15%) and arboriculture (2%) generating much fewer reports.

In terms of equipment type, there are few surprises, with 3a (27%) and 3b (26%) machines being involved in most accidents across 2022, while 1b (vehicle) types accounted for 14% of incidents in 2022 and 1a a fairly negligible 5%, though this merely reflects the most common machine types used by contractors.

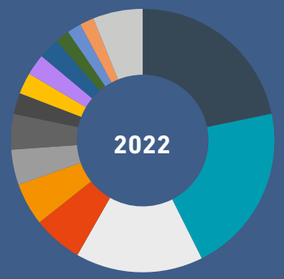
There are positive signs when comparing lost-time incidents (LTIs) involving contractor personnel year-on-year. In 2021 there were 23 LTIs involving operators or occupants, two involving company staff and two each involving ground personnel and "other" contractors. However, there were just 10 LTIs involving operators and one each for all other categories across 2022.

Contractor vs location



- Construction site 50%
- Commercial premises 16%
- Public area 11%
- Yard..... 10%
- Roads/highways.....9%
- Workshop.....3%
- Office 1%

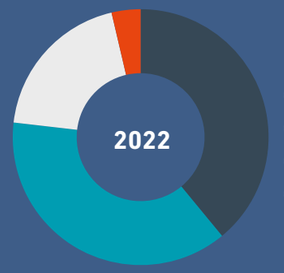
Contractor vs accident type



- Unsafe situation.....21%
- Collision 21%
- Mechanical/technical.....15%
- Loading/unloading tipover...6%
- Entrapment 5%
- Theft of machine.....4%
- Transport.....3%
- Hit by vehicle/machine 3%
- Fall from platform 3%
- Overturn.....3%
- Ground condition instability ..2%
- Electrocution.....2%
- Machine sinking 2%
- Other 10%

* **Other** – *Person walks into object/machine; slip, trip, fall from same level; theft of components; fall from height (not platform); inadequate safety equipment; using hand tools; MCWPs and construction hoists, manual handling; crushing, trapping, pinching; RTA.*

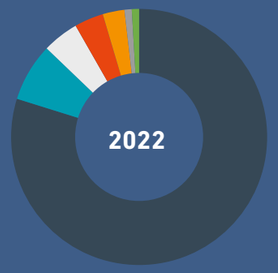
Contractor vs machine type



- 3a 38%
- 3b 38%
- 1b vehicle.....20%
- 1a 4%

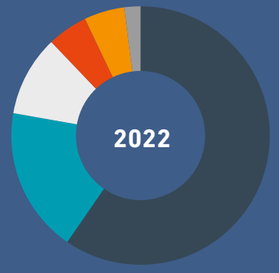
Contractor fatal, major & minor injuries

Contractor vs injury type



- Near miss.....80%
- Unknown 6%
- Fracture 5%
- Bruising/impact pain.....4%
- Cut/laceration/puncture.....3%
- Electric shock 1%
- Sprain/strain.....1%

Contractor vs industry sector



- Construction 59%
- Facilities management 18%
- Other 10%
- Telecommunications 5.5%
- Manufacturing/logistics 5.5%
- Arboriculture 2%

MCWPs and hoists

In previous years', IPAF has acknowledged that reports relating to mast climbing work platforms (MCWPs) and construction hoists were not being received into the portal in sufficient volume as to be statistically significant. However, these have steadily been increasing over the past three years to the point that it is now possible to present some data analysis, which it is hoped in turn will lead to further reporting regards this machine type.
The pie chart, right, of incident involving MCWPs and hoists are mechanical or technical failure (30%), followed by unsafe situations (16%), manual handling (11%) and falls from the platform or from height that accounting for a combined 9% of all reported incidents over the most recent three-year data-gathering.

IPAF will continue to work with the sector in terms of delivering training, development and implementation of standards, adapting the IPAF Rental+ scheme for MCWP & hoists and leading industry responses to related safety alerts, as per the UK HSE MCWP safety alert that was issued in May 2022.

MCWP incident type

- Mechanical/technical.....30%
- Unsafe situation.....16%
- Manual handling 11%
- Using power tools 7%
- Overturn.....7%
- Collision.....7%
- Fall from height 5%
- Mechanical/technical 5%
- Fall from platform 5%
- Other.....7%

* **Other** – *Transport, slipped, tripped, fell from same level, entrapment, using hand tools*

RESOURCES

- IPAF H1: Fall Protection in MEWPs leaflet
- IPAF E2: Exiting the Platform at Height leaflet
- IPAF Don't Fall For It! Safety Campaign
- Loading and unloading MEWPs on the Public Highway.
- IPAF/CPA Good Practice Guidance for Reducing Trapping/Crushing Injuries to People in MEWPs
- IPAF operator training
- IPAF ePAL app
- IPAF MEWP Demonstrator training course
- F1: Familiarisation
- IPAF management training

Hire companies go the extra mile to supply safety data

Following on from last year's report, which was the first to present data regarding rental company activities, there was a nine per cent year-on-year increase in the number of reports received about incidents in this sector.

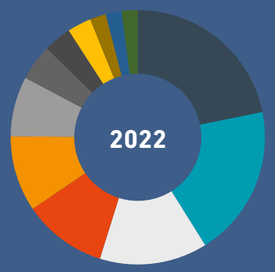
As with all incidents, it is not necessarily a bad thing that more reports are being received; it could just reflect enhanced engagement and reporting by rental companies.

When trying to unpick "rental activity", it is almost impossible to estimate how many loading unloading activities are carried out globally each year, neither is it possible to identify how many times a wheel, motor or hydraulic component is changed or indeed any kind of maintenance or carried out on equipment, but it is clear that there has been an increase in the number of engineers or technicians seriously injured or killed in 2022.

For this reason, IPAF has renewed its Safe Loading, Unloading and Transportation of MEWPs campaign in 2023, reminding everyone of the need for proper planning, training, supervision and execution of delivery tasks and pointing to the range of free guidance that IPAF offers to help make this activity as safe as possible

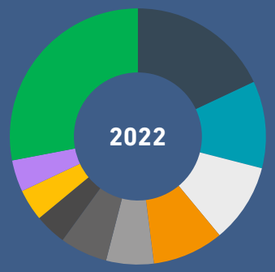
With rental company operators and technicians/engineers second and third in the list of most likely personnel to be involved in rental company incidents, there should be renewed focus to ensure these people are trained, supervised and supported. From the reports we are receiving from rental companies, around 70% of all persons involved in rental activity-related incidents have undergone training. This indicates that those rental companies engaged in IPAF reporting understand the importance of training.

Rental activity by location



- Yard 32%
- Commercial premises 18%
- Roads and highways 17%
- Construction site 13%
- Public area 9%
- Workshop. 7%
- Office 2%
- Training centre 2%

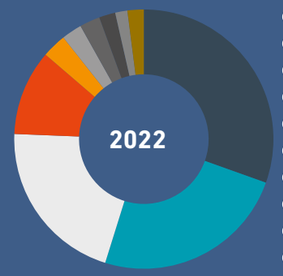
Rental activity by accident type



- Collision 18%
- Mechanical/technical 11%
- Transport 10%
- Slipped, tripped, falls 9%
- Unsafe situation 6%
- Environmental damage 6%
- Loading/unloading tipover ...4%
- Crushing, trapping, pinching..4%
- Hit by vehicle or machine.....4%
- Other 28%

* **Other** – *inadequate safety equipment; manual handling; using hand tools; overturn; person walks into object/machine; theft of machine; entrapment; fire/explosion; fall from height (not platform); hit by falling object; fall from platform; RTA.*

Rental activity by machine type

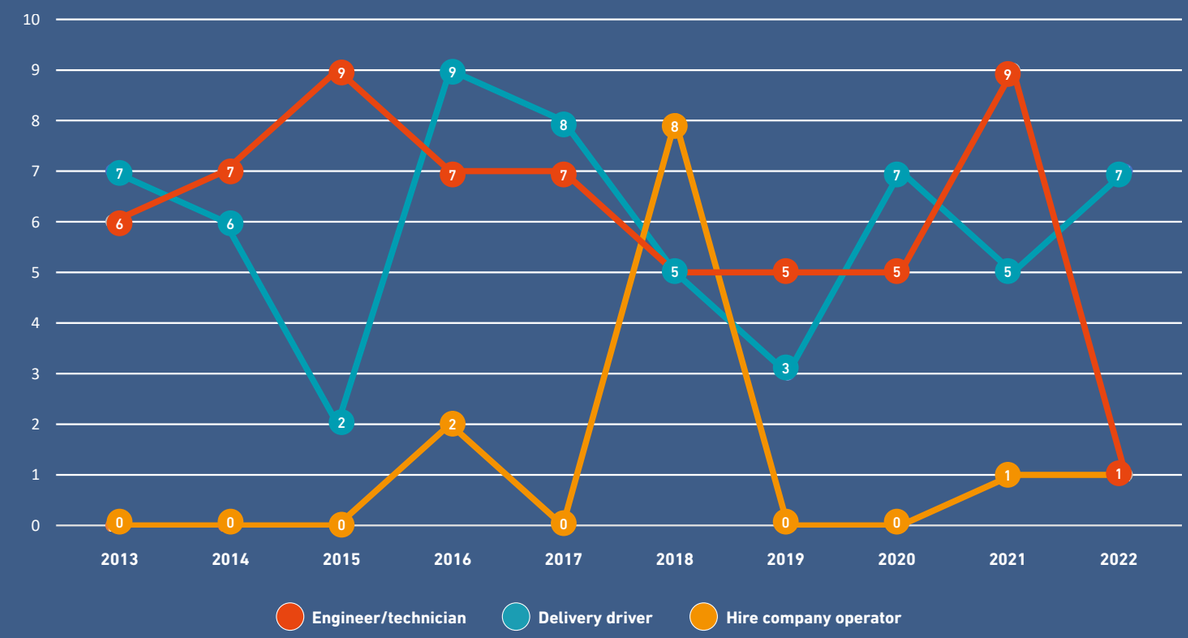


- 3a 29%
- No machine involved 24%
- 3b 21%
- 1b vehicle.....11%
- 1b tracked/spider 3%
- 1a PAV 3%
- Unknown 3%
- Telehandler 2%
- 1b towable.....2%
- Other*.....2%

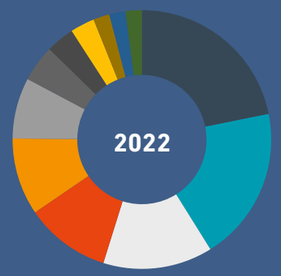
* **Other** – *personnel hoist, 1a, mast climbing work platform, goods hoist*

Rental activity fatal/major injuries

Involving: Engineer/technician, delivery driver and hire company operator



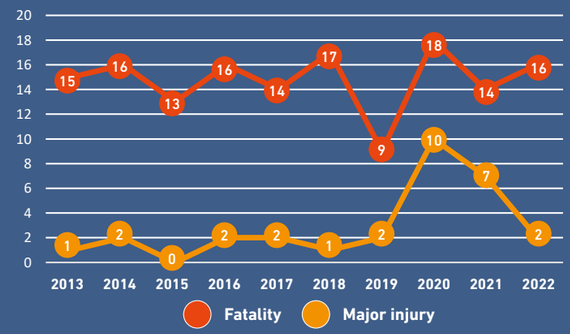
Rental activity by machine configuration



- Load/unload 22%
- Not in use.....19%
- Unknown 14%
- In transit.....11%
- Elevated 10%
- Travel in lowered position ...8%
- Walking MEWP 5%
- Maintenance 4%
- Platform entry/exit 2%
- Travel in elevated position ...2%
- Manually manoeuvring 2%
- Other*.....1%

* **Other** – *set up/stowing, MCWP erection and dismantling*

Rental activity: Total reports by year



Analysis & outcomes

This year's rental activity focus looks only at the 2022 accident data and, in comparison with the previous year, trends are broadly similar, however one change to note is that collision with an object or person was the most common cause of serious injury, with four such incidents reported. The figure may not seem high, but it should be noted that each of these incidents resulted in serious or even life-changing injuries.

In terms of MEWP type involved, there were 59 incidents featuring 3a MEWPs, 43 with a 3b and 48 with no machine involved. All operatives involved were trained, three were on rental premises and one on a construction site. Of the personnel involved, five were delivery drivers, two were service engineers/technicians and three were operators.

Some incidents occurred when the machine control was used in the pedestrian mode. When operating from outside the platform, the mobile control box must be correctly orientated to the way the machine is being driven and operators must stand clear of the machine. IPAF offers a Toolbox Talk on this topic (see resources panel).

IPAF Rental Standard and IPAF Rental+ scheme

IPAF and its members are working towards creating a new IPAF Rental Standard to acknowledge and document industry good practice, which in many cases exceeds minimum legislative requirements.

The standard arises out of IPAF Rental+, and relates to the rental and hire of powered access equipment. It is intended as a reference document outlining operational industry process and good practice relevant to any rental company hiring out MEWPs, MCWPs and construction hoists.

IPAF Rental+ provides assurance to customers at every stage of the powered access rental process, the scheme is: An industry guarantee of a high-quality rental company; proof a rental company has been independently audited and meets rigorous health & safety, quality, and environmental standards; a mechanism through which continual business improvement can be measured. Rental companies participating in the IPAF Rental+ accreditation scheme are audited annually against recognised operational procedures and processes. The annual audit covers four main areas: Finance; health & safety; quality; and environmental.

RESOURCES

- IPAF Safe Loading, Unloading and Transportation of MEWPs
- IPAF Safe Workshop Servicing & Repair of MEWPs Toolbox Talk
- IPAF Walking the MEWP Toolbox Talk
- IPAF Safe On-site Servicing of MEWPs Toolbox Talk
- IPAF/CPA Good Practice Guidance for Reducing Trapping/Crushing Injuries to People in MEWPs

How to report

www.ipafaccidentreporting.org

IPAF and its members analyse anonymised data on incidents involving powered access to identify areas of risk and common trends which informs guidance, training, and safety campaigns. We aim to increase our understanding of working practices and reduce incidents in every country. Reporting is not restricted to IPAF members; any person or organisation can report an incident. Since this report was published last year, IPAF has launched ePAL, a mobile app for operators and managers, which enables quick on-the-spot reporting direct to the IPAF portal of all incidents-including near misses.

How to report

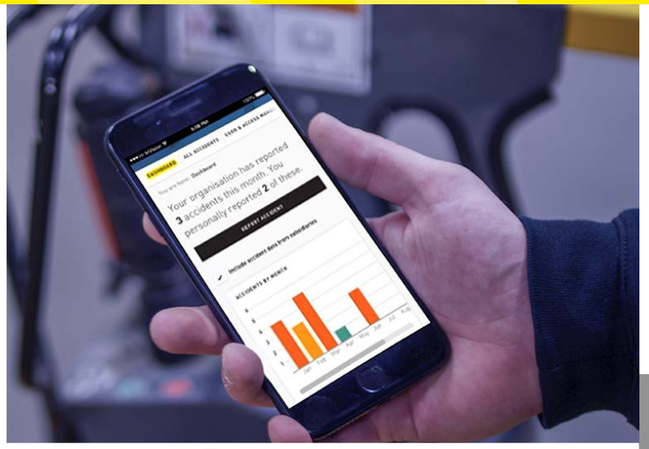
All accidents, incidents and near-misses can be reported quickly and easily at www.ipafaccidentreporting.org via desktop or laptop PCs, most web-enabled mobile devices, or through the IPAF ePAL app (www.ipaf.org/ePAL) for operators and supervisors. Please register first to report accidents on the database. Reports can also be made anonymously via the portal. Companies wishing to have multiple persons reporting accidents should appoint a nominated person (a senior person who will manage reporting). This nominated person should register first in the company name. Once registered, the nominated person will be able to give others access to report accidents and be able to track their accidents and manage their incident records. Information entered into the database will be kept confidential and will be used strictly for the purposes of analysis and improving safety.

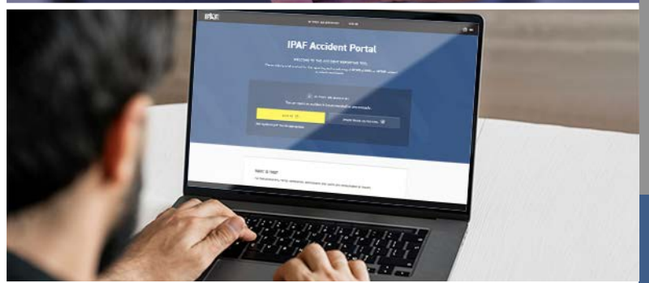
What is reported

All reported incidents involving powered access are collated by IPAF. This includes incidents that result in death, injury or a person requiring first aid. It also includes near–miss incidents that didn't result in injury or damage to machines or structures, yet still represented a potentially dangerous situation for machine occupants or bystanders.

The machines

The report analyses incidents that occurred when using, delivering and maintaining Mobile Elevating Work Platforms (MEWPs). IPAF also collates incidents involving other machinery including Mast Climbing Work Platforms (MCWPs), all types of construction hoists and telehandlers.



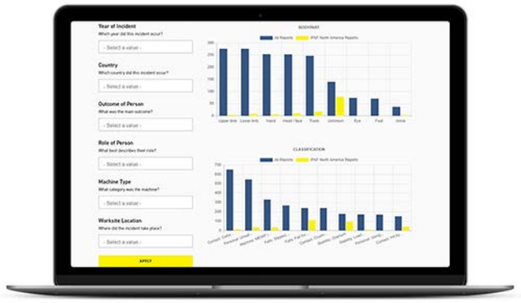


Who can report?

Anyone involved in working at height can report an incident to the IPAF portal. The data presented in this report is based on information collected either directly reported via the IPAF portal; obtained by IPAF staff worldwide; using data from regulatory bodies; and through information collated from media reports. IPAF will soon offer a special customisable dashboard for all members reporting to benchmark their companies performance against regional, national and global data.

Confidentiality of data

The information provided to IPAF is confidential and private. Information that can identify a person or company involved in a reported incident is removed prior to analysis by IPAF and its committees, and thereafter remains redacted. IPAF is GDPR-compliant and has a privacy policy that can help you understand what information we collect, why we collect it, and how you can update, manage, export and delete your information. The full IPAF privacy policy can be found at **www.ipaf.org/privacy**



Members and non-members who log data in the IPAF accident reporting portal are now able to access improved dashboard functions that allow them to track their own safety statistics against the wider industry, following work to enhance and updated the portal's user interface.

Those using the incident reporting dashboards can now apply multiple filters that will give a snapshot of company incidents entered against all database entries, which are completely anonymised, so no company or individual can be identified.

Offering a quick and simple way for reporting companies to tailor their own database read-outs, this will assist in making powered access use safer.

About IPAF

The International Powered Access Federation (IPAF) promotes and enables the safe and effective use of powered access equipment worldwide in the widest sense – through providing technical advice and information; through influencing and interpreting legislation and standards; and through its safety initiatives and training programmes.

IPAF is a not-for-profit organisation owned by its members, which include manufacturers, rental companies, distributors, contractors and users. IPAF has members in more than 70 countries, who represent the majority of the MEWP rental fleet and manufacturers worldwide.

Visit **www.ipaf.org** for local office information

Become an IPAF member

By joining IPAF you are joining a global movement to ensure a safer powered access industry. Membership also brings a host of special services and benefits including access to the members' safety analysis dashboard. For more information about becoming a member of IPAF visit **www.ipaf.org/join**

Report an accident or near miss: www.ipafaccidentreporting.org

Acknowledgements

IPAF would like to thank all members of the IPAF International Safety Committee for their ongoing efforts to understand and interpret the data gathered via the IPAF portal. IPAF also acknowledges the input from country and regional representatives and members either reporting directly or collating reports from third parties and outside bodies. IPAF also gives special thanks to members of the ISC that constituted the Global Safety Report Work Group:

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Director, Access Safety Management

Definitions

GENERAL TERMS:

INSULATED AERIAL DEVICE (IAD)
This is a specialist machine designed to work at height in proximity to overhead power lines as an extra precaution against electrocution.

PEDESTRIAN MODE
Operating a MEWP from outside the platform, using a mobile control panel, for instance to travel in tight spaces, under low ceilings or doorways. Sometimes referred to as wander-leading or 'walking the dog'.

PERSONAL FALL-PROTECTION EQUIPMENT (PFPE)
This includes full-body harnesses and fall-restraint lanyards, recommended for use in all boom-type MEWPs.

RENTAL ACTIVITY
Delivery, collection, loading and loading machines, manoeuvres in depots, cleaning and maintenance of machines

LOST–TIME INCIDENT:

An incident that occurred during the operation, movement, loading, transport or maintenance of a MEWP, which has resulted in harm to a person (operator, occupant, driver, technician or bystander) or damage to the MEWP or other object.

As well as fatal incidents, the following definitions may apply:

MAJOR INJURY
Injuries that prevent the person working for more than seven days.

MINOR INJURY
Injuries that prevent the person working from one to seven days.

INCIDENT CATEGORIES HIGHLIGHTED WITHIN THIS REPORT:

ELECTROCUTION
Person(s) electrocuted following contact or arcing with power lines.

ENTRAPMENT
Entrapment is when a MEWP platform and its occupant or occupants become trapped between the controls or guardrails and an immovable object or external structure. The person's head or body is caught between the machine and an external structure during operation: This occurred during operation of the MEWP. The person was in the platform.

FALL FROM WORK PLATFORM
Person(s) have fallen from the work platform.

Person(s) have fallen from another structure (roof, tree) when exiting the work platform.

Person(s) have been ejected from the work platform as a result of the MEWP movement.

This includes a catapult movement after the MEWP platform or extending structure became trapped or caught on an obstruction. This effect can also occur during travel of the MEWP.

MEWP INOPERABLE – MECHANICAL/TECHNICAL ISSUE:
The MEWP is inoperable or cannot be used safely. This includes components disconnecting (eg covers or bolts coming loose, wheels becoming detached from chassis), hydraulic, electrical or software faults.

HIT BY FALLING OBJECT
The MEWP has been struck by an external object, for example a tree branch, sign or a part of the building under construction/destruction.

HIT BY VEHICLE OR MACHINE
The MEWP has been struck by another moving machine, for example a truck, car, train, gantry crane or forklift.

OVERTURN
Loss of stability of the MEWP, so that the MEWP has overturned or partially overturned. A MEWP classed as partially overturned will be resting on an external structure or not have all the necessary ground points (wheels, stabilisers or outriggers) in contact with the ground.

DEFINITIONS OF DIFFERENT CONFIGURATIONS:

ELEVATED
The work platform is in an elevated position or is being moved into the elevated position. There are people in the platform.

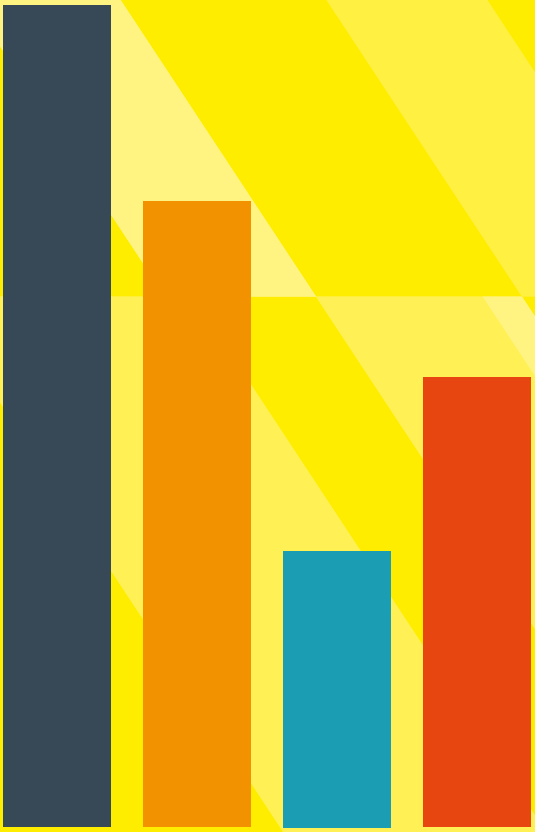
LOAD/UNLOAD
The MEWP is moved on to the transport vehicle, exiting the MEWP, tying down the MEWP and climbing down from the transport vehicle.

TRAVEL IN LOWER POSITION (STOWED)
Travel of the MEWP with the lift structure lowered. The work platform may be elevated slightly, for example by the jib, to improve the visibility of the operator.

IPAF.org

Promote and enable the safe, effective use of powered access worldwide

www.ipafaccidentreporting.org



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