

# EMPOWERING DROPS PREVENTION

A DROPSAFE HANDBOOK

# HOW DO DROPS AFFECT THE POWER GEN SECTOR?

Power Generation is turning a corner. As the sector looks to bolster its approach to safety, operators of facilities such as coal, gas, hydro-electric and nuclear power plants are driving significant improvements in tackling Dropped Objects (Drops). The risks are now better understood, and knowledge of Drops prevention best practice is increasingly taking root.

Drops prevention is not yet ingrained across the board, however. For example, contractors arriving on site during busy 'turnarounds' may have differing levels of Drops training. HSE and plant managers need to be able to apply and incentivise common standards.

Ultimately, each facility must be equipped with the knowledge – and the tools – to minimise Drops risks and deliver a safer working environment, while reducing long-term expenditure.

Empowering Drops Prevention: A Dropsafe Handbook is a guide on Drops prevention that provides a practical resource for Power Generation operators, ensuring that plant and turnaround managers are prepared to meet the Drops challenge. The handbook will offer guidance based on the real experience of Dropsafe and its partners in the Power Generation sector to effectively reduce Drops.

This first instalment outlines the fundamental challenges of Drops prevention in Power Generation, focusing on three key questions:

- What are Drops in Power Generation?
- How common are Drops in the sector?
- What are the impacts of Drops on operators?

## WHAT IS THE FREQUENCY OF DROPS INCIDENTS IN POWER GEN?

A lack of consistent reporting is a serious issue in Power Generation and represents a key stumbling block for effective sector-wide Drops prevention. Industries such as Oil & Gas have long established bodies such as DROPS ([www.dropsonline.org](http://www.dropsonline.org)) to collect incident data and rates.

However, in Power Generation, incidents may not even be shared between facilities of the same company, let alone among the wider industry.

Despite a lack of hard data, Dropsafe has identified several key takeaways which give an indication of the challenges faced by plant owners and operators:



## WHAT ARE DROPS?

A Drops incident occurs when an item falls from height, causing equipment damage, personnel injury or fatality

Drops incidents fall into one of two categories: Static or Dynamic. Approximately 80% of Drops are Dynamic – the rest Static. Human error is a key factor leading to Dynamic Drops and an important consideration for plant operators in Power Generation designing Drops prevention programmes.

### Dynamic Drops

Objects falling due to applied external force, including objects falling from conveyor belts, handheld items such as hammers dropped by personnel, moving equipment or materials being accidentally dropped when being lifted into place.

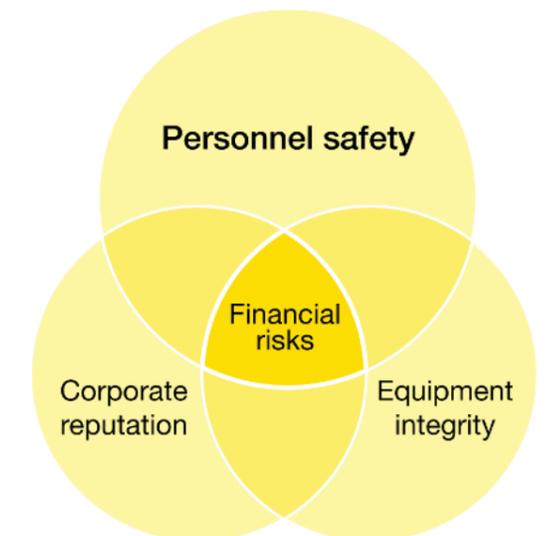
### Static Drops

Fixed objects that fall from height with no external force applied, such as lights or speakers breaking free from their attachment points due to vibration, corrosion, poor maintenance or being incorrectly installed.

- Drops risks are significantly higher during 'turnarounds' due to an influx of additional personnel and unfamiliar work practices. This makes consistently recording incidents challenging, while increased activity raises the risks of human error and increases the consequences of potential Drops.
- The Power Generation sector frequently uses third-party contractors whose Drops training and competency levels may be unknown, reducing the control operators have over training.
- The large size of an average power plant has presented a barrier to the widespread adoption of best practice Drops prevention solutions in Power Generation, as the initial investment can be significant when not considering the long-term savings.
- There is a generational divide in the sector, with experienced personnel a vital source of knowledge on Drops risks – but also more reluctant to adopt new practices and technology.

## WHAT ARE THE IMPACTS OF DROPS IN POWER GENERATION?

Drops incidents present a fourfold threat to the safety of personnel, the integrity of equipment, the reputation of businesses in Power Generation, and their financial performance. Safety is always the first priority for HSE and plant managers. However, as the diagram below shows, the first three factors combine to create financial losses.



## Personnel safety

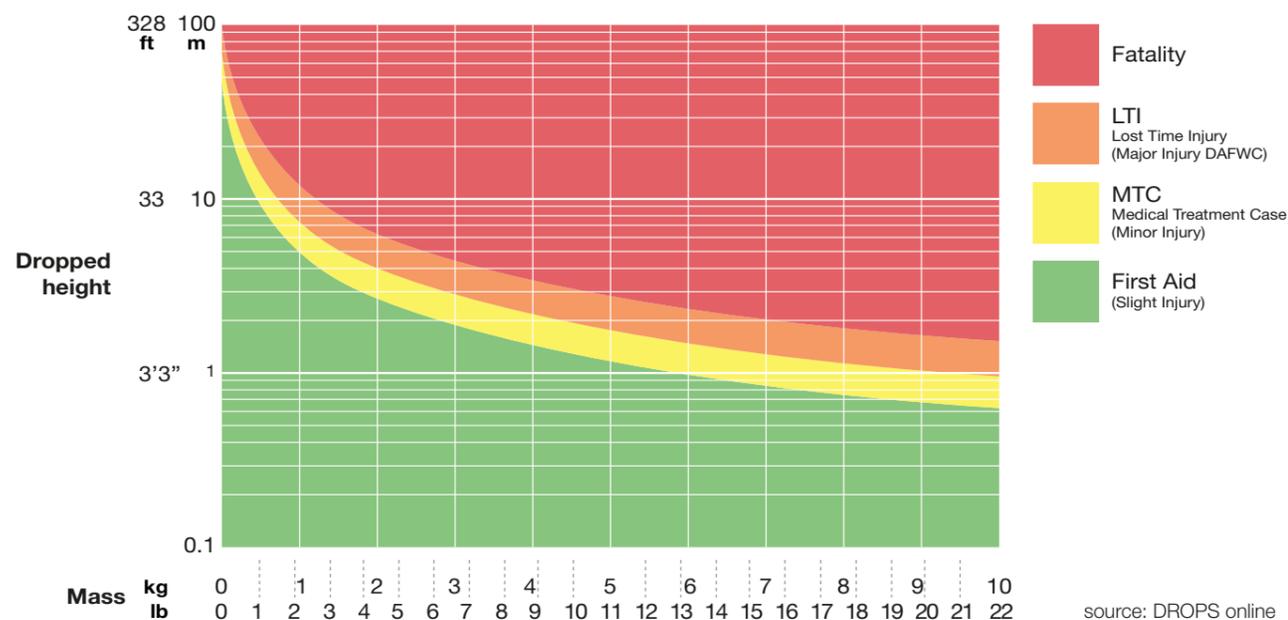
The clearest and most commonly recognised impact of Drops for plant managers in Power Generation is the threat to personnel, who may be struck by an object and suffer anything from a minor injury to long-term disability or even death.

Behind every statistic is a person, with loved ones and family. Although equipment can be replaced, the duty of care to protect employees as much as possible is far more important.

Injuries to personnel also cost power generation facilities financially through working days lost. Furthermore, there are potential financial compensation implications, and, as HSE professionals will be well aware, the legal consequences that go hand-in-hand with injuries and fatalities.

As the DROPS Calculator shows, even relatively light objects can cause fatalities when dropped from height. For example, a 1.5kg wrench striking someone from 10m could present a high potential risk of death.

Figure 1: DROPS calculator



source: DROPS online

## Equipment integrity

Drops can also strike equipment, leading to loss of tools and causing damage to structures.

If a Drops incident causes damage to important generators, turbines or pressurised steam pipes, this incurs the cost of replacing damaged assets, but may also lead to a temporary suspension of operations, creating significant challenges for plant managers and causing further financial losses.

Preventing Drops is particularly critical for nuclear power facilities. Retrieving tools from foreign material exclusion zones means a hazardous, lengthy and expensive process. Damage to coolant or containment infrastructure could create a much more dangerous situation.

## Corporate reputation

While plant managers are rightly focused on the day-to-day task of protecting personnel and equipment, Drops incidents can have more far-reaching impacts on companies, particularly when negative attention is drawn towards the operator.



Press coverage is sometimes the only way of uncovering the details of a significant Drops incident. Part of the reluctance to issue comprehensive statistics and provide potentially extremely useful case studies about incidents of falling objects relates to the reputational damage this could do to businesses.

If severe Drops incidents are reported by national media, it reduces trust in the company involved and can affect future business prospects. The experiences of the Californian wildfires and the Texas freeze have particularly hardened the industry's resolve to bolster its reputation for safety and reliability.

## Financial risks

Again, financial impacts may be the least of a plant manager's concerns, but the above risks combine to impact the financial standing of a business in different ways – directly or indirectly.

It is difficult to accurately assess the cost to businesses of individual Drops incidents as operators are reticent to share this information. When the costs identified above in terms of compensation claims, lost time incidents (LTIs),

damaged tools and equipment are combined, the result can significantly affect the profitability of a facility.

The disruption caused by an enforced inspection during a post-incident investigation can also be a drain on time and resources. The paperwork and reporting process undertaken by HSE managers and operations managers is time spent away from productive work. Should scrutiny of procedures by inspectors lead to a citation, this could mean further reputational damage.

The intangible costs to a business caused by this kind of reputational damage, can exceed all other financial costs.

Ultimately, establishing a holistic approach to Drops prevention will give plant managers more control over their Drops their incident rates, prevention costs, and the reputation of their company.

The next instalment of 'Empowering Drops Prevention: A Dropsafe Handbook' will take a more detailed look at the practical risks experienced by operators in power generation, and how these might be mitigated through a combination of training, awareness and engineered solutions.