

CASE STUDY

Enhancing Safety in the Filler
Machine and Shrink Tunnel with
AmGard Solution

Related Industries

Food Packaging | Pharmaceuticals Plant
Beverage Plant | Packaging Industries



#M/P Safety

Integrated Machine
Safety & Process
Interlocking
Solutions



Enabling Safe, Productive
& Profitable Workplace

TERMINOLOGY DEFINITION

■ **Filler:**

A Packaging machinery to fill the product into bag, pouch, or containers such as bin or bottle.

■ **AmGard:**

A unique modular construction which allows easy configuration and provides total electro-mechanical solutions for practically safeguarding applications.

■ **Engineering Control:**

Physical modifications to the workplace that reduce hazards (e.g., safety devices, interlocks, machine guards).

■ **Administrative Control:**

Policies or procedures aimed at reducing risks (e.g., training sessions, safety protocols, LOTO procedures).

■ **OSHA:**

Occupational Safety and Health Administration is a U.S. agency that ensures safe and healthy working conditions by setting and enforcing standards.

■ **RPM:**

Revolution Per Minute

■ **Man-Machine Interface:**

The interface that ensures effective communication, control, and feedback between humans and machines to prevent accidents, reduce errors, and enhance operational safety.

BRIEF OVERVIEW

This case study focuses on a beverage plant in Bhopal, where our team has completed the mechanical aspects of a project involving two critical pieces of machinery: a filler machine and a shrink tunnel. While the mechanical installation is complete, the electronic components remain unfinished, as the customer has taken responsibility for this aspect.

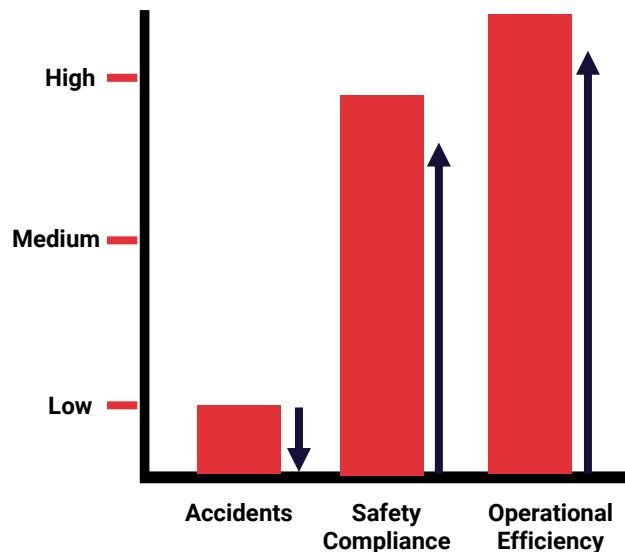
This report highlights the safety concerns related to the current machinery setup. **BRIGS**, in collaboration with **Fortress**, has implemented an AmGard Interlock system that enforces strict safety protocols. This system ensures that machines cannot be operated unless all predefined safety measures are fully adhered to. Doing so, not only prevents accidents but also reduces downtime by allowing safe access for minor maintenance activities.

The Result

- Accidents Down
- Safety Compliance Up
- Operational Efficiency Boosted

The Impact

- Immediate and
- Enduring



This case study showcases the transformative power of engineering controls in creating safer, more productive industrial environments.

It's not just jargon but real change in action.

THE CONCERN

The existing safety measures in place for the filler machine are inadequate, particularly concerning the limit switch employed in the system. This switch is not safety-rated, which poses a significant risk in a hazardous environment..

Hazards in Beverage Plant



Giant Machinery and Movement of Massive Equipment



Man – Machine Interface Issues



Extreme Conditions - Exposure to Heat and Fire



Toxic



Corrosive Materials



Fire



Noise and Vibrations



Explosives



Fall Hazard



Biological Hazard



Electrical Hazards



Isolation Hazards

Amongst all the hazards one major area of concern in a beverage plant is the **Man-Machine Interface**. Despite LOTO procedures, safety violations often occur due to pressure or shortcuts, which led to fatal incidents at a beverage plant filler area.

THE CONCERN

Safety Gaps

- **Limit Switch Performance:**

The current limit switch has a failure probability of 1 in 100,000, which is too high for personnel safety applications and doesn't meet the required safety standards for hazardous situations, increasing the risk of failure.

- **Bypassability of Safety Features:**

The actuator head can be bypassed by securing it with a thread or cable tie, allowing the operation of the machine while the door is open. This practice is particularly dangerous as it could lead to inadvertent machine startups while personnel are inside.

These events not only resulted in the loss of life but caused a two-month production halt, adding to operational losses. The incidents emphasize the need for robust, engineering-driven solutions to mitigate risks.

Risks

- **Higher Probability of Failure:**

- The device has a failure rate of 1 in 100,000, indicating a low reliability.

- **Not Recommended for Hazardous Application:**

- Due to the high probability of failure, using this device in environments where safety is crucial is strongly discouraged.

- **Risk of Unexpected Startup:**

- There is a significant risk that the machine could start unexpectedly while personnel are inside the operational area.

- **Potential for Accidental operation:**

- Another individual could operate the machine while the operator is present, posing a high risk.

THE CONCERN

THE CHALLENGE

The client sought a solution for the filler lock that was not of a progressive type due to issues with the existing switch's failure.

Client Requirements

- **Non-Progressive Filler Lock:**

The client requested a filler lock mechanism that operates differently from traditional progressive types, indicating a preference for a more direct locking solution.

Issues with Existing Switch

- **Failure of Current Switch:**

The existing switch has failed, causing downtime, safety issues, and inefficiencies, likely due to wear, environmental factors, or design flaws.



THE SOLUTION

Although LOTO saves lives, it remains on OSHA's top 10 list for the most cited violations. The main reason is that LOTO is an Administrative Control that can be bypassed.

In most cases of work accidents, fatigue, complacency, and work pressure are the biggest causes of deviation from protocols. Therefore, **engineering control** has proven to be the most reliable in addressing such scenarios.

That is why **BRIGS** proposed **The AmGard Interlock Solution TA1T6ST401** of **Fortress**. This engineering control ensures that the machine cannot start unless all safety conditions are met. In addition, the solution offered custom flexibility, addressing major and minor maintenance activities, where traditional LOTO methods either weren't feasible or often bypassed.

Safety Features:

- **Certified and Robust:**

Rated at CAT 4, Ple, and IP67; exceptionally low failure rate of 1 in 10 million, minimizing false signals.

- **Non-Duplicable Keys:**

It cannot be removed while the machine is in operation.

- **Heavy-Duty Actuator:**

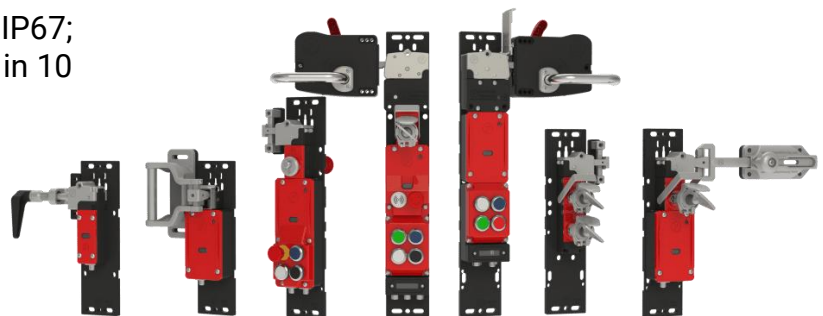
Designed for impact resistance; access allowed only when the goods lift is at the designated floor.

- **Durable Construction:**

Full metal body enhances durability and ensures a longer lifespan compared to plastic models.

- **Key Dependency:**

Operator must carry a safety key when entering the machine area; key can only be removed when the machine has stopped. Restarting the machine is not possible if the safety key is retained.



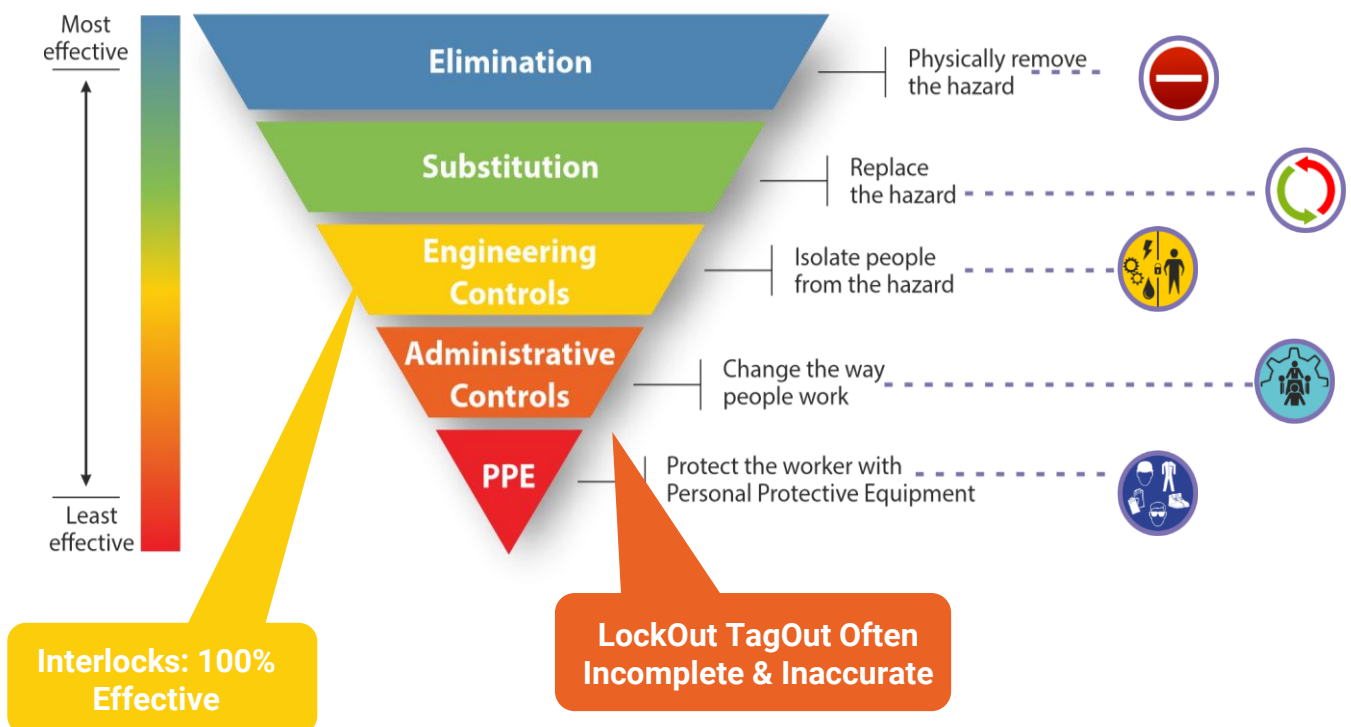
WHY TRAPPED KEY SOLUTION?

Engineering Control vs Administrative Control

Unlike LOTO, which is often bypassed or not enforced rigorously, the AmGard Interlock provides a fail-safe engineering solution. It eliminates the risks posed by human error, shortcuts, and unexpected machine startups.

By implementing this solution, even if there is an unauthorized entry, the machine cannot be restarted, ensuring the operator's safety.

AmGard Interlock is a proven reliable Engineering Control



CLIENT SUCCESS

- **Safety and Security:**

The system includes advanced safety measures, such as non-duplicable keys, to protect operators and prevent unauthorized access.

- **Durability and Reliability:**

Made from high-quality materials, the device withstands harsh conditions and heavy use, ensuring reliable performance.

- **Longevity of the Product:**

Engineered for durability, the product's design ensures a longer lifespan than competitors, reducing replacements and enhancing long-term value.

- **Zero Harm Operations – Fail-Proof Engineering Control:**

The system features fail-proof controls, including automatic shutdowns and alerts, to ensure safe operations.

- **Enhanced Safety Culture:**

The device enriches a safety culture, encouraging safe practices and reinforcing protocols for a secure workplace.



Safety and Security



Zero Harm Operations



Durability and Reliability



Longevity of the Product



Enhanced Safety Culture

KEY TAKEAWAYS

- **Fail-Safe Engineering Control:**

The AM Gard Solution provides 100% reliable, fail-safe protection without disrupting productivity.

- **Standards Compliance:**

The solution meets stringent CAT 4, PL e, IP67 safety standards, ensuring compliance across high-risk operations.

- **Collaboration between BRIGS and Fortress:**

The combined expertise brought to this solution underscores its industry-leading effectiveness.

CONCLUSION

By integrating the **AM Gard Interlock** system, **BRIGS** has fundamentally transformed the safety culture within the filler machine and shrink tunnel, reducing both accidents and downtime. This engineered solution represents a critical shift from administrative controls to a robust, tamper-proof engineering control that ensures total compliance with safety standards.

The implementation has not only enhanced safety but has also improved productivity, setting a new standard for safe industrial operations.

This collaboration between **BRIGS** and **Fortress** underscores the powerful impact of engineering controls in fostering safer, more efficient industrial environments.

ABOUT US

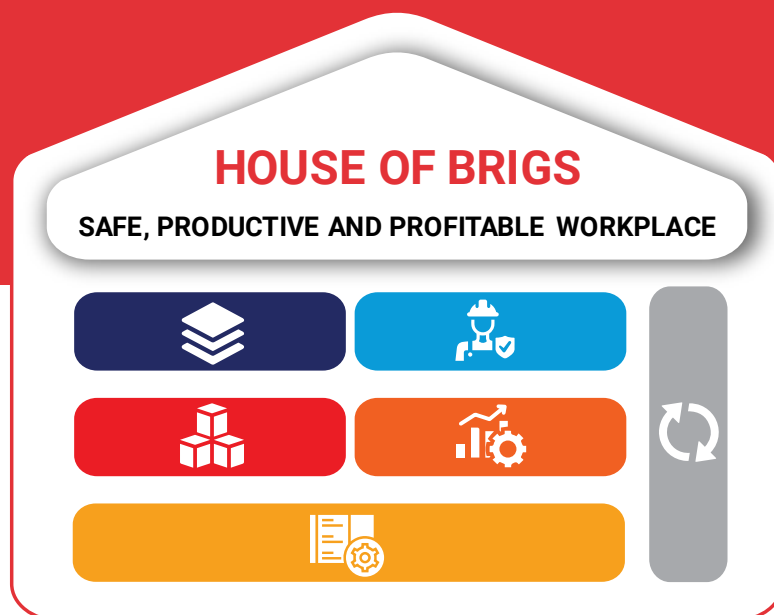
At **BRIGS**, we design innovative and sustainable safety solutions that protect both people and machines without compromising productivity. Our expertise lies in creating safer, more efficient, and fully compliant workplaces through advanced platforms like Factory U/X, Factory O/S, and M/P Safety.

With a mission to build secure and self-regulating work environments worldwide, our B11 Licensed Machinery Safety Specialist and Workplace Safety Experts, with a 360-degree overview of machine safety, offer comprehensive services across the entire machine life cycle. From risk assessments to compliance with international standards like ANSI B11.0:2010 and ISO 12100, we ensure that your workplace is safeguarded from operational hazards.

In partnership with Fortress, we have successfully collaborated to deliver cutting-edge solutions like the AmGard Interlock System, enhancing workplace safety and setting new industry standards. Together, we are committed to making safety seamless and workplaces productive.

Every Life Matters!

Write to us - info@brigs-espro.com to Lock in Safety with a Trapped Key Interlock!



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|---|----------------------|---|----------------|
| 1 | Organized Workplace | 4 | Inventory Max |
| 2 | Safe Workplace | 5 | Matrix Display |
| 3 | Productive Workplace | 6 | Change RX |

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