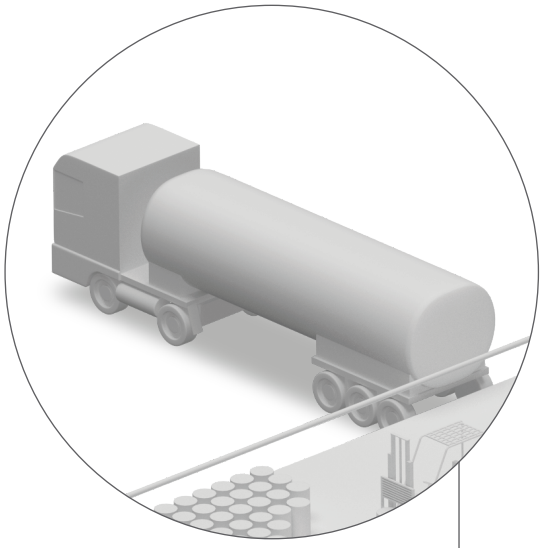
Tanker Delivery

Food Industry
Application Note

Castell

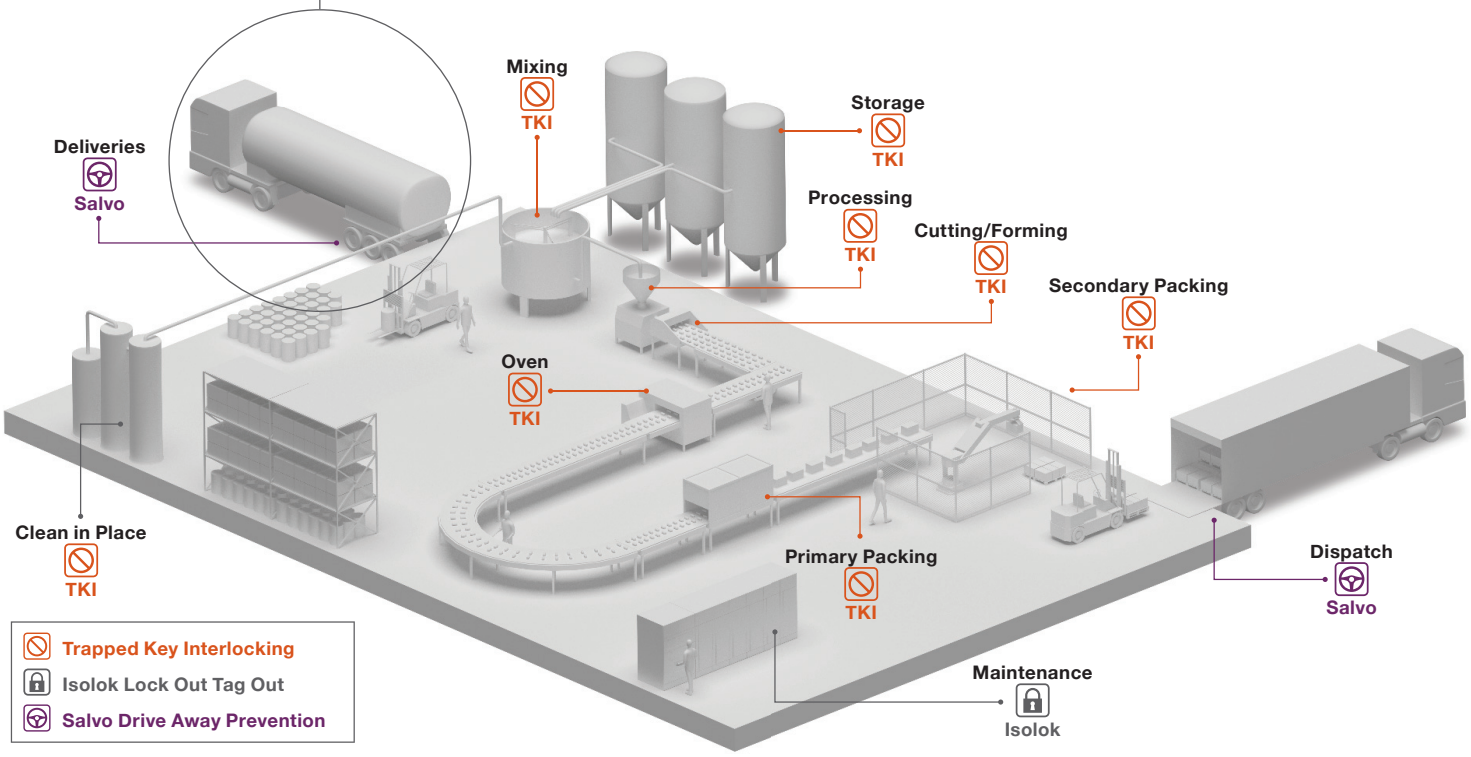


Tanker Delivery

The Risk

Loading and unloading tankers without an engineered safety mechanism can lead to the risk of driveaways and pulloffs whilst ingredients are being transferred. This can lead to risks of spills and asset damage as well as potential exposure to hazardous chemicals. Significant injuries and deaths are caused by the loading and unloading of vehicles each year.

Food Industry

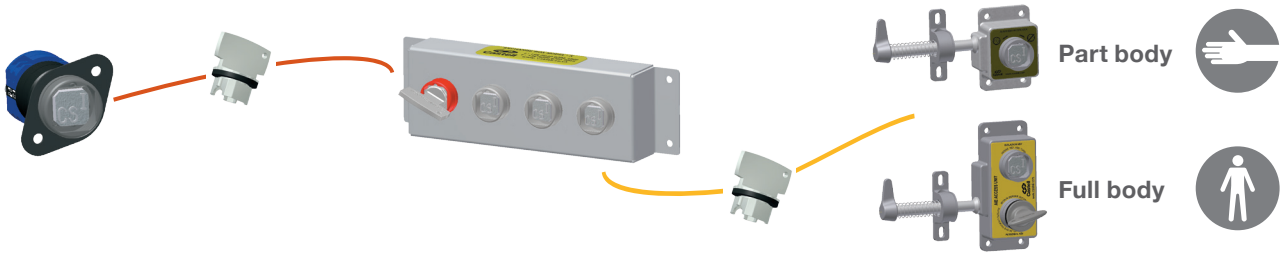


Castell Solution

1 Isolation

2 Key Exchange

3 Access Control



Isolation	Access
The Salvo coupling is used on the vehicles emergency airline to isolate the vehicle. The key can only be removed when the Salvo coupling is fitted, this prevents access to the hose, transfer or gantry mechanism until the vehicle is safely locked in position.	The hose or transfer mechanism is prevented from being connected to the tanker until the vehicle is locked in position with the Salvo coupling. Additional keys can then be released in sequence to allow a valve to be operated or to commence loading or unloading. The loading gantry can be accessed by the released Salvo key. Several keys can then be released in a procedural sequence to allow hoses to be connected, valves to be operated and to start the loading or unloading of the tanker.

Benefits

1) Improved safety, loading and unloading can only occur when the vehicle is safe.
2) Increased efficiency, loading is not dependant on verbal communication.
3) Increased efficiency, unloading becomes a process and is not procedurally based.
4) Reduced downtime, equipment is not damaged due to accidental driveaways.

Products

<table>
<tr><th>Isolation</th><th colspan="3">Access</th></tr>
<tr><td rowspan="2">Salvo Coupling
  </td><td>MBV - Valve Control
  </td><td>AI - Access lock
  </td><td>AIE - Access exchange lock
  </td></tr>
<tr><td>KS - Switch
  </td><td colspan="2">KSS - Solenoid Control
  </td></tr>
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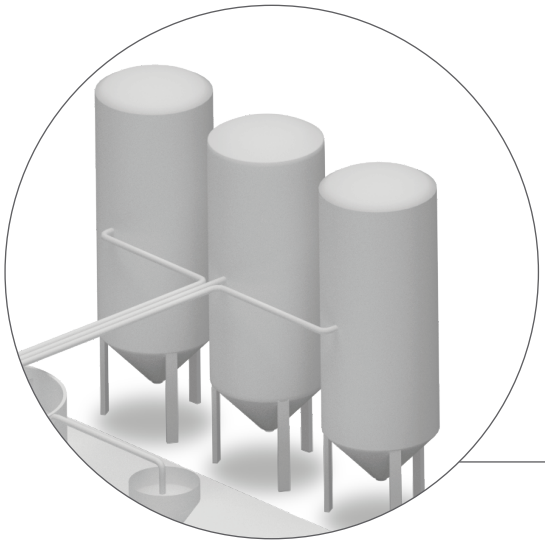
Raw Material Storage

Food Industry
Application Note

Castell

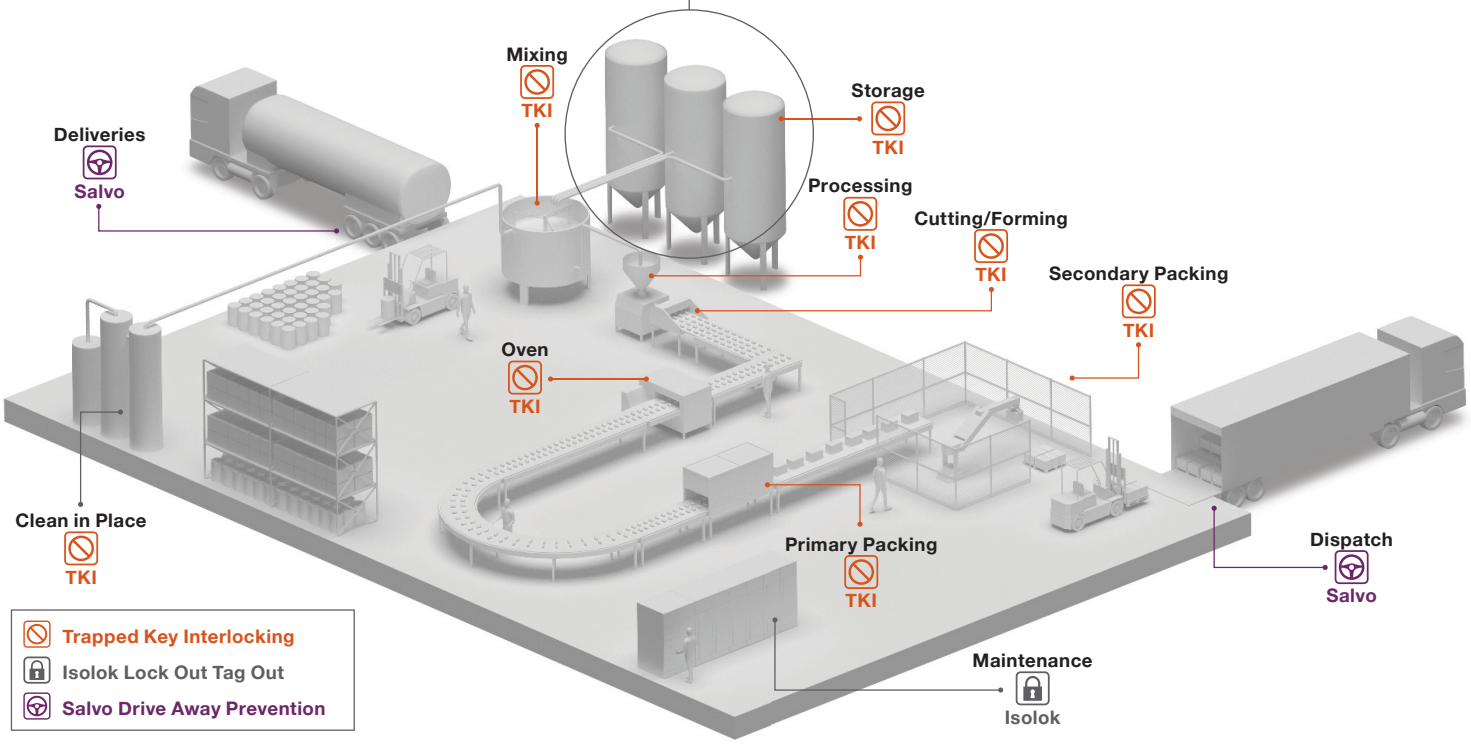


Raw Material Storage

The Risk

Unprotected access to storage silos and containers that are being agitated can lead to a risk of suffocation. This occurs through sinking through the both solids and liquids.

Food Industry

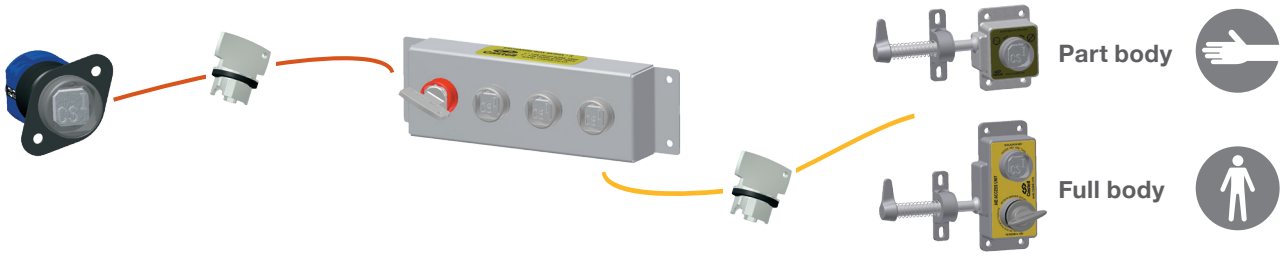


Castell Solution

1 Isolation

2 Key Exchange

3 Access Control

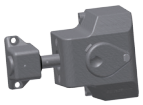


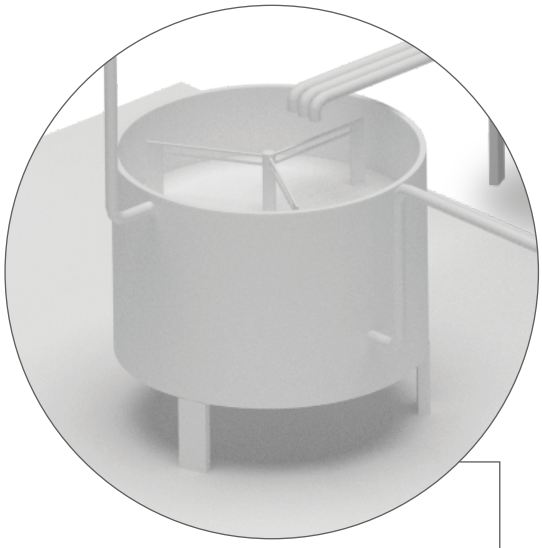
Isolation	Exchange	Access
Isolation of multiple agitation, feed and extraction systems are required prior to releasing the trapped key. This may involve MBVs for valve control, BEMF or time delay units for agitation and access locks for loading hatches.	Where there multiple points of isolation are required an exchange box will be needed to accept multiple keys before any access keys can be released.	The product used to control access has to be based on the access that can be gained, this will be either a part body or full body access lock.

Benefits

1) Improved safety, through the interlocking of access and motion together with the personnel key the operator or engineer who is entering the storage container remains in control of the system.
2) Improved safety, through interlocking the fill and extract systems coupled with a personnel key make sure any person entering the storage facilities are in control of the systems so no accidental fill or extraction can take place.
3) Reduced downtime, through implementing a mechanical system downtime due to water ingress and damage from the elements is removed ensuring high levels of operation
4) Improved efficiency, through implementing a process rather than a procedure the system operation is not dependant on verbal communication. The transfer of the key enables operators to know the status.

Products

Isolation		Exchange	Access		
KS20 - Switched	KSD - Three phase switched	Exchange Box	AI - Part Body	Salus - Part Body	AIE - Full Body
					
BEMF - Motion Sensing	TDI - Timed, DAE - Timed		AIS - Full Body	AIES - Full Body	
					

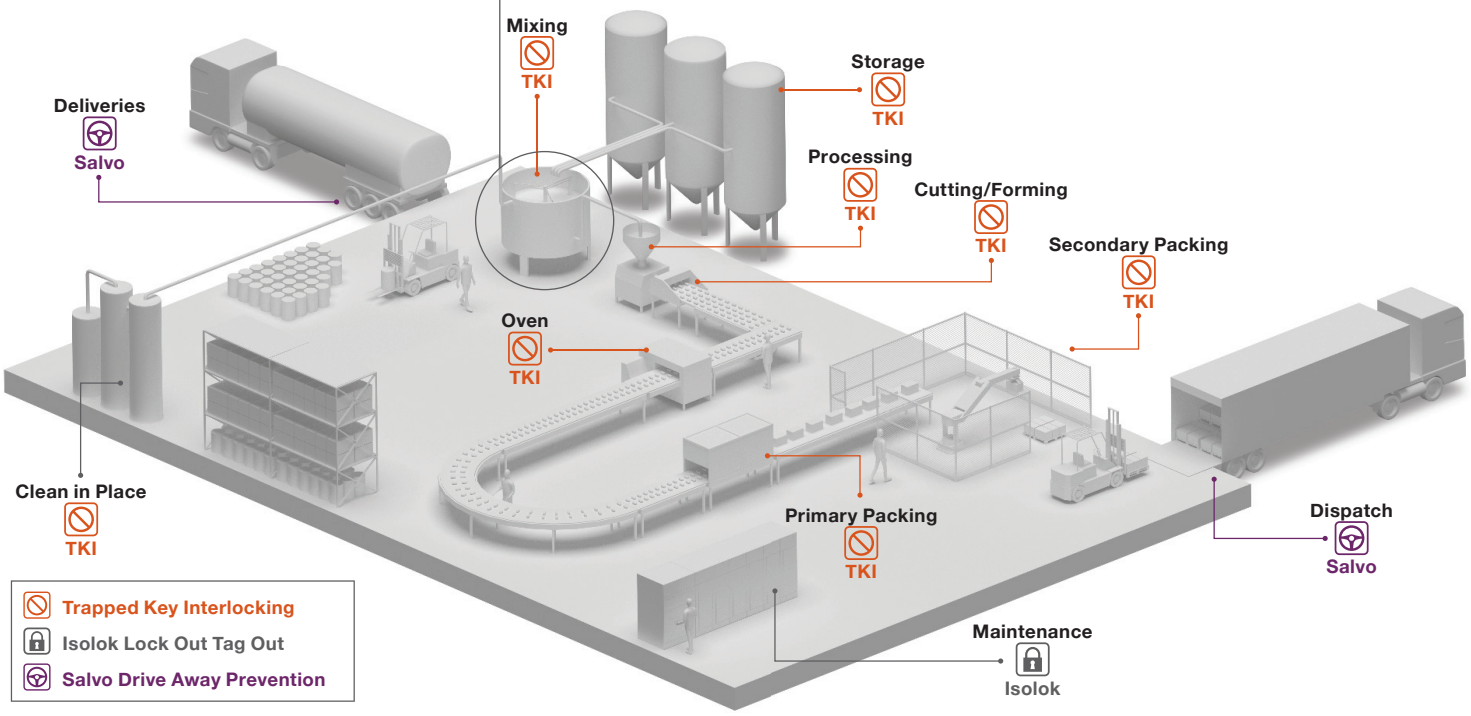


Mixing

The Risk

Unprotected access to the mixer creates a high risk of injury from rotating blades and arms. There is potential further risk of burns if the contents are heated during the process. This is increased in large mixers where full body entry can be gained.

Food Industry

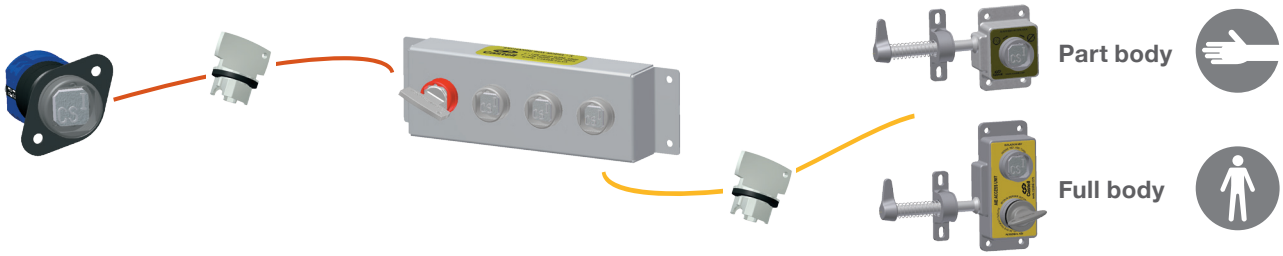


Castell Solution

1 Isolation

2 Key Exchange

3 Access Control

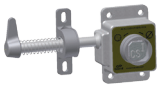
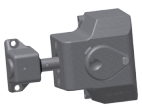


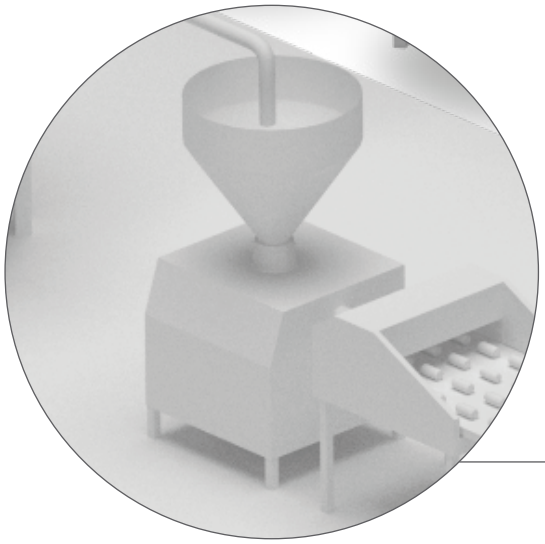
Isolation	Exchange	Access
Where there is a large amount of energy in the mixer, the blades or arms continue to rotate for a period of time after power has been switched off then either a time delay unit or a BEMF unit needs to be used to delay the isolation key being released. If the rotation stops instantaneously then a KS20 can be used.	Where there are multiple points of entry an exchange box will be required to enable multiple keys to be released.	The product used to control access has to be based on the access that can be gained, this will be either a part body or full body access lock.

Benefits

1) Extended system life, due to the stainless steel construction of housings and mechanisms Castell interlock systems offer many years of trouble free operation.
2) High level of risk control, as control is in the hands of the operator/engineer when in the dangerous area through the personnel key.
3) Downtime is reduced as access is mechanical and is highly tolerant of wash-down environments.
4) Efficiency, this is improved through the use of the BEMF unit so the key is released as soon as the equipment is safe so there is no delay in access.

Products

Isolation			Exchange	Access		
KS20 - Switched	Salus20 - Switched	BEMF - Motion Sensing	Exchange Box	AI - Part Body	Salus - Part Body	AIE - Full Body
						
TDI - Timed	DAE - Timed			AIS - Full Body	AIES - Full Body	
						

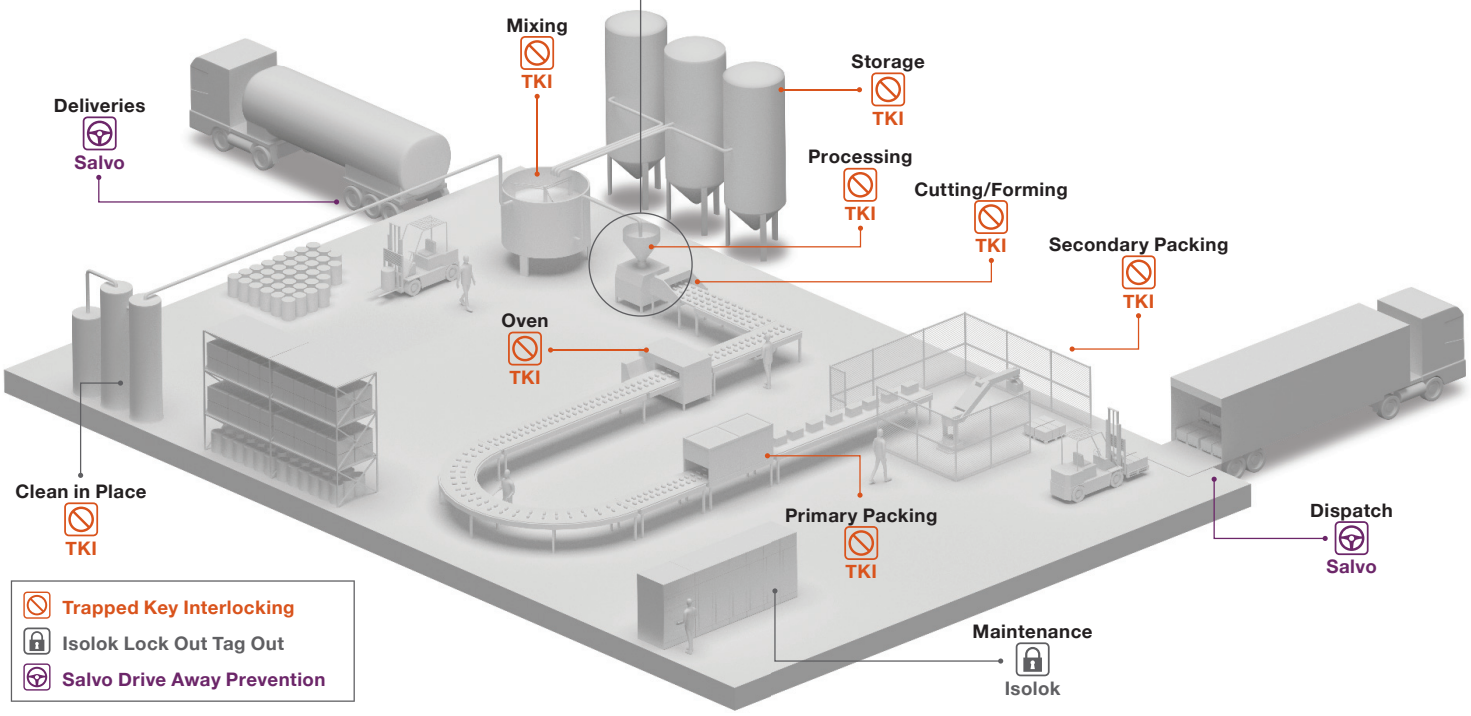


Processing

The Risk

Unprotected access to the processing equipment creates a potential hazard where there are rotating parts such as augers in hoppers and delivery tubes. Typically these allow access to mechanisms that could lead to hand arm access.

Food Industry

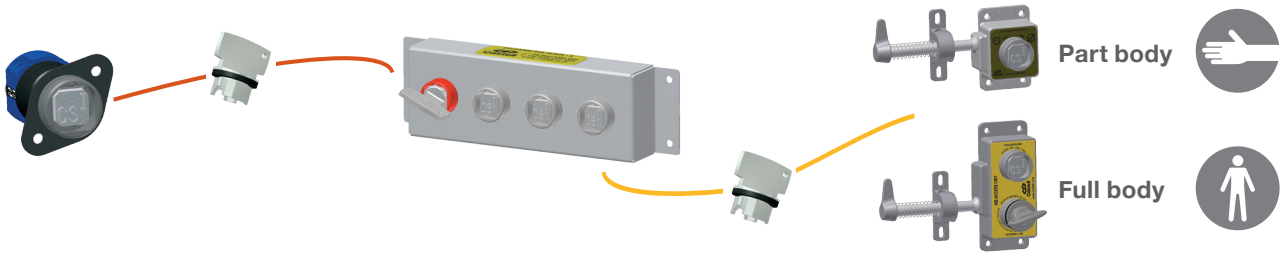


Castell Solution

1 Isolation

2 Key Exchange

3 Access Control

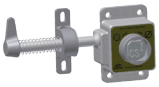
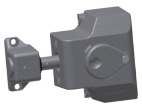


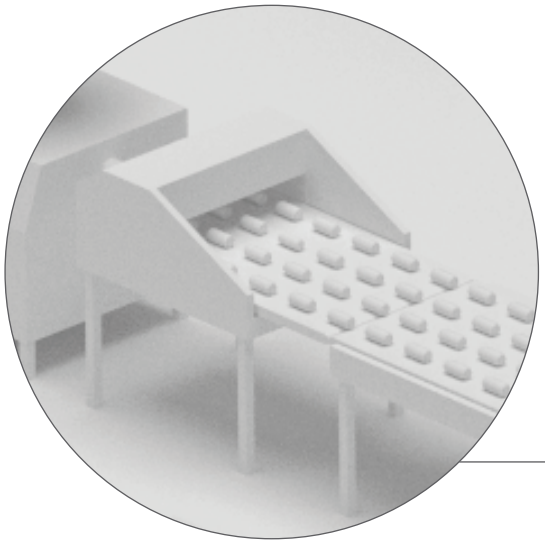
Isolation	Exchange	Access
Where there is a large amount of energy in the processing equipment, the blades or arms continue to rotate for a period of time after power has been switched off then either a time delay unit or a BEMF unit needs to be used to delay the isolation key being released. If the rotation stops instantaneously then a KS20 can be used.	Where there are multiple points of entry an exchange box will be required to enable multiple keys to be released.	The product used to control access has to be based on the access that can be gained, this will be either a part body or full body access lock.

Benefits

1) Extended system life, due to the stainless steel construction of housings and mechanisms Castell interlock systems offer many years of trouble free operation.
2) High level of risk control, as control is in the hands of the operator/engineer when in the dangerous area through the personnel key.
3) Downtime is reduced as access is mechanical and is highly tolerant of wash-down environments.
4) Efficiency, this is improved through reducing the dependance on fit and electrical contacts. The key can only be released when guarding has been fitted correctly. This reduces the time spent chasing poor contacts prior to machinery restarting.

Products

Isolation			Exchange	Access		
KS20 - Switched	Salus20 - Switched	BEMF - Motion Sensing	Exchange Box	AI - Part Body	Salus - Part Body	AIE - Full Body
						
TDI - Timed	DAE - Timed			AIS - Full Body	AIES - Full Body	
						

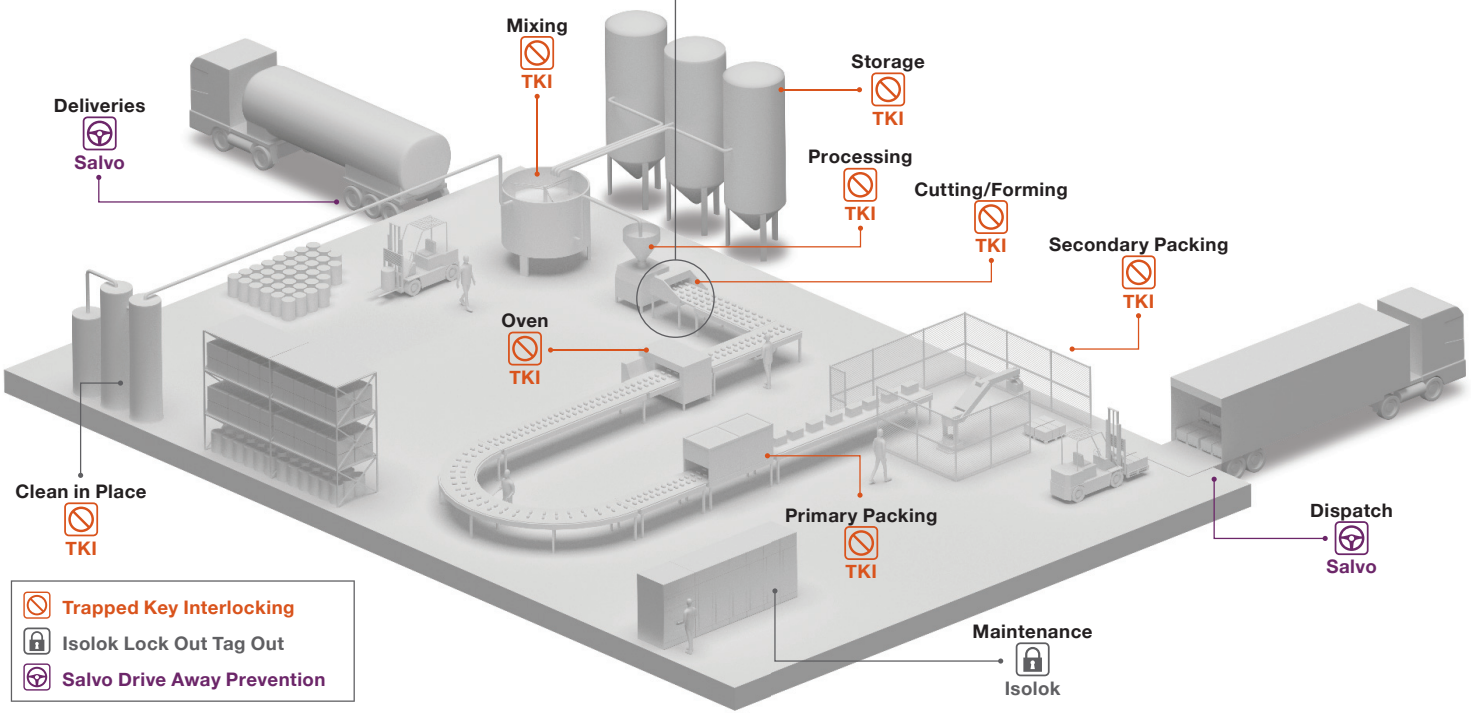


Cutting and Forming

The Risk

Unprotected access to the processing equipment creates a potential hazard where there are rotating parts such as augers in hoppers and delivery tubes. Typically these allow access to mechanisms that could lead to hand arm access.

Food Industry

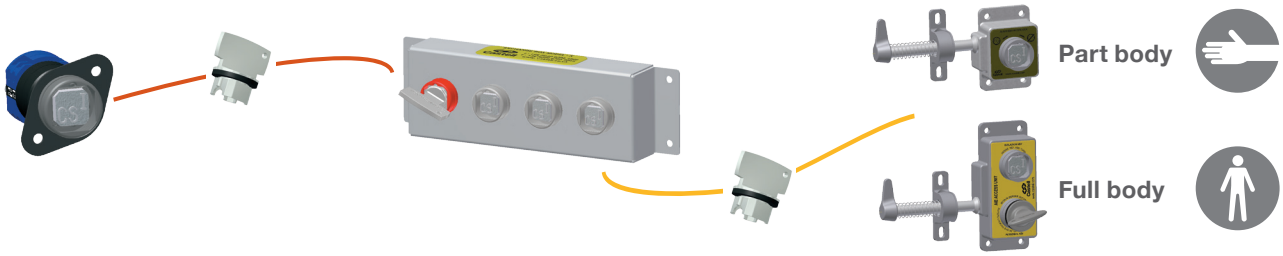


Castell Solution

1 Isolation

2 Key Exchange

3 Access Control

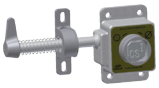
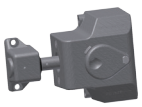


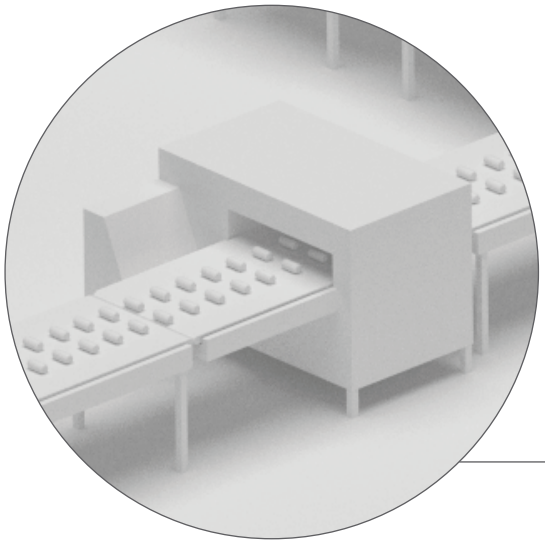
Isolation	Exchange	Access
Where there is a large amount of energy in the cutting and forming equipment, the blades or arms continue to rotate for a period of time after power has been switched off then either a time delay unit or a BEMF unit needs to be used to delay the isolation key being released. If the rotation stops instantaneously then a KS20 can be used.	Where there are multiple points of entry an exchange box will be required to enable multiple keys to be released.	The product used to control access has to be based on the access that can be gained, this will be either a part body or full body access lock.

Benefits

1) Extended system life, due to the stainless steel construction of housings and mechanisms Castell interlock systems offer many years of trouble free operation.
2) High level of risk control, as control is in the hands of the operator/engineer when in the dangerous area through the personnel key.
3) Downtime is reduced as access is mechanical and is highly tolerant of wash-down environments.
4) Efficiency, this is improved through reducing the dependance on fit and electrical contacts. The key can only be released when guarding has been fitted correctly. This reduces the time spent chasing poor contacts prior to machinery restarting.

Products

Isolation			Exchange	Access		
KS20 - Switched	Salus20 - Switched	BEMF - Motion Sensing	Exchange Box	AI - Part Body	Salus - Part Body	AIE - Full Body
						
TDI - Timed	DAE - Timed			AIS - Full Body	AIES - Full Body	
						

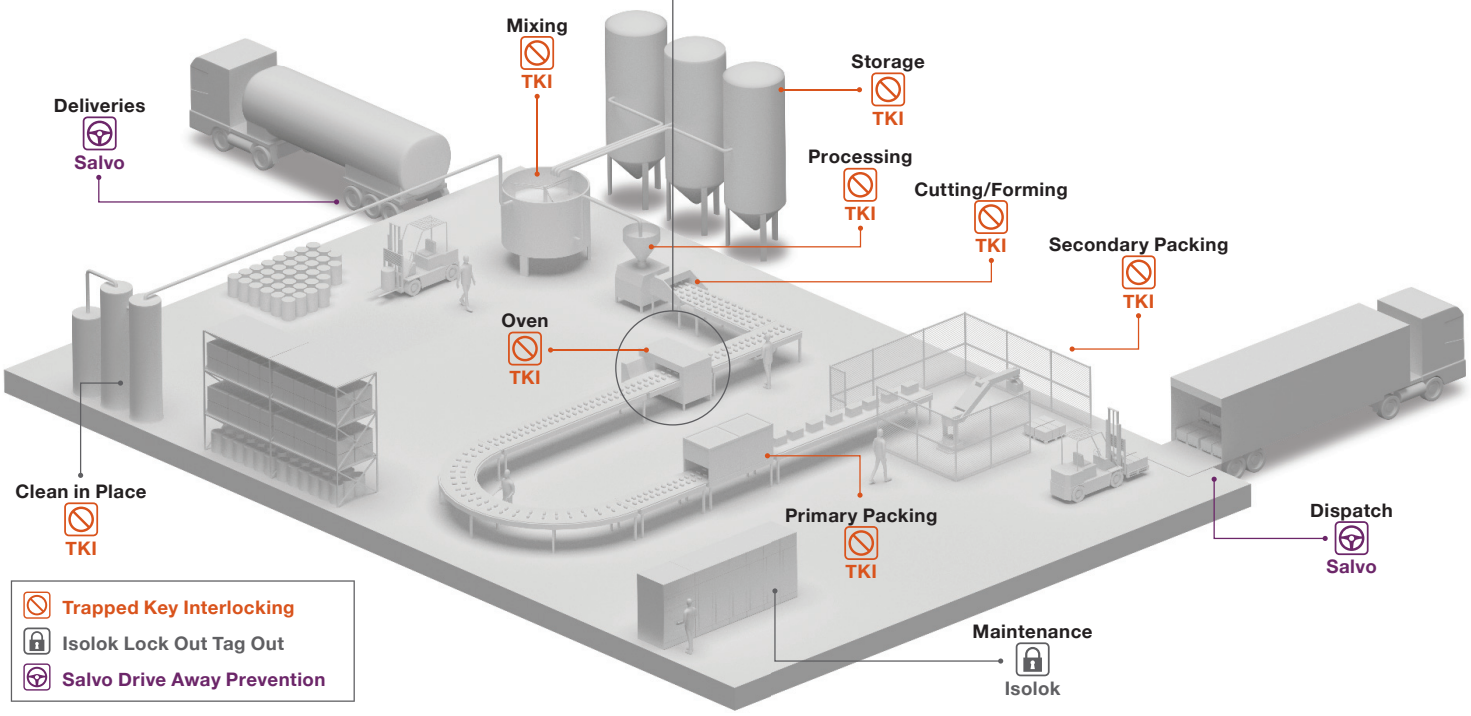


Oven and Cooking

The Risk

Unprotected access to ovens creates two sets of hazards. Firstly heat exposure, this can be caused through insufficient cooling time, or equipment being switched on whilst personnel are still in a dangerous environment. The second danger is the risk of working in an enclosed space with conveyor and mechanical movement systems.

Food Industry

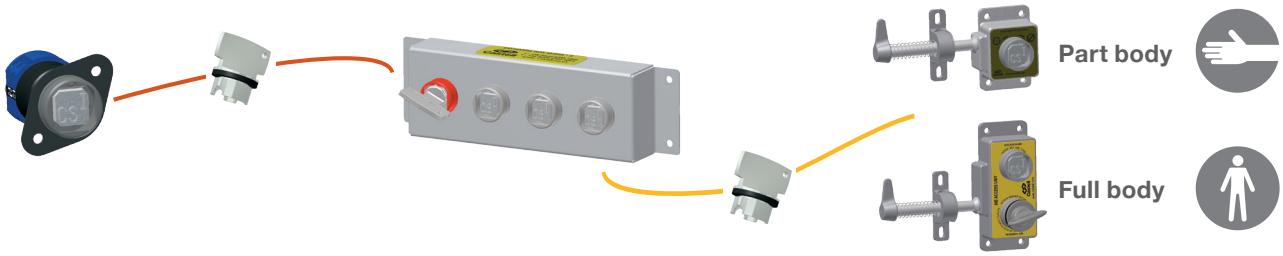


Castell Solution

1 Isolation

2 Key Exchange

3 Access Control

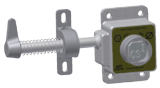
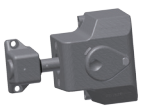


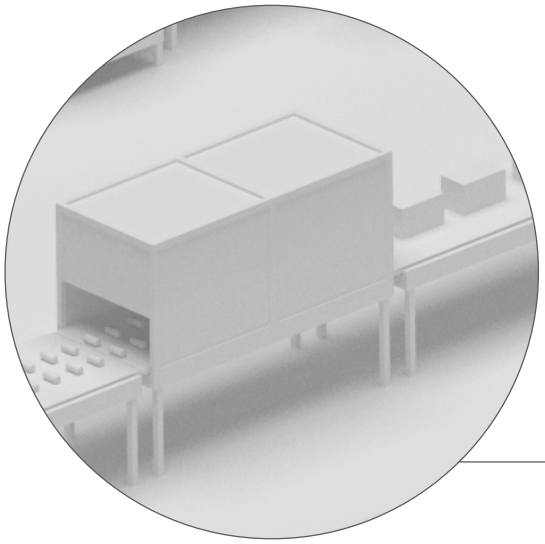
Isolation	Exchange	Access
Where there is latent heat a time delay unit maybe required to ensure that adequate cooling has occurred prior to access being gained. The equipment may also require the isolation of conveyor or movement equipment being isolated at the same time using time delay, solenoid control or motion sensing units.	Where there are multiple points of entry and or multiple points of isolation required an exchange box will be needed to enable multiple keys to be inserted prior to access keys being released.	The product used to control access has to be based on the access that can be gained, this will be either a part body or full body access lock.

Benefits

1) Extended system life, due to the stainless steel construction of housings and mechanisms Castell interlock systems offer many years of trouble free operation.
2) High level of risk control, as control is in the hands of the operator/engineer when in the dangerous area through the personnel key.
3) Downtime is reduced as access is mechanical and is highly tolerant of wash-down environments.
4) Efficiency, this is improved through reducing the dependance on fit and electrical contacts. The key can only be released when guarding has been fitted correctly. This reduces the time spent chasing poor contacts prior to machinery restarting.

Products

Isolation			Exchange	Access		
KS20 - Switched 	Salus20 - Switched 	TDI - Timed 	Exchange Box 	AI - Part Body 	Salus - Part Body 	AIE - Full Body 
DAE - Timed 	KSS20 - Solenoid Control 			AIS - Full Body 	AIES - Full Body 	

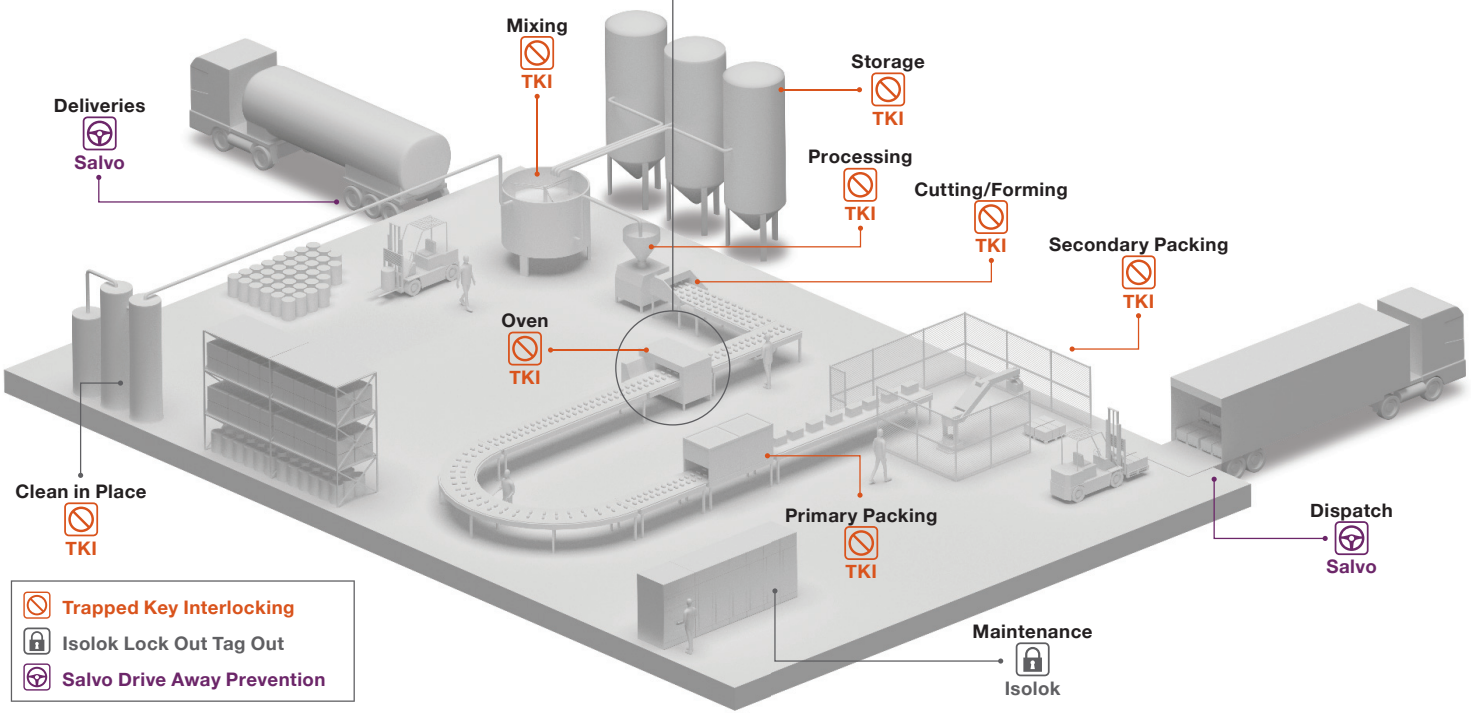


Primary Packaging

The Risk

Unprotected access to bagging, wrapping, container filling and bottling equipment, especially where these operations are happening at high speed, can lead to a high risk of injury to limbs and hands.

Food Industry



Castell Solution

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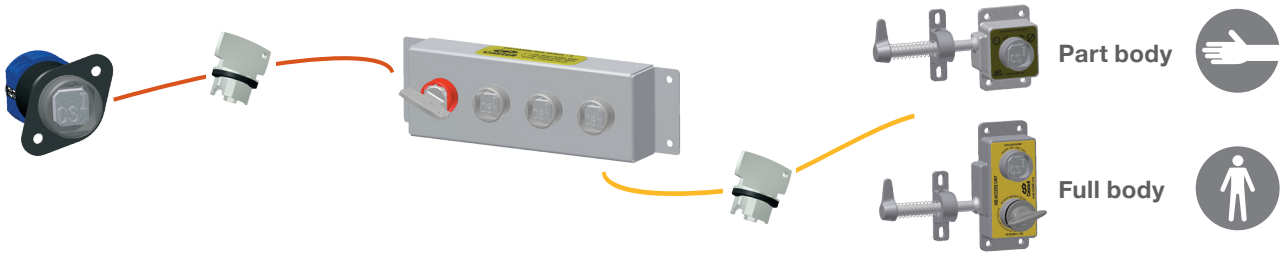
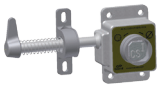


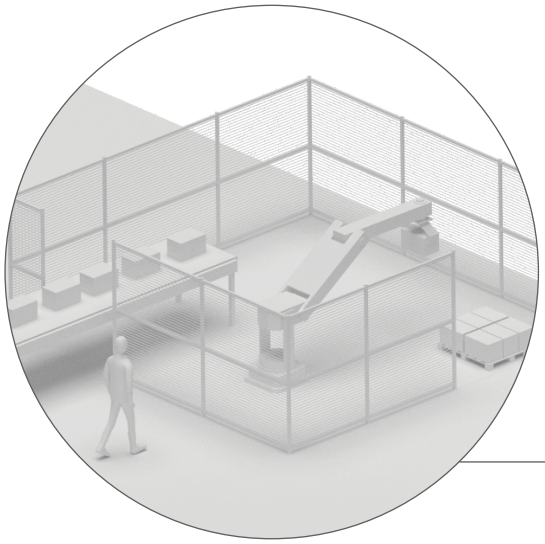
Isolation	Exchange	Access
Isolation of primary packaging machinery can require either a rundown time or mechanisms reaching a home position. This can be achieved through a simple switched control - KS20, solenoid control - KSS or time delay - TDI, DAE unit. Until the machine is safe the key will not be released.	Where there are multiple points of entry an exchange box will be required to enable multiple keys to be released.	The product used to control access has to be based on the access that can be gained, this will be either a part body or full body access lock.

Benefits

1) Extended system life, due to the stainless steel construction of housings and mechanisms Castell interlock systems offer many years of trouble free operation.
2) High level of risk control, as control is in the hands of the operator/engineer when in the dangerous area through the personnel key.
3) Downtime is reduced as access is mechanical and is highly tolerant of wash-down environments.
4) Efficiency, this is improved through reducing the dependance on fit and electrical contacts. The key can only be released when guarding has been fitted correctly. This reduces the time spent chasing poor contacts prior to machinery restarting.

Products

Isolation			Exchange	Access		
KS20 - Switched	Salus20 - Switched	TDI - Timed	Exchange Box	AI - Part Body	Salus - Part Body	AIE - Full Body
						
DAE - Timed	KSS20 - Solenoid Control			AIS - Full Body	AIES - Full Body	
						

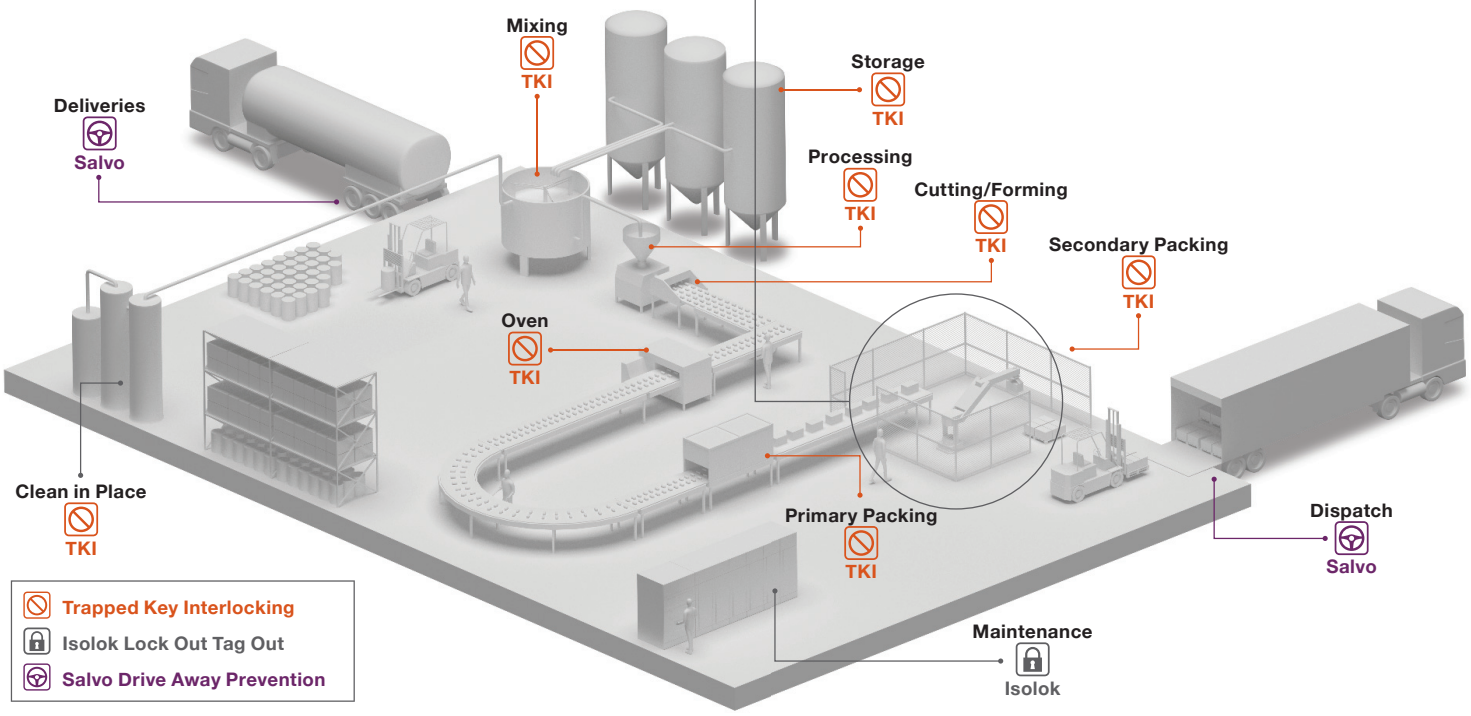


Secondary Packaging

The Risk

Unprotected access to the secondary packing area creates a high risk of injury from wrapping machinery as well as palletizing equipment. The fast moving parts have the ability to cause serious impact injuries.

Food Industry

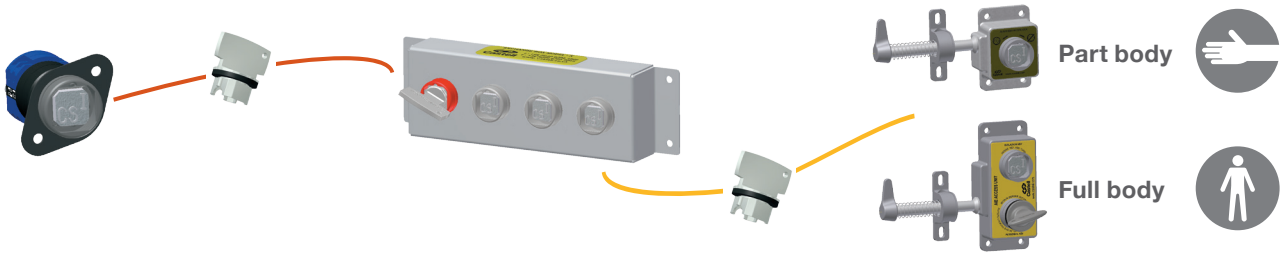


Castell Solution

1 Isolation

2 Key Exchange

3 Access Control

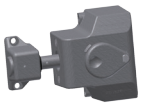


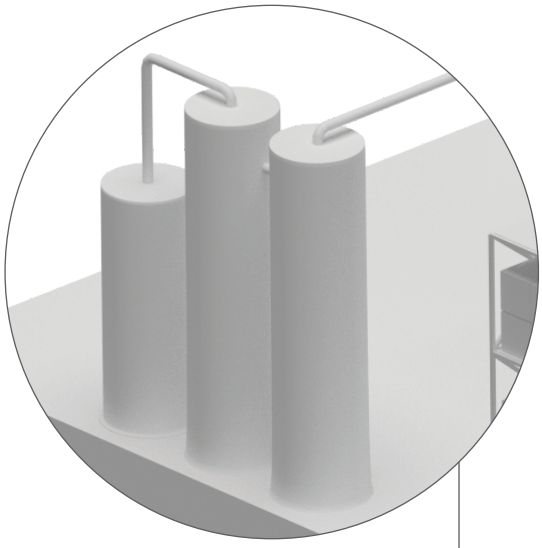
Isolation	Exchange	Access
Isolation of packaging machinery can require that the equipment reaches a home position before safe entry can be gained. If this is require a solenoid KSS unit is required. This device waits for a home signal before the key used to gain access is released. If the equipment can be stopped in any position a simple KS20 switch can be used.	Where there are multiple points of entry an exchange box will be required to enable multiple keys to be released.	The product used to control access has to be based on the access that can be gained, this will be either a part body or full body access lock.

Benefits

1) Extended system life, due to the stainless steel construction of housings and mechanisms Castell interlock systems offer many years of trouble free operation.
2) High level of risk control, as control is in the hands of the operator/engineer when in the dangerous area through the personnel key.
3) Downtime is reduced as access is mechanical and is highly tolerant of wash-down environments.
4) Efficiency is improved through enabling access when the equipment is ready through the use of the KSS unit. These removes the need for a fixed time delay.

Products

Isolation		Exchange	Access		
KS20 - Switched	KSS20 - Solenoid Control	Exchange Box	AI - Part Body	Salus - Part Body	AIE - Full Body
					
Salus20 - Switched			AIS - Full Body	AIES - Full Body	
					

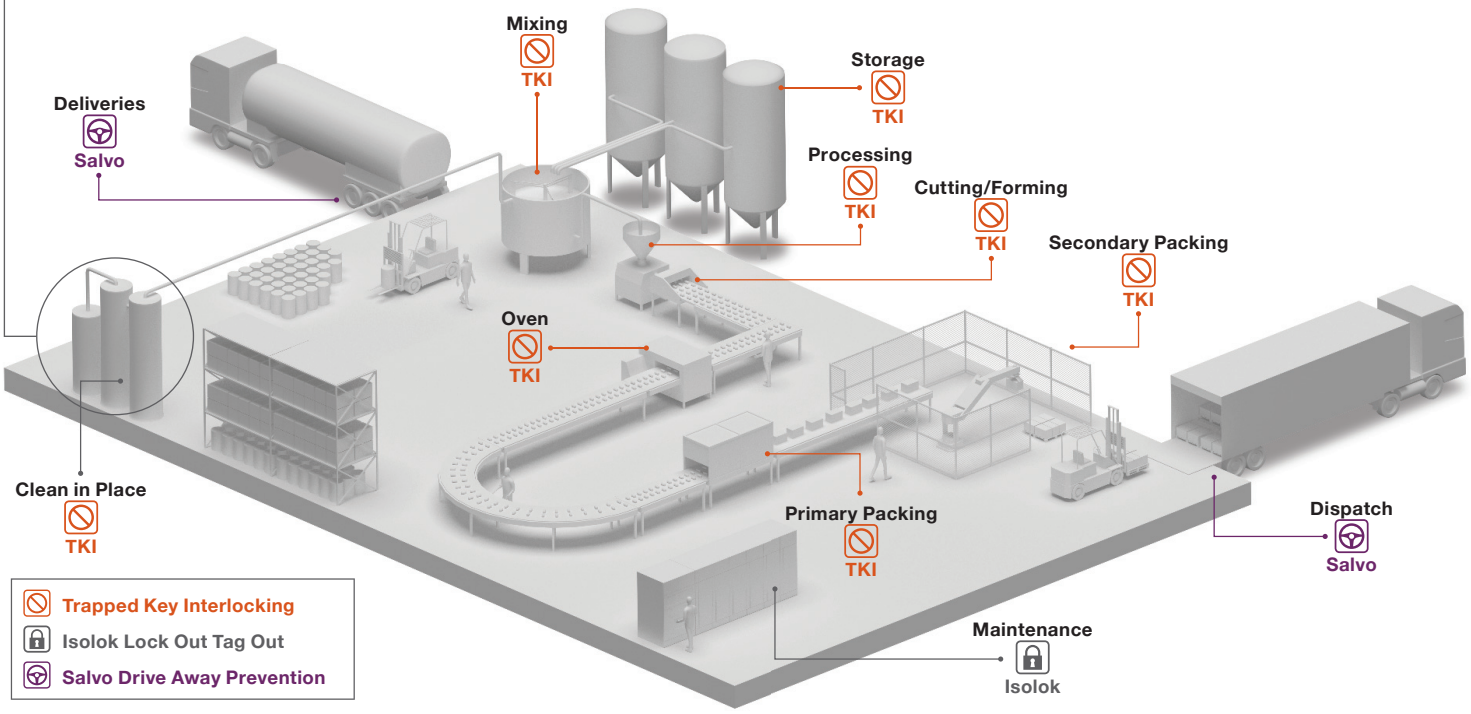


Cleaning in Place

The Risk

The major risk from Clean in Place systems is food contamination with dangerous cleaning fluids. A CIP system that does not have a mechanism to prevent contamination can lead to significant exposure to risk for customers of tainted product.

Food Industry

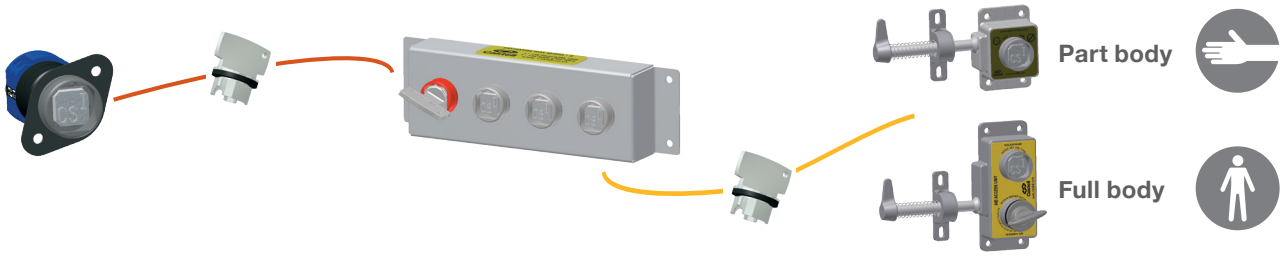


Castell Solution

1 Isolation

2 Key Exchange

3 Access Control

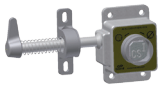
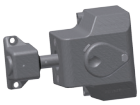


Isolation	Exchange	Access
Control over transfer valves are interlocked using the MBV valve control. Interlocking ensures that cleaning fluid and food are separated and cannot mix. Using solenoid control to retain the key until the cleaning cycle is complete ensures that separation is achieved.	Where there are multiple cleaning areas a number of areas can be processed through the use of an exchange box.	Access to equipment to be cleaned is controlled through solenoid key release and MBV valve control.

Benefits

1) Food safety, through interlocked control food and cleaning fluids are kept separated preventing contamination.
2) Improved hygiene, through solenoid control, cleaning sequences have to be completed to the required standard before production can be restarted.
3) Improved efficiency, this is achieved through the interlocked control of cleaning processes to ensure that individual areas can be cleaned safely whilst production is maintained.
4) Reduced downtime, this is achieved through implementing a mechanical safety system that can endure rigorous wash down regimes.

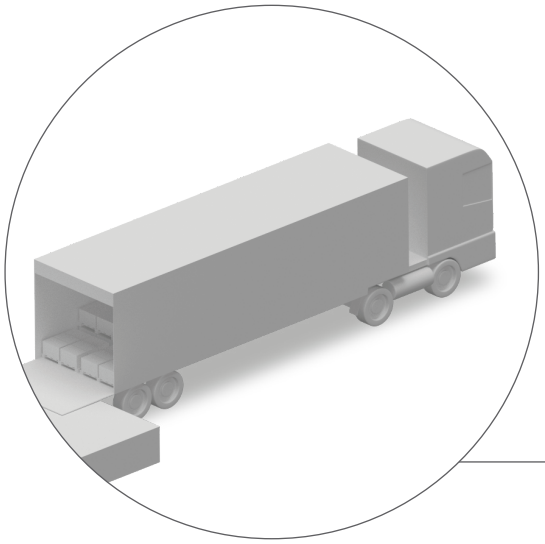
Products

Isolation	Exchange	Access		
MBV - Valve Control 	Exchange Box 	AI - Part Body 	Salus - Part Body 	AIE - Full Body 
KS20 - Switched 		AIS - Full Body 	AIES - Full Body 	

Loading Bay Dispatch

Food Industry
Application Note

Castell

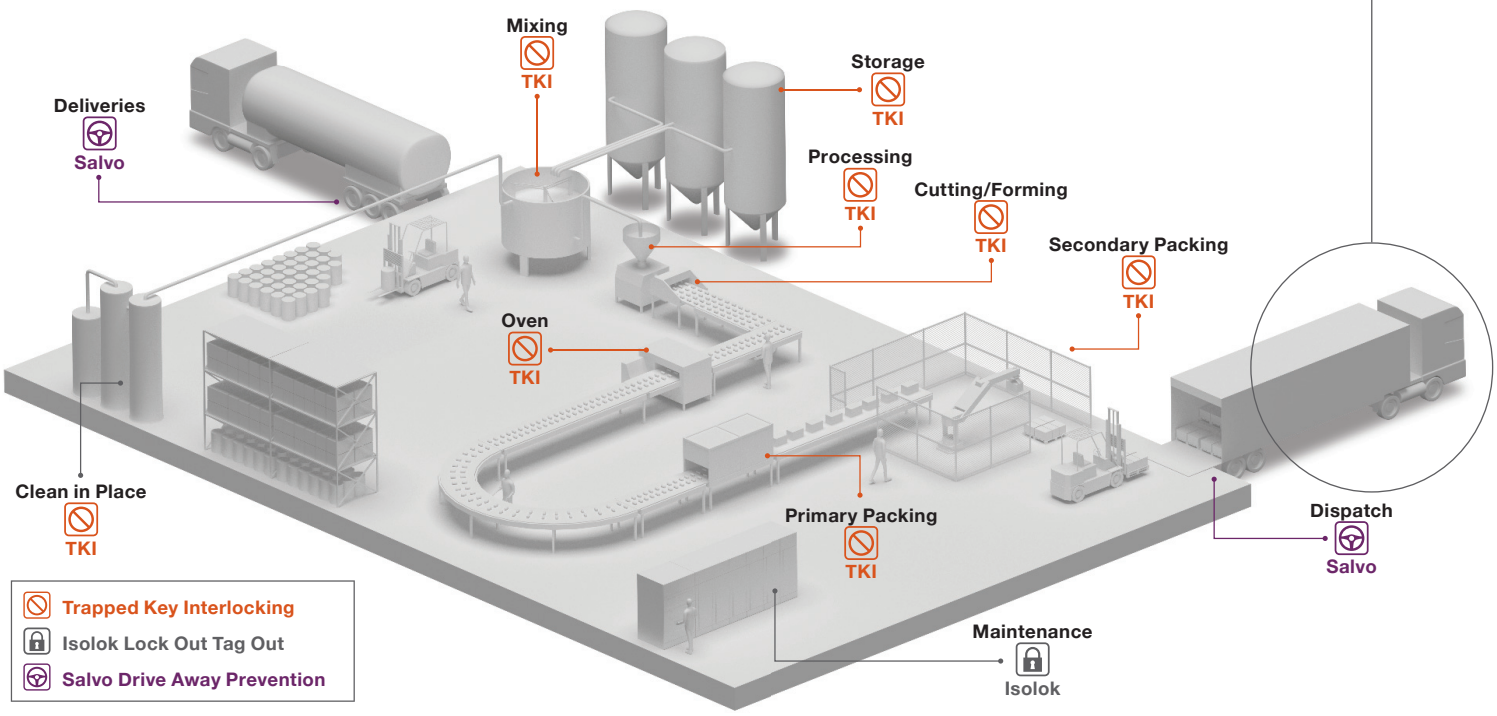


Loading Bay Dispatch

The Risk

Loading and unloading trucks without an engineered safety mechanism to prevent early departure can lead to the risk of driveaways and pulloffs. Accidents at the loading dock can be extremely dangerous. Significant injuries and deaths are caused by the loading and unloading of vehicles each year. This is in addition to potential product damage.

Food Industry



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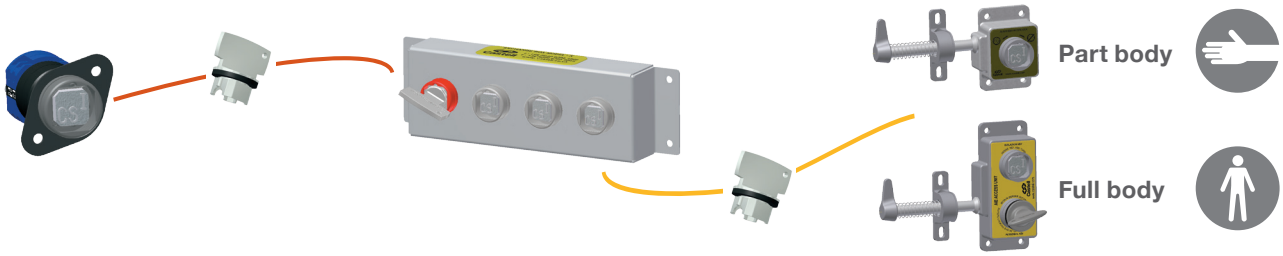


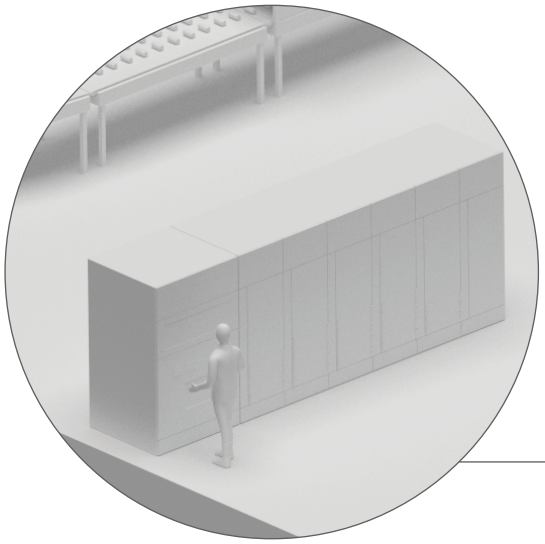
Isolation	Access
The Salvo coupling is used on the vehicles emergency airline to isolate the vehicle. The Salvo key can only be removed when the coupling is fitted, this immobilises the vehicle by locking on the trailer brakes.	The Salvo Control Panel (SCP) prevents the operation of the loading bay door. Until the key from the Salvo coupling is inserted, the loading bay door remains in the closed position. While the loading bay door is open the Salvo key is retained in the SCP preventing the Salvo coupling from being removed. This ensures the vehicle remains immobilised whilst loading takes place

Benefits

1) Improved safety, loading and unloading can only occur when the vehicle is immobilised, vehicle is only enabled when the loading bay door is closed.
2) Increased efficiency, loading is not dependant on verbal communication. Automatic indication is given when the dock is safe to be opened. This is further enhanced through the management if rotation system dock monitor which provides visual, real time data on all loading docks simultaneously.
3) Increased safety, security and pest control, the loading door remains shut when no vehicle is present. This prevents unauthorised access to the loading area, prevents falling from height and reduces the opportunity for pest invasion.
4) Energy saving, heat or chilled air is retained more effectively as the door is only open during loading.

Products

Isolation	Access	
Salvo Coupling 	SCP - Salvo Door Control 	Beacon 
	Door sensors 	Storage Box 

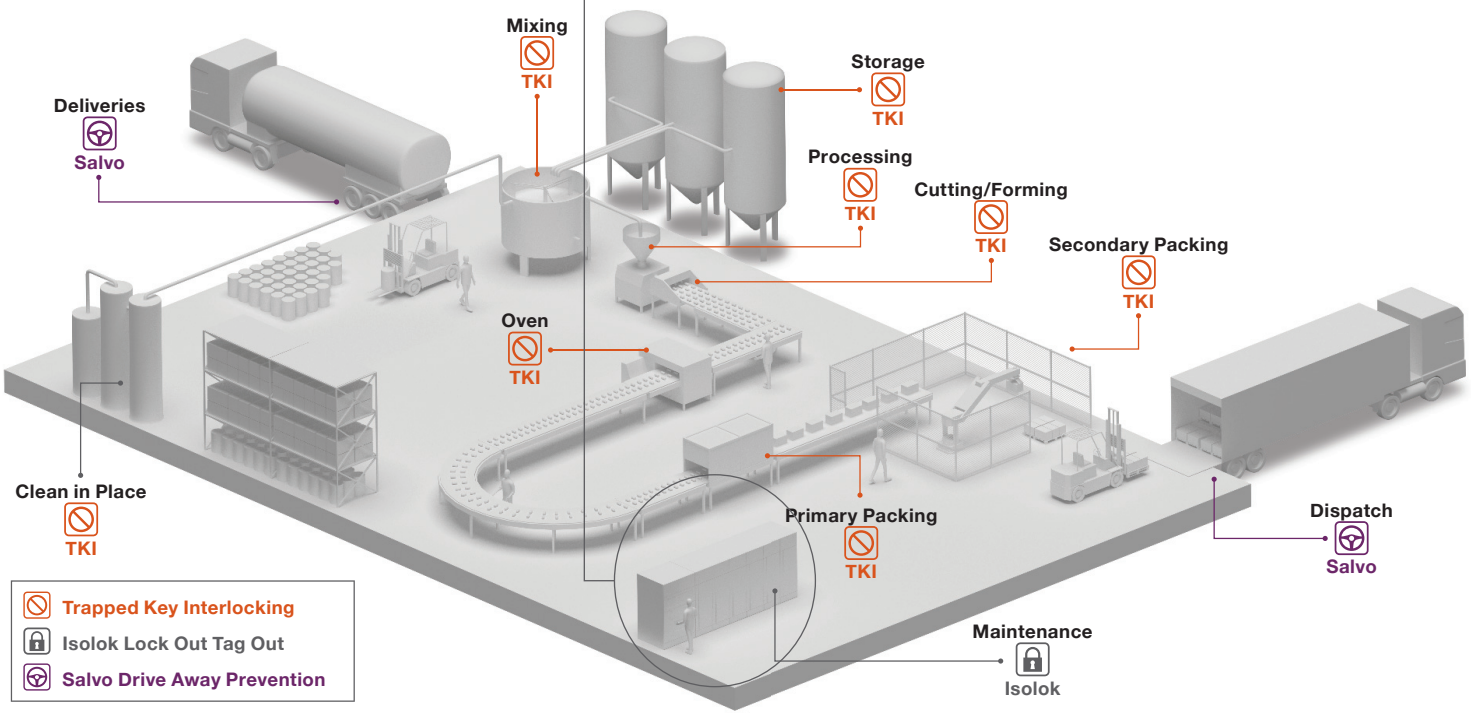


Maintenance

The Risk

During maintenance engineers can be working on an area plant or equipment that is remote from the point of isolation. This may create hazards that are not normally present when the machinery is in normal operation.

Food Industry

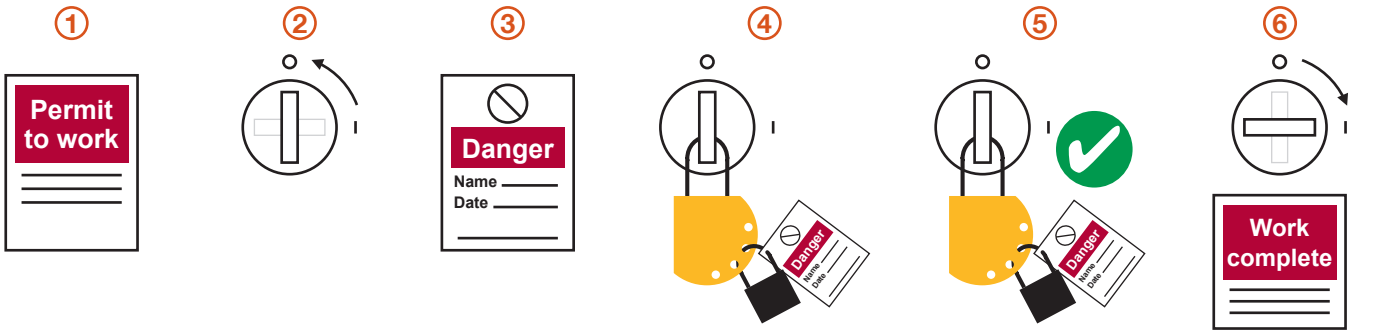


Iso-Lok Lockout Tagout

Food Industry
Application Note

Castell

Castell Solution



1. Notify personnel when service work is to be carried out.

2. Isolate power on equipment/ energy sources.

3. Assign tags with information relating to the work to be carried out.

4. Lock out equipment using tags, padlocks, and clasps.

5. Test to ensure equipment is isolated.

6. When the work is complete; communicate equipment is back in use.

Isolation
The use of Iso-Lok padlocks and clasps can be used to isolate machinery by engineers. In a lock out tag out system where each engineer has individual padlocks the clasp allows each engineer working on the equipment to use their padlock to lock out the machine. This ensures the machine cannot be turned on until each engineer has finished their task and removed their padlock.

Benefits

1) Lock out tag out offers a lower level of safety compared to trapped key interlocks. This makes the system more suitable for engineering intervention.
2) Castell provide Iso-Lok padlocks in a range of materials including stainless steel and brass. This ensures protection can be provided whatever the environment demands. The stainless steel range is suitable for the food industry.
3) Iso-Lok Padlocks are high quality hand built padlocks that are high integrity and are built to ensure that there is no chance of clashing (where one key fits a padlock with a different differ code).
4) Castell record all Iso-Lok differ codes for each padlock sold. This means that Castell can ensure that the same differ code is never shipped to a site unintentionally.

Products

Isolation

Padlocks

Clasps

Cabinet

Valve

Station