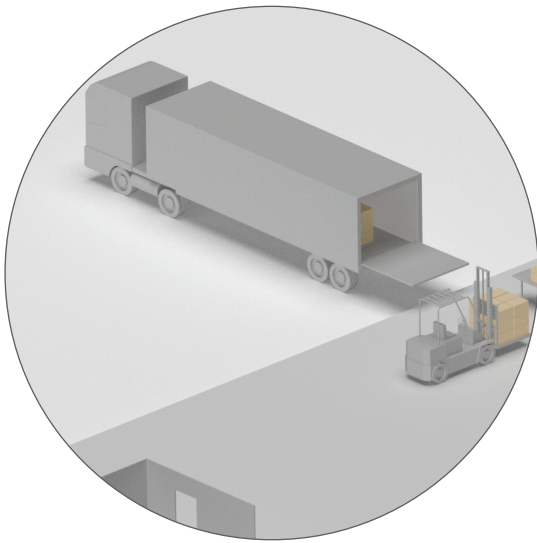


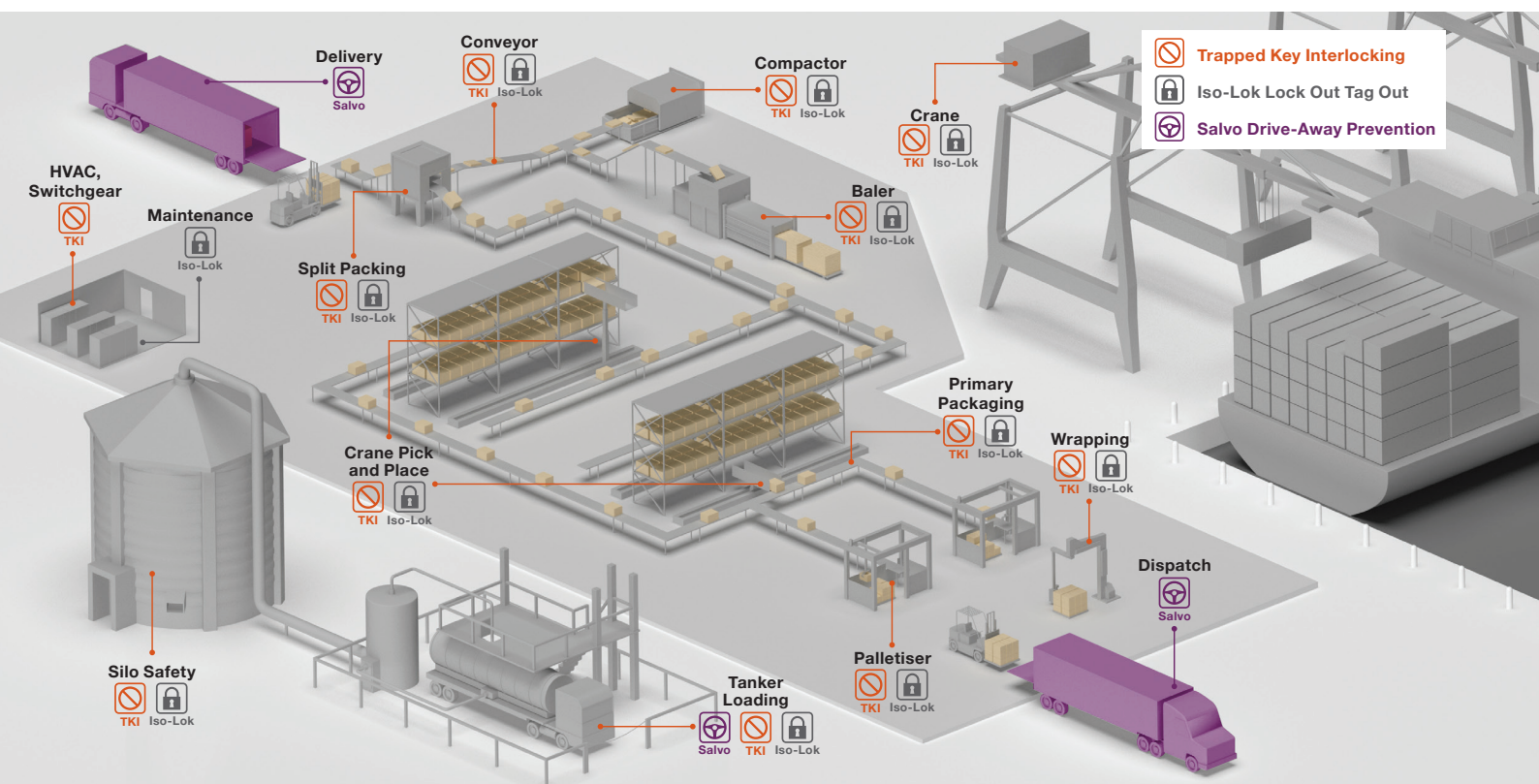
### The Risk

Loading and unloading lorries without an engineered safety mechanism to prevent early departure can lead to the risk of unscheduled lorry departures. Accidents at the loading bay 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.



Salvo Drive-Away Prevention

Distribution Industry

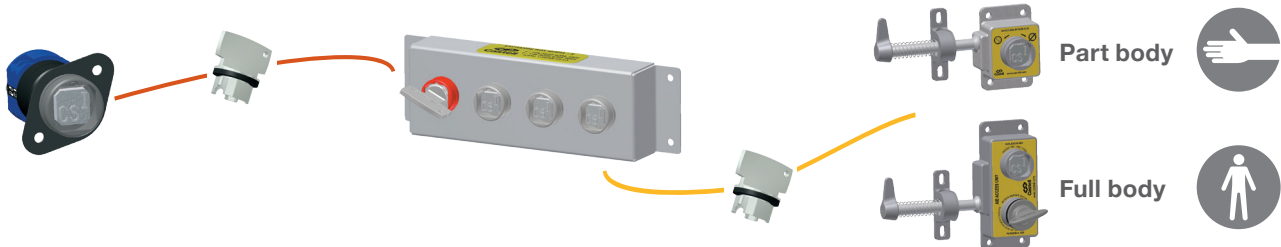


## Castell Solution

### 1 Isolation

### 2 Key Exchange


### 3 Access Control



## Benefits

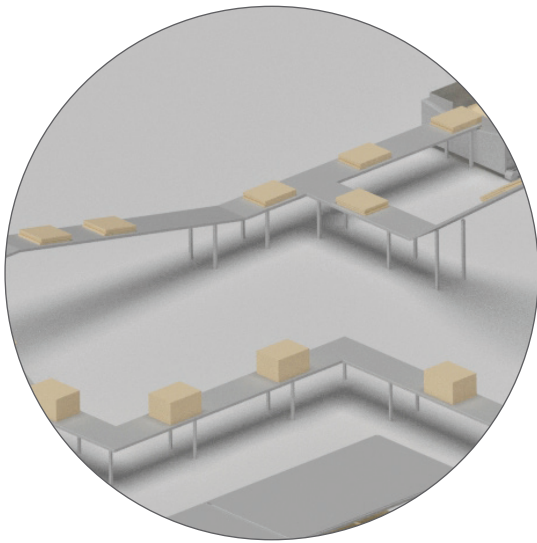
- 1) Improved safety; loading and unloading can only occur when the vehicle is immobilised, the vehicle is only enabled when access to the loading bay or ramp is prevented.
- 2) Increased efficiency; loading is not dependent on verbal communication. Automatic indication is given when the bay is safe to be opened. This is further enhanced through the management system, DockMonitor, which provides visual, real time data on all loading bays or ramps simultaneously.
- 3) Increased safety and 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) The system is the same for both employees and third-party drivers removing risk from loading the vehicles.

## Products

Isolation		Access		Management System
<p>The Salvo coupling is used on the vehicle's 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's brakes.</p>		<p>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.</p>		<p>Wireless technology now removes the expensive and cumbersome fit of hard wiring. Using the latest wireless technology, Salvo Wireless DockMonitor can measure, display and record data that will enable you to access and monitor live bay usage information. This enables you to spot and implement efficiencies in your business avoiding the unnecessary costs associated with expansion or additional resources.</p>
Susie	SGL	Chain Barrier	Bollard	<p>Salvo Wireless DockMonitor</p> 
Chock	Club	SCP+	Hercules AIS	

### The Risk

The conveyor is an automated process machine which provides a risk due to moving parts on the chain drive at the directional change point. Access can be gained into the area whilst the conveyor is in an unsafe state. The conveyor needs to be isolated and put in a safe state before entry to the area can be granted.

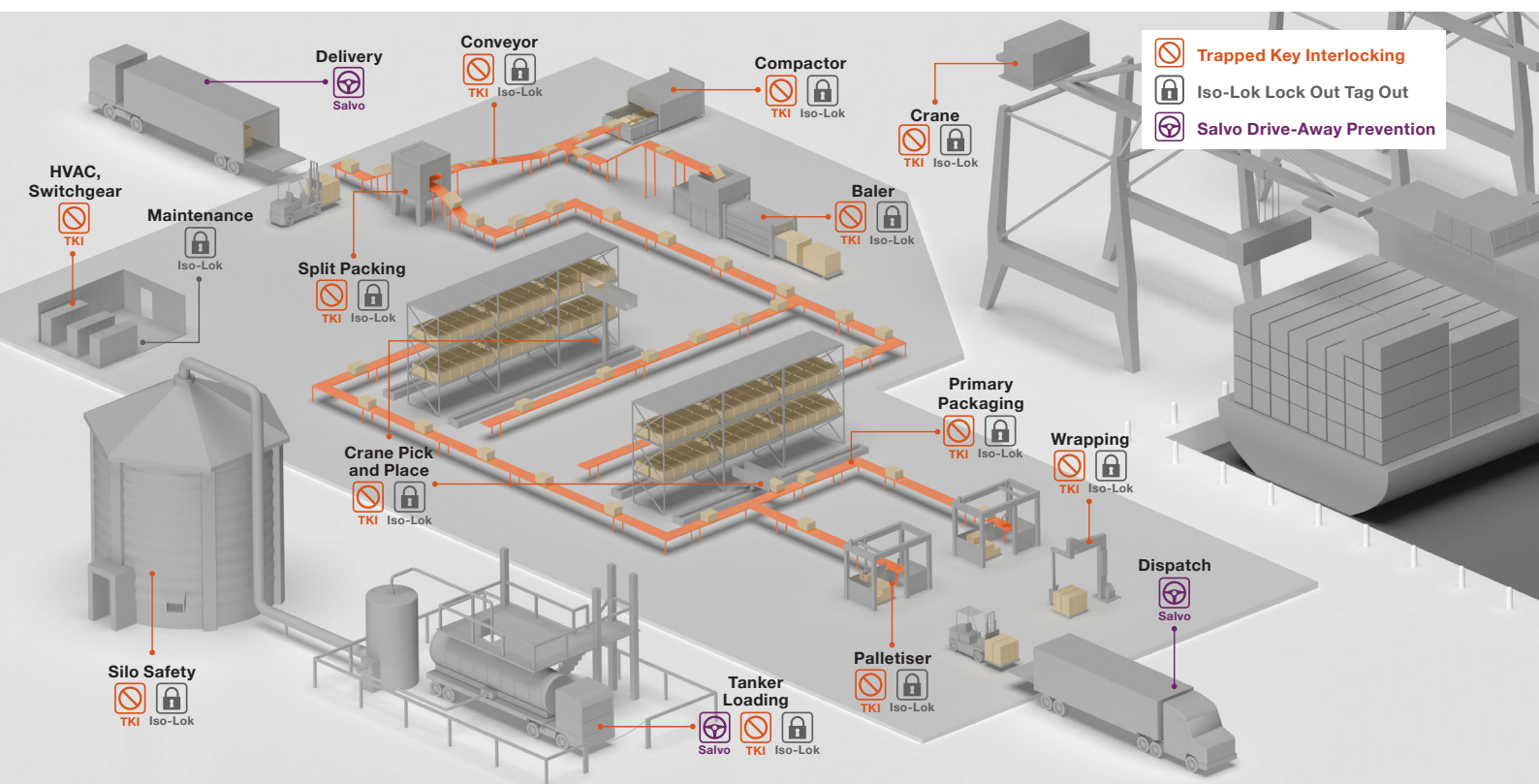


Trapped Key Interlocking



Iso-Lok Lock Out Tag Out

### Distribution Industry

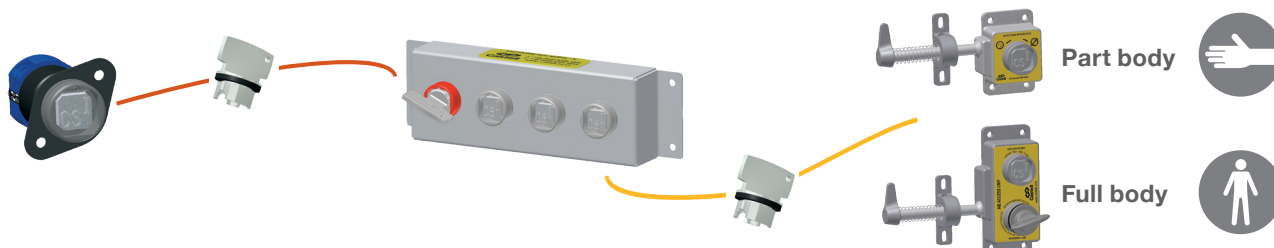


### Castell Solution

#### 1 Isolation

#### 2 Key Exchange




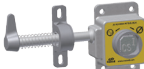




#### 3 Access Control



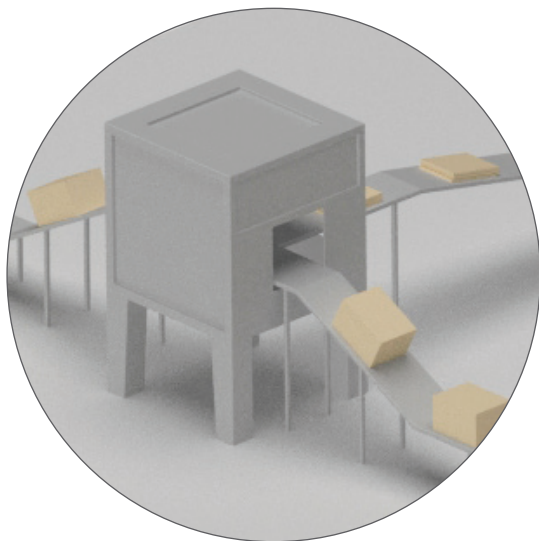
### Benefits

- 1) Extended system life; due to the 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) Multiple points of entry can be controlled over a wide area and distance without the requirement for high cost wiring and control systems.
- 4) Efficiency is improved through enabling access when the equipment is ready through the use of the KSS unit. This removes the need for a fixed time delay.

### Products

Isolation		Exchange	Access	
Isolation of the conveyor is required before entry can be gained. A simple KS switch or KSD can be used to isolate the equipment.		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.	
KS20 Switch 	KSD 	Exchange Box 	AI - Part Body 	Salus - Part Body 
			AIE - Full Body 	AIS - Full Body 
			AIES - Full Body 	





### The Risk

Unprotected access to case splitting equipment creates a high risk from the movement of blades and motion equipment. This is on top of the risk from electrical systems and components.

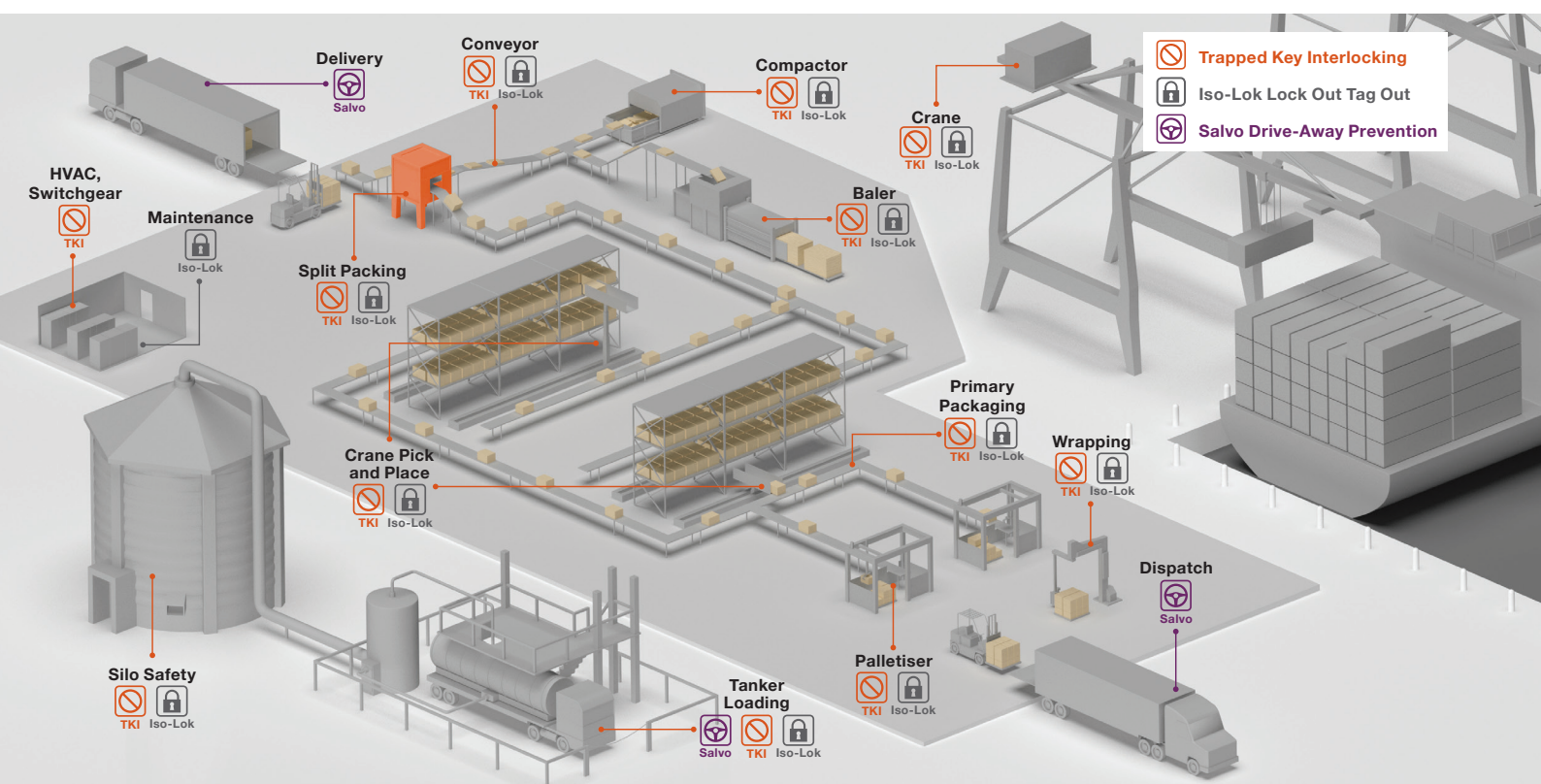


Trapped Key Interlocking



Iso-Lok Lock Out Tag Out

### Distribution Industry



### Castell Solution

#### 1 Isolation

#### 2 Key Exchange




#### 3 Access Control

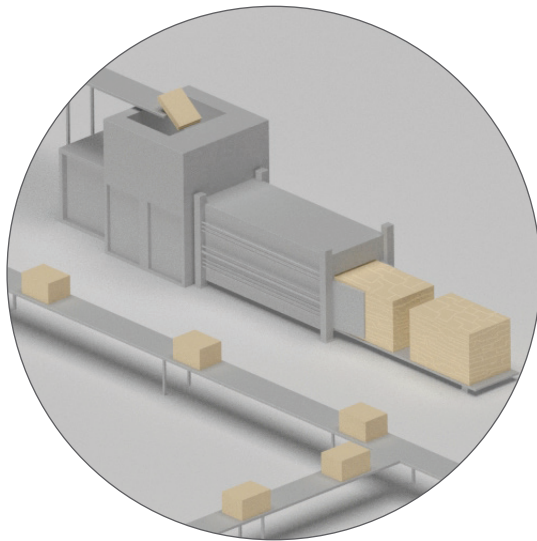


### Benefits

- 1) Extended system life; due to the 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) Multiple points of entry can be controlled over a wide area and distance without the requirement for high cost wiring and control systems.
- 4) Efficiency is improved through enabling access when the equipment is ready through the use of the KSS unit. This removes the need for a fixed time delay.

### Products

Isolation		Exchange	Access	
Isolation of the case splitter is required before entry can be gained. If the case splitter is required to reach a home position prior to entry being gained then a KSS solenoid system will need to be used. If entry can be gained without the need for machinery to reach a home position, a simple KS switch can be used to isolate the equipment.		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.	
KS20 - Switched	KSS20 - Solenoid Control	Exchange Box	AI - Part Body	Salus - Part Body,
			AIE - Full Body	AIS - Full Body
K			AIES - Full Body	



### The Risk

Unprotected access to baling equipment creates a high risk from the movement of hydraulic rams and presses. This is on top of the risk from electrical systems and components.

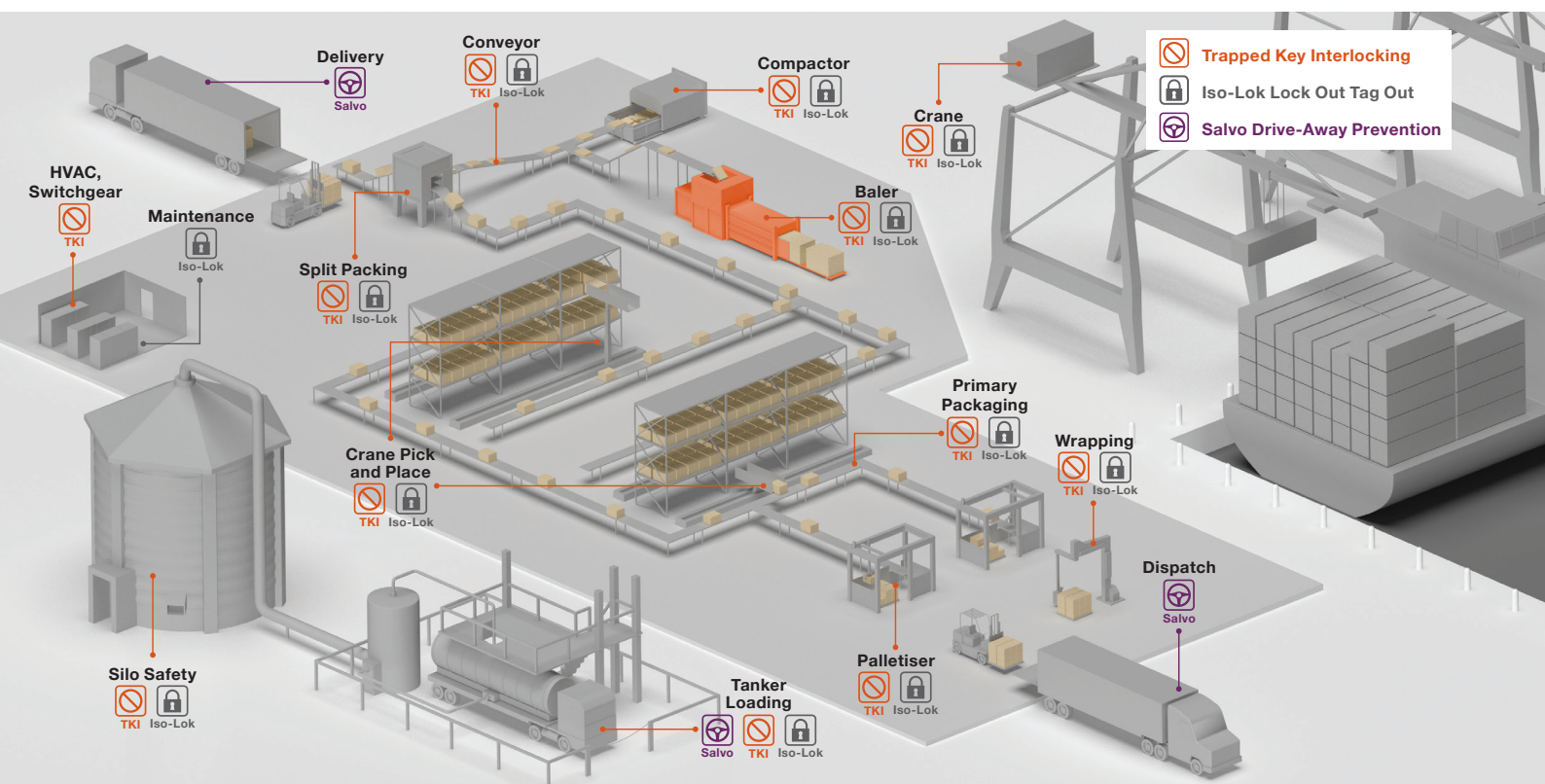


Trapped Key Interlocking



Iso-Lok Lock Out Tag Out

### Distribution Industry

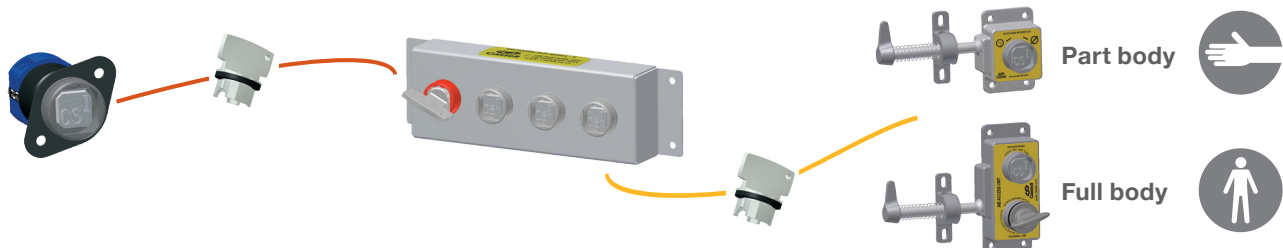


### Castell Solution

#### 1 Isolation

#### 2 Key Exchange




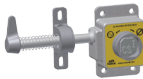




#### 3 Access Control



### Benefits

- 1) Extended system life; due to the 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) Multiple points of entry can be controlled over a wide area and distance without the requirement for high cost wiring and control systems.
- 4) Efficiency is improved through enabling access when the equipment is ready through the use of the KSS unit. This removes the need for a fixed time delay.

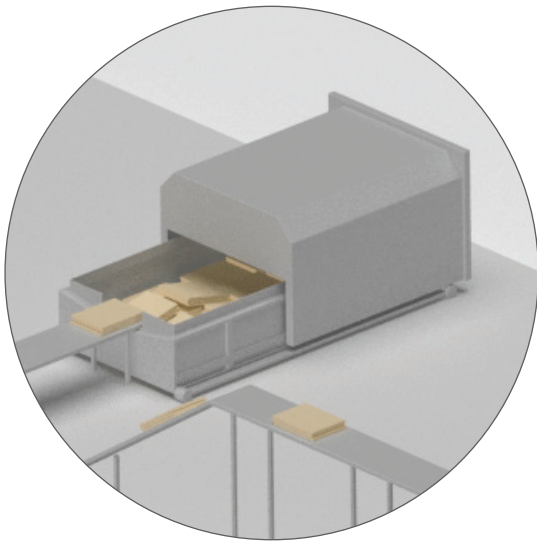
### Products

Isolation		Exchange	Access	
Isolation of the baler is required before entry can be gained. If the baler is required to reach a home position prior to entry being gained then a KSS solenoid system will need to be used. If entry can be gained without the need for machinery to reach a home position, a simple KS switch can be used to isolate the equipment.		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.	
KS20 - Switched 	KSS20 - Solenoid Control 	Exchange Box 	AI - Part Body 	Salus - Part Body, 
			AIE - Full Body 	AIS - Full Body 
			AIES - Full Body 	



### The Risk

Unprotected access to compactor equipment creates a high risk from the movement of hydraulic rams and presses. This is on top of the risk from electrical systems and components.

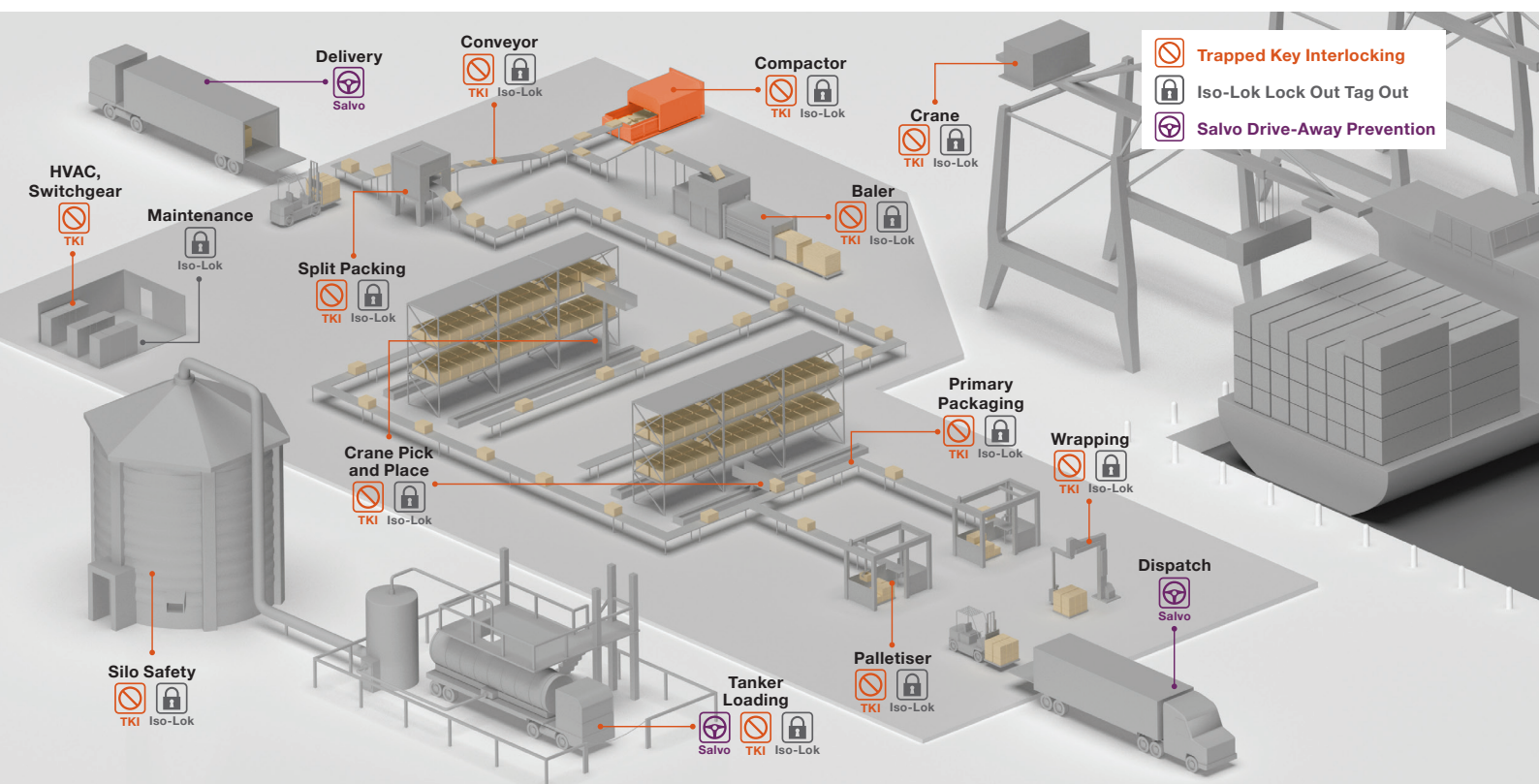


Trapped Key Interlocking



Iso-Lok Lock Out Tag Out

### Distribution Industry

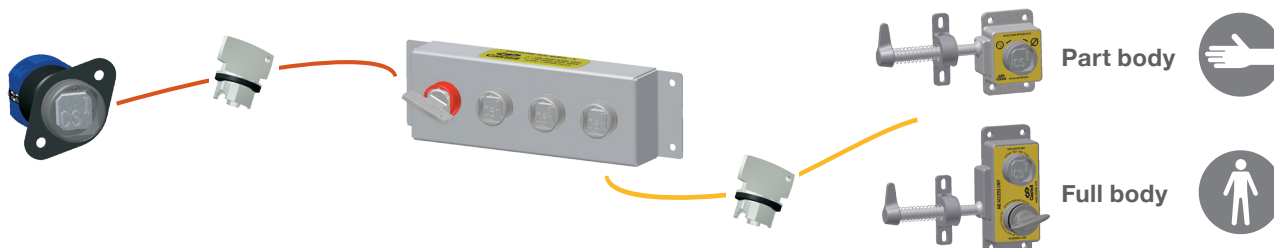


### Castell Solution

#### 1 Isolation

#### 2 Key Exchange




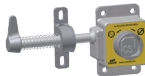




#### 3 Access Control

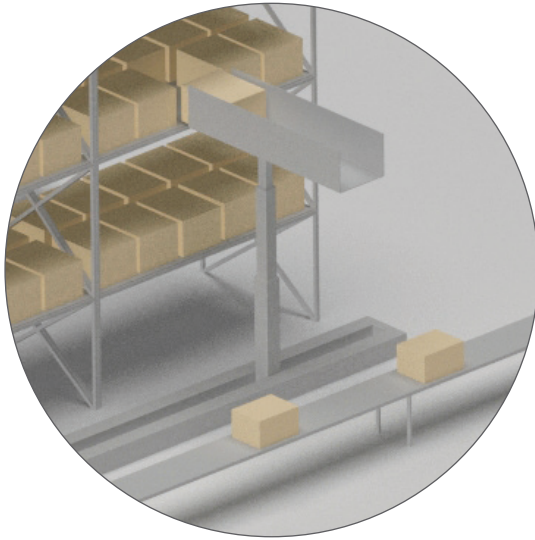


### Benefits

- 1) Extended system life; due to the 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) Multiple points of entry can be controlled over a wide area and distance without the requirement for high cost wiring and control systems.
- 4) Efficiency is improved through enabling access when the equipment is ready through the use of the KSS unit. This removes the need for a fixed time delay.

### Products

Isolation		Exchange	Access	
Isolation of the compactor is required before entry can be gained. If the baler is required to reach a home position prior to entry being gained then a KSS solenoid system will need to be used. If entry can be gained without the need for machinery to reach a home position, a simple KS switch can be used to isolate the equipment.		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.	
KS20 - Switched 	KSS20 - Solenoid Control 	Exchange Box 	AI - Part Body 	Salus - Part Body 
			AIE - Full Body 	AIS - Full Body 
			AIES - Full Body 	



### The Risk

Unprotected access to automated pick and place systems creates a high risk of injury from high speed motion components as well as from the movement of platforms and falls from height. The fast moving parts have the ability to cause serious impact injuries.

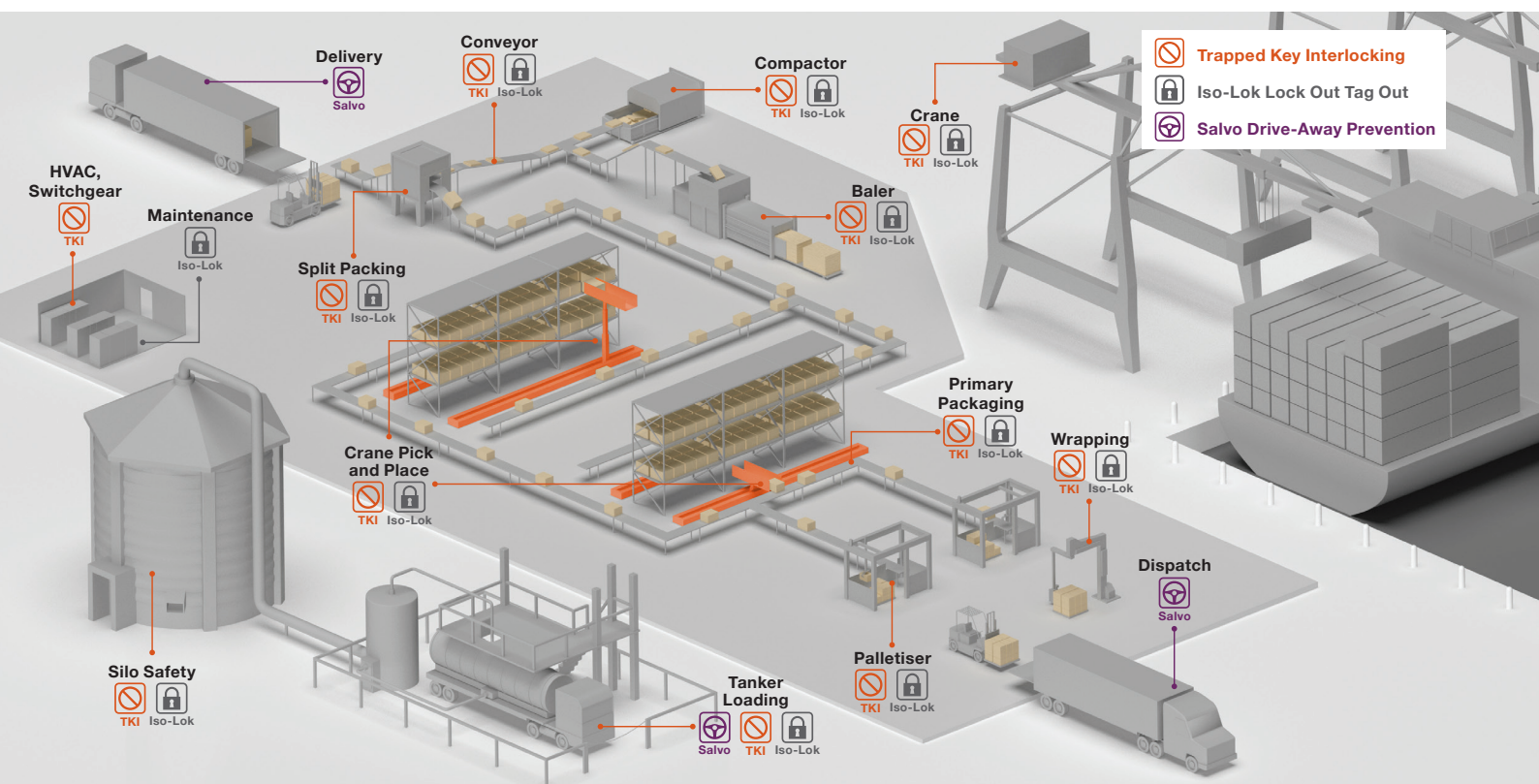


Trapped Key Interlocking



Iso-Lok Lock Out Tag Out

### Distribution Industry



Castell Solution

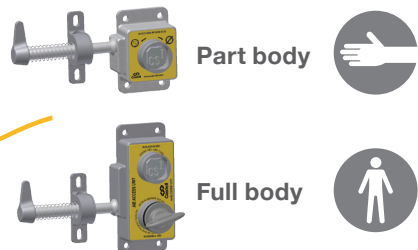
1 Isolation



2 Key Exchange






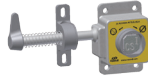

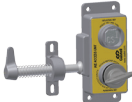


3 Access Control



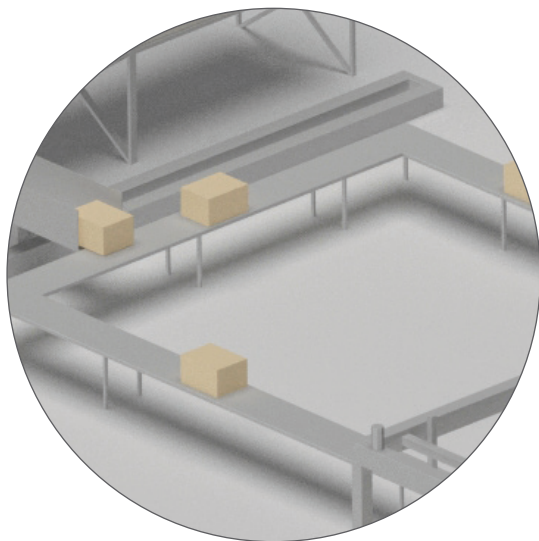
Benefits

- 1) Extended system life; due to the 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) Multiple points of entry can be controlled over a wide area and distance without the requirement for high cost wiring and control systems.
- 4) Efficiency is improved through enabling access when the equipment is ready through the use of the KSS unit. This removes the need for a fixed time delay.

Products

Isolation		Exchange	Access	
Isolation of automated pick and place machinery can require that the equipment reaches a home position before safe entry can be gained. If this is required 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.	
KS20 - Switched 	KSS20 - Solenoid Control 	Exchange Box 	Al - Part Body 	Salus - Part Body 
			AIE - Full Body 	AIS - Full Body 
			AIES - Full Body 	





### 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.

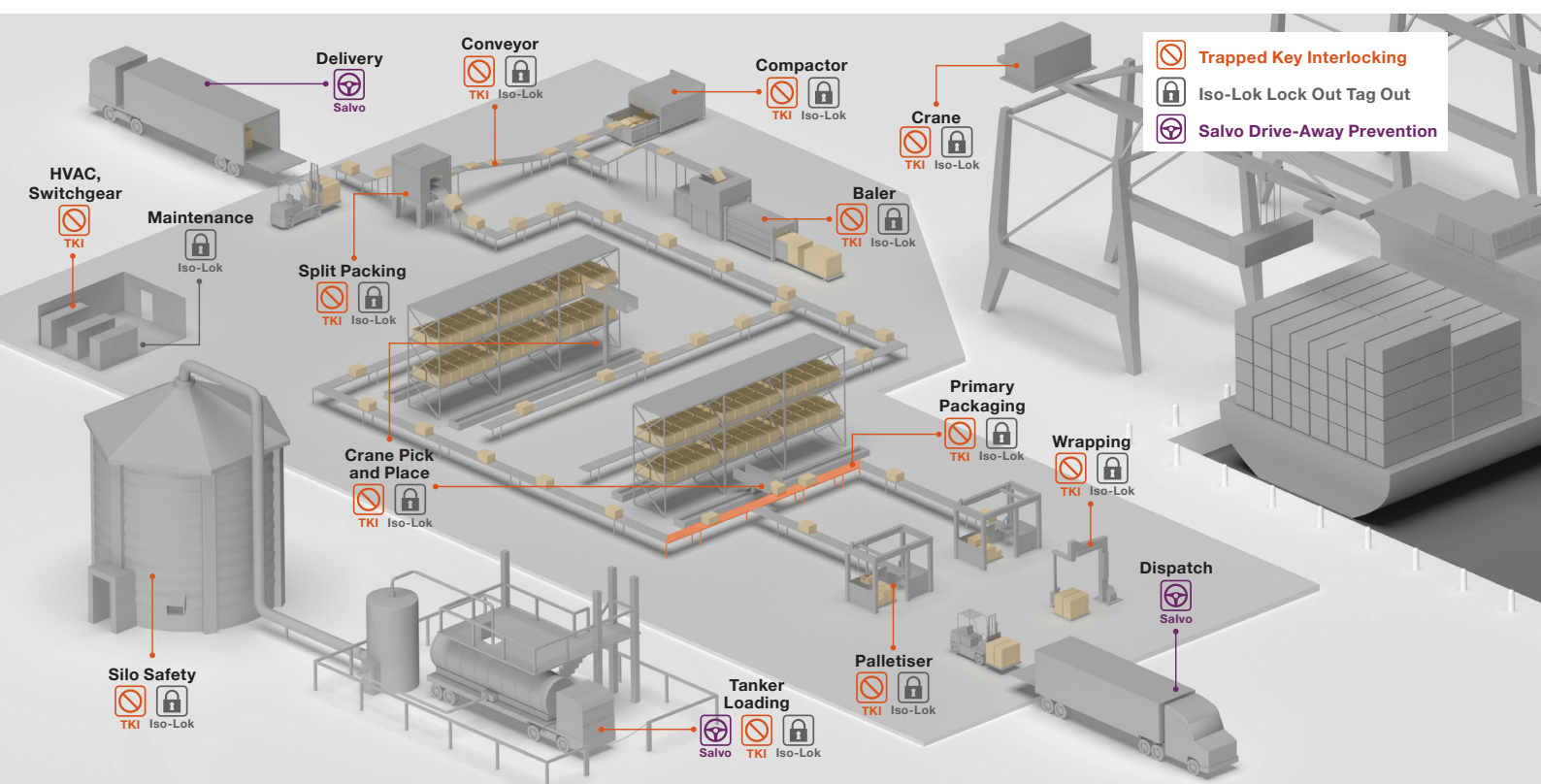


Trapped Key Interlocking



Iso-Lok Lock Out Tag Out

### Distribution Industry

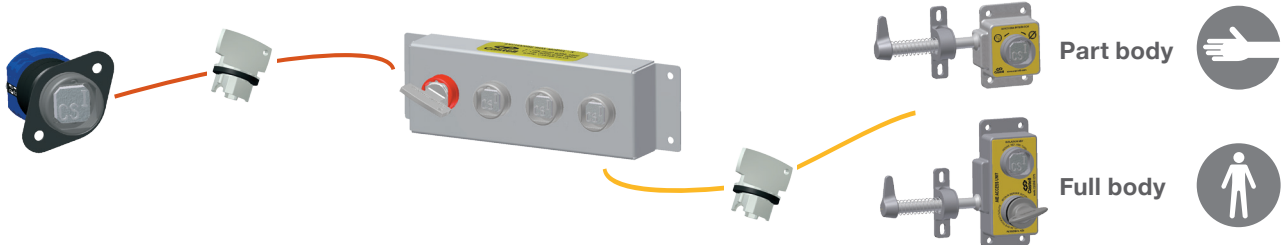


### Castell Solution

#### 1 Isolation

#### 2 Key Exchange

#### 3 Access Control



### Benefits

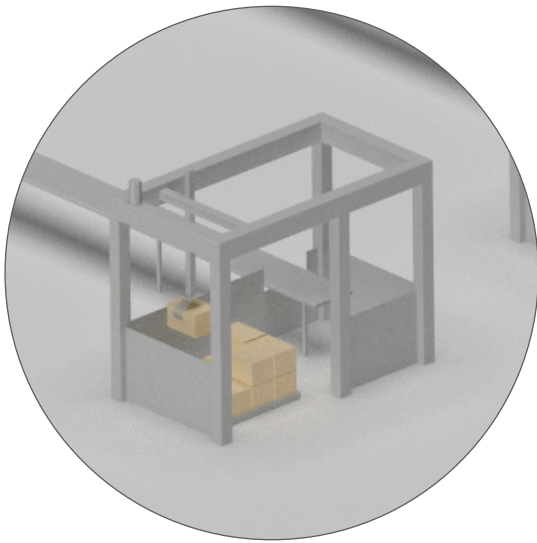
- 1) Extended system life; due to the construction of housings and mechanisms Castell interlock systems offer many years of trouble free operation.
- 2) High level of risk control; as control is in the hands of the operator/engineer when in the dangerous area through the personnel key.
- 3) Multiple points of entry can be controlled over a wide area and distance without the requirement for high cost wiring and control systems.
- 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	
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 - KSS20; 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.	
KS20 - Switched	TDI - Timed	Exchange Box	AI - Part Body	Salus - Part Body
			AIE - Full Body	AIS - Full Body
DAE - Timed	KSS20 - Solenoid Control			
			AIES - Full Body	

### The Risk

Unprotected access to palletiser areas creates a high risk of injury from high speed motion components as well as from the movement of platforms. The fast moving parts have the ability to cause serious impact injuries.

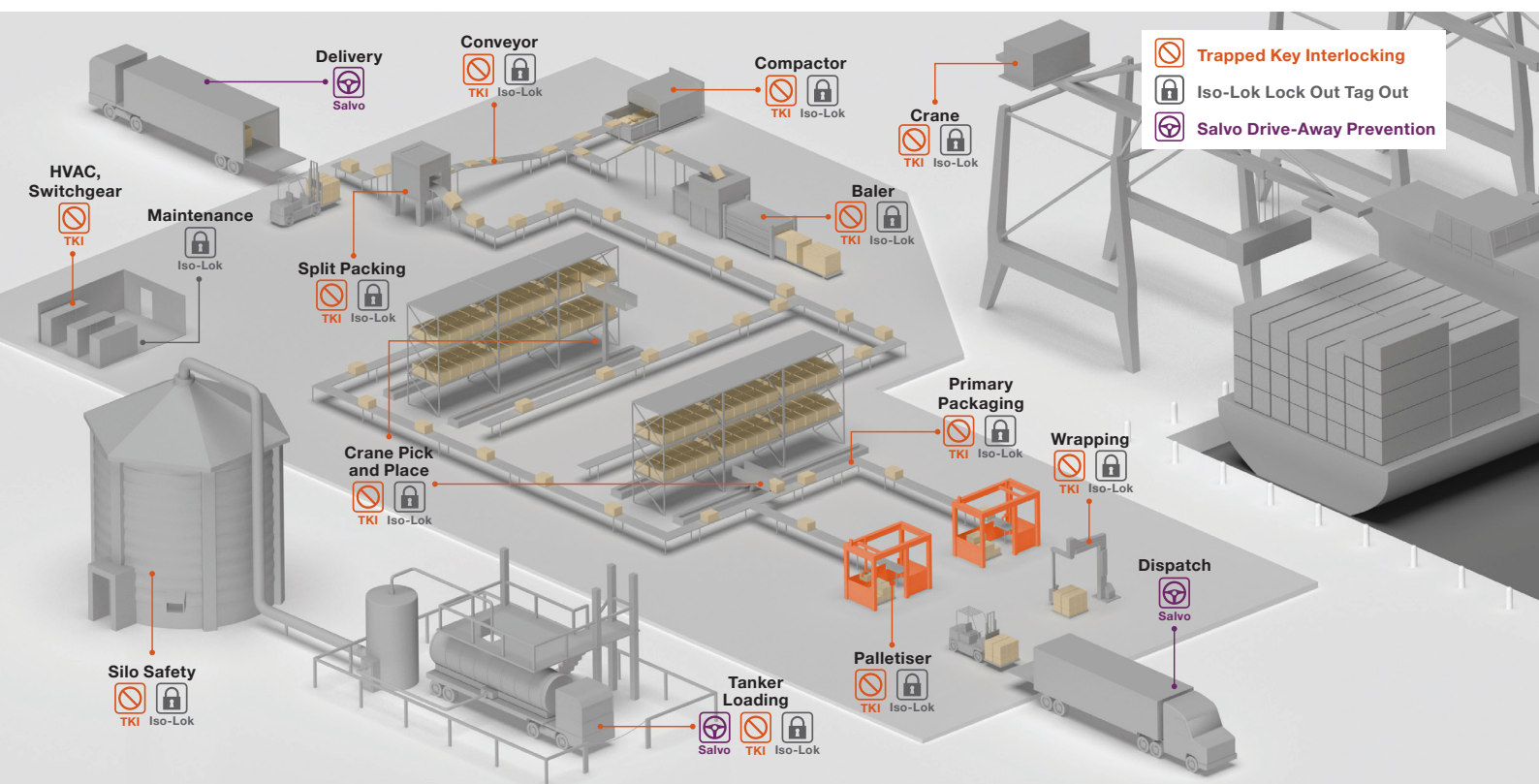


Trapped Key Interlocking



Iso-Lok Lock Out Tag Out

### Distribution Industry

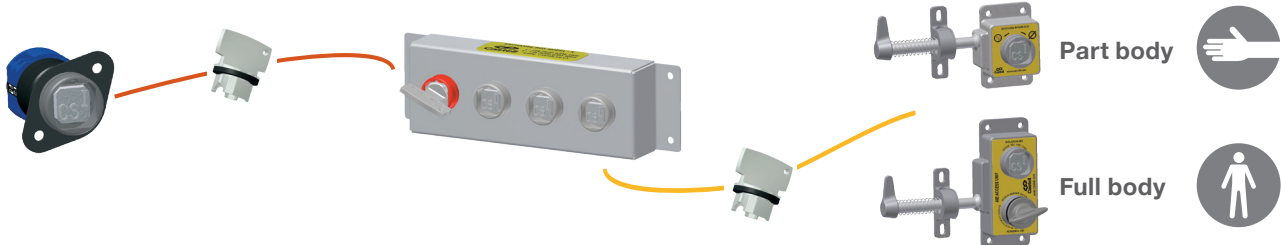


### Castell Solution

#### 1 Isolation

#### 2 Key Exchange




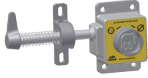




#### 3 Access Control



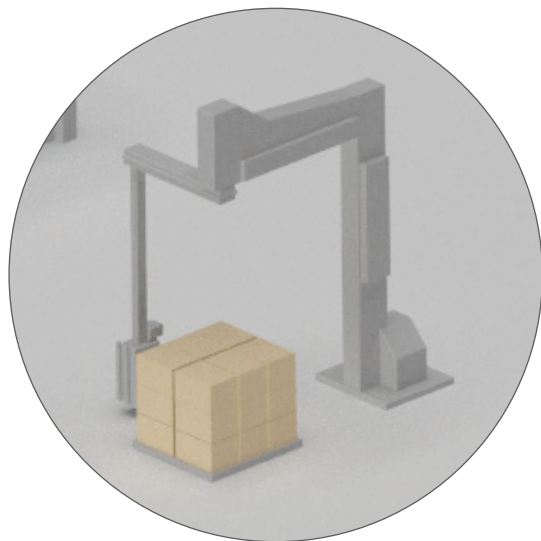
### Benefits

- 1) Extended system life; due to the 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. This removes the need for a fixed time delay.

### Products

Isolation		Exchange	Earthing	
Isolation of palletising machinery can require that the equipment reaches a home position before safe entry can be gained. If this is required 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.	
KS20 - Switched 	KSS20 - Solenoid Control 	Exchange Box 	AI - Part Body, 	Salus - Part Body 
			AIE - Full Body 	AIS - Full Body 
			AIES - Full Body 	





### The Risk

Unprotected access to wrapping areas creates a high risk of injury from high speed motion components as well as from the movement of platforms. The fast moving parts have the ability to cause serious impact injuries.

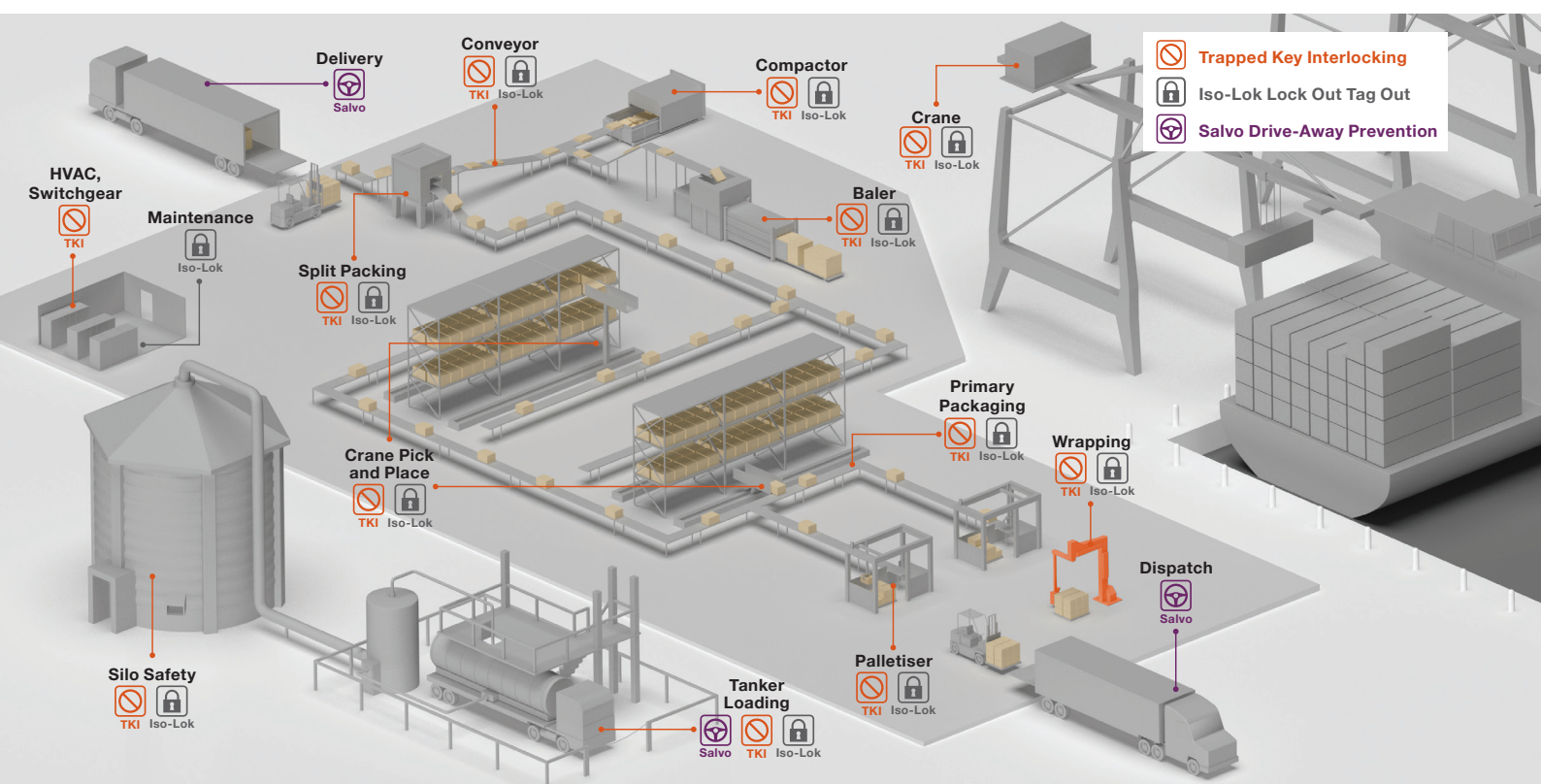


Trapped Key Interlocking



Iso-Lok Lock Out Tag Out

### Distribution Industry

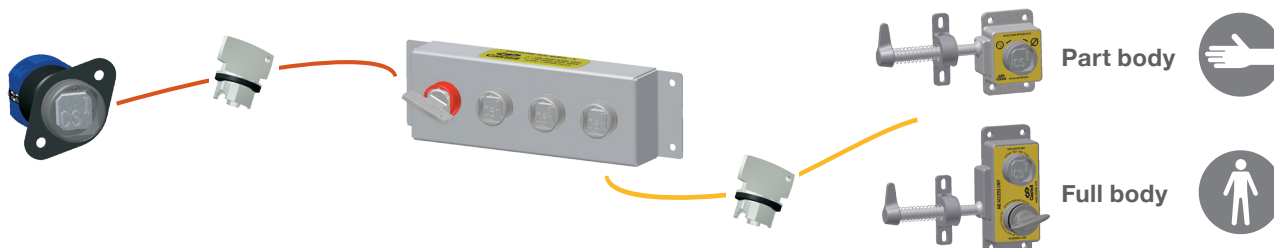


### Castell Solution

#### 1 Isolation

#### 2 Key Exchange




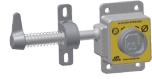




#### 3 Access Control

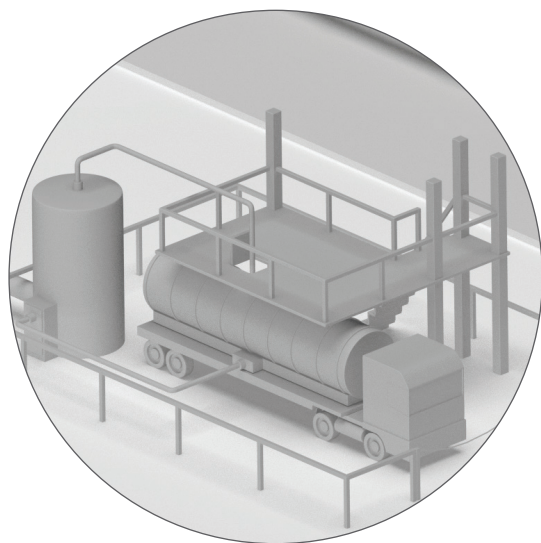


### Benefits

- 1) Extended system life; due to the 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. This removes the need for a fixed time delay.

### Products

Isolation		Exchange	Access	
Isolation of palletising machinery can require that the equipment reaches a home position before safe entry can be gained. If this is required 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.	
KS20 - Switched 	KSS20 - Solenoid Control 	Exchange Box 	AI - Part Body 	Salus - Part Body 
			AIE - Full Body 	AIS - Full Body 
			AIES - Full Body 	



### The Risk

Loading and unloading tankers without an engineered safety mechanism can lead to the risk of drive-aways 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.



Iso-Lok Lock Out Tag Out

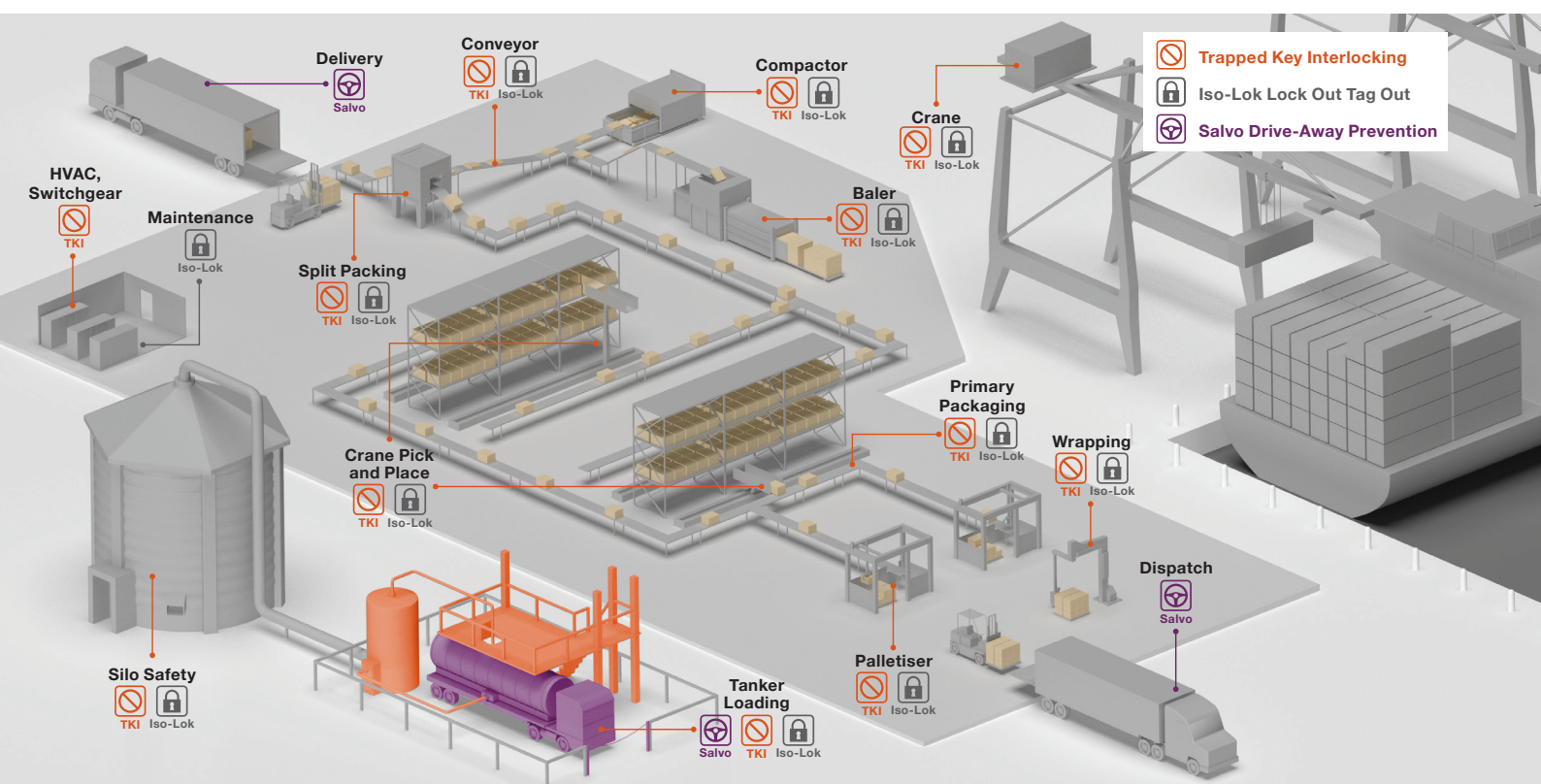


Salvo Drive-Away Prevention



Trapped Key Interlocking

### Distribution Industry

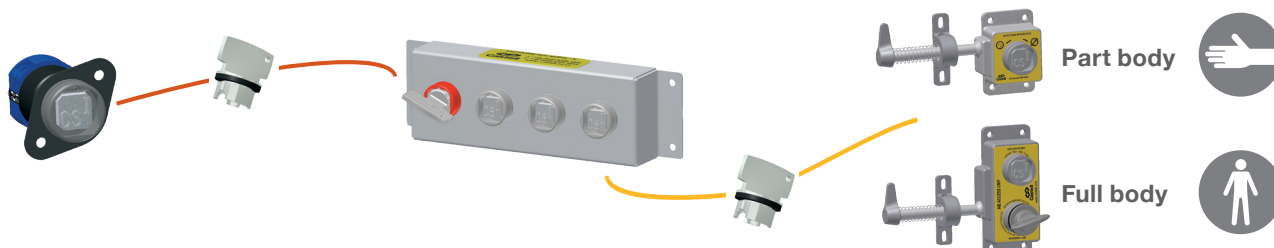


### Castell Solution

#### 1 Isolation

#### 2 Key Exchange





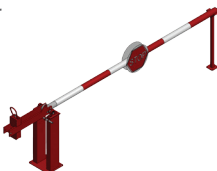



#### 3 Access Control



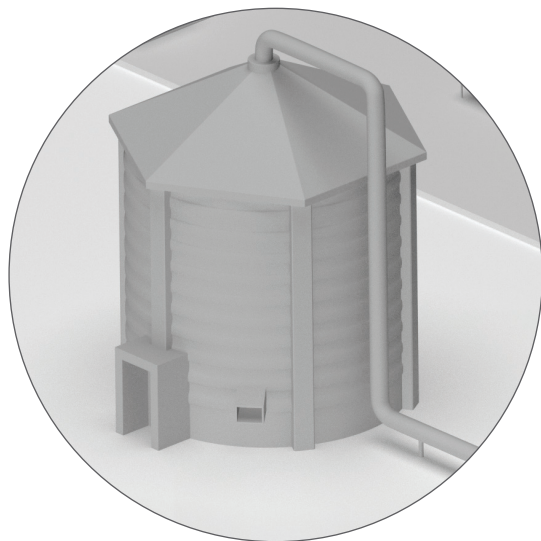
### Benefits

- 1) Improved safety; loading and unloading can only occur when the vehicle is safe.
- 2) Increased efficiency; loading is not dependent 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 drive-aways.

### Products

Isolation	Exchange	Access		
<p>The Salvo coupling is used on the vehicle's 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.</p>	-	<p>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.</p>		
<p>Salvo Coupling</p> 	-	<p>MBV - Valve Control</p> 	<p>AI - Access lock</p> 	<p>AIE - Access exchange lock</p> 
<p>Barrier</p> 		<p>KS - Switch</p> 	<p>KSS - Solenoid Control</p> 	<p>AI - Access lock with chain</p> 





### 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 both solids and liquids. In addition, accidental filling whilst the inspection/maintenance hatches are open can be prevented.

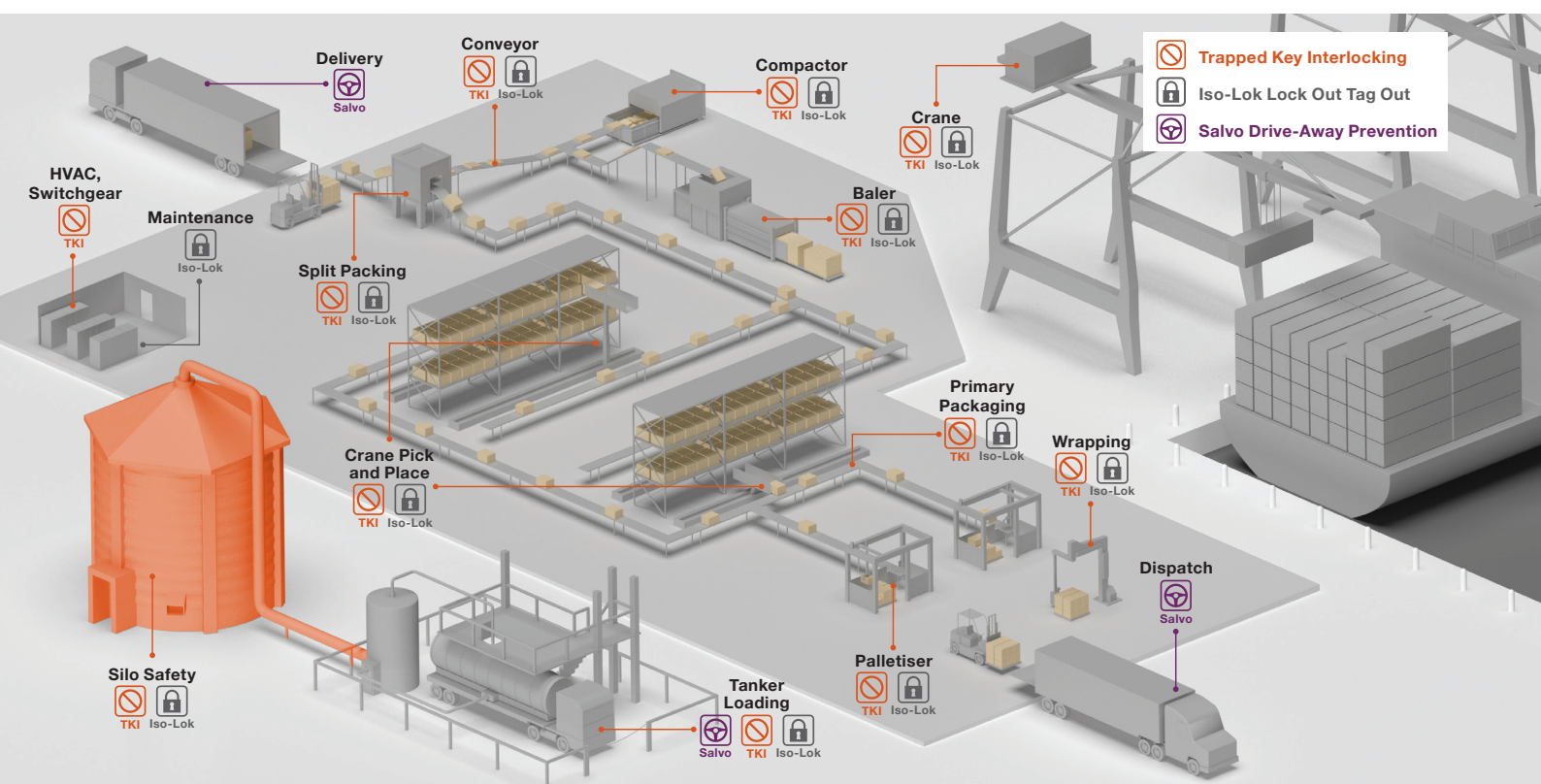


Iso-Lok Lock Out Tag Out



Trapped Key Interlocking

### Distribution Industry

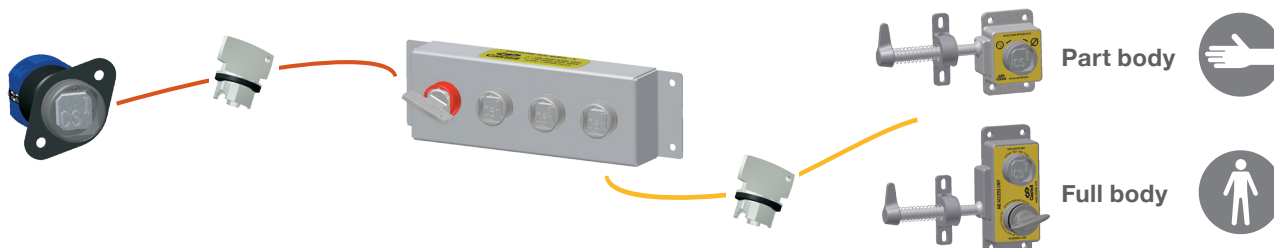


### Castell Solution

#### 1 Isolation

#### 2 Key Exchange




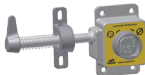







#### 3 Access Control

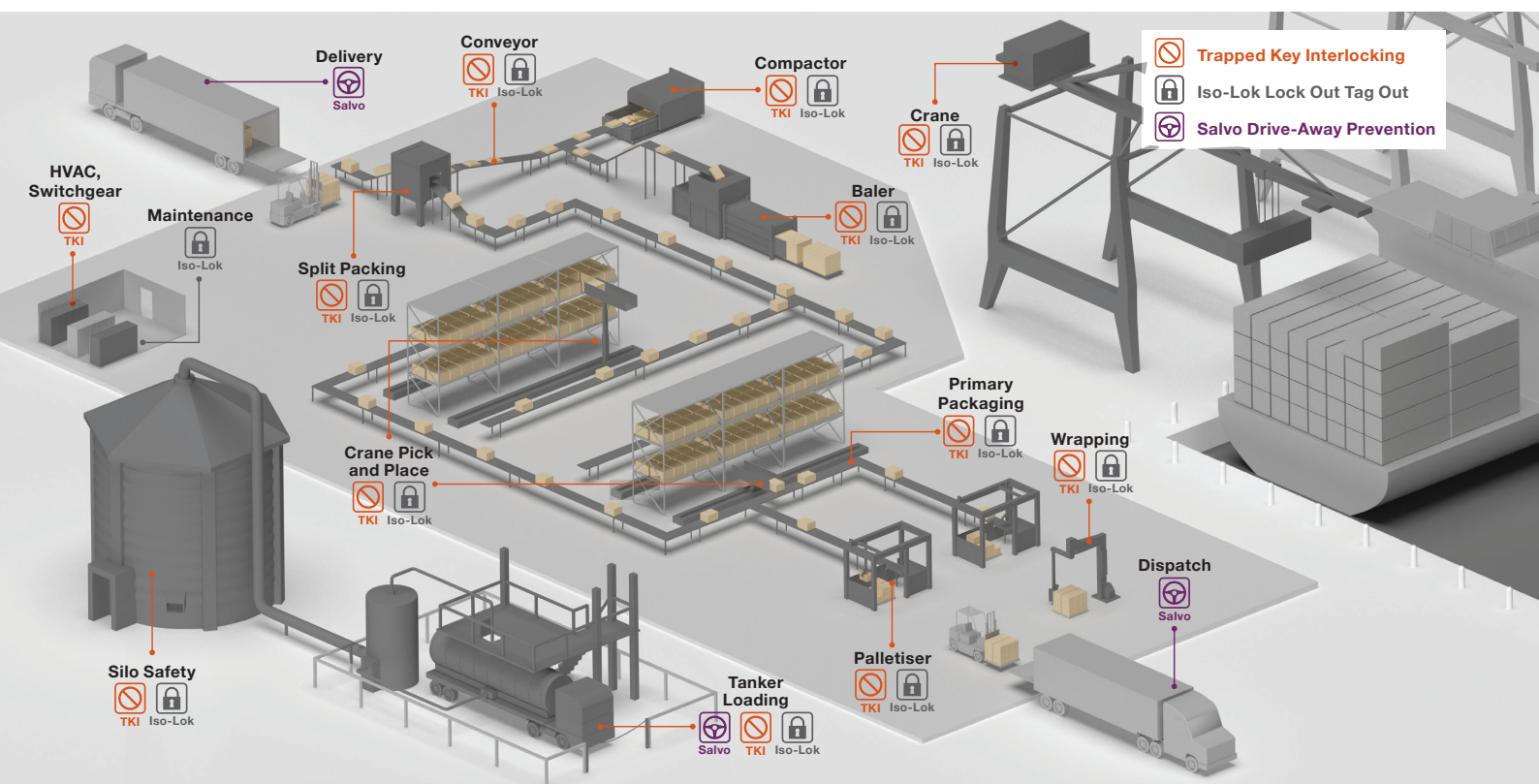
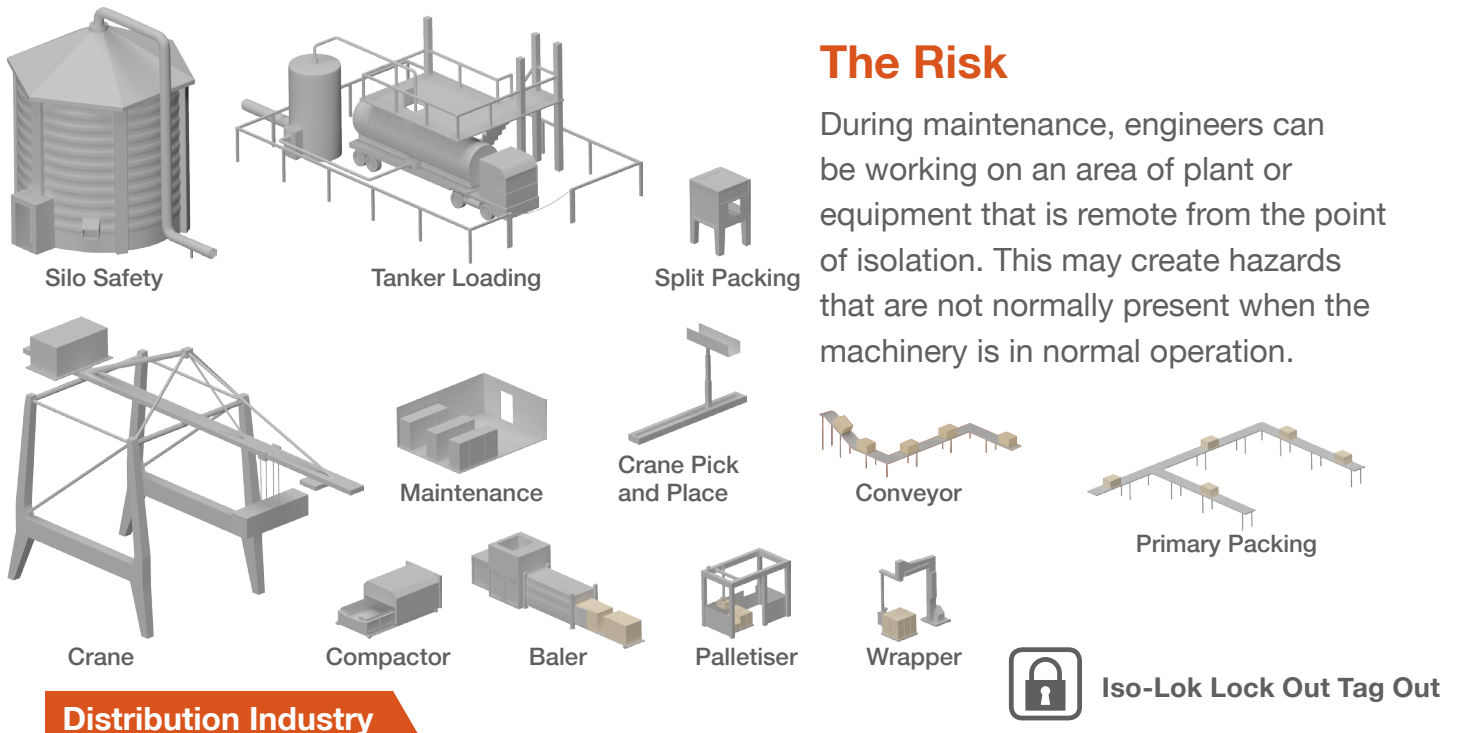


### Benefits

- 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 making sure any person entering the storage facilities is 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 dependent on verbal communication. The transfer of the key enables operators to know the status.

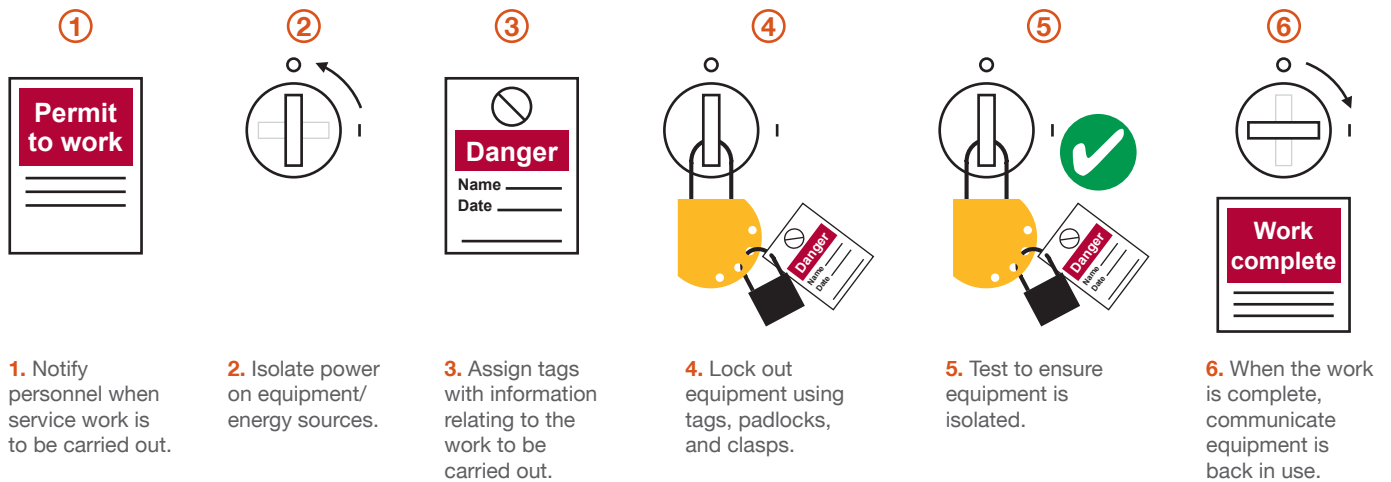
### Products

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










### Castell Solution



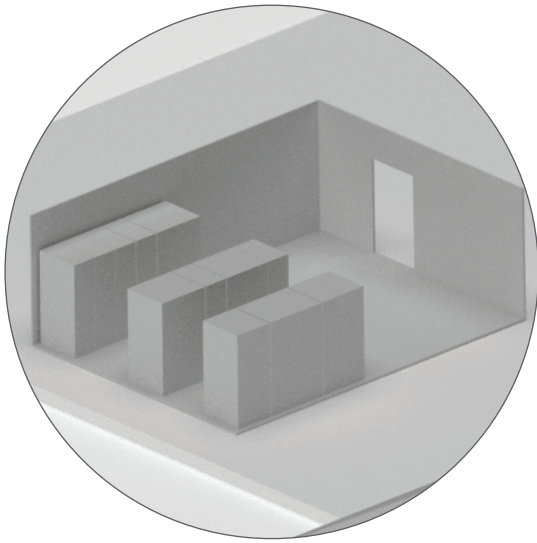
### Benefits

- 1) Lock Out Tag Out offers a lower level of safety compared with 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			
<p>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.</p>			
<b>Padlocks</b> 	<b>Clasps</b> 	<b>Cabinet</b> 	<b>Valve</b> 
		<b>Station</b> 	

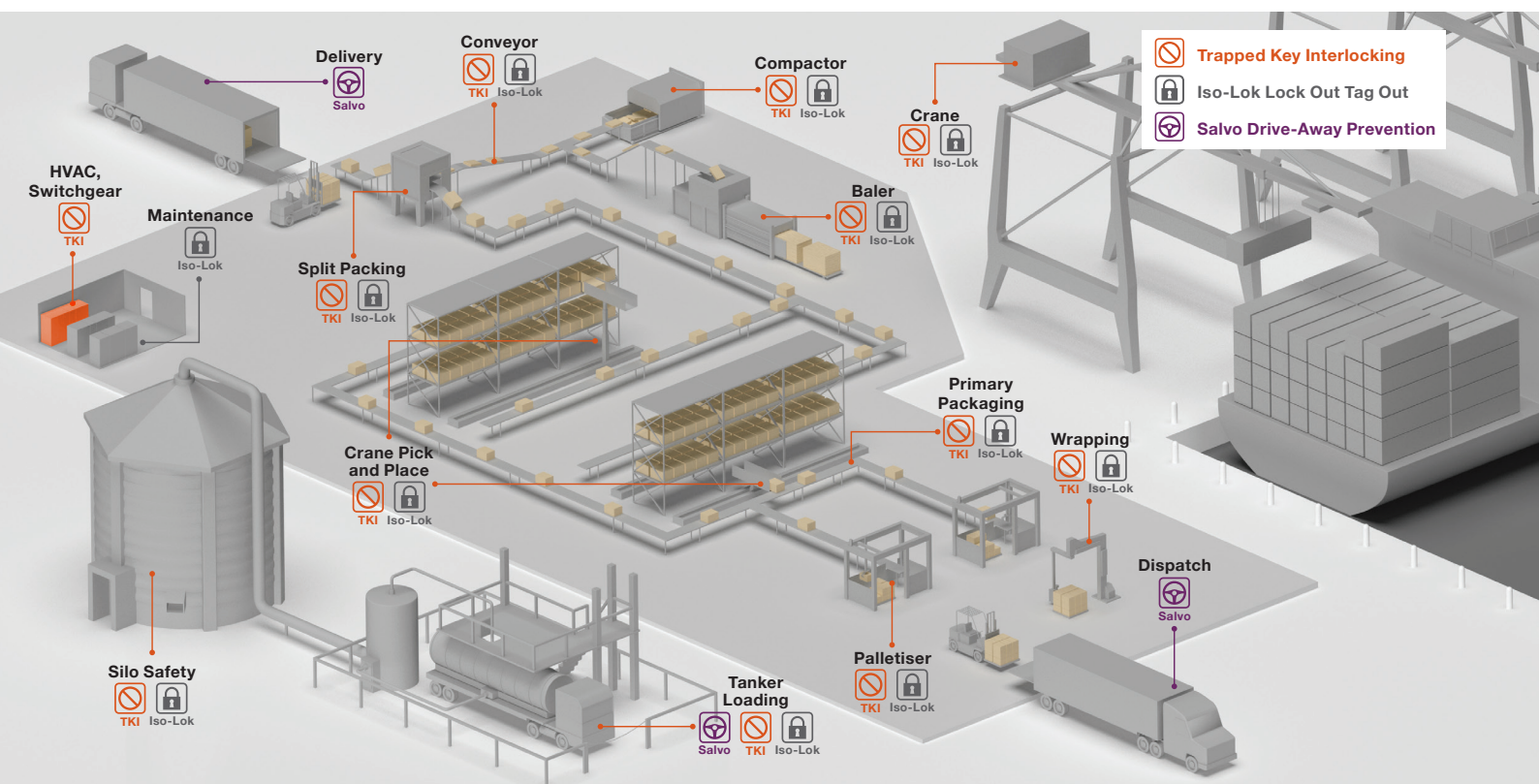




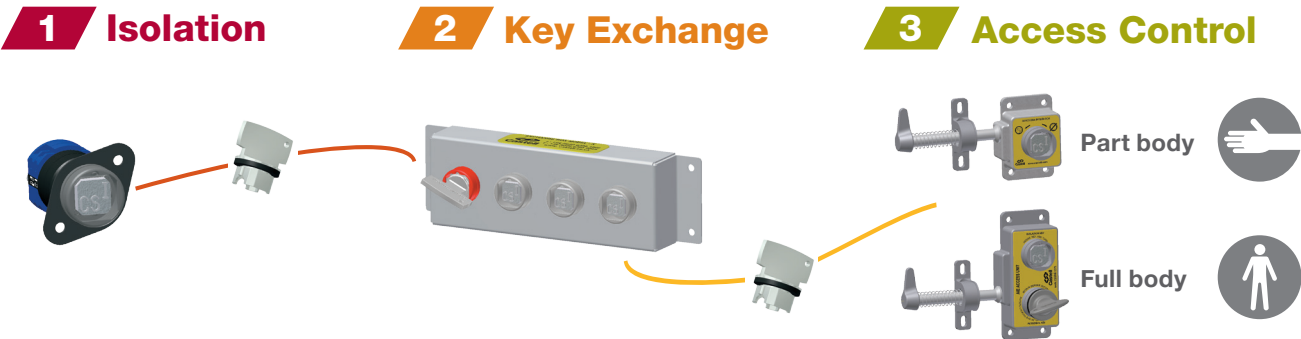
### The Risk

The process of switching incomers and generators on to common supply busbars can have complicated switching schedules whereby you have the danger of circuit breakers being switched to close before opening the necessary other circuit breakers first, for example, switching two incoming feeds on to a common bus bar. This runs the risk of the equipment becoming damaged through fire and arc flashing.

### Distribution Industry




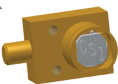


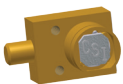






Castell Solution



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 switching between circuit breakers.
- 3) Downtime is reduced as operation is mechanical.
- 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	
FS/Q 	K 	X 	FS/Q 	K 
KI 	KP 		KI 	KP 
KLP 			KLP 	

## Switchgear Interlocking

### Incomer Interlocking (1)

#### Operation

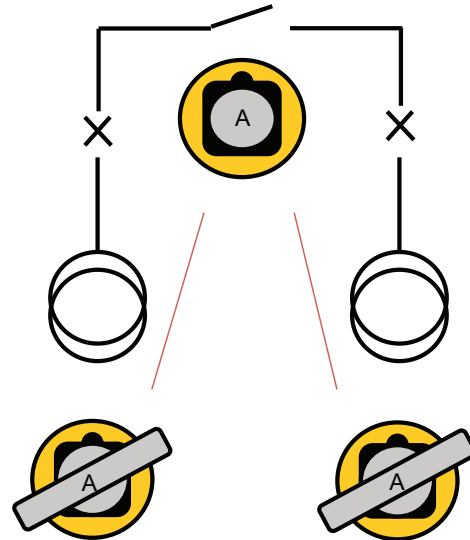
This system will require three locks and two keys. Under normal operation the two keys are trapped with the switches closed so the incomers are supplying.

The system will allow an incomer to be opened (disconnected) and the key released. This key is then transferred to the open bus coupler which can then be closed.

The system ensures that either only two incomers or only one incomer and the busbar are supplying at any time.

The symbols used here are all symbol A.

\* All locks can be individually fitted to suit the switchgear



### Incomer Interlocking (2)

#### Operation

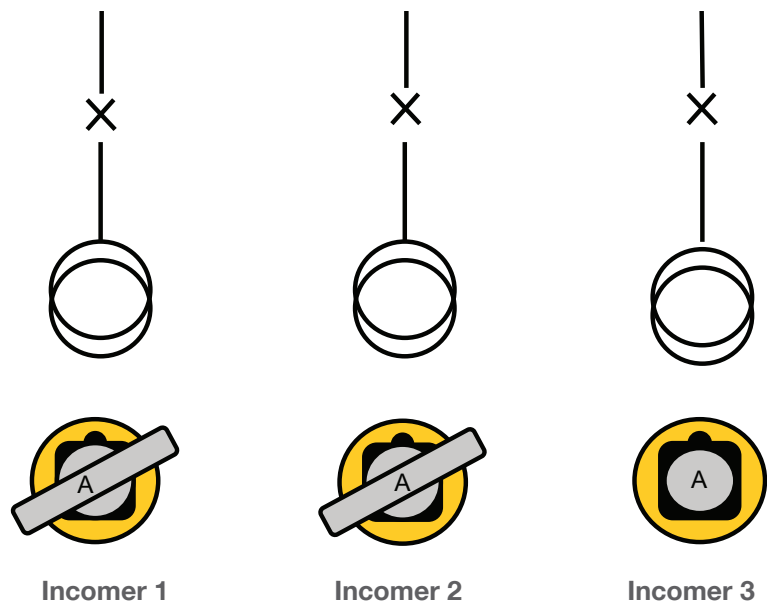
This system will require three locks and two keys. Under normal operation the two keys are trapped with the switches closed so the incomers are supplying.

The system will allow an incomer to be opened (disconnected) and the key released. This key is then transferred to in to the other open incomer which can then be closed.

The system ensures that only two incomers are supplying at any time.

The symbols used here are all symbol A.

\* All locks can be individually fitted to suit the switchgear



Switchgear Interlocking

Incomer Interlocking (3)

Operation

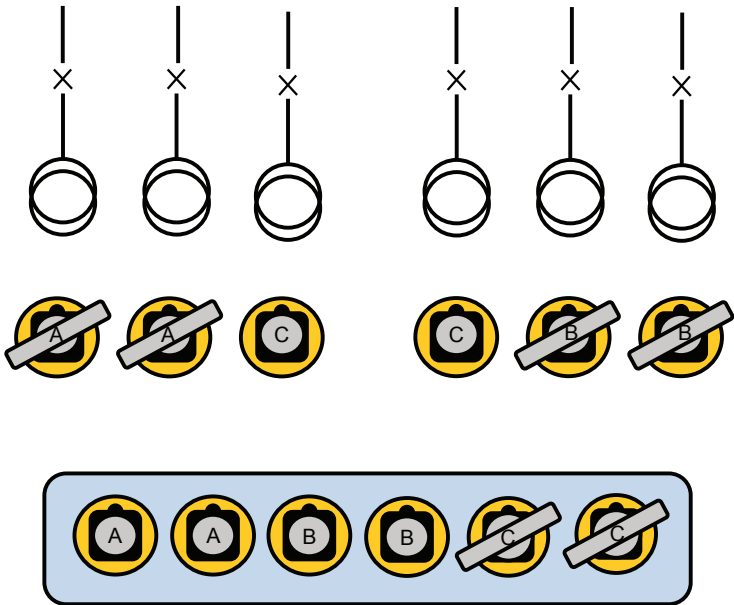
This system will require six locks depending on the breakers. One key exchange box and six keys.

Breakers A and B are closed and the keys are trapped. Keys A and B are removed from the breakers when they are opened and inserted into the key exchange box releasing the C keys.

The C keys are then inserted in the C locks, closing breakers C.

The symbols used here are A, B and C for the incomers.

\* All locks can be individually fitted to suit the switchgear



Incomer Interlocking (4)

Operation

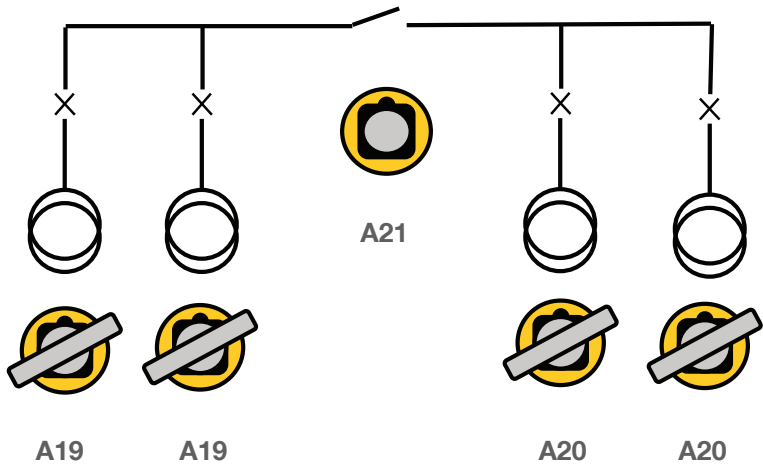
The operation is shown with all incomers closed, the bus coupler open and its key A21 trapped in the W Selector Box.

To change to position 1 from normal, incomers with symbols A19 are inserted and trapped in the W Selector Box. The asterisks denote that incomers three and four remain closed and need not be returned to the box. Key A21 can now be removed to close the bus coupler switch.

To change to position 2 from normal, incomers with symbols A20 are opened and their keys are inserted and trapped in the W selector box. The asterisks denote that incomers 1 and 2 remain closed and need not be returned to the box. Key A21 can now be removed to close the bus coupler switch.

The symbols used here are A19 and A20 for the circuit breakers and A21 for the bus coupler.

\* All locks can be individually fitted to suit the switchgear



Position	Inc 1 A19	Inc 2 A19	Inc 3 A20	Inc 4 A20	BC A21
1	T	T	F	F	F
Normal	F	F	F	F	T
2	F	F	T	T	F

\* In neighbouring positions only where the key is free in both positions the key does not need to be returned to the key exchange box.



## Switchgear Interlocking

### Incomer and Busbar Interlocking (1)

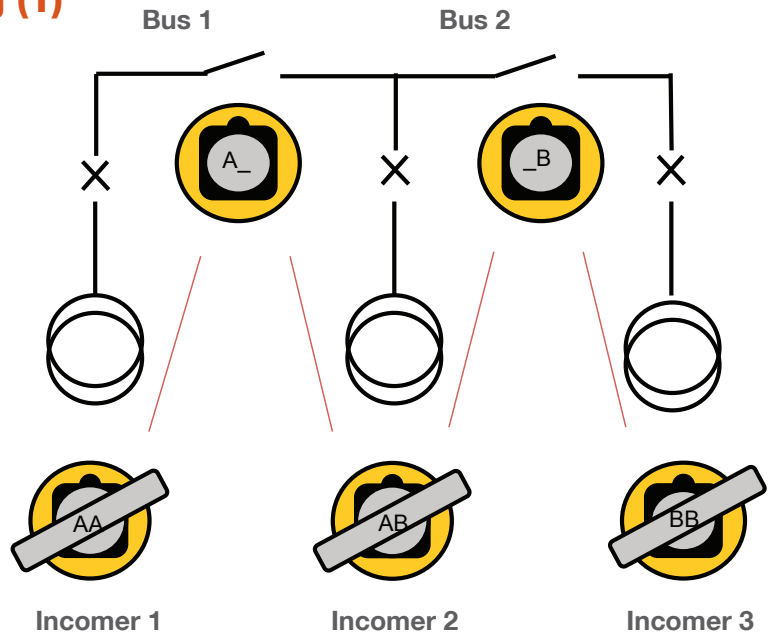
#### Operation

This system requires five locks and three keys. In the normal operation the keys are trapped in the incomers in the closed position and both bus couplers are open.

The symbol sequence will allow appropriate incomers to be open allowing the key to be released, transferred and inserted and trapped to the associated bus coupler allowing it to be closed.

The symbols used here are AA, AB and BB for the Incomers and A\_ (A BLANK) and \_B (BLANK B) for the bus couplers.

\* All locks can be individually fitted to suit the switchgear



### Incomer, Generator and Busbar Interlocking

#### Operation

The normal operation is the 2 incomers are closed with bus coupler and generator are both open. The symbol arrangement using key symbols AA, AB, A\_ (A Blank) on locks with just keys AA AB will ensure safe switching operation. It will not be possible to have Incomer 2 and Generator closed at the same time to avoid paralleling.

The symbols used here are AA and AB for the incomers and A\_ (A BLANK) for the bus coupler.

\* All locks can be individually fitted to suit the switchgear

