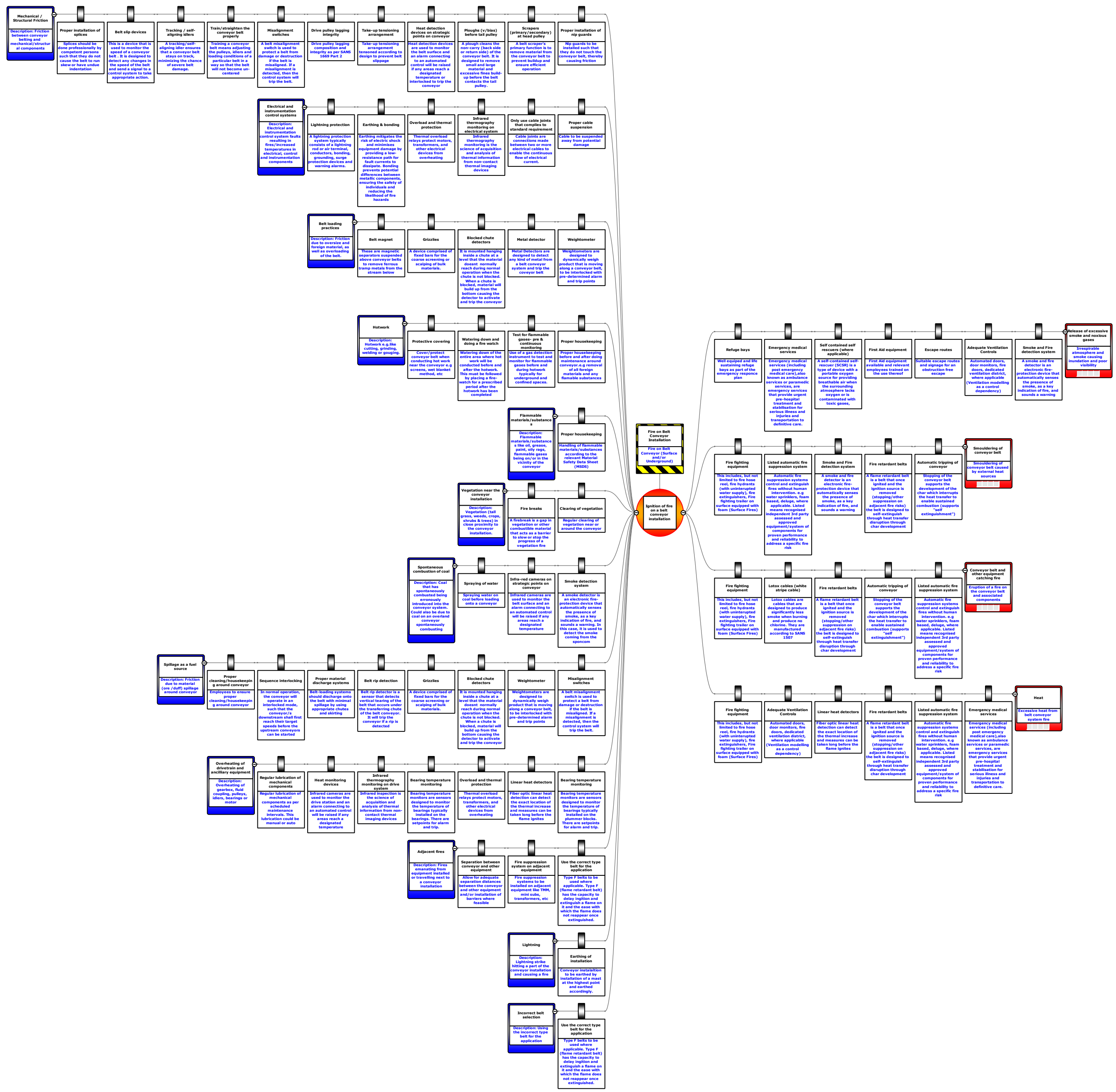
Mechanical / Structural Friction
Description: Friction between conveyor belting and mechanical/structural components
Proper installation of splices
Splices should be done professionally by competent persons such that they do not cause the belt to run skew or have undue indentation
Belt slip devices
This is a device that is used to monitor the speed of a conveyor belt . It is designed to detect any changes in the speed of the belt and send a signal to a control system to take appropriate action.
Tracking / self-aligning idlers
A tracking/self-aligning idler ensures that a conveyor belt stays on track, minimizing the chance of severe belt damage.
Train/straighten the conveyor belt properly
Training a conveyor belt means adjusting the pulleys, idlers and loading conditions of a particular belt in a way so that the belt will not become un-centered
Misalignment switches
A belt misalignment switch is used to protect a belt from damage or destruction if the belt is misaligned. If a misalignment is detected, then the control system will trip the belt.
Drive pulley lagging integrity
Drive pulley lagging composition and integrity as per SANS 1669 Part 2
Take-up tensioning arrangement
Take-up tensioning arrangement tensoned according to design to prevent belt slippage
Heat detection devices on strategic points on conveyor
Heat detection devices are used to monitor the belt surface and an alarm connecting to an automated control will be raised if any areas reach a designated temperature or interlocked to trip the conveyor
Ploughs (v/bias) before tail pulley
A plough cleans the non-carry (back side or return side) of the conveyor belt. It is designed to remove small and large material and excessive fines build-up before the belt contacts the tail pulley.
Scrapers (primary/secondary) at head pulley
A belt scraper's primary function is to remove material from the conveyor belt to prevent buildup and ensure efficient operation
Proper installation of nip guards
Nip guards to be installed such that they do not touch the conveyor belt, thereby causing friction
Electrical and instrumentation control systems
Description: Electrical and instrumentation control system faults resulting in fires/increased temperatures in electrical, control and instrumentation components
Lightning protection
A lightning protection system typically consists of a lightning rod or air terminal, conductors, bonding, grounding, surge protection devices and warning alarms.
Earthing & bonding
Earthing mitigates the risk of electric shock and minimises equipment damage by providing a low-resistance path for fault currents to dissipate. Bonding prevents potential differences between metallic components, ensuring the safety of individuals and reducing the likelihood of fire hazards
Overload and thermal protection
Thermal overload relays protect motors, transformers, and other electrical devices from overheating
Infrared thermography monitoring on electrical system
Infrared thermography monitoring is the science of acquisition and analysis of thermal information from non-contact thermal imaging devices
Only use cable joints that complies to standard requirement
Cable joints are connections made between two or more electrical cables to enable the continuous flow of electrical current.
Proper cable suspension
Cable to be suspended away from potential damage
Belt loading practices
Description: Friction due to oversize and foreign material, as well as overloading of the belt.
Belt magnet
These are magnetic separators suspended above conveyor belts to remove ferrous tramp metals from the stream below
Grizzlies
A device comprised of fixed bars for the coarse screening or scalping of bulk materials.
Blocked chute detectors
It is mounted hanging inside a chute at a level that the material doesnt normally reach during normal operation when the chute is not blocked. When a chute is blocked, material will build up from the bottom causing the detector to activate and trip the conveyor
Metal detector
Metal Detectors are designed to detect any kind of metal from a belt conveyor system and trip the coveyor belt
Weightometer
Weightometers are designed to dynamically weigh product that is moving along a conveyor belt, to be interlocked with pre-determined alarm and trip points
Hotwork
Description: Hotwork e.g.like cutting, grinding, welding or gouging.
Protective covering
Cover/protect conveyor belt when conducting hot work near the conveyor e.g screens, wet blanket method, etc
Watering down and doing a fire watch
Watering down of the entire area where hot work will be conducted before and after the hotwork. This must be followed by placing a fire-watch for a prescribed period after the hotwork has been completed
Test for flammable gases- pre & continuous monitoring
Use of a gas detection instrument to test and monitor for flammable gases before and during hotwork typically for underground and confined spaces.
Proper housekeeping
Proper housekeeping before and after doing maintenance around conveyor.e.g removal of all foreign materials and any flamable substances
Flammable materials/substances
Description: Flammable materials/substances like oil, grease, paint, oily rags, flammable gases being on/or in the vicinity of the conveyor
Proper housekeeping
Handling of flammable materials/substances according to the relevant Material Safety Data Sheet (MSDS)
Vegetation near the conveyor installation
Description: Vegetation (tall grass, weeds, crops, shrubs & trees) in close proximity to the conveyor installation.
Fire breaks
A firebreak is a gap in vegetation or other combustible material that acts as a barrier to slow or stop the progress of a vegetation fire
Clearing of vegetation
Regular clearing of vegetation near or around the conveyor
Spontaneous combustion of coal
Description: Coal that has spontaneously combusted being erronously introduced into the conveyor system. Could also be due to coal on an overland conveyor spontaneously combusting
Spraying of water
Spraying water on coal before loading onto a conveyor
Infra-red cameras on strategic points on conveyor
Infrared cameras are used to monitor the belt surface and an alarm connecting to an automated control will be raised if any areas reach a designated temperature
Smoke detection system
A smoke detector is an electronic fire-protection device that automatically senses the presence of smoke, as a key indication of fire, and sounds a warning. In this case, it is used to detect the smoke coming from the sponcom
Spillage as a fuel source
Description: Friction due to material (ore /duff) spillage around conveyor
Proper cleaning/housekeeping around conveyor
Employees to ensure proper cleaning/housekeeping around conveyor
Sequence interlocking
In normal operation, the conveyor will operate in an interlocked mode, such that the conveyor/s downstream shall first reach their target speeds before the upstream conveyors can be started
Proper material discharge systems
Belt-loading systems should discharge onto the belt with minimal spillage by using appropriate chutes and skirting
Belt rip detection
Belt rip detector is a sensor that detects vertical tearing of the belt that occurs under the transferring chute of the belt conveyor. It will trip the conveyor if a rip is detected
Grizzlies
A device comprised of fixed bars for the coarse screening or scalping of bulk materials.
Blocked chute detectors
It is mounted hanging inside a chute at a level that the material doesnt normally reach during normal operation when the chute is not blocked. When a chute is blocked, material will build up from the bottom causing the detector to activate and trip the conveyor
Weightometer
Weightometers are designed to dynamically weigh product that is moving along a conveyor belt, to be interlocked with pre-determined alarm and trip points
Misalignment switches
A belt misalignment switch is used to protect a belt from damage or destruction if the belt is misaligned. If a misalignment is detected, then the control system will trip the belt.
Overheating of drivetrain and ancilliary equipment
Description: Overheating of gearbox, fluid coupling, pulleys, idlers, bearings or motor
Regular lubrication of mechanical components
Regular lubrication of mechanical components as per scheduled maintenance intervals. This lubrication could be manual or auto
Heat monitoring devices
Infrared cameras are used to monitor the drive station and an alarm connecting to an automated control will be raised if any areas reach a designated temperature
Infrared thermography monitoring on drive system
Infrared inspection is the science of acquisition and analysis of thermal information from non-contact thermal imaging devices
Bearing temperature monitoring
Bearing temperature monitors are sensors designed to monitor the temperature of bearings typically installed on the bearings. There are setpoints for alarm and trip.
Overload and thermal protection
Thermal overload relays protect motors, transformers, and other electrical devices from overheating
Linear heat detectors
Fiber optic linear heat detection can detect the exact location of the thermal increase and measures can be taken long before the flame ignites
Bearing temperature monitoring
Bearing temperature monitors are sensors designed to monitor the temperature of bearings typically installed on the plummer blocks. There are setpoints for alarm and trip.
Adjacent fires
Description: Fires emanating from equipment installed or travelling next to a conveyor installation
Separation between conveyor and other equipment
Allow for adequate separation distances between the conveyor and other equipment and/or installation of barriers where feasible
Fire suppression system on adjacent equipment
Fire suppression systems to be installed on adjacent equipment like TMM, mini subs, transformers, etc
Use the correct type belt for the application
Type F belts to be used where applicable. Type F (flame retardant belt) has the capacity to delay ingition and extinguish a flame on it and the ease with which the flame does not reappear once extinguished.
Lightning
Description: Lightning strike hitting a part of the conveyor installation and causing a fire
Earthing of installation
Conveyor instalaltion to be earthed by installation of a mast at the highest point and earthed accordingly.
Incorrect belt selection
Description: Using the incorrect type belt for the application
Use the correct type belt for the application
Type F belts to be used where applicable. Type F (flame retardant belt) has the capacity to delay ingition and extinguish a flame on it and the ease with which the flame does not reappear once extinguished.
Fire on Belt Conveyor Installation
Fire on Belt Conveyor (Surface and/or Underground)
Ignition of fire on a belt conveyor installation
Refuge bays
Well equiped and life sustaining refuge bays as part of the emergency responce plan
Emergency medical services
Emergency medical services (including post emergency medical care),also known as ambulance services or paramedic services, are emergency services that provide urgent pre-hospital treatment and stabilisation for serious illness and injuries and transportation to definitive care.
Self contained self rescuers (where applicable)
A self-contained self-rescuer (SCSR) is a type of device with a portable oxygen source for providing breathable air when the surrounding atmosphere lacks oxygen or is contaminated with toxic gases,
First Aid equipment
First Aid equipment available and relevant employees trained on the use thereof
Escape routes
Suitable escape routes and signage for an obstruction free escape
Adequate Ventilation Controls
Automated doors, door monitors, fire doors, dedicated ventilation district, where applicable (Ventilation modelling as a control dependency)
Smoke and Fire detection system
A smoke and fire detector is an electronic fire-protection device that automatically senses the presence of smoke, as a key indication of fire, and sounds a warning
Release of excessive smoke and noxious gases
Irrespirable atmosphere and smoke causing inundation and poor visibility
Fire fighting equipment
This includes, but not limited to fire hose reel, fire hydrants (with uninterupted water supply), fire extinguishers, Fire fighting trailer on surface equipped with foam (Surface Fires)
Listed automatic fire suppression system
Automatic fire suppression systems control and extinguish fires without human intervention. e.g water sprinklers, foam based, deluge, where applicable. Listed means recognised independent 3rd party assessed and approved equipment/system of components for proven performance and reliability to address a specific fire risk
Smoke and Fire detection system
A smoke and fire detector is an electronic fire-protection device that automatically senses the presence of smoke, as a key indication of fire, and sounds a warning
Fire retardant belts
A flame retardant belt is a belt that once ignited and the ignition source is removed (stopping/other suppression on adjacent fire risks) the belt is designed to self-extinguish through heat transfer disruption through char development
Automatic tripping of conveyor
Stopping of the conveyor belt supports the development of the char which interrupts the heat transfer to enable sustained combustion (supports "self extinguishment")
Smouldering of conveyor belt
Smouldering of conveyor belt caused by external heat sources
Fire fighting equipment
This includes, but not limited to fire hose reel, fire hydrants (with uninterupted water supply), fire extinguishers, Fire fighting trailer on surface equipped with foam (Surface Fires)
Lotox cables (white stripe cable)
Lotox cables are cables that are designed to produce significantly less smoke when burning and produce no chlorine. They are manufactured according to SANS 1507
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Conveyor belt and other equipment catching fire
Eruption of a fire on the conveyor belt and associated components
Fire fighting equipment
This includes, but not limited to fire hose reel, fire hydrants (with uninterupted water supply), fire extinguishers, Fire fighting trailer on surface equipped with foam (Surface Fires)
Adequate Ventilation Controls
Automated doors, door monitors, fire doors, dedicated ventilation district, where applicable (Ventilation modelling as a control dependency)
Linear heat detectors
Fiber optic linear heat detection can detect the exact location of the thermal increase and measures can be taken long before the flame ignites
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Emergency medical services
Emergency medical services (including post emergency medical care),also known as ambulance services or paramedic services, are emergency services that provide urgent pre-hospital treatment and stabilisation for serious illness and injuries and transportation to definitive care.
Heat
Excessive heat from belt conveyor system fire

used where applicable. Type F (Fume extinctor) bell: has the capacity to extinguish a fume or it and the ease with which it can be used and stopper once extinguished.