



SAFETY MONITORING A BUCKET ELEVATOR



Belt misalignment monitoring
Bearing temperature monitoring
Speed monitoring
Transmitters & converters
Explosion vent panels
& flameless vents

SCHEMATIC OVERVIEW MONITORING OF AN INDOOR ELEVATOR

Preventive measures

Prevention is a better cure. Taking preventive measures is therefore the primary concern. These measures focus on preventing the possibility of creating an explosive hazardous situation by eliminating as many of the elements as possible. The risk involving a potentially hazardous mixture of powder and air, which could cause a dust explosion can be reduced by taking the following precautions:

- Mechanical conditioning of the whole installation
- Earthing the installations
- Good cleaning of the factory
- The removal of foreign objects in the installation
- Dustproof construction of equipment
- The installation of (ATEX) explosion safety systems

Curative measures

If all preventive measures have been taken and there is still an explosion risk, curative measures must be taken. These are aimed at providing protection from the consequences of an explosion. Examples are shown hereafter:

- Explosion-proof construction
- Explosion pressure relief
- Compartmentalisation
- Explosion suppression



Control room / visualisation



Minimum required components for the monitoring of one elevator	Component	Applied component	Junction box + transmitters & converters	Cable type	SKADA / PLC
1 Belt misalignment monitoring Preventive A minimum of four Rub-Block belt misalignment sensors, to be used for fail-safe monitoring.	 <p>Rub-Block round or rectangular with PT100 sensor</p>	 <p>Rub-Block rectangular & junction box</p>	 <p>Junction box large with cable screw terminals</p>	 <p>Intrinsically safe 16-wired cable</p>	 <p>Example PLC</p>
2 Bearing temperature monitoring Preventive Each bearing (4pcs.) should be equipped with temperature monitoring sensors to guard against overheated bearings.	 <p>PT100 bearing temperature sensor</p>	 <p>PT100 bearing temperature sensor</p>	 <p>Junction box large with head transmitters 4-20 mA</p>	 <p>Intrinsically safe 8-wired cable</p>	
3 Junction box large + transmitters & converters Use two large junction boxes for connecting belt misalignment and bearing temperature sensors.			 <p>Junction box large with converters</p>	 <p>Intrinsically safe 24-wired cable</p>	
4 Speed monitoring Preventive One speed monitoring sensor to verify belt slip	 <p>Speed monitoring sensor</p>	 <p>Speed monitoring & small junction box</p>	 <p>Junction box small with mounting bracket</p>	 <p>Intrinsically safe 4 till 8-wired cable</p>	
5 Junction box small Use one small junction box for connecting speed monitoring sensor.					
6 Flameless vents Curative Number of flameless vents is determined on the height and volume of the elevator. With outdoor elevators, applying explosion vent panels is possible.	 <p>Flameless vents (flame filter)</p>	 <p>Flameless vents</p>			

MULLER BELTEX
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