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## SAFETY SYSTEM

We can offer you a risk analysis of your Siwertell machine to protect both the machine and personnel near it, such as operators and maintenance staff, in accordance with the strictest regulations, i.e. the US ANSI Z.535 standards.

### DESCRIPTION

High digging forces increase wear and power consumption and the risk of overload. The slewing motion and the travelling motion (as applicable) are continuously compared with the maximum allowed digging force, actual capacity and capacity requested/set by the operator. The optimal speed is then set automatically.

After the analysis, we can support your machine with 'emergency stop' buttons located in various positions on the Siwertell. To alert personnel around and on the machine we have audible alarms and lights providing warnings for machine movement, travelling motion, and for 'conveyors on'. By installing a gate at the entry to the slewing part of the Siwertell machine we can avoid crushing, falling and tripping hazards that could cause severe injury or death.

When someone goes through the gate the audible alarms and warning lights up on the machine will be activated and also an alarm alerting the operator. If the operator does not acknowledge this alarm by pressing the 'cancel' button within 20 seconds the inlet feeder will be stopped. When the alarm is acknowledged the inlet feeder will start again.

### BENEFITS

To protect the machine chock relief valves can be mounted on the hydraulic cylinders to minimise the risk of introducing excessive force into the machine's steel structure. Pipe rupture valves and load holding valves can be mounted on the hydraulic cylinders to hold the arm system in its current position if a hydraulic pipe or hose breaks. The load holding valves also ensure that the arm system maintains the same position it was in when the electrical supply was interrupted. Changes in valve settings or manipulating the hydraulic system could cause severe injury or death.

The manoeuvring optimisation system (MOS) is an integrated part of the control system and also good safety protection to help the operator run the machine at a high continuous capacity, without applying unnecessarily high digging forces. High digging forces increase wear and power consumption and risk overloads. The slewing movement and the travelling movement are

continuously compared to the maximum allowed digging force, actual capacity and capacity set/requested by the operator. The optimal speed for slewing and travelling motions is then set automatically.

## SCOPE OF SUPPLY

To reduce the risk of damaging the inlet feeder and the vertical screw conveyor from, for instance, scrap iron in the material that is unloaded we use Safeset and Autoguard couplings. We have also an overload guard protection for the auxiliary hoist. An additional safety device to the auxiliary hoist is the overspeed brake which prevents the load from dropping in the event of a failure in the mechanical components linking the motor and the rope drum.

The emergency gasoline engine/pump can operate the luffing and pendulum movements during a power failure to get equipment out of the ship's hold. Emergency lighting makes it possible to walk along the access ways from the electrical switchgear compartment and get down safely during a power failure. An emergency light can also be fitted in the hydraulic equipment cabinet.

When storm locking detects that the wind speed is exceeding 20 metres per second (39 knots), an alarm alerts the operator who must stop the operation, park the machine and 'storm lock' it. Warning signs will be added to the machine and your manuals will be updated with safety protection systems.