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MAXVicu

The Maxspeed[®] Bucket Unloader System



Benefits

The **Maxspeed**[®] **Bucket Unloader** system enables the operator to become more efficient by eliminating tasks where the operator's skills are not required.

- Increased Productivity with optimal bucket loading and discharge into the hoppper with consistently repeatable automatic operation.
- Reduced wear and tear on the bucket and hopper due to automatic soft repeatable bucket discharge cycles over the hopper and bucket loading control.
- Vessel damage protection with bucket anti-sway control and bucket loading control.
- **Reduced Rope wear** via implementation of slack rope detection system and smart stops.
- **Reduced operator fatigue** with automation cooperation between vessel and hopper and automatic dig cycle.
- **Reduced power costs** via the TMdrive Power Factor Correction which maintains the PF at near unity when the unloader is operating.

Features

- Automatic Operation Between Vessel and Hopper means that the operator only has to intervene when it's time to change the target.
- Automatic Dig Cycle lowers the bucket onto the pile, digs, closes bucket, and raises, while maintaining rope tension to minimize slack rope.
- Bucket Loading control allows operator to select different types of material and density for each bucket dig operation. Materials have varying weight and density, requiring a unique bucket rope tension to assure a fully loaded bucket without overload.
- Enhanced on-board diagnostics and crane management system. With optional communication package, crane status can be monitored from a remote station via an internet communication link.
- Advanced electronic anti-sway system, to prevent bucket sway. TMEIC employs a sensorless anti-sway algorithm. This algorithm provides an improvement over open loop designs used in the past.
- **Remote Operator Station** feature can be supplied. The ROS function allows a single operator to monitor and control multiple bucket unloaders from a remote operator desk.

How it works

The TMEIC **Maxspeed**[®] Bucket Unloader System is designed to be highly efficient and easy to learn, using a minimum number of control devices to operate the crane.

- **Bucket Control:** With the TMEIC bucket control system, both Hold and Close motors use incremental encoders to measure the motor speed and bucket position. TMEIC uses this information to provide several functions which simplify the operator's control of the crane.
 - **Bucket Open/Close Control:** After a digging operation the control system ensures that the bucket remains closed as the bucket is hoisted up to the level of the hopper. After emptying the bucket over the hopper and returning to the vessel, the bucket is held open as the bucket is lowered down into the vessel. As a result, the control system makes sure that the bucket never opens or closes when it shouldn't while in transit to or from the hopper/pile.
 - **Smart Stops:** The TMEIC system is able to sense when the bucket is nearing the fully opened or fully closed positions and automatically adjusts the speed even if the operator is holding the masterswitch at full speed. This feature reduces bucket wear and fatigue failures by avoiding impact loads seen when the bucket reaches a physical stop position at high speed.
 - Near Close/Open operation features Damage control & productivity improvements When the bucket becomes near-closed, it can be lifted out of the pile and will finish closing as it is lifted reducing cycle time. Also if the bucket is fully closed in the pile, it will slack the Hold ropes causing rope wear or snapping of the ropes when being lifted. When the bucket becomes near-open over the hopper, the load has been discharged, so the Trolley can be reversed and head back to the vessel sooner reducing cycle time. During travel the bucket continues to fully open.
- Automatic Dig Function:
 - Automatic control of the Hold ropes to prevent entanglement.
 - Slack rope detection system to prevent premature dig initiation.
 - Allows for a full bucket to be picked up on every cycle.
 - Bucket automatically closes to 100% (if not already) when the raise command is initiated.
 - o Simple operation.
- **Completing the Cycle:** Once the bucket is clear of any obstructions, the operator can complete the cycle by commanding the trolley to move over the hopper and dumping the load. The system can trolley and raise (or lower) at the same time. It can also trolley and open (or close) at the same time.
- Manual Operation: The operator uses two stepless masterswitches to control the trolley and bucket motions. In addition to the two masterswitches, a thumb switch is used to indicate to the control system when the operator wants to "Dig" into a pile.



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