KONECRANES®
Lifting Businesses™

Standardized, tested solutions for crane-specific control systems

DynAApplication - SW Products

COMBINED POWER OF SOFTWARE AND CRANE KNOW-HOW

DynAPilot
For efficient load-sway control

DynATrak
For smooth and accurate bridge travel

DynAGrab
For superb mechanical grab handling

DynAMonitor
For PLC-based diagnostics and statistics

KONECRANES DIAGNOSTIC FAMILY

ControlPro
> For hoisting machinery
> Combination of overload protection, diagnostics and safe working monitoring
> Statistics of crane usage
> Alarms and warnings
> ControlPro field bus for multi-hoist cranes
> ControlPro GSM for remote access

DynAMonitor
> For PLC-controlled cranes
> Crane drives in field bus
> Operators panel
> All crane I/O can be monitored

CMS
> PLC for I/O handling
> PC for powerful analysis and data collection
> Specific screens for alarms and warnings
> Assist in troubleshooting
> Production data statistics

DynAPilot

TOTAL LOAD CONTROL SOLUTION

As the leading process crane technology developer, Konecranes has several load-sway control patents. These patented technologies are used in load-sway control products developed for many different crane types and applications. DynAPilot products ensure optimal performance and short payback time for our customers. All products are tested in real industrial applications.

Advantages of the DynAPilot load control system:

> Improved safety
> Faster cycle times
> Less material damage
> Small differences in operator performance
> Faster operator training
> Longer crane lifetime
> New crane tasks
> Affordable crane automation
> Industry tested for over 10 years.

DynATrak

KEEP WHEEL FLANGES OFF THE RAIL

Long crane spans, in bridge or gantry cranes, can lead to a running condition where the bridge or gantry structure is skewing (one end is lagging while other is leading). Excessive skew may cause premature wheel wear or load positioning problems. Lagging may be caused by different factors, like the mechanical characteristics of the crane, a poorly aligned rail with bad joints, an imbalance in the load between ends, a slip in the squirrel cage motors etc.

Skewing can be controlled with the DynATrak anti-skew system. Two DynAC inverter drives are used, one for each end of the crane; these drives allow speed adjustments to be made independently, thus preventing excessive misalignment.

THERE ARE TWO DIFFERENT MODELS OF DynATrak:

DynATrak/P refers to the **P**osition measuring of both ends of a crane, with the main function being to prevent crane skewing. The measurement can be done with either a proportional measurement or an absolute measurement. In a proportional measurement, the absolute position of the bridge ends on the runway is not known, but alignment is monitored at several checkpoints placed along the runway together with pulse encoders. Correction is done based on the last measurement point. For an absolute measurement, laser distance measurement units or absolute encoders at both ends are used.

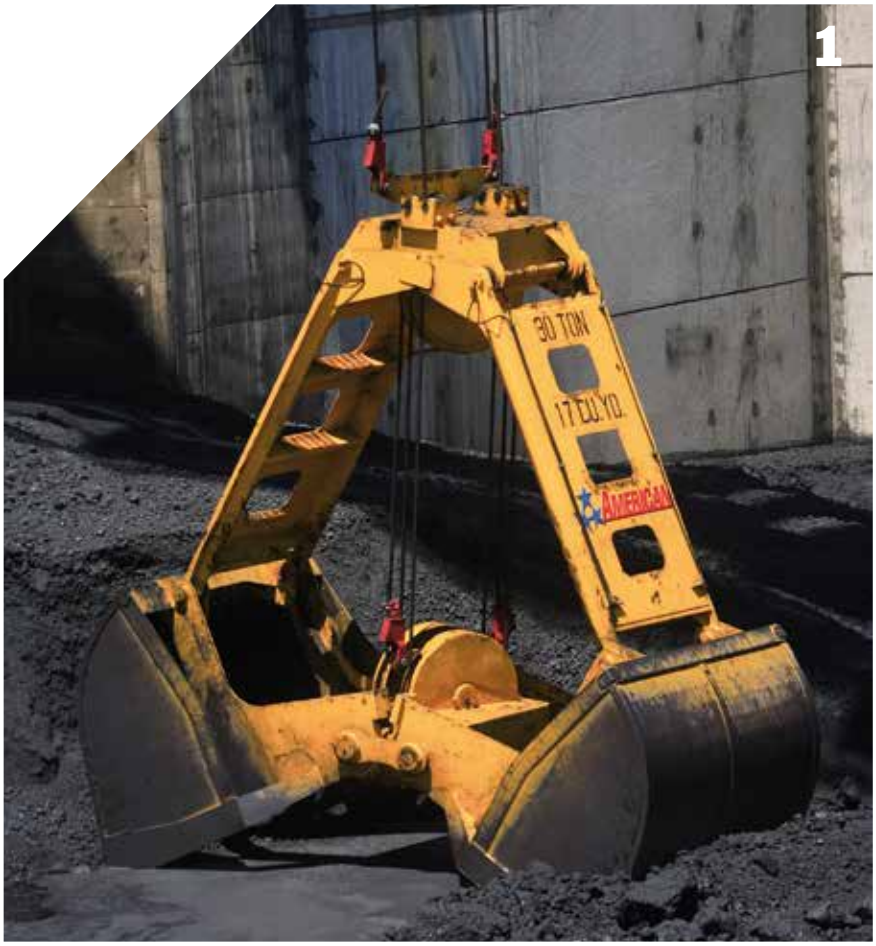
DynATrak/R refers to **R**ail tracking utilizing the measurement of the end truck alignment in relation to the rail. It is often called “Electronic Guide Rollers.” This system is patented by Konecranes. One side of the crane is fitted with two pieces of short-range lasers to detect crane end truck position relative to the rail. Normally, a laser is used for measuring accuracy of less than 0.5 mm. The measuring range is typically 20-50 mm. These signals are wired to the PLC control system.

DynAGrab

DynAGrab Control is designed for grab unloaders and other cranes that have a mechanical grab operated by two machinery systems. DynAGrab Control consists of two DynAHoists (Konecranes Frequency converter), PLC (programmable logic controller), sensors, limit switches, and other devices for user interface.

DynAGrab Control has been developed using Konecranes extensive experience with and know-how in crane applications, with thousands of engineering hours spent on PLC software and electrical design. It combines the latest inverter technology for AC motor drive systems, and it has an integrated control system developed specifically for grab crane applications.

- **Load Balancing**
- **Synchronization**
- **Field Weakening**
- **Grab Fast Stop**
- **Grab Sinking**
- **Grab Jammed Detection**
- **Overload Protection**
- **Limit Switch Functions**
- **Fault Detection**
- **Automatic Grab Filling**



DynAMonitor

GRAPHICAL CONDITION MONITORING PANEL

The system consists of a PLC and operator panel with a touch screen or membrane keyboard. All texts, alarms and event histories are stored in the memory of the operator panel. DynAMonitor screens typically consist of the following data areas: Date and time; the event text appears when an event is active; a pop-up window appears in the event of a new alarm and system messages.

Screens

DynAMonitor can be tailored to different customer needs. The following basic packages can be selected for the application:

- **Process screen**
- **System settings**
- **Condition monitoring (Alarm/Event buffers)**
- **Service/Maintenance screen**
- **Screens for other DynA software applications:**
  - DynATrak
  - DynAGrab
  - DynAPilot

From the main screen, operators can select the following sub-screens:

- **Process screen, includes information for crane operators**
- Crane load, machinery positions, machinery starts and hours in operation
- **System-setting screen**
- **Alarms/Events screen**
- **Service screen, includes information for service personnel**
- Selection of DynA diagnostic screen
- Selection of I/O display screen
- Selection of Absolute encoder calibration screen
- Selection of Operation parameters screen

Alarms

Alarm messages are typically triggered by device errors or device status that can be considered as a system fault. For example the following signals will trigger error messages: DynAC/ DynAHoist errors, Protection switch trips, Power supply voltage monitor tripped, Brake wear, Brake opening/closing monitoring time exceeded, Overload and Motor over temperature alarm.

Events

Event messages indicate device status or a change in condition, which are parts of the normal operation cycle. An operator can recover from a fault by his own actions. For example, the following signals will trigger event messages: End stops, Protected area stops, Slack rope and Motor over temperature warnings.


INDUSTRIAL CRANES


NUCLEAR CRANES


PORT CRANES


HEAVY-DUTY LIFT TRUCKS


CRANE SERVICE


MACHINE TOOL SERVICE

Konecranes is a world-leading group of Lifting Businesses™ offering lifting equipment and services that improve productivity in a wide variety of industries. The company is listed on NASDAQ OMX Helsinki Ltd (symbol: KCR1V). With over 10,000 employees at more than 570 locations in almost 50 countries we have the resources, technology and determination to deliver on the promise of Lifting Businesses™.

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