

Advant® Crane Control GSU

Grab Ship Unloader - Highly efficient control of the unloading cycle for new cranes and rebuilds



Seamless Integration

The system design of Advant Crane Control for GSUs is based on seamless integration of control, drives, information management, and low voltage equipment. The control system utilizes ABB's unique software – Grab Pendulum and Performance Optimizer (GPO) – to optimize the unloading cycle.

The Advant Crane Controller AC 800M acts as an overriding controller (PLC). It communicates with distributed S800 I/O control stations and field devices on one or more fiber-optic PROFIBUS DP buses. To ensure fast and accurate control, the drives are connected by a separate dedicated fiber-optic drive bus. ACS 800 AC drives or DCS 600 DC drives are used for the main motions – hold, close, trolley, boom hoist, and gantry. These are crane-dedicated versions of ABB's well known high-end industrial drives. All drives share a common user and control interface. DCR rebuild kits can be used in rebuilding projects to update the DC drive control electronics while retaining the power electronics.

Crane Information Management System

The Crane Information and Management System (CIMS) is a distributed PC-based client-server system for collection of diagnostic and operational data. A GSU normally employs a Crane Maintenance Station (CMS) in the electrical house and a Cabin View in the operator's cabin. Besides information management, the CMS computer also has software tools for programming and maintenance of the Advant Crane Controller (Control Builder M) and the drives (Drive Window).

All CIMS units communicate with each other and with the Advant Crane Controller on a TCP/IP network. The network may be extended to include other units such as a Dock Level Station or a Land Station. The latter is used for collection of crane data from one or several cranes and presenting it at a location convenient to the user.

Unique Grab Pendulum and Performance Optimizer (GPO)

GPO introduces full automation to the unloading cycle. With GPO enabled by the driver pressing a pedal, the system repeatedly performs all the main movements of the unloading cycle – mimicking the actions of a skilled operator. The actual crane operator can assume a less tiring, more supervisory role.

The crane operator's job is to start and supervise. Basically, the operator only needs to intercede for adjusting the grab return point in the transverse direction, and carrying out particular parts of the unloading procedure that must be performed manually, such as cleaning the hatch. As a result, the average cycle times are kept short, and the full capacity of the main drives is utilized for high speeds and accelerations, resulting in increased crane productivity regardless of unloading conditions.

GPO Features

Grab control handles the grab motion for optimal fill and minimum stress on crane mechanics. Several drive modes are used during an unloading cycle in order to achieve truly optimal performance. The system allows the use of several different grabs without readjustments, and features easy-to-use adaptation to material characteristics, simply by turning a knob.

Pendulum Control takes advantage of grab sway to minimize cycle time, instead of trying to counteract swinging.

The control principle echoes a skilled operator's way of using the crane's motion physics in his favor. The main motions are controlled in harmony with the movement of the grab.

Needless to say, this greatly reduces shock loads as well as stress on mechanical components and the crane structure.

Why choose Advant® Crane Control for your unloader?

Performance: Optimized control results in high utilization without overloading and short cycle times without the need of a skilled operator.

Reduced stress and wear on machines: The GPO works in harmony with the main movements of the cranes.

Availability: Advant Crane Control is based on well-proven solutions and products, based on worldwide experience from the most demanding industrial applications. Advanced tools for maintenance and information management help keep downtime to a minimum.

Easy service: Field service, spare parts and training, all specifically qualified for cranes, can be obtained from a single source.

References

Throughout the years the ABB Advant Crane Control has been installed in more than 180 grab ship unloaders worldwide (December 2009).

For more information please contact:

ABB AB

Crane Systems

SE-721 59 Västerås, Sweden

Phone: +46 21 32 50 00

Fax: +46 21 34 02 90

e-mail: cranes.sales@se.abb.com

www.abb.com/cranes

Note:

We reserve the right to make technical changes or modify the contents of this document without prior notice. ABB AB, Crane Systems does not accept any responsibility whatsoever for potential errors or possible lack of information in this document. We reserve all rights in this document and in the subject matter and illustrations contained herein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in part – is forbidden without prior written consent of ABB AB, Crane Systems.

© Copyright 2010 ABB. All rights reserved.