

Process cranes
individual solutions

Product application

Process cranes in the bulk material handling industry

Economic handling of additives in the cement industry

Requirement:

Storage and retrieval as well as the distribution of three different materials (rubber chips, ferrocarron, sand) in a new store for substitute material.

The requirement was to handle 54 m³/h, corresponding to a handling rate of 64 t/h, with bulk material weighing between 0.4 and 1.6 t/m³.

Solution:

An automatically controlled Demag double-girder open-winch crane with a visualisation system and a warehouse management system. The load handling attachment is a closed four-rope clamshell grab with a capacity of 5 m³.



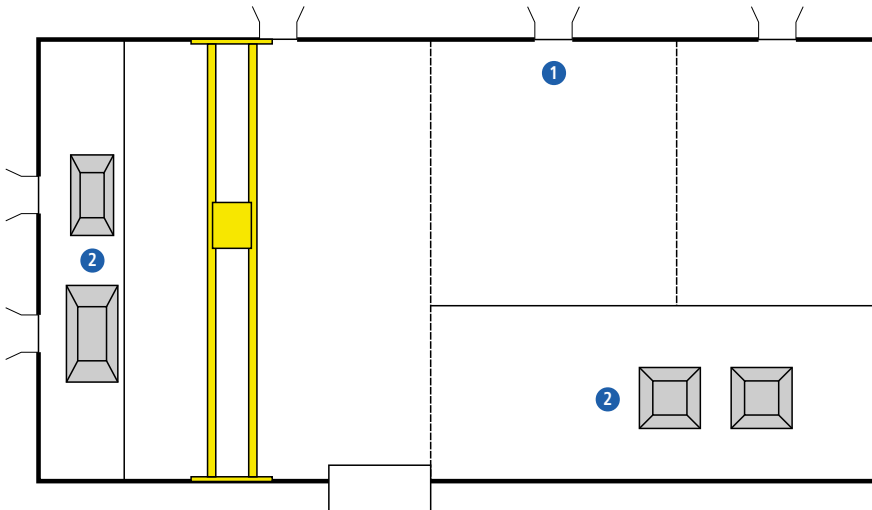
Description of the process

1 Additives are supplied by truck to the corresponding truck tipping areas and are stored in the storage location assigned by the

computer system. While the additives are being stored, the working area at the truck tipping areas is blocked off for the crane.

The crane can continue to work unrestricted outside this area.

2 The bunkers are filled direct from the truck tipping areas or from the storage location of the required additives.



Delivery:

Truck drivers report in at the truck tipping areas at chip card reading terminals. Data such as material type and weight are transferred to the warehouse management system. Subsequently, the corresponding gate is opened and the material can be unloaded from the truck.

The truck tipping areas are designed in such a way that damage to the building is reduced to a minimum.



Storage strategy:

Clearing of four truck tipping areas as required, taking the gate control into consideration. The truck tipping area is blocked off for the crane throughout the unloading process.

The strategy involves:

- giving first priority to feeding the bunkers
- giving the next priority to clearing the truck tipping areas

Storage and retrieval operations are only performed when there are no priorities to consider.

The material lifted from the truck tipping area is stored in the position assigned by the computer.

The installation is controlled via a stationary control room on the long side of the building. The complete electrical control system including the drive control system is also incorporated in the control room.

A user-friendly 9" Touch-Screen monitor permits a clear overview of the installation.



37904-3

Retrieval strategy:

In the event that the bunkers have to be fed and the truck tipping area cleared at the same time, the bunkers are filled direct from the truck tipping area.



37904-12

The digging arc is adjusted automatically to different material types varying in density. Efficient handling is thus guaranteed at all times, since the grab is filled to its full capacity.



37904-8

Installation visualisation and operation

Operation and visualisation of the installation from a stationary control room via a Touch-Screen terminal.

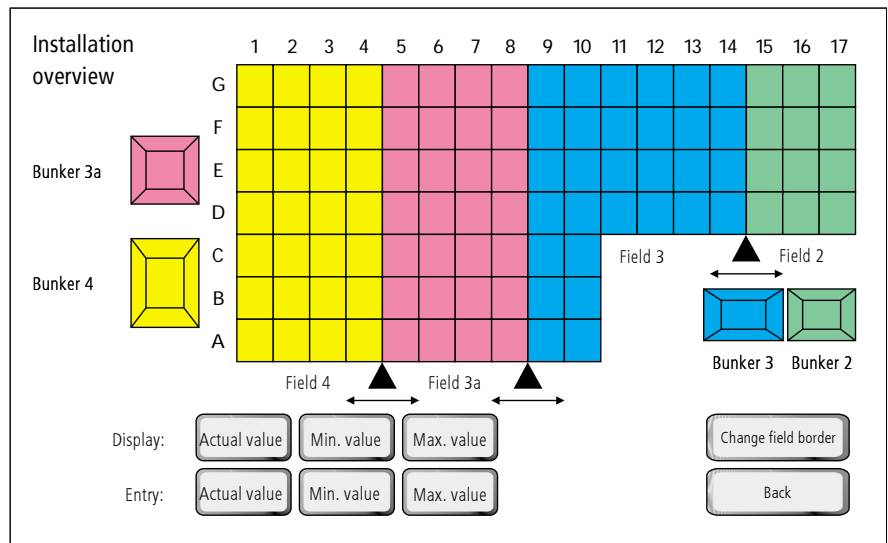
Installation overview

System image including the field borders (indicated by triangles).

Minimum and maximum values of the individual fields are displayed and can be programmed.

Crane status

Display of setpoint and actual coordinates (x, y, z), i.e. destination, operating mode, program status and grab status are shown.



Technical data:

Crane:

Double-girder open-winch crane type ZKKW
12.5 t x 24.2 m; with maintenance platform

- Crab type: open-winch crab
- Hoist speed: v = 80 m/min
- Cross travel speed: v = 60 m/min
- Long travel speed: v = 60 m/min
- Grab type: four-rope clamshell grab
- Grab capacity: 5 m³

Controls:

Automatic operation:

- Warehouse management via crane with automation device S5 155U
- Interbus-S
- Pitouch visualisation system

Manual operation:

- Stationary control room

Demag Cranes & Components GmbH Cranes

P.O. Box 67 · D-58286 Wetter
Telephone (+49 23 35) 92 - 7442
Telefax (+49 23 35) 92 - 2175
E-Mail: schuettgut@demag.de
Internet: www.cranes.demagcranes.de