



Wheel Loader Tracking in Bulk Material Handling

The challenge

Hafengesellschaft Brunsbüttel mbH operates the Elbehafen, a multi-purpose port with direct access to the North Sea and Baltic Sea. The port offers full scale services with materials handling, storage and transport. For their customer Norddeutsche Affinerie AG (NA), the largest copper producer in Europe, Hafengesellschaft Brunsbüttel has built a new hall to store copper concentrate arriving by cargo vessel. The concentrates are kept correctly sorted until blended and sent to Hamburg for further processing according to NA's requirements. The correct mixing ratio for all deliveries is a key quality criteria.

The solution

The wheel loaders that commission the various concentrates receive their transport orders from a central dispatch control. The loaders then pick up the bulk concentrate at the respective storage compartments and discharge it at a pre-determined in-feed hopper. To ensure the correct mixing ratio, the positions of the loaders are continuously tracked by LPR®-2D. The source and destination of each transport job is thus compared with the actual loader positions - loading wrong concentrate or dumping it into a wrong hopper is actively avoided by the Symeo tracking sensors.

The project's success

Symeo's maintenance free radio technology is not susceptible to the high amount of dust ubiquitous in the hall with fine-grained copper concentrate. Deliveries with an inaccurate mixing ratio have been avoided from day 1 of the operation onwards.

High process reliability demand

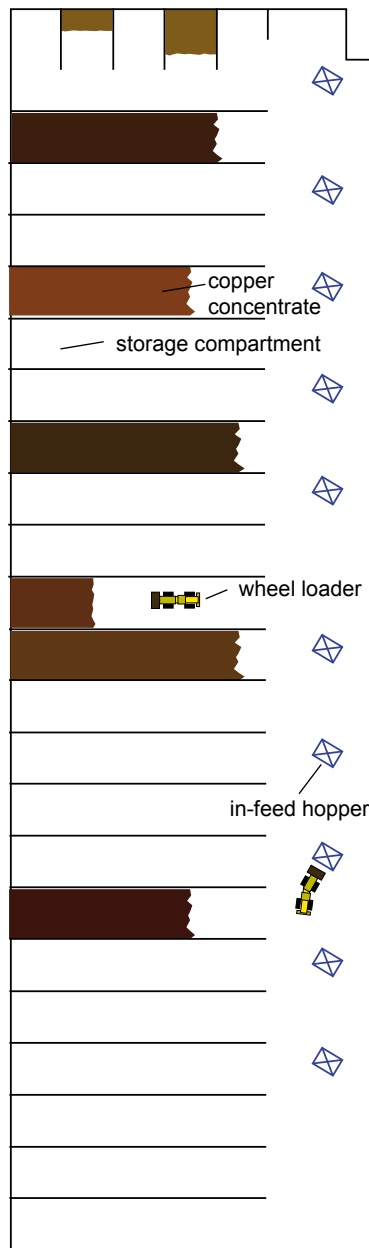
„The various storage compartments are separated by concrete walls and each compartment looks the same to the loader drivers. Likewise can the identical in-feed hoppers be mistaken, from where the concentrate is commissioned for direct dispatch to the NA. With several hundred transport jobs a day, the chances for unwanted mistakes are quite good. Tracking the vehicle position and confirming the right pick-up and discharge point is a great support for our drivers in our zero-fault operation,“ explains Dipl.-Ing. Dierk Neuhaus, Operations Manager at the Hafengesellschaft Brunsbüttel. „This special competence in logistics was not the least reason that we won NA as a long-term customer.“

No complex engineering, reliable components

The simple and efficient system design has been determined in cooperation with the company that implemented the process control, Leitec GmbH in Kassel. The LPR® sensors were all taken from Symeo's standard components toolbox. These units have proven their reliability under harsh environmental conditions in the crude steel industry.

„This is why we had all reasons to trust in that technology beforehand. Operations have now only confirmed that the LPR® sensors fully meet our expectations,“ says Dierk Neuhaus.

Storage Hall



Hafengesellschaft Brunsbüttel mbH
The Hafengesellschaft Brunsbüttel group consists of several specialized companies providing a complete set of services for cargo handling, storage and transport. The Elbehafen site with over 6 mil tons of cargo annually makes best use of its excellent strategic location with connections to important inland waters and efficient land transport on street and rail.
www.elbehafen.de

Symeo GmbH

Symeo GmbH develops and markets systems enabling precise and contact free real-time distance and position measurement of cranes, free ranging vehicles and objects. Symeo's products are of extremely robust design making them ideally suited for applications in rough industrial environments, indoors as well as outdoors.

Symeo offers the Local Positioning Radar (LPR), a radio based, real-time capable, absolute position measuring system. This industry leading technology and the company's long lasting experience in dealing with complex industrial environments enable cost effective solutions.

The Company cooperates with system integrators and ERP software solutions providers. Customized OEM products are available for special applications.

Facts & Figures

- Standard Symeo LPR®-2D sensor components
- Real-time tracking of all wheel loaders
- Reliable under the extreme amount of abrasive dust
- Typical position accuracy ± 10 cm
- Refresh rate 5 Hz
- Dimensions of storage hall 240 x 70 m
- Maintenance-free

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