

Big Data Analytics

LiDAT[®] smartApp



| LiDAT | | | |
|-----------------|--------------------------------------|-----------------------------|----------------------------------|
| Scenario > Test | | | |
| Machines | General Information Test > | Operation > | Optimization > |
| Manual | Machine Type: sum 080 300 | Cycle Time: avg 279 s | Waiting Time: avg 76 % |
| | Time Range: from 2016-07-05 14:06 | Waiting Time: avg 290 s | Crane Utilization: avg 100 % |
| | to 2016-08-01 14:06 | Wind Speed: avg 5.0 m/s | Mixing Gear Speed: avg 25 % |
| | Data Coverage: max 100 % | Performance: avg 166 t/s | Load Path: avg 05 m |
| | Operating Hours: sum 327 h | Performance: avg 9 cycles/h | Slewing Angle Path: avg 124 ° |
| | Handled Cargo: sum 87 650 t | Operation Mode: max 6-to | Lifting Path: avg 0.22 m |
| | count 5 088 cycles | | |
| | Location > | Machine Health > | Load Recorder > |
| | | Overloads: sum 90 | Turnover: sum 65 547 t |
| | | | Turnover: avg 96 s |
| | | | Cycle Time: avg 661 s/h |
| | | | Performance: avg 27 cycles/h |
| | | | Invalid Cycles: count 179 cycles |

LIEBHERR

Optimise your performance with big data analytics



LiDAT® smartApp is an IT solution, which supports operating companies in analysing and optimising cargo handling processes, performed by Liebherr ship cranes. The focal point is to make the processes faster, more environmentally friendly and more cost efficient. In real-time, by transmitting cycle data directly after being generated, LiDAT® smartApp gives a full overview of the equipment status and the process. By allowing detailed analysis, the web application shows up starting points to improve the efficiency of cargo handling processes.



Analysis
Detailed analysis of cargo handling process in real-time



Optimisation
Identification of starting points for optimisation activities



Direct access
Information obtained directly from crane control system, rather than from external sensors



Web app
Intuitive web application, available for different devices



Tracking
Comprehensive, informative data collection on process and machine statuses



Comparison
Direct comparison of multiple cranes during definable time periods

Benefits

Increased turnover efficiency

On basis of an automatic work cycle detection significant key performance indicators are calculated, which help to analyse turnover processes in order to optimise them and to use the full performance of the crane.

Cost saving

Optimised turnover processes, projectable downtimes for refuelling and maintenance work minimise standstill times and save costs.

Eco-friendliness

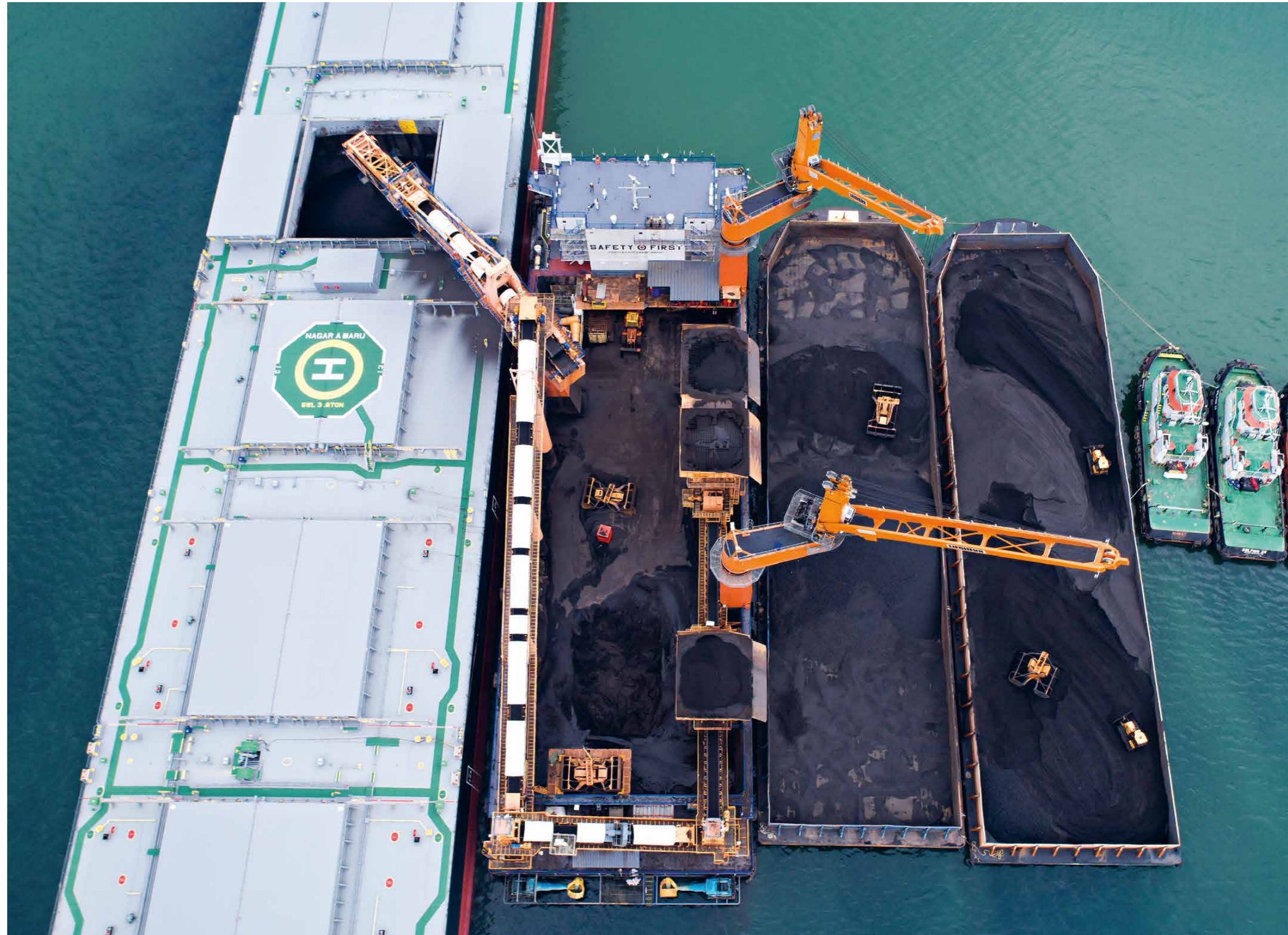
Efficient turnover processes and reduced hours of non-productive operating minimise the impact on the environment.

Increased resale value

Less operation hours plus scheduled and realised maintenances increase the resale value of the crane.

Good process and machine overview

Dashboards for machines and definable process timeframes plus a bunch of relevant reports help to keep the overview to draw conclusions and to make decisions.

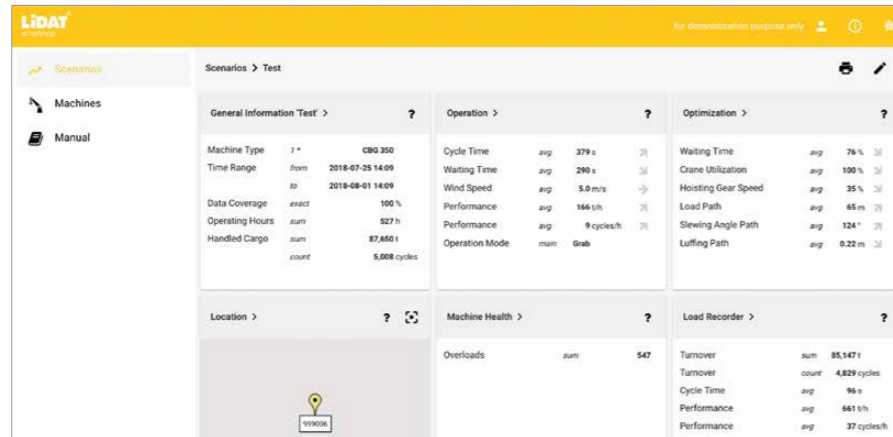


Packages and Features

Basic

Features

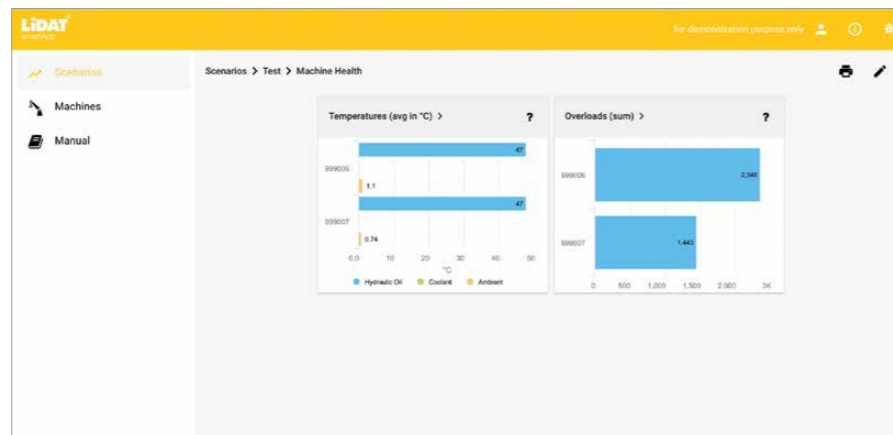
- Dashboards with basic machine and process data for a quick and easy overview (e.g. current location, handled cargo, operation hours)
- Basic operational key performance indicators
- Relevant data put into graphs
- Reports relating to basic machine data, machine use, safety aspects, messages from the machine control, maintenance and cargo handling



Optimisation

Features

- Extended dashboards relating to operational and optimisation key performance indicators
- Extended reports relating optimisation key performance indicators
- Load Recorder data analysis



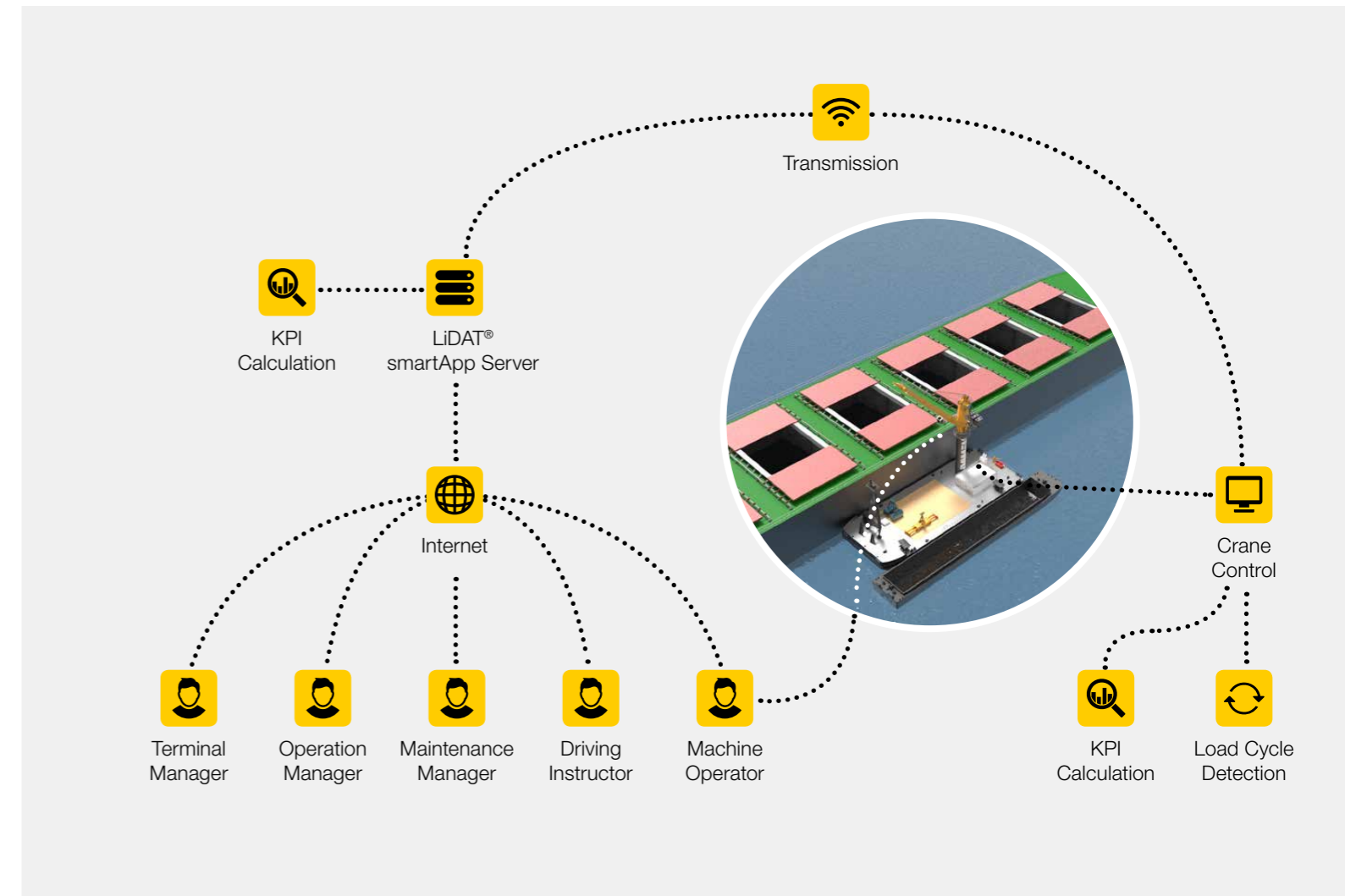
Maintenance

Features

- Extended dashboards relating to machine operation hours, filling levels and temperatures
- Extended reports relating to filling levels and machine operation hours
- Operation Monitoring
- Teleservice



Technical Description



The relevant data generated and preprocessed by the crane control system during operation are transmitted by the established LiDAT® Technology to the LiDAT® smartApp server to be stored and preprocessed. Authorised users can access and download the processed data via LiDAT® smartApp, a software solution which is designed as web application. Liebherr handles the setup and support of the transmission link, hosts the data and maintains the software during the active user subscription.

The Liebherr Group of Companies



Wide Product Range

The Liebherr Group is one of the largest construction equipment manufacturers in the world. Liebherr's high-value products and services enjoy a high reputation in many other fields. The wide range includes domestic appliances, aerospace and transportation systems, machine tools and maritime cranes.

Exceptional Customer Benefit

Every product line provides a complete range of models in many different versions. With both their technical excellence and acknowledged quality, Liebherr products offer a maximum of customer benefits in practical applications.

State-of-the-art Technology

To provide consistent, top quality products, Liebherr attaches great importance to each product area, its components and core technologies. Important modules and components are developed and manufactured in-house, for instance the entire drive and control technology for construction equipment.

Worldwide and Independent

Hans Liebherr founded the Liebherr family company in 1949. Since that time, the enterprise has steadily grown to a group of more than 130 companies with over 41,000 employees located on all continents. The corporate headquarters of the Group is Liebherr-International AG in Bulle, Switzerland. The Liebherr family is the sole owner of the company.

www.liebherr.com