

Evolution of Bulk Handling

SmartGrip®



LIEBHERR

Mode of Operation

SmartGrip® operates as an intelligent system which optimises grab filling rates in a self-learning manner and has the potential to significantly increase bulk turnover. Test and analysis in the field have shown an average grab filling rate of 70%. SmartGrip® utilizes the remaining 30%.

System

Without any additional driver interaction the algorithm learns the machine settings and material properties autonomously within the first 7 lifts. During operation the self-learning system automatically adjusts its behaviour by recognizing bulk density, compression and granularity as well as current frame conditions such as depth of impression or type of grab.

Driver

For crane drivers the estimation of the material density and the right grabbing angle may turn out to be a real challenge. Using SmartGrip® the driver just controls the closing of the grab. The system controls the filling of the grab to suit the load curve of the crane. This leads to a perfect crane utilization with a significant reduction of overloads.

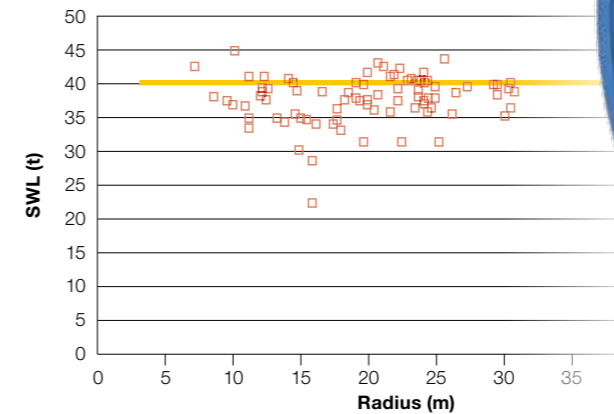


SmartGrip® Benefits

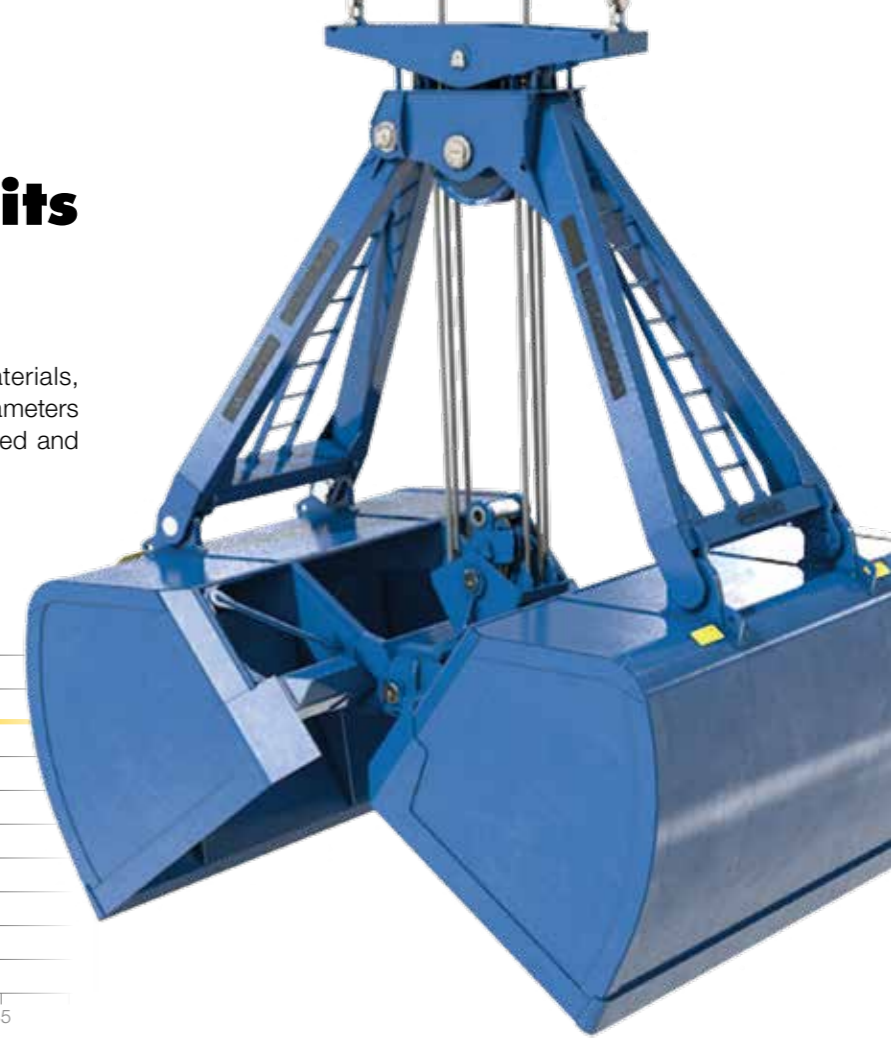
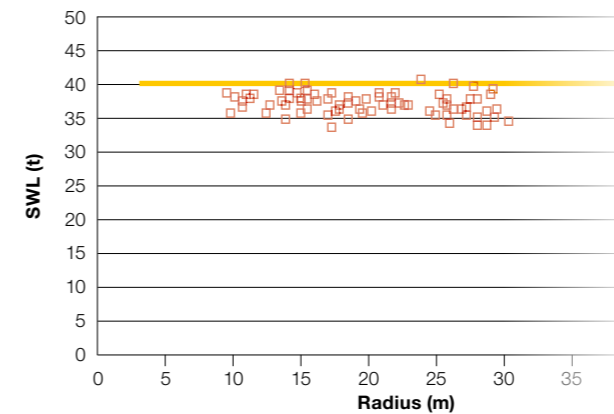
Turnover

Turnover depends on many issues (drivers, materials, logistics, etc.). SmartGrip® addresses various parameters to improve performance by up to 30% for land based and 25% for floating applications.

Load Diagram without SmartGrip®



Load Diagram with SmartGrip®



Optimized Filling Rate

- Independent of incident angles
- Grab volume fits to max. outreach

Reduced Cycle Times

- Less time for grab filling
- No grab re-opening required
- Less power needed

Lifetime

Extended Crane Lifetime

- Reduced dynamic overload peaks
- Bigger grabs can be used

Driver

Reduced Stress

- The system adjusts to different materials and densities
- Significant improvement of less skilled drivers

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