

Material handling machine

LH 120 C
Litronic®

Job Report

The LH 120 C Litronic material handling machine in action at Schrott- und Metallhandel M. Kaatsch GmbH



LIEBHERR

Situation

Scrap recycling protects raw material resources, saves energy and protects the environment. To ensure that the recycling process can be carried out economically the old materials must be collected, sorted and treated correctly so that they can be used as secondary raw materials. Schrott- und Metallhandel M. Kaatsch GmbH is a waste disposal contractor with a highly modern range of machinery and an extensive infrastructure which enables it to make a significant contribution to this process.

The company is one of the most important and largest handling companies for scrap and metals in Southern Germany. When it was founded in 1952 by Margarete Kaatsch, M. Kaatsch Schrott- und Metallhandel was the first step in a successful company history bridging several generations. From humble beginnings with a horse and cart, the company's willingness to accept new production techniques meant that it developed into a handling company with its own port facilities and into a healthy, growing business. In the hands of Managing Director Hermann Wager and Scholz AG in Esslingen since 1988, Kaatsch GmbH has developed into a modern recycling company. The small scrap and metal storage facility from the 1950 has expanded not only in the form of the company's own fleet of vehicles but also with rail and

quay facilities. Since 1982 the company's site has been extended with environmental and bulk goods storage buildings and sound protection systems to comply with environmental regulations. Since 2004 Kaatsch has also operated a waste timber treatment plant. Today the company in Plochingen has over 7,000 square metres of production and storage space on which an average of 500,000 tonnes of material is handled every year.

The company site right on the railway intersection in Plochingen with its own port facilities on the River Neckar is just about ideal for transporting material by rail and water. Large quantities of the treated scrap are loaded into vessels straight from the storage site. The material then goes to supply steelworks in both Germany and elsewhere with this valuable material by waterway which protects the environment and saves energy.

A large number of Liebherr handling machines in various sizes with mobile and crawler undercarriages is used for loading and unloading trucks and railway wagons, for sorting the storing scrap, feeding the 1,200 tonne scrap shears and for loading and unloading ships.



Task

Scrap is a mass volume material which means that transporting it by waterway is an economical solution. An inland waterway vessel on the River Neckar to date has had an average cargo capacity of around 1250 tonnes. This corresponds to around 60 truckloads. The vessels are becoming increasingly larger and they now have a capacity of up to 2000 tonnes of scrap. Since the time when they are tied up costs money, the objective is to load and unload these vessels as quickly as possible.

This results in an increase in loading capacities. This also reduces storage costs since the material is stored for as short a time as possible. To achieve these objectives the company decided to purchase a larger, more efficient handling machine. The requirements for it were more grapple capacity and the ability to get a greater reach and height range.





Solution

A long term partnership has developed between Liebherr and Kaatsch, a specialist in the recycling industry and a technology leader in scrap recycling as a result of the latter's good experience with Liebherr machines. Kaatsch has been using a fleet of 30 Liebherr handling machines with mobile and crawler undercarriages for many years for sorting and handling scrap. In close cooperation with Kaatsch, Liebherr designed and built a handling machine perfectly tailored to the needs of a modern, pioneering scrap and material trading company - the Liebherr LH 120 C Litronic material handling machine which has been in use since 2009 for loading and unloading vessels.

The machine, which weighs around 135 tonnes and develops around 400 kW of power, is equipped with a 15 m industrial-type angled boom, a 12 m industrial-type stick and a grapple with a capacity of 2.5 m³. This balanced industrial kinematic ensures a maximum reach of 25.0 m to the centre of the grapple and a maximum height range of 22.5 m with the grapple open. In addition at maximum radius throughout the swivel range of 360° the machine has a load of 7 tonnes on crane hook. A large undercarriage with a square design provides excellent stability and enables the user to take advantage of the maximum handling capacity.

Coordinated components, the majority manufactured by Liebherr, ensure that the machine is highly economical. The multi-circuit hydraulic system and the Liebherr diesel engine have been perfectly tailored to each other with reduced engine speed and large flow cross-sections in the hydraulic hoses and hydraulic components ensuring extremely low losses. Other features such as the „Positive Control“ hydraulic system ensure fast and precise working movements during the handling

process. Since superimposed operating cycles can be activated individually but also in combination, this ensures excellent use of energy. All these innovations are reflected in drastically reduced fuel consumption.

The LH 120 C material handling machine allows modular, driver-independent joystick programming. This feature makes it possible to program individual settings on the machine for each driver.

Two separate temperature-controlled fans ensure that the hydraulic system, air, water and fuel are kept at their perfect operating temperatures. The separate cooler system is temperature-controlled and thus enhances the machine's energy efficiency. The „Retract arm without pressure“ function is a major contributor to the machine's efficiency. The fundamental benefits of this include:

- Fuel savings - no increase in pressure on the arm cylinder ring side
- Improved performance - the power saved can be used for hoisting
- Higher hoist speed - the complete operating cycle is around 10% faster
- Safety - due to the automatic braking of the arm whilst it is being retracted

The LH 120 C material handling machine is LiDAT-capable which means that the customer can record the machine's relevant operating data at any time, transfer them and evaluate them accordingly. In addition LiDAT supplied service interval information which helps to improve time management for machine maintenance.





Technical Data

LH 120 C Litronic

Operating weight _____ 135 Tonnes
 Engine type _____ Liebherr D 9508, 8-Zylinder-V-Engine
 Engine output _____ 400 kW/543 PS at 1,800 min⁻¹
 Emission stage _____ IIIA

Undercarriage:
 Track gauge _____ 5.70 m
 Wheelbase _____ 7.20 m
 Flat pads _____ 750 mm

Loading capacity

A Dutch inland vessel was loaded with 1,630 tonnes of scrap, the equivalent of 2,500 m³ destined for a French steelworks in approx. 5 hours. Loading straight from the port facility with a swivel radius of 180° allowed the machine to achieve a loading capacity of 300 tonnes per hour.

Equipment

Industrial-type angled mono boom _____ 15.0 m
 Industrial-type stick _____ 12.0 m
 Grapple type _____ GMM 120 with 2.5 m³
 Max. reach _____ 25.0 m
 Max. heap height _____ 22.5 m
 Max. load _____ 7 Tonnes