Job Report

Mining Excavator
R 9150

The Liebherr R 9150 Mining Excavator
at Rotem phosphate mine, Israel
Operated by Taavura Holdings Ltd.

LIEBHERR

Key Facts

- Phosphate belt in the arid region of the Negev desert
- Fuel-efficient Liebherr engine D9512
- 100 t off-highway trucks loaded in six passes
- R 9150 production increased by 26 % compared with R 984 C
- Cab fitted with a pressurization system
- 10.6 m^3 high performance bucket combined with Liebherr GET system

Situation

The Rotem mine is located in the Negev desert in the southern part of Israel. The Negev is crossed by the phosphate belt extending from Turkey to Morocco and includes numerous phosphate deposits in Jordan, Syria, Iraq and Israel. Among these deposits is the Rotem mine, owned by Rotem Amfert Negev Ltd., a company producing phosphoric acids, fertilizers, chemical and phosphate salts. Mining at Rotem mine site is carried out by three contractors using Liebherr 100 t class excavators. One of those is Taavura Holdings Ltd., a Liebherr dealer and customer since 1979 for earthmoving equipment, mining excavators and mobile cranes. In 2015, Taavura was assigned to increase the total amount of overburden to be moved per year by 33 %, compared to 2014.

New R 9150 to Succeed Proven R 984 C

In order to increase their production, Taavura decided to progressively replace its fleet of R 984 C with new Liebherr R 9150. Taavura's R 9150 fleet are to be equipped with a 10.6 m^3 backhoe bucket (vs 8.5 m^3 for the R 984 C) to move overburden material with a loose density of 1.5 t/m^3. To optimize Tavuura's productivity, Liebherr delivered its "High Performance" bucket solution allowing increased volume capacity while maximizing the bucket's structure lifetime. Depending on the type of truck loaded, the production difference expected by the R 9150 is between 15 % and 20 % increase on the R 984 C. At Rotem, the R 9150 loads 100 t trucks in six passes, when R 984 C requires two more passes to do so. During the conducted performance test, the measured cycle times were averaging 22 seconds, enabling the R 9150 to increase productivity by 26 % compared with the R 984 C.

Fuel Burn Efficient V12 Liebherr Engine

The R 9150 mining excavator is equipped with the Liebherr D9512 diesel engine that has been developed to power Liebherr 100 t class mining excavators. This 12 cylinder engine integrates the latest engine management system and has been built for reliable performance in mining application. Thanks to the turbocharger and the common-rail direct injection, the engine delivers an output of 565 kW (757 HP) at 1800 rpm. The R 9150 has an operating weight of 10 t more than the R 984 C and delivers 12 % more gross power, so the theoretical fuel consumption of R 9150 is expected to be approximately 5 % higher than the R 984 C. At Rotem, the conducted performance tests shows a similar fuel consumption per hour for both R 984 C and R 9150. Despite the newness of the Liebherr D9512, its production was the result of Liebherr's experience in diesel engine development and manufacturing; this engine was specially chosen to assist Taavura to meet its expectations regarding machine availability (machine usage to exceed 5,500 hours per year) and operating cost efficiency.

Continuous Performance in most Challenging Conditions

The Negev region is known as being a very arid area with very little rain: conditions that promote the formation of a large amount of dust. Temperatures in this area frequently climb up to 50 °C (131 °F) with very limited air circulation. Those climatic conditions can impair excavator performance if they are not adequately prepared for. As a preventative, the R 9150 integrates a highly performant cooling system using hydrostatic-driven fans and electronic on-demand speed regulation to offer reliable and continuous engine and hydraulic system performance in such warm conditions. To face dust pollution, the air intake system is fitted with additional centrifugal pre-filters placed upstream of basic air filters. This advanced filtration system combined with the dust ejecting system promotes extended air filter replacement and optimal engine internal-combustion to perform. Lastly, the cab is fitted with a pressurization system keeping dust outside of the cab to ensure peak operator comfort and safety.

Technical Data

Operating weight	128 tonnes / 141 tons
Engine model	Liebherr D9512, 12 cylinder
Engine output	565 kW / 757 HP at 1,800 rpm
Fuel tank	1,984 gal / 524 gal

Attachment

Bucket capacity @ 1.5 t / m^3 (2,530 lb / yd^3)	10.6 m^3 / 13.08 yd^3
Liebherr ground engaging Tools size	Z100, CL-profile
Max. digging force (SAE)	530 kN / 119,149 lbf
Max. breakout force (SAE)	620 kN / 139,381 lbf

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