Job Report

Mining Excavator

R 996/R 996 B

The Liebherr R 996 mining excavator
at Sangatta coal mine, Indonesia
Operated by PT Kaltim Prima Coal (KPC)

LIEBHERR

Key Facts

- Open-pit coal mine
- Indonesian province of East Kalimantan
- 24/7 Liebherr on-site service support
- 58 Liebherr mining machines in operation
- Average loading cycles time as low as 30 seconds
- Average productivity of 2,200 BCM/hour for the face shovel excavators

Situation

PT Kaltim Prima Coal (KPC) is a majority owned subsidiary of Bumi Resources Tbk, and is the world's largest exporter of thermal coal. KPC operates a wide scale open-pit coal mining operation in the Indonesian province of East Kalimantan under a contract granted by the government in 1982 and that will remain valid until 2021. Thermal coal shipment started in 1992. Coal production started in 1992 with 7 million tonnes and is expected to reach approximately 55 to 58 million tonnes in 2015, in order to satisfy increasing global demand for thermal coal and despite the decline in coal prices. The approximately 91,000 hectares concession area is composed of two major mining areas, Bengalon and Sangatta, with produced coal reclaimed and transported either by dual 13 km long conveyor to KPC's dedicated port facilities at Tanjung Bara or by truck to the barging facility at Lubuk Tutung for Bengalon coal. KPC carries out its own mining in around 40% of the pits and contracts out a the remainder of the mining requirements. Since 1997, Liebherr has delivered to KPC a large fleet of 600t and 800t class hydraulic excavators complemented by some 100t excavators as well as a fleet of 363t off-highway trucks to satisfy KPC's global coal output challenging objectives while maintaining the best cost efficiency.

19 units of R 996 to load Ultra Class trucks

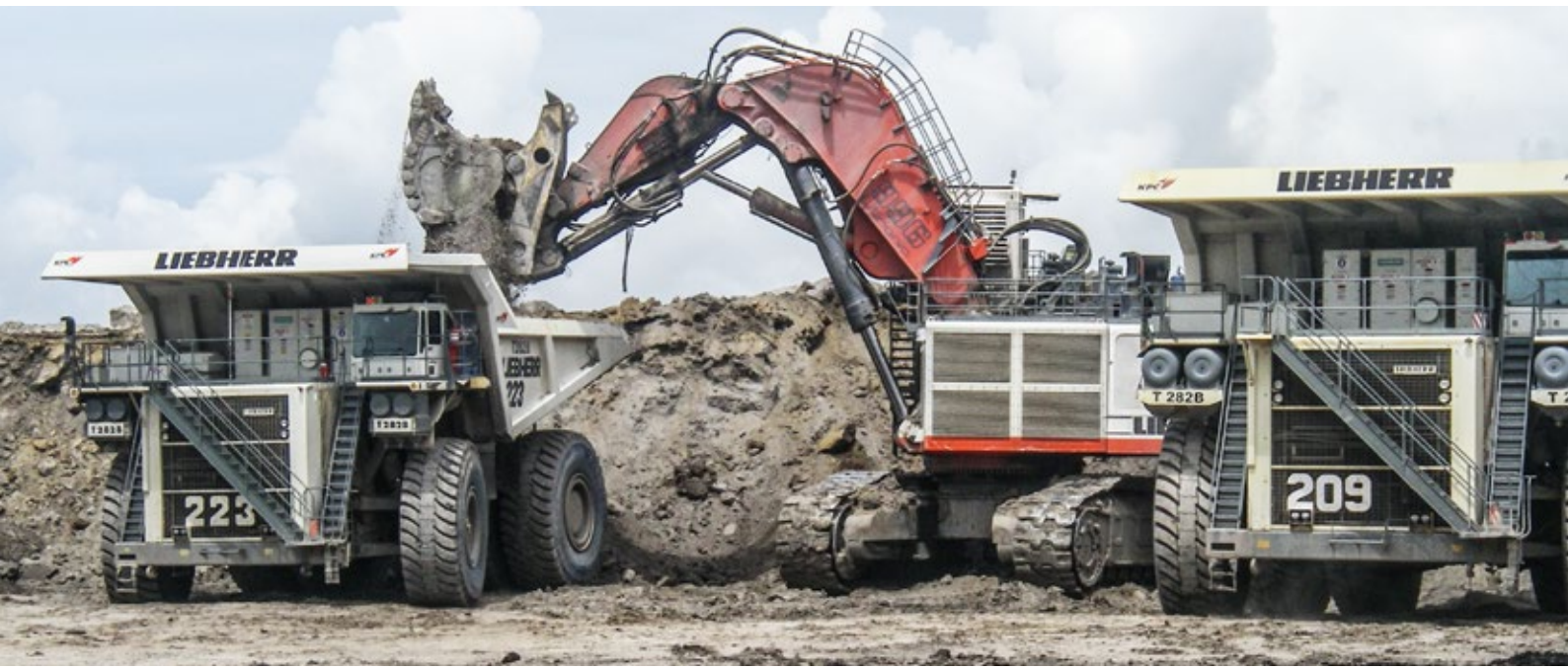
Since 1997, a total of nineteen R 996 / R 996 B, three R 9800 and four R 984 C excavators plus thirty-two T 282 B trucks have been commissioned at Sangatta. One third of the R 996/ R 996 B fleet has been delivered in backhoe configuration and is equipped with a 33 m^3 bucket. The remaining two thirds of the fleet are configured as face shovels and are fitted with 32/34 m^3 bottom dump buckets. The Liebherr R 996/ R 996 B moves material with a loose density of around 1.6 – 1.8 t/m^3 and loads large mining trucks in 4 passes in a reasonably restricted work area, and with an average loading cycles time as low as 30 seconds. Driven by two Cummins K 1800 E delivering 1120 kW or 1500 HP each, the R 996/ R 996 B face shovel reaches an average long term productivity of 2,200 BCM/hour and the backhoes can exceed 2,000 BCM/hour.

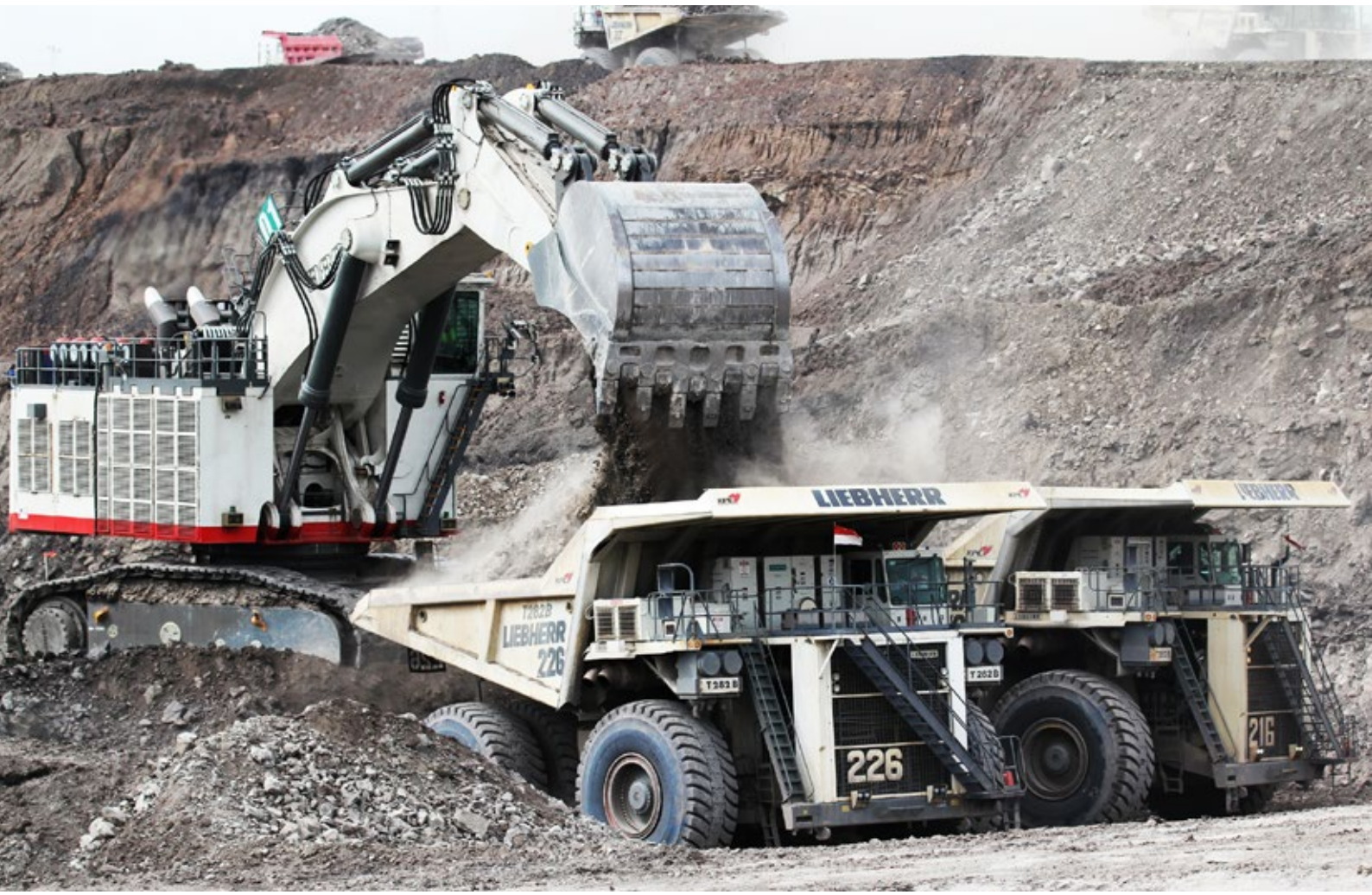
Record 115,000 working hours in tropical climate

Sangatta is situated in a rainforest with annual average temperatures close to 30°C (86°F) with year-round humidity levels going up to 80% and annual precipitation averaging 2200 mm (87 inches). In such challenging mining conditions, the R 996/R 996 B has demonstrated outstanding reliability. Proof of this is shown by the fact that the oldest unit,commissioned in 1997, has accumulated over 115,000 working hours with an annual SMU hours close to 6,700 and is still operating. The R 996/R 996 B includes numerous features to reliably face such conditions of extreme humidity. For instance, the water separator protects the high pressure common rail fuel system that prevents premature wear of the injectors and other enginerelated component failure. The R 996 B is also equipped with final drives using a double lifetime seal preventing mud intrusion that could cause damage or reduce transmission system efficiency.

Local Maintenance and Repair Contract

Day to day maintenance requirements are addressed by the Liebherr on-site service support center, PT Liebherr-Indonesia Perkasa. Preventive maintenance and the parts exchange program are performed on a contract basis with initial operator and maintenance training provided by Liebherr Mining Equipment factories. As part of the MARC contract, Liebherr has built site offices, workshops, stock facilities and also relies on back-up facilities in Balikpapan. Through a team of 170 people, attendance is ensured 24 hours a day, 365 days a year. This ensures the R 996/R 996 B machines are able to reach availabilities exceeding 90% with the Mean Time Between Failure greater than 45 and the Mean Time To Repair less than two hours.





Technical Data

Engine model	Cummins K 1800 E, 16 cylinders
Engine output	2 x 1,120 kW / 2 x 1,500 HP at 1,800 rpm
Fuel tank	13,000 l / 3,440 gal

Backhoe Attachment

Operating weight	672 tonnes / 740 tons
Bucket capacity @ 1.6 t / m^3 (2,69 lb / yd^3)	33 m^3 / 43.16 yd^3
Max. digging force (SAE)	1,535 kN / 345,082 lbf
Max breakout force (SAE)	1,640 kN / 368,687 lbf

Face Shovel Attachment

Operating weight	676 tonnes / 745 tons
Bucket capacity @ 1.6 t / m^3 (2,69 lb / yd^3)	34 m^3 / 44.5 yd^3
Max. crowd force (ISO 6015)	2,330 kN / 523,804 lbf
Max breakout force (ISO 6015)	1,930 kN / 433,881 lbf

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