

**Liebherr Mining Shovel and Truck  
located at the Sishen Mine Site, Operated  
by Hitricon Contracting in South Africa.**



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## Situation

The Sishen mine, owned by Kumba Resources, is one of the largest iron ore mines in South Africa. As part of their continuing expansion projects, Kumba Resources has signed a contract with Hitricon Contracting to move additional material.



## Assignment Report

Given the size of the contract, Hitricon has elected to add additional equipment to the existing fleet that is working at the mine. In order to reduce the operating costs and increase production, Hitricon has chose to purchase one Liebherr R 996 Hydraulic Shovel, with a bucket size of 30 m<sup>3</sup>, and three Liebherr T 282 Diesel Electric Haul Trucks, with a payload capacity of 345 t.



## Solution

The Shovel and Trucks were commissioned in the third quarter of 2003. The Liebherr T 282's are being used to haul clay/shale and calcrete with varying material densities of 1.93 t/m<sup>3</sup> to 2.3 t/m<sup>3</sup>.

The T 282 dump body has been specifically designed to prevent spillage of the oversized material to withstand the abrasive ness as well. The trucks are hauling on a distance of approximately 2,750 m with an average round trip cycle time of 20 minutes.

The T 282 is the largest haul truck currently operating in Africa.

## Performance

Given the density of the material, the length of the haul roads, and the payload of the haul trucks, the R 996 is currently 7 to 9 passing in order to optimize the shovel production time and reduce potential "waiting time" for the trucks.

The T 282's are cycling faster than their smaller DC siblings. By using the Siemens AC drive system, the T 282's can haul a nominal payload of 345 t up an effective grade of 12.5% at speeds of 8 to 9 km/h. A top speed achievable for the T 282's on flat haul roads is 64 km/h.

In order to support this project in South Africa, Liebherr has provided direct factory assistance at the mine site. Technical Supervisors from the Shovel and Truck factory are assisting with the start up and support of the project. In addition, our local Liebherr Company, Liebherr-Africa – located in Johannesburg, is providing additional technicians to work in conjunction with the Hitricon service technicians already on site. These people are working at the mine to perform all the necessary maintenance and planning for the equipment. Up to 8 Liebherr people will be employed at the mine site to support the Liebherr fleet of three T 282's, one T 262 and one R 996 Shovel.

The demands placed on loading machines vary with the mining conditions and the material to be moved. By properly matching the loading tool with the mine conditions, the R 996 provides

- high loading capability with
- high digging forces,
- low operating costs,
- highest possible availability,
- and long life expectancy.

The R 996 hydraulic shovel and T 282 haul trucks provide optimum levels of production in demanding applications. Both of the machines have projected lives of 60,000 hours or ten years. Thus providing Hitricon Contracting many years of high end production with low operating costs.



## Technical Data

### R 996 Litronic

Operating weight \_\_\_\_\_ 656 t  
Engine \_\_\_\_\_ 2 Cummins Diesel K 1800 E  
Engine output per SAE J 1995 \_\_\_\_\_ 2240 kW/3000 HP  
at 1800 RPM

### T 282

Empty vehicle weight \_\_\_\_\_ 240 t  
Payload \_\_\_\_\_ 345 t  
Gross vehicle weight \_\_\_\_\_ 585 t  
Engine \_\_\_\_\_ Cummins Diesel QSK 60  
Engine output per SAE J 1995 \_\_\_\_\_ 2014 kW/2700 HP  
at 1800 RPM  
Drive system \_\_\_\_\_ Siemens, Gear ratio 37.33 : 1  
Dump body \_\_\_\_\_ Liebherr  
Capacity@ 2 : 1 heap \_\_\_\_\_ 200 m<sup>3</sup>

## Attachment

Shovel attachment  
Bottom dump bucket  
Capacity SAE heaped \_\_\_\_\_ 30,0 m<sup>3</sup>  
Cutting width \_\_\_\_\_ 4700 mm  
Max. crowd force \_\_\_\_\_ 2340 kN/238,5 t  
Max. breakout force \_\_\_\_\_ 1905 kN/194,2 t