Grasberg is defined by the spectacular high-altitude open pit mine but it's underground where the action now is and where more than 400 small bore Cummins engines are in operation.

TOUGHING IT OUT IN BRUTAL EXTREMES

A fleet of 300-plus Western Star trucks are used as support vehicles for the operation of the mine. Since 2012 all new Western Stars have had Cummins ISX 400 engines.

Cummins South Pacific and Indonesian partner PT Altrak 1978 are ensuring the success of a vast amount of equipment at Grasberg, one of the world's great mines.

More than 700 Cummins engines are in service at Grasberg – the mine in Papua, Indonesia, that has reached almost mythical status.

Grasberg is certainly one of the world's great mines: The iconic copper and gold mining complex incorporates both open pit and underground mines, and its high-altitude operations are on a scale unique even by the standards of modern mega-mining.

Some call Grasberg – built at an oxygen-depleted altitude of 3,500 to 4,285 metres (11,500 to 14,000 ft) – the most spectacular mineral deposit ever found. The isolation, high altitude, and incessant rain and fog also contribute to one of the world's most hostile mining environments.

In 2016, Grasberg – operated by PT Freeport Indonesia – produced more than 500,000 tonnes of copper and over 1 million ounces of gold.

'Cumminising' the mine.

Ten years ago, Cummins South Pacific regional branch manager Ralph Cremer, who oversees the Cummins operation at Grasberg, left no doubt as to the company's intentions: "One of our goals is to 'Cumminise' the Grasberg complex, and we're well on the way to achieving that with our dedicated team on site," he said at the time.

Six years later, the 500th Cummins engine entered service at Grasberg (in 2013), and today the Cummins total stands at over 700. These don't include the 50 Komatsu 930E haul trucks with 2700 hp Cummins QSK60 engines which have now been shipped out as the open pit nears the end of its life.

"The real challenge now at Freeport is the big transition to underground mining," says Stewart Maclennan, Cummins' operations manager at the mine. "As the open pit winds down and production moves into the massive GBC (Grasberg Block Cave) mine, Cummins' operation is changing dramatically with a population of more than 400 small bore engines to be maintained in a challenging underground environment."

> *The isolation, high altitude, and incessant rain and fog contribute to one of the world's most hostile mining environments.*

He points out that a dedicated team of technicians from Cummins South Pacific and Cummins' Indonesian distributor PT Altrak 1978 works around the clock to keep the fleet of over 400 engines running at high availability. In fact, PT Altrak has around 135 technicians in the forever growing underground mine that has 450 km of road and 50 km of rail lines.

The star player underground.

The 6.7-litre QSB is Cummins' star player in the transition to underground mining, and has proved itself time and again for reliability and durability. The QSB engines are engaged in a variety of underground tasks, propelling concrete agitators, flat-deck trucks, crane trucks, scissor lifts and loaders. Cummins power can also be found in a wide variety of other applications at Grasberg, ranging from generator sets, water pumps, welders and compressors to cranes and forklifts.

Ten German-built Zephyr locomotives are also Cummins-powered and they will support the targeted 130,000 to 160,000 tonnes of ore per day from the GBC underground mine to the oreflow and concentrating process.

While there's a vast amount of Cummins-powered equipment involved in the actual mining at Grasberg, a fleet of 300-plus Western Star trucks are used as support vehicles for the operation of the mine; they do not haul any mined product.

In 1992, Western Star sealed a significant contract with Freeport and since then has provided hundreds of trucks which carry containers of consumables as well as the tyres, equipment, fuel and anything else that needs to be hauled to the mine site.

Given the cost and constraints of air transport, nearly all major supplies and equipment arrive via sea port and are hauled up the main supply route to the mine.

Since 2012, all the new Western Stars that have been put into service by PT Freeport Indonesia – 121 units – have Cummins ISX power, 400 hp to be exact. Now that rating may suggest a fairly leisurely run to the Grasberg mine site. Nothing could be further from the truth, with grades as severe as 30% on the HEAT – Heavy Equipment Access Track.

However, the Western Stars – brutish 6900 XD models with the Cummins ISX driving through an automatic transmission to a 6x6 drive configuration – handle the conditions remarkably well and are a critical cog in the overall efficiency of the mine. ■

Ralph Cremer (right), who has headed up Cummins South Pacific's operations at Freeport for 16 years, with Cummins Commentary editor Murray Clifford about to fly to minesite.

More than 400 Cummins QSB engines power a variety of underground equipment at the Grasberg complex.

Western Stars have a 6x6 drive configuration to handle the challenging environment.

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