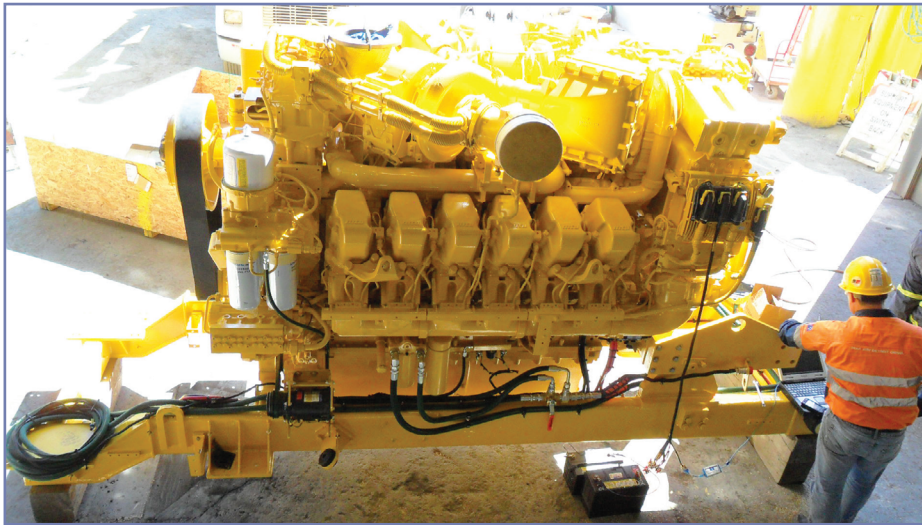




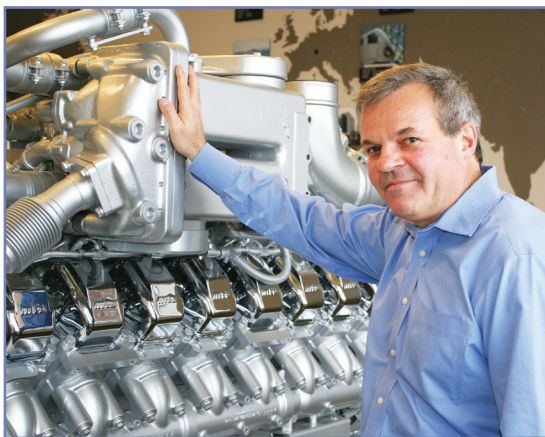
With a strategic approach to each repower project, the equipment and engine can be optimised as a system

Mining repowers: dos and don'ts

Ran Archer, senior sales manager at MTU America, provides a crash course on hot topics in engine repowers today

"Repowers are almost always more expensive than simply rebuilding a tired engine"

Ran Archer,
senior sales
manager at
MTU America



Engine repowers are the mighty equaliser in today's mining industry. Mining operations are confronted with an incredible variety of terrain and extraction challenges, ranging from treacherous coal removal in Appalachia's mountaintops to punishing temperatures in Arizona's desert copper operations.

These dramatic and highly variable differences can influence the performance of your mining equipment, and the ability of diesel-powered vehicles to operate effectively at their rated power.

When considering a vehicle repower, safety, load profile and emissions

regulations should be carefully evaluated to ensure that the power rating of the new engine complies with environmental standards and that production targets can be achieved. If they don't, the result is sub-optimal system operation, lower efficiency, higher emissions and greater operating costs.

With a strategic approach to each repower project, the equipment and engine as a 'system' can be optimised to achieve the ideal balance between engine power capability and applied load, with the most efficient use of fuel consumption and maintenance spend.

For engines, the mighty equaliser is brake-specific fuel consumption (BFSC), which provides an indication of fuel savings or expense, but ultimately, the complete vehicle and engine operating as a system defines performance and the total cost of operation.

Read on for a handy "dos and don'ts" guide that will help to make your next repower successful.

DO: Work closely with your distributor and engine manufacturer

There's no better way to ensure that your entire system will be set up for optimal performance than working with your local service distributor and

engine manufacturer. Together, in close partnership, they have extensive engine-application knowledge, and understand your priorities and concerns.

Whether engine power is upgraded or downgraded, they will protect your investment by ensuring that your equipment performance and cost expectations are achieved. Their ultimate marker of success will be to ensure that your repower leverages fuel consumption per unit of production while maintaining and improving safety, operational uptime and emissions compliance with current standards. Tapping into their engine knowledge will protect your investment and enable your haulage and loading cycle to hit the sweet spot of reliable and efficient power application.

For a real-world example, let's look to the cowboy state: haul trucks operating in Wyoming's coal basins have an exceptionally low load factor by mining standards – less than 30% in haul trucks.

When equipment operates in a low load-factor application such as this, there is a risk that excess available power results in excess fuel burn. This equipment is a prime candidate for a repower that downgrades engine power.

The delicate balance between power downgrade and maintaining productivity must be analysed carefully. If the power pendulum swings too far to the downgrade side, an engine could end up under-powered for the equipment's load factor and mines can experience premature failure of the engine and other major equipment components.

DO: Make sure to measure KPIs, such as cost-per-tonne moved and ROI

Repowers are almost always more expensive than simply rebuilding a tired engine. Factors such as engine availability and reliability are key to a successful repower programme. Measuring lifecycle costs and comparing them with tonnes of material moved is a consistent method to determine the effectiveness of the repower.

DON'T: Forget to check for other system upgrades

You've already balanced the cost of a repower with projected fuel savings and have determined that installing new engine technology is a worthy investment, but have you explored ►



A repower in progress

► whether there is an opportunity to upgrade other system components?

Maximise the necessary equipment outage that comes with the repower installation to improve injector life, or incorporate other value-add options such as a larger battery-charging alternator. Work with your distributor to determine which system upgrades are available and would improve equipment performance at the time of your repower.

DO: Abide by federal engine disposal regulations

Working closely with your engine distributor and manufacturer will ensure that your repower is by the book. It's a little known fact that the US Environmental Protection Agency (EPA) forbids the reselling or reuse of engine cores domestically or internationally in an effort to standardise and regulate engine emissions across the board.

Repowered engine cores must either be destroyed or sent back to the manufacturer to be remanufactured and stamped with a new serial number. If you miss this step, your mine could incur hefty federal fines that accumu-

late on a per-day, per-engine basis.

With financial implications this high, mishandling a repowered engine core could bankrupt a mine, and potentially take down an entire company.

DON'T: Underestimate improvements in overall operation and ease of use

When your repower is complete and your equipment is back in action, you might be surprised by improvements in noise emissions, responsiveness and manoeuvrability.

By optimising the match between load factor and horsepower, improvements are seen in areas besides fuel economy – the entire system improves.

Engine repowers allow mining operations to leverage new technology in existing equipment without the capital investment of a brand-new machine, giving mines the opportunity to safely maximise and improve fleet performance, durability, fuel economy and operator experience.

With a custom-equipped fleet repower, your mine will be fine-tuned and primed for optimal performance that will enable maximum return on investment. ♥



MTU Repowering Solutions:

**More Profit. More Power.
More Productivity.**

The world's most productive mine operations count on MTU engines. Day in and day out, they perform under extreme conditions. When it's time to repower, you can count on MTU to boost your equipment's performance, while reducing fuel, maintenance and repair costs.

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