

CSIR to showcase tech, facilities at Mining Indaba 2025

Celebrating its 80th year of existence this year, the CSIR has a track record of serving the mining industry with research and innovation, products and services to ensure zero harm, legal compliance and optimal operations. At the 2025 Mining Indaba in Cape Town, from 3 to 5 February, the CSIR will be part of a proudly South African pavilion hosted by the Department of Minerals and Energy to showcase a selection of current capabilities based on eight decades of investment and innovation.

Presented under the theme "Future-Proofing African Mining, Today!", the event is an opportunity to reveal advances in mine modernisation driven by fourth industrial revolution (4IR) tools such as digital twinning of mobile machines, a rock engineering assistant, virtual reality training for underground emergencies, **laser-based refurbishment** of high-value components, systems for integrated mine operations control rooms, defences against cyber threats, green energy usage and metallurgical treatment technology that prolongs the useful life of machinery.

Below, we highlight some of the technologies and expertise that will be on display:

WATCH: Mechanical testing, rope testing and self-contained self-rescuer testing



The CSIR ensures that products in the mining industry and beyond are safe and of high quality. Our rope testing laboratory, self-contained self-rescuer testing laboratory and mechanical testing laboratory are national assets in terms of the facilities and expertise we have available to support South African businesses. For over 80 years, mines, manufacturers and users have relied on our technical expertise and testing facilities to adhere to legally mandated regulations and international standards, as well as for research and development.

The mining sector is critical to the national economy and one of the largest employers in the country. This brings with it strict legal regulations and standards to underpin safe working practices. The CSIR is a trusted partner to the sector by offering intensive underground mine safety training, managing laboratories for testing hoist ropes, breathing apparatus and canisters, and performing research into human-centred mining approaches. Based in Johannesburg, these laboratories are unique in South Africa and are recognised as critical for mining operations and innovation.

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New Hot Isostatic Press facility at the CSIR ensures integrity of parts and components

At this year's Mining Indaba, visitors will be given a glimpse of the benefits of **Hot Isostatic Pressing** (HIP), made possible through a new facility at the CSIR campus in Pretoria. This initiative is funded by the Department of Science, Technology and Innovation.



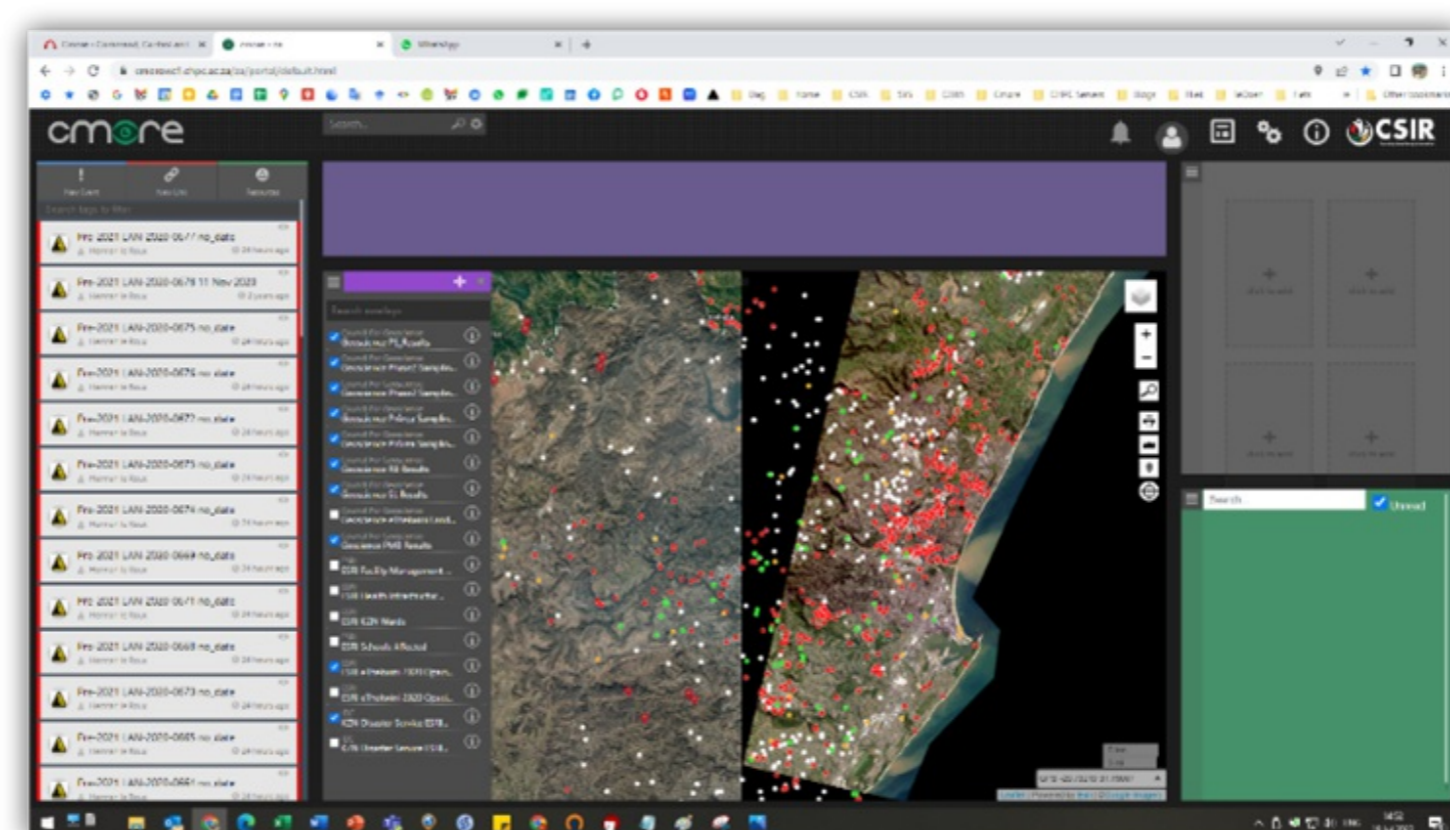
HIP is a specialised manufacturing technique employed particularly in industrial sectors to eliminate internal defects that arise during the initial manufacturing process. This is achieved by subjecting components to a blend of high temperature and gas pressure within a regulated environment. Click [here](#) for more information.

High-power lasers: faster repair of high-value mining equipment and components



The CSIR's **laser technology** enables the strengthening of parts through shock peening, refurbishment or repair instead of replacement, component printing, welding, cladding or cutting. Samples will be on show at the 2025 Mining Investment Indaba. Click [here](#) for more information.

Cmore software can help mines keep track of vehicles and people



Cmore is a secure software that disseminates situational awareness data. It can be used in mining control rooms to assist with operations and enhance safety. It is a proudly South African-designed and developed technology. It has been specifically built with the country's national security interest in mind and serves as a collaboration platform for national security capabilities.

As the country's premier multidisciplinary science council, manufacturers and users in the mining industry rely on the CSIR's scientific and technological support.

The CSIR has invested in scientific infrastructure over eight decades and houses a suite of testing, evaluation and measurement laboratories in domains ranging from aerodynamics and radar to bioprospecting, batteries, ballistics, optronics, robotics, water, wind, air and dust. For more stories, visit the CSIR website at www.csir.co.za

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