HARNESSING CONTINUOUS INNOVATION

OPERATING PILLARS AFFECTED	Safety, health and well-being	Costs	Quality	Volume
STAKEHOLDERS	ORGANISED LABOUR	EMPLOYEES	SHAREHOLDERS	CUSTOMERS
OUTCOMES DESIRED	Total returns	Assured product	Economic value	Better lives

WHAT WE DID IN 2020

SUCCESSES

Delivered business improvements through the testing of the Continuous innovation process. More than R900 million in continuous innovation opportunities identified in Integrated Shared Services (ISS) and the Metallurgical operations

Deployed idea and innovation management platforms to support the continuous innovation process

Established class-leading data architecture designed to adopt and scale digital technology effectively

Completed the development and testing of a Group-wide data visualisation platform and successfully scaled it to the SA PGM operations

CHALLENGES

Determined multiple limitations of specific technologies

Proliferation and adoption of digitalisation remains challenging within the organisation

The Group acquisitive growth strategy presents challenges with different legacy systems that complicate our objective to standardise and globalise a digital strategy

The world stands on the brink of a technological revolution that will fundamentally alter the way people live, work, and relate to one another. It is in this context that Sibanye-Stillwater's drive to innovate, adopt new technologies and digitalise is not only vital to delivering value through the improvement of efficiencies and productivity across the Group but also in staying competitive in an increasingly technology-dominated business environment. It is the Group's ultimate objective to become an innovative, technologically advanced, and digitally integrated mining organisation.

SDGs reflected in this section:

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

CONTINUOUS INNOVATION

Technology and Innovation is contained within the Group Technical function and is responsible for implementing a comprehensive and cohesive global technology and innovation strategy. This strategy is fully aligned with the safe production strategy of creating an enabled environment for empowered people using systems that support the broad-based adoption of innovation, technology and digitalisation. It is also underpinned by our CARES value proposition.

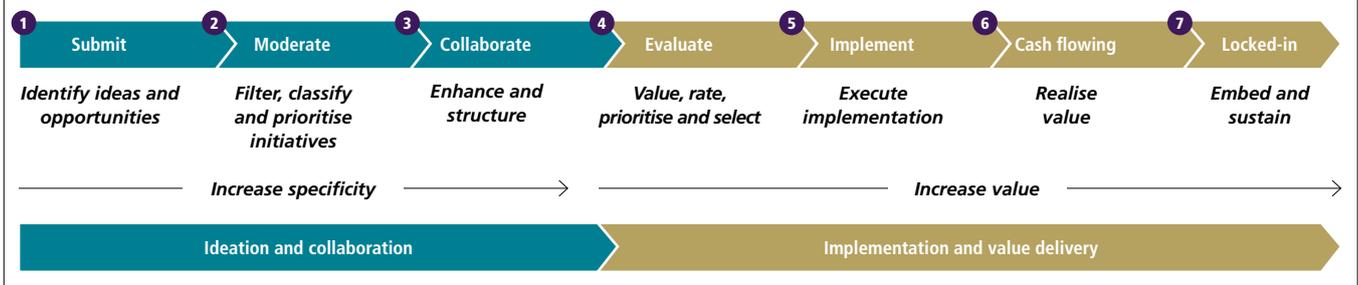Details of our technology and innovation strategy can be found on page 227 of the 2019 Integrated Report available at *https://www.sibanyestillwater.com/news-investors/reports/annual/2019/*.

"Sibanye-Stillwater has adopted a 'digital first' approach, which not only adopts digital technology but creates cultures, structures and processes that support digital transformation."

Although the vast amount of internal time and resources allocated to technological advances is, at times, difficult to measure the full extent of resources deployed to make these advances, we estimate expenditure of about R52 million in 2020 compared to R39.7 million in 2019.

CONTINUOUS INNOVATION PROCESS

To support the strategy, Technology and Innovation has developed and has been in the process of implementing the continuous innovation process. This process, which is aligned to the technology strategy, is designed to embed the concept of innovation in the broader organisation. Beyond this process, Sibanye-Stillwater intends to align operating models, build capability and develop accountability for innovation within all areas and management structures as core functions to the business.

Underpinned by our structured Continuous innovation process

1 Submit	2 Moderate	3 Collaborate	4 Evaluate	5 Implement	6 Cash flowing	7 Locked-in
Identify ideas and opportunities	*Filter, classify and prioritise initiatives*	*Enhance and structure*	*Value, rate, prioritise and select*	*Execute implementation*	*Realise value*	*Embed and sustain*

Increase specificity →   Increase value →

Ideation and collaboration	Implementation and value delivery

In an internal survey of the organisation, 75% of respondents said they believed they had an innovative idea that could add value to the organisation and would appreciate the opportunity to implement ideas.

Underpinning the continuous innovation process is Idea Drop, an application launched in November 2020 to support the idea management process represented in steps 1-3 in the preceding image. This Group-wide application is used to solicit ideas from the Group for continuous innovation. It has broad functionality, both in terms of employees being able to submit challenges and ideas and management being able to call for solutions to solve specific challenges relating to a wide array of competencies. The launch of this platform, in support of the continuous innovation process, reaffirms Sibanye-Stillwater's people-centric approach and focus on technology and innovation across the organisation.

Alongside this initiative, Sibanye-Stillwater continued to run its Proof of Concept for the innovation management process, represented as steps 4-7 in the preceding image. This was done through the Integrated Shared Services division and one of the gold metallurgical facilities. This has, to date, resulted in a pipeline of more than R900 million annualised benefit in continuous innovation opportunities, which will be delivered over the next 12 to 18 months.

Key to driving a innovation process has been continuous capability building and the implementation of suitable management platforms. Moreover, supporting line responsibility has been

established throughout the Group in that all senior managers are now considered innovation ambassadors with supplementary innovation officers and champions being appointed in areas of the business that support the platform and process.

DRIVING A DIGITAL FIRST APPROACH

Group Technical's priority and focus in the year under review was the repositioning of Sibanye-Stillwater as a 'digital first' organisation.

The Group has, for many years, embraced digitisation, digitalisation and digital transformation as a means to improve efficiencies and productivity and enhance the creation of value for all stakeholders. We are, however, aware that the holistic digital transformation of Sibanye-Stillwater cannot be achieved just through the adoption and implementation of digital technologies; the Group's inherent culture, processes and structures need to be aligned to facilitate this journey and support digital adoption.

It is in this context that Sibanye-Stillwater has adopted a 'digital first' approach, which takes the digital transformation journey to the next level. Becoming a digital-first organisation requires a fundamental change in thought and practise. It means reconsidering every aspect of a business, from the tools employees use for the simplest of everyday tasks to the entire organisational structure of a company. We have therefore begun to shift our approach from the utilisation of digital technology in a standard way to one that applies and adopts digital solutions to realise opportunities and address challenges.

Sibanye-Stillwater defines a digital first organisation as one that, not only adopts innovation and digital technology, but creates cultures, structures and processes that support digital transformation and looks to technology or digital solutions to realise an opportunity or to solve problems.

Mechanised mining at the US PGM operations

HARNESSING CONTINUOUS INNOVATION CONTINUED

The digital first philosophy is being driven by Group Technical, which has been positioned to lead the philosophy across the entire organisation, leveraging its cross-functional technical influence and shared service infrastructure. In 2020, the priority focus was to drive the philosophy and ensure its adoption across Sibanye-Stillwater. Simultaneously, the roles of all the Group Technical discipline heads were repositioned to include a strong digital element.

In 2020, this digital first philosophy was tested in the various areas with considerable success. The intention is to continue rolling it out to the various operations in the early months of 2021.

OPERATIONAL DATA VISUALISATION PROGRAMME

A flagship initiative that has proved to be not only the foundation of the digital strategy but also the embodiment of the digital first philosophy is the operational data visualisation programme. Data visualisation is the graphical representation of information and data. By using visual elements such as charts, graphs, and maps, data visualisation tools provide an accessible way to see and understand trends, outliers, and patterns in data thereby telling a clear and compelling story. Data visualisation facilitates intelligent decision making, which can have a significant impact on a business. The programme is intended to deliver semi-real-time information on operational metrics that enable period-concomitant and proactive remediation of negative trends as opposed to reactive remediation over a longer term. Management is now able to see trends daily rather than monthly.

During the year under review, Group Technical, in collaboration with the SA gold operations, completed what was essentially a three-year long project to integrate and align all available digital data, particularly relating to safety and health and production, by means of data visualisation techniques and platforms. The result of this project was the establishment of a baseline of all relevant data and the development of a comprehensive digital dashboard presenting easily accessible, and key

operational information. Much effort was put into structuring the process correctly and ensuring protocols were in place for this new dashboard to operate and be utilised effectively.

Another significant outcome of this project has been the consolidation of disparate data sources into a single, structured database. This has enabled data and information access from any operation in any location.

A degree of change management has been necessitated with the implementation of this new platform. Whereas management would previously rely on production and safety data from multiple reports and sources, they can now access all the above from a single point. This has necessitated numerous positive management philosophy changes, which have been facilitated and supported by alignment and training.

This operational data visualisation programme highlights the efficacy and positioning of Group Technical within the broader Group and of the collaboration with technical functions to create user-driven digital solutions. The project will be rolled out to the Group's other operations in 2021 and it is anticipated that Sibanye-Stillwater's future analytics will all be based on this system.

RESEARCH AND DEVELOPMENT PARTNERSHIPS

Through its drive to embed the digital first philosophy across the organisation, we have realised that the organisation and, more importantly the mining industry, is still digitally nascent. A lack of digital and data density across a vastly complex value chain limits Sibanye-Stillwater's ability to adopt off-the-shelf technology without additional research and development. Moreover, to be truly digitally disruptive, the mining industry needs to look outward and evolve its thinking to address key limitations, broaden horizons, develop fit-for-purpose solutions, and maximise returns on research and development investments.

It is in this context that digital technology is consuming considerably more focus within the research and development

sphere of the business. This is undertaken principally through the DigiMine initiative, a digital mining laboratory, situated at the University of the Witwatersrand, and run in partnership between Sibanye-Stillwater and the Wits Mining Institute (WMI).

DigiMine is equipped with digital systems to enable hands-on training and research for the mine of the future. The agenda includes any digital advances that can reduce risk in the mining environment, which includes systems among others for communication, monitoring positioning, navigation, detection of abnormalities and risk management.

DigiMine is funded under two separate agreements: a primary research anchor agreement which, to date, has totalled R27.5 million over a six-year period (R12.5 million covering 2015 to 2017, and R15 million covering 2018 to 2020) and has been renewed at R15.5 million for the next three years (covering 2021 to 2023). The Anchor agreement funding supports fundamental and applied research efforts within DigiMine and provides for student support and infrastructure upgrades in the Wits Mining Institute.

A separate agreement of R30 million (covering 2019 to 2021) was implemented post the Wheaton transaction. The Wheaton Agreement is focused on further bridging the gap between fundamental and applied research, and the commercialisation and adoption of concepts and solutions that are borne out of the anchor agreement.

The Anchor agreement for 2021 to 2023 has been approved.

"The success of the Operational Data Visualisation Programme demonstrates the value of our organisational positioning and previous investment in foundational elements that support our Digitial First strategy."

DigiMine core focus areas	Progress in 2020
Fast-tracking of WMI-initiated technologies and prototypes through DigiMine, in partnership with the Tshimologong Precinct	DigiMine formed a partnership with the Tshimologong Precinct. Owned by the University of The Witwatersrand, Tshimologong is where the incubation of digital entrepreneurs, commercialisation of research and the development of high-level digital skills for students, working professionals and unemployed youth is undertaken.

Current projects include PPE manufacturing for Sibanye-Stillwater health personnel and mineworkers through laser cutting of shields to protect against infectious and viral diseases such as COVID-19, analysis of specific absorption rate in humans' wearable wireless devices in underground mines, and advanced metal accounting principles and application.

A key fast-track initiative, which supports the Group's broader ESG strategy, is research and development into advanced tailings monitoring and management strategies. The research to date has covered a benchmarking study on best-in-class tailings management policy and strategy, identifying potential areas of improvement. Phase 2 of the project will focus on developing digital practices and systems that align with best practice and enhance the Group's ability to ensure tailings performance beyond compliance. |
| Fast tracking tailings management best practice | The initial phase of the research consisted of a global analysis of tailings legislation and best practice guidelines which informed a consolidated set of management philosophies and procedures. Phase two will comprise an investigation into digital systems and solutions that solve gaps identified in the initial research. The net result is expected to be a comprehensive digital system that supports tailings management beyond compliance. |
| Fast-tracking of mine seismicity research | The four focus areas in 2020 included:

• adaptation and transfer of technologies to measure stress along boreholes

• integration of mine tremor source parameters and geological interpretation of 3D reflection seismic to gain a better understanding of seismogenic structures

• modelling of the rock mass response to seismic energy release

• a review of Sibanye-Stillwater's seismic management practice

Please refer to page 207: *Continuous safe production – Rock mass management* |
| Enhancing the sustainability of the WMI and DigiMine | A fund to ensure the sustainability of DigiMine and the various initiatives has been established into which R1 million is deposited each year. By the end of 2020, Sibanye-Stillwater's total contribution to this interest-bearing project was R4 million. |
| Enhancing the delivery structure for the research and development agenda | The delivery structure is designed to create the necessary capacity required to enable efficient and contributory communication between DigiMine and Sibanye-Stillwater's technical resources. |
| The creation of the Sibanye-Stillwater Health and Safety DNA project | Projects include digital solutions for talent recruiting, onboarding and development of induction material during onboarding that support a digital first, and people-centric approach.

Please refer to page 188: *Empowering our workforce* |

HARNESSING CONTINUOUS INNOVATION CONTINUED

In addition to those five core areas, increased attention was given to artificial intelligence (AI) and algorithm development, both of which are key enablers for automation. The functionality delivered by AI is making the mine of the future look very different; it will be managed differently and will require professions and skills that do not exist today.

In preparation for the adoption of AI, DigiMine has started researching and assessing technologies that support the digitisation and automisation of the mining value chain, considering a typical underground conventional deep-level gold mine.

DIGITAL TWINNING

Sibanye-Stillwater uses digital twin simulation technologies to improve and sustain operational efficiencies within its mining operations. The digital twins provide integrated and dynamic simulations capability and are powerful tools for the improvement of mine operations and services, including pumping, refrigeration, ventilation and compressed air, to name a few. These simulations allow root cause analyses of existing operational inefficiencies, the identification of cost-effective solutions and opportunities for decarbonisation. The digital twins are also used for scenario planning and to predict future operational constraints and changes, enabling optimised future mine planning and energy management. The figure above illustrates a digital twin for an integrated cooling and dewatering network within our gold operations.

The ability to accurately predict the impact of operational improvement solutions on the mining environment is a significant advantage of the technology. This reduces the risk of implementing new system configurations and results in effective project management strategies while avoiding unnecessary implementation and trial costs. The digital twins can also be used to determine the optimum mining operation at minimum energy consumption. By comparing this to real-time measurements, operational inefficiencies
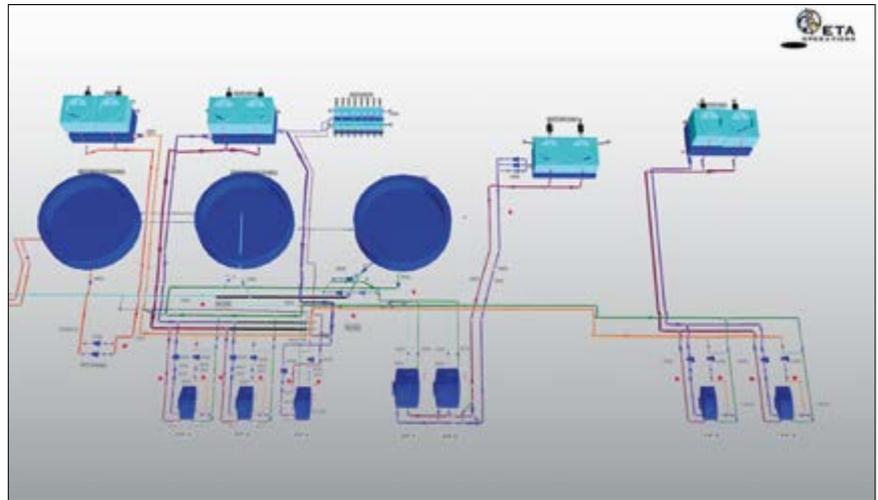
Kloof (at SA gold operations) cooling and water reticulation digital twin

can be pinpointed and corrected. In addition, this will enable accurate benchmarking between operations.

The Group has implemented several digital twins across the SA operations which have played a significant role in reducing 159GWh of electricity consumption and abating 165,270t CO_2e of greenhouse gas emissions across these operations in 2020, thereby enabling an electricity cost saving of R215 million. It is anticipated that the enhanced adoption and integration of digital twins within our business will exponentially unlock operational improvements and benefits.

INFORMATION AND COMMUNICATION TECHNOLOGY

The governance and management of information and related communication technologies (ICT) has become increasingly critical as our dependence on the use of technology to share and collect information has increased exponentially. See Corporate governance for more information on the governance and management of ICT.

A key strategic focus area was the implementation of our ICT operating model at our Marikana operation. This included the greater insourcing of ICT services and system integration/consolidation of infrastructure. Total annual savings on the back of the successful integration is expected to be R100 million.

The other strategic change was the adoption of a new ICT and business partnership model. In a world that is rapidly changing from a digital perspective, Sibanye-Stillwater is embracing a means of effectively and efficiently transforming our business. This model not only facilitates a greater level of engagement between ICT, regional management committees and operational management teams, it also facilitates collaboration on key technology decisions. This ensures a much closer alignment between business requirements and the execution of ICT products and services. With the adoption of this model, ICT has repositioned itself as a cross-functional support partner to the entire organisation.

While the spread of COVID-19 across the globe posed many hurdles to businesses during 2020, Sibanye-Stillwater was well-positioned to confront such challenges. It is on this basis that several key initiatives were undertaken and successfully completed.

Key ICT initiatives
Digital infrastructure

In 2020, the project to upgrade, consolidate and migrate the digital infrastructure used across the Group continued. Sibanye-Stillwater has adopted a hybrid cloud model, which is best suited to its operating model. This model facilitates a significant footprint reduction of the data centres used in both South Africa and the United States. This footprint reduction supports our broader ESG strategy.

The merging of our data centres into one data centre hosted at Teraco commenced in 2020 and is anticipated to be completed by the end of 2021. The networking team managed to successfully implement highly secured network infrastructure by partnering with strategic vendors, which will facilitate future growth of Sibanye-Stillwater's ICT environment in the SA and US regions.

This central facility will host the core of the Sibanye-Stillwater business systems and will enable the Group to benefit from increased bandwidth and availability and place it in a position to optimally support all central services to the SA and US operations.

SOHO project

On the back of the significant impact and disruptions caused by the spread of the COVID-19 pandemic, a small office, home office (SOHO) concept was introduced as a permanent arrangement for suitable roles – applicable to between 1,000 and 1,500 employees – within the business both in South Africa and the United States. To support this initiative, the Group has increased the use of suitable technologies to enable the business services to continue without interruption. These technologies are improved upon on a daily basis. This project has provided the capabilities of each employee who works from home with all the information and resources they need in order to complete their tasks without having to physically be at an office. The success of this project can largely be attributed to the maturity and sophistication of Sibanye-Stillwater's ICT infrastructure that enables remote working capability.

WeAreOne mobile app

To communicate and engage with our workforce, the WeAreOne mobile application (app) was developed in early 2020. It was launched just prior to the implementation of South Africa's national lockdown on 27 March and proved a vital tool to engage with employees in the midst of uncertainty.

To date, over half of our employees (53.2%) use the application. The preferred medium through which the

application is accessed is mobile phones (62%) as opposed to accessing it through other means. Co-sensing interviews, focus group discussions and feedback gathered through the application are used to refine the information that is shared through the application. It also helps understand the users' persona and journey to strategically improve communication efforts through the application. (Refer to *Empowering our workforce*: page 190; *Stakeholder engagement*: page 78).

ERP one

The aim of this project is the integration of the various commercial and human capital systems into a single system for the Group. This serves to support the consolidation initiative following the acquisition of the Marikana operation in 2019. The integration of the human capital and payroll system was successfully completed during 2020, with the SAP consolidation of various platforms expected to be completed during 2021.

📷 *WeAreOne application for employees enables effective communication*
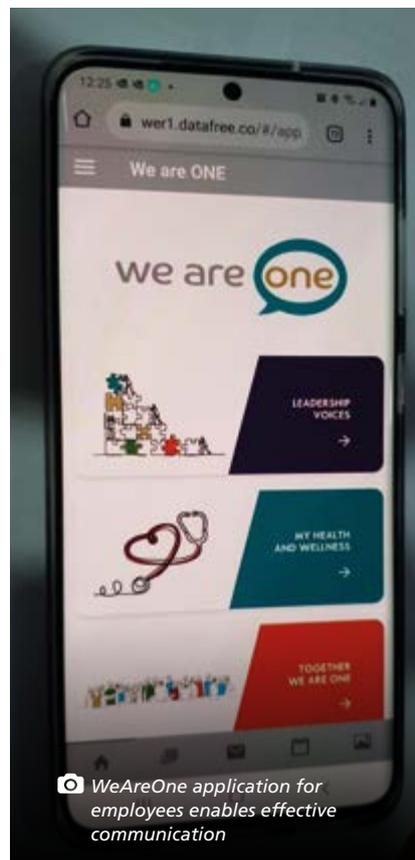
Service efficiency centre

The conversion and expansion of the newly established Service Efficiency Centre into a global efficiency centre for all services was also completed in 2020. This conversion has seen the traditional ICT call centre being converted to service ICT-related calls, time management, transport, COVID-19 crisis and payroll queries. Leveraging off the infrastructure established by ICT, the aim is to continue expanding the capability to service more areas within the business.

Reduction in printing

ICT's introduction of new and innovative technologies to automate processes and business processes, which has included the conversion of all payslips to an electronic format, resulted in a 27% reduction in printing. A cost saving of R3.8 million specifically at Marikana operations, and R250,000 at the SA gold operations.

POPIA

South Africa's Protection of Personal Information Act (POPIA) officially came into effect on 1 July 2020 with a 12-month period to 1 July 2021 provided for compliance. The purpose of this legislation is to protect the personal information of citizens, obtained and processed by both public and private institutions, and attempts to balance the right to privacy with other rights such as access to information. While the Act is now officially being enforced, companies have been given a year to comply with sections 110 and 114 of the Act, which refers to the lawful processing of personal information by employers.

To ensure compliance with the requirements, Sibanye-Stillwater, with the active participation of ICT, launched a project to specifically deal with the issue of personal information and data management. We are well positioned to meet the deadline of 30 June 2021.

HARNESSING CONTINUOUS INNOVATION CONTINUED

CYBERSECURITY

As cyber-attacks are increasing globally, cybersecurity continues to receive focus as part of the Sibanye-Stillwater Risk Management portfolio. Security of our ICT systems, networks and information is, in this context, vital. Measures to ensure ICT security include:

- Regular penetration testing and vulnerability assessments; any vulnerabilities encountered are immediately attended to

- Our user community undertake regular cybersecurity training and awareness initiatives

- ICT security is monitored 24/7/365 by active internal and external security operations centres

- The continuous review of new technologies or concepts coming onto the market

ICT security is governed by a cybersecurity framework, which is supported by established security response protocols in the event of a security breach or incident. No incidents were, however, recorded in 2020.

For more information refer to the *Corporate governance* section on page 124 and *Managing our risks and opportunities within the external operating environment* on page 51.

FUTURE FOCUS

Sibanye-Stillwater's key near-term focus will include the following:

- Continue the drive to transform the Group into a digital first organisation

- Embed, sustain and expand on the successful initiatives pursued during 2020, particularly the innovation process

- Expand on the success of establishing core data infrastructure and replicating/scaling successful initiatives

- Persevere with research and development initiatives to not only pursue new opportunities but also understand emerging technology themes

- Understand the applicability of electrification of our trackless fleet as well as remote and autonomous operations
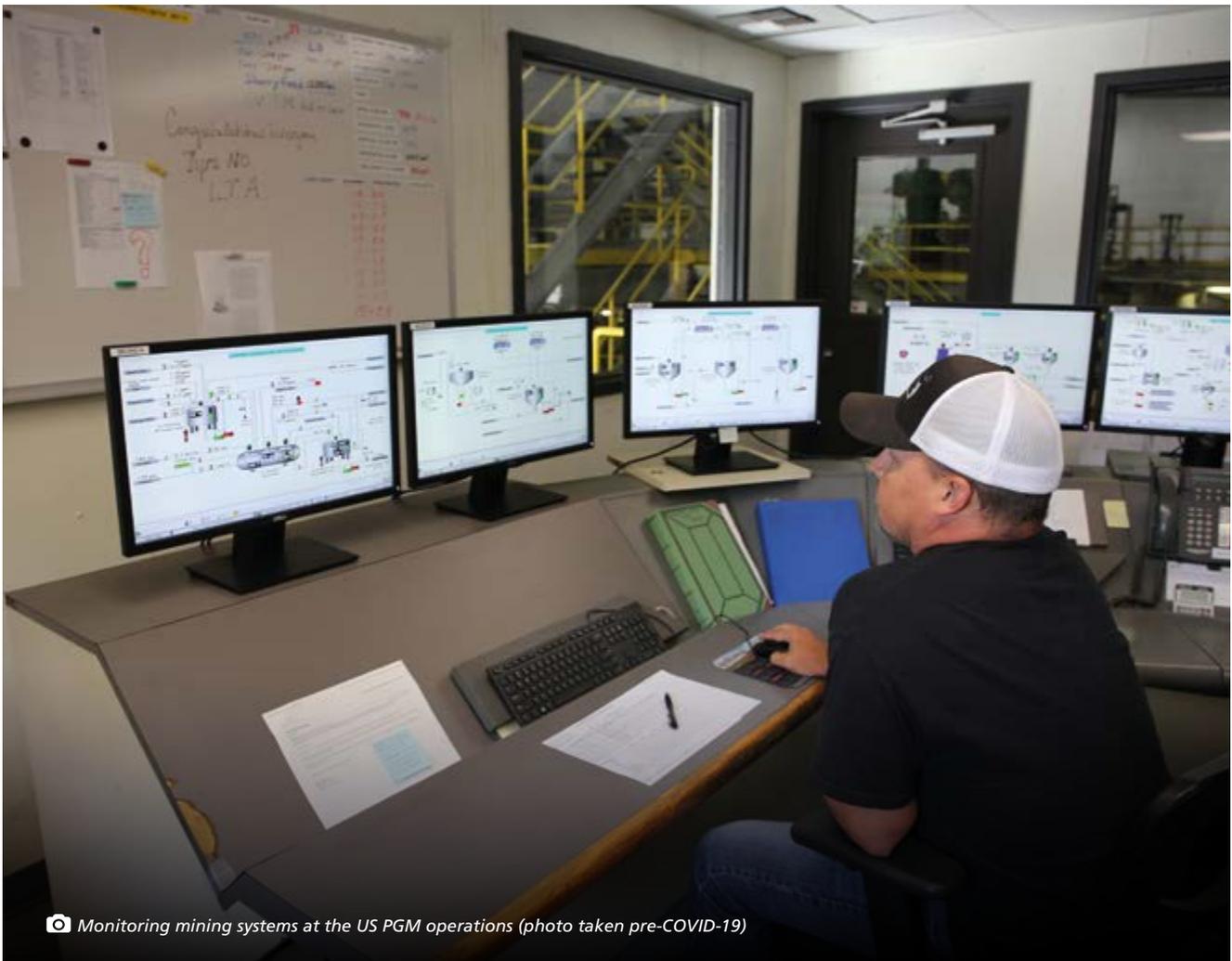
📷 *Monitoring mining systems at the US PGM operations (photo taken pre-COVID-19)*

Employees at the SA PGM operations training to operate machinery using a simulator