

Mining 4.0: investing in human operators

Despite the growing trend of process automation, improving processes depends on a deep and individualized understanding of the people who make up a company.

Brazilian mining giant Vale has assembled a team of experts from diverse fields to improve the productivity of its mining operations by shifting its focus from investing in machines, to value and develop the people at the core of its business - the excavator operators.

The High Performance Operators Program (POAD, acronym in Portuguese) starts by understanding and mapping the characteristics and key-factors that might impact the worker's performance on an individual level. To do so, it establishes four intervention areas, each of which apply different tools to deliver specific objectives, while their interaction results in the holistic development of a specific operator.

The Technical Core identifies training needs of the operators and provides individualized training sessions on a Virtual Reality system to amplify their technical skills. The operational diagnostics also assist in the development of technological solutions that reduce workload and improve performance.

In the Cognitive Core, engineers, computer scientists and neuroscientists develop Artificial Intelligence-based neurotechnology to decode brain patterns of a productive mind, and cognitive training is conducted to improve the cognitive skills of unexperienced operators.

The Psychosocial Core uses qualitative methodologies (psychological tests, questionnaires and interviews) to help operators improve their own performance by reflecting about their work activity and its meaning, considering the collective perspective of work and also emphasizing protection, prevention and health promotion.

The Clinical and Physical Core uses knowledge acquired from other mines about socioeconomic and cultural factors as well as nutritional and physical conditions to classify risk factors that can impact workers. In a second step it aims to reduce and prevent risk factors to improve operators' wellbeing and quality of life, and in turn their performance.

Beyond increasing monthly productivity by 9% in one of its sites, the program has resulted in increased worker satisfaction, lower rates of absenteeism and withdrawal.



Developing a high performance operator using a mining simulator and measuring brain activity patterns