The different X-ray fluorescence technologies can be applied in most cases to every routine application in the mining field: Simultaneous wavelength-dispersive instruments are often seen as high speed and fast solutions for high throughput labs, but at the same time they are very inflexible. Sequential wavelength-dispersive WDXRF instrument are rated as very flexible and precise, but at the same time as slow. Benchtop EDXRF instruments are making their way into the WDXRF domain in process control. With latest instrumental developments this view seems outdated and need to be revised - Examples for typical mining applications, like the analysis of iron ore with the different instrument types are shown and guidance is given, which instrument should be selected for the purpose.

When moving production to other regions or starting a mining operation in Africa automation is the key to success by delivering precise and accurate results. Requirements and solutions for the successful integration of XRF into an automated lab are shown with special focus on GLP. Nevertheless the biggest source for efficiency improvements is the immediate real-time analysis without delaying the analysis due to the sample transport and sample preparation. An instrumental setup will be shown for online analysis in mining operations and mineral beneficiation plants which could complement lab based XRF instruments as a new tool for process control. Applications examples will be presented for iron ore, copper, lead and zinc ores.