



MAYA M4L LIBS-based analyser.

- Measurement of 'penalty' elements: Mg and Si.

The MAYA on-line laser analyser, a LIBS-based system manufactured by **LYNCIS**, provides direct, safe, efficient and accurate elemental analysis of phosphates and potash on conveyor belts.

LYNCIS has extensive experience of developing LIBS analysers for mining and industrial applications. The company has direct access to the latest innovations, being headquartered in Lithuania, one of Europe's biggest hubs for laser, optical and spectral technologies.

MAYA analysers come equipped with state-of-the-art optical systems and can accurately report phosphate content as either BPL or P_2O_5 . They can also successfully detect and measure Al_2O_3 , SiO_2 and other undesirable impurities in phosphate rock and process feed.

LIBS-based analysers manufactured by LYNCIS have been installed by two leading

fertilizer companies, the US phosphates producer Mosaic and Russian potash producer Uralkali. These provide real-time elemental analysis for process monitoring and control.

MAYA analysers have the following applications in phosphate and potash production:

- Controlling ore quality based on elemental analysis (K, Na, P, Ca, Mg, Fe, C, etc.)
- The regulation of flotation reagent dosage and water, according to the quality of the ore, resulting in increased P_2O_5 recovery
- Determining the content of insoluble precipitates
- Controlling final product quality.

Having compositional information for the phosphate rock feed prior to beneficiation is particularly valuable, suggests LYNCIS, as it makes early and timely process interventions possible. These can improve pro-

duction outcomes and save on operational costs. MAYA analysers offer safety, simplicity and low cost of ownership, according to the company, by ensuring high performance conveyor belt measurements based on robust calibration.

The first MAYA analyser in the phosphates industry was sold to US producer Mosaic in 2008. This unit was installed for continuous control of the ore feed quality by discarding high MgO rock (> two percent MgO pebble content). For this installation, calculations suggest that using instantaneous LIBS measurement to reject high MgO rock, rather than the delayed results of laboratory analysis, could potentially improve plant profitability by \$5.9 million. This estimate was based on a production level of 1.9-2.0 million tonnes and other pricing and technical assumptions. These cost savings are partly delivered by lowering the water and flotation reagent consumption required in the beneficiation of high MgO ore. ■