

VALUE OF SGS' MECHANICAL SAMPLING SYSTEMS AND ON LINE ANALYSIS IN THE COAL INDUSTRY

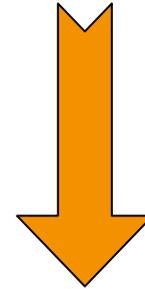
WHEN YOU NEED TO BE SURE



- Why is sampling required?
- The value of representative samples
- Mechanical versus manual sampling?
- Real-time process control
- Services provided by SGS

THE BENEFITS OF SAMPLING

- Analysis of the sample determines the product value
- Sample data allows process control
- Contract compliance and specifications are verified



COAL INDUSTRY PLAYERS

- Producers want to be paid a fair price for the quality of coal produced
- Consumers want to pay for the energy in the coal that was actually delivered
- Traders want the analysis to agree each time a shipment is sampled

MECHANICAL OR MANUAL SAMPLING?

- ISO and ASTM standards recognize that mechanical sampling of coal generates the most representative and repeatable sampling results

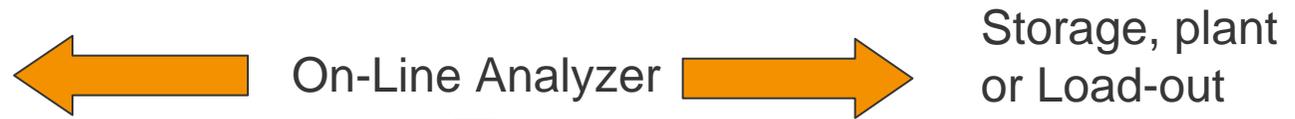


- Mechanical sampling is more reliable than Manual sampling because:
 - Entire coal stream is intersected and sampled
 - No human bias or discretion
 - System always runs the same
 - Automated operation
 - ISO, ASTM Standards recognize this



- SGS can provide:
 - On-line analysis as an integral part of a sampling system
 - Instant coal quality feedback to an operator
 - Increase operational profitability





Feed-Back Control to improve mining performance and profits.

- Ash feed-back data used to control out-of-seam dilution. Maximize value of ROM coal.
- Real quality feed-back can be used to update and maintain mine quality data base without the need of channel samples. This is real as-mined data.

Generates Data

Moisture

Ash

Sulfur

Ash minerals

Heating value estimate

■ Feed-Forward Controls

- Sort coal based on quality
- When quality from the mine is right bypassing the preparation plant and directly hitting a train.

← Information Flow →

From On-Analyzer



or



On-Line Analyzer
Feed-forward
Control



On-Line Analyzer
Feed-forward
Control



■ Sort coal based on quality:

- Ash
- Sulfur
- Ash Minerals

- Reduce derates
- Improve Efficiency
- Reduce CO₂/MW

■ Sort coal based on quality:

- Moisture
- Ash
- Sulfur
- Ash minerals to control slagging



SGS MECHANICAL SAMPLING ENGINEERS

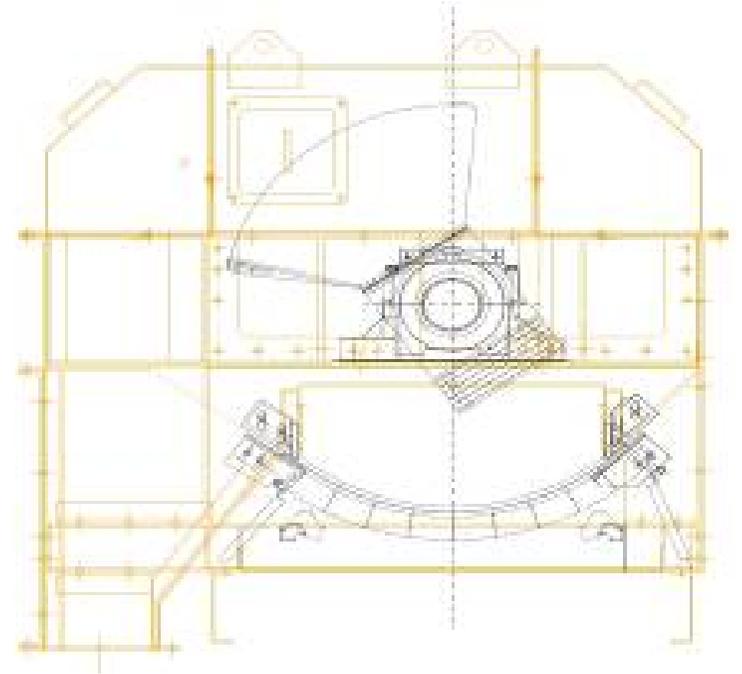
- Design, build and operate sampling systems
- Have decades of expertise
- Are core members of ISO and ASTM committees which developed the global sampling standards



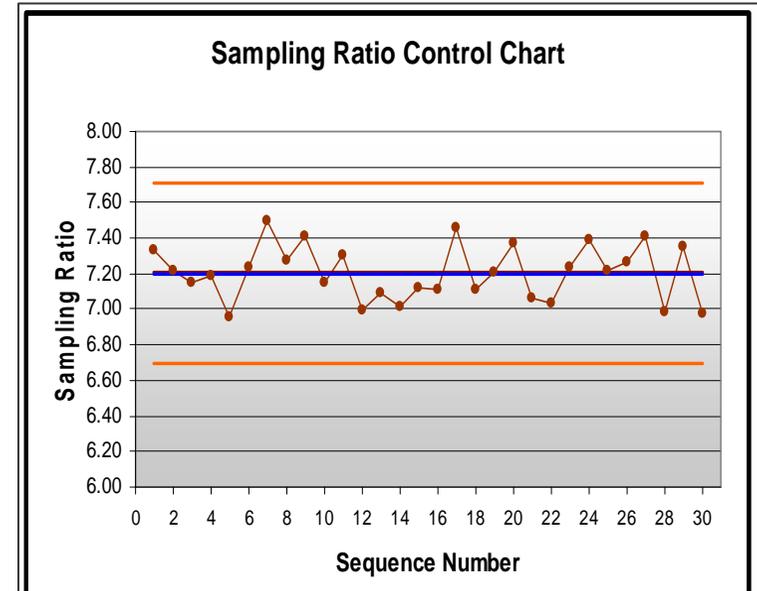
YOUR TOTAL MECHANICAL SAMPLING SOLUTION

- Provides:
 - Inspection of existing systems
 - Bias testing
 - Systems design
 - Equipment supply
 - Turn-key construction
 - Operation and maintenance
 - Sample analysis
 - On-line analyzer systems

- SGS can inspect your existing mechanical sampling systems to determine if they are operating properly and test them for bias. If problems are found, SGS will have the solutions and corrections.
- The SGS sampling team, working with you, will develop sampling system designs that SGS guarantee will not be biased when tested, operate reliably and at a fair price.
- SGS can supply the equipment and construction services to turn your sampling plans into a bias-free sampling system.



- SGS can operate and maintain your sampling system. This insures that your sampling system is operational when needed.
- SGS operations services can gather, maintain, and report data that monitor the sampling systems performance. This insures the systems SGS operates for you continue to operate in a manner that produces representative results.



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WHEN YOU NEED TO BE SURE

