SABIA®

What you need to know

X1-LiNX

BTU ANALYZER FOR POWER PLANTS



An Application Note:

Increased BTU/CV Accuracy Through Advanced Carbon Modeling

Improved X1-LiNX performance allows for advanced proprietary algorithms

Advanced Algorithim

- New technology
- Robust over a wide variety of coal types
- New level of heating value accuracy
- New model using carbon measurements
- Change coal types without the need for recalibration

SABIA's Latest Performance Breakthrough

In SABIA's ongoing effort to provide more value to our customers, a new heating value model has been developed to showcase the performance of the X1-LiNX analyzer. Using extensive empirical data and rigorous analysis, this new model provides a much more effective heating value result.

What does this mean for you?

- Precision necessary to maintain control of your boiler
- No re-calibration due to change in material types
- Control delivered material quality
- Increased flexibility in coal supply
- More efficient blending
- Extended boiler life
- Reduced De-rates
- Extend mine life



Better Performance. Better Value.
Better Customer Experience.

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ISO 9001:2008 Certified Company

*Patent Pending

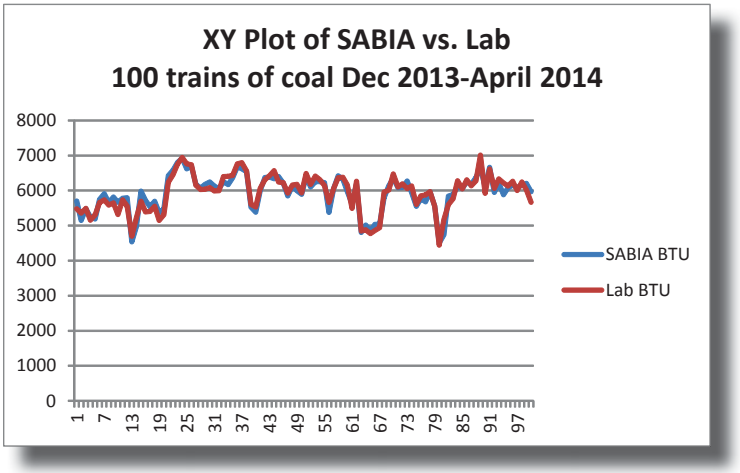
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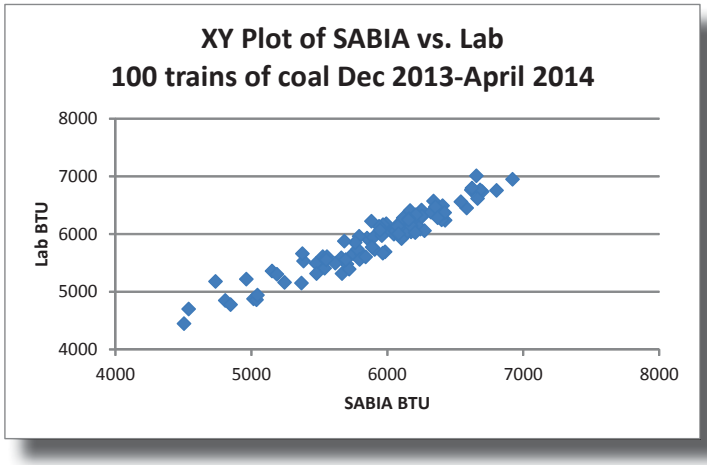
Improved Algorithm for Calorific Value Calculations

In order to have a successful BTU reading from a PGNA analyzer, you must have both precise measurements and an effective algorithm. For years, there has been a struggle to find the best equation to calculate BTU from the many versions that are available. Common methods include a Moisture-ash dilution or the Dulong-Petit equation, however, these methods can quickly fall apart over the span of a plant's material. In addition, none of these equations were developed specifically with PGNAA in mind.



The significant performance improvements afforded by the X1-LiNX coal analyzer, specifically in carbon measurement, opened up a new approach to modeling BTU for any given coal type. The development of this new BTU model had its beginning with a version of the time-honored Dulong-Petit equation used successfully by laboratories around the world for decades: CV = 337Carbon + 1442(Hydrogen – Oxygen/8) + 93Sulfur. Utilizing over 1500 data points from around the world, available on the USGS website, SABIA developed a new model to calculate BTU specifically for PGNAA with increased accuracy over a much larger range of heating value.

Once the model was developed and tested, SABIA conducted a case-study with analyzer data. The data was collected between December 2013 and April 2014 from a Texas lignite site. The BTU was first calculated with the Moisture-Ash Free method, obtaining a R^2=0.35 and a RMSD=±425.7 BTU/lb over a range of 4000-7200 BTU. There is obvious correlation, but with the precision of the analyzer, SABIA was determined that we could have a better result. Using the same data, the new algorithm was applied to find a R^2=0.91 and a RMSD=±156 BTU/lb. The same algorithm has been used at other coal sites with similar results.



The data shows conclusively that the SABIA PGNA analyzer utilizing the new proprietary BTU model that incorporates a carbon measurement, can deliver effective near real time measurements of heating value to our customers.

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