

TRADE SERVICES FOR COAL PREPARATION PLANTS

SERVICES TO SUPPORT COAL PREP PLANTS

When your operations involve preparing coal for sale to the market, you need an ethical partner you can trust. SGS understands that factors such as sampling, shipping, inventory quantities, washability studies and process simulations are all extremely important considerations in maintaining the most financially viable operations. We also realize that every preparation plant is different and customize our services to your needs, increasing your efficiency.

As an independent, leading supplier of innovative, technologically advanced services to the coal industry, SGS is uniquely positioned to partner with you to improve your efficiencies and enhance your profitability. All SGS work is done in accordance with internationally accepted standards such as ASTM, EPA, ISO and JIS. We are dedicated to providing you with value-added solutions that reduce risk, enhance value and maximize operations at your prep plant.

Through our global network of operations, SGS can deliver a broad spectrum of independent evaluation services to coal preparation plants worldwide, aimed at reducing your risks and maximizing your profits. Our team of professionally qualified engineers and support staff can provide you with technical expertise in the following areas:

- Shipment services.
- Preparation plant performance audit and design services.
- Mechanical sampling systems.
- Inventory services.
- Washability studies.
- Process simulations.
- On-site laboratories.
- Environmental services.

SHIPMENT SERVICES

HOLD INSPECTIONS

SGS staff will verify that the hold is suitable and can receive the intended cargo. We will check for cleanliness, dryness and ventilation, and that there is provision for cargo separation. Inspection will also verify that remnants from other shipments will not effect your load.

Hold inspection is a part of a larger service that provides assurance that the shipped cargo be received in the same condition as when it was loaded.

WEIGHT DETERMINATION

When establishing the value of a parcel that is being bought or sold, the weight is always determined first. It must be determined in a manner which is fair to both parties. SGS weights are traceable to a known calibration and check weights.

Ways of determining weight include:

- Static weighbridges.
- Dynamic weighbridges.
- Belt scales.
- Hopper scales.
- Draft survey.

DRAFT SURVEY

A draft survey is a means of determining the weight of material loaded onto or discharged from a vessel. This measures the displacement in water prior and after loading or discharge. By recording the initial displacement of the vessel, prior to loading (or prior to discharge) and then after, the weight of the cargo can be determined.

Experienced and highly qualified SGS surveyors can produce accurate draft survey weights. During the draft readings, several other key factors are taken into account and measured before the weight of the cargo loaded or discharged can be determined. These include:

- The density of the sea or river water.
- Changes in the quantity of ballast between initial and final draft readings.
- Changes in the consumables on the vessel between initial and final draft readings (fuel oil, potable water, etc.).
- Allowance for trim and deformation corrections (SGS uses data from the vessel's draft tables).

BARGE SURVEY

Comprehensive barge examination and inspection surveys are completed by qualified SGS personnel with extensive marine surveying experience. Such surveys include:

- Condition of the vessel and the commodity.
- Loaded and unloaded draft readings of the vessel.
- Tonnage calculations.
- Barge number, vessel type, vessel configuration and size, vessel profile and commodity type.

Costs associated with transporting coal can account for up to 70% of the total delivered cost. SGS will ensure that your cargo is transported efficiently and safely by vessels that meet the necessary shipping standards.

PLANT PERFORMANCE, DESIGN AND EFFICIENCY TESTING

SGS provides a range of technical services to help you optimize plant efficiency and improve your bottom-line performance for new or existing operations. Optimizing the performance of a coal prep plant can readily increase its profitability with a relatively small financial outlay. The payback period is usually measured in weeks for such improvements, not years.

SGS provides complete prep-plant performance audits. We have the expertise to design the audit, perform the in-plant sampling and washability studies, and analyze all the data required to measure the efficiency of your preparation equipment. We will prepare diagnostic distribution curves for all the coal preparation equipment, generate a report detailing equipment performance and provide specific, workable recommendations to help you resolve any issues.

In addition, SGS has the experience and expertise to provide complete circuit design services or we can act as an independent consultant during a plant design. Informed plant design decisions made early in the process will ultimately determine the prep plant's efficiency and profitability. Our world-class technical experts will provide you with sample system designs and certification of your plant performance.

MECHANICAL SAMPLING SYSTEMS (MSS)

Risk associated with inaccurate evaluation of coal can be managed by selecting the proper mechanical sampling system (MSS). SGS has a team of professionally qualified staff that have the experience needed to provide services related to your new or existing mechanical sampling system. We have 25 years experience in the design, supply, installation and commissioning of client-dedicated, site-specific MSS, with more than 300 SGS-designed systems operating in over

20 countries worldwide.

Qualified SGS personnel perform technical audits and provide on-going maintenance to ensure the best possible sampling from your equipment. SGS will maintain a quality assurance program for your Mechanical Sampling System in accordance with international standards including:

- Inspection of the MSS.
- Bias testing of the MSS.
- Collection and analysis of the samples from your MSS.
- Modification of the existing MSS to improve performance and/or eliminate bias.
- Technical advice.
- Breakdown repairs.

To design an effective MSS, detailed information about the location of the MSS and the material to be sampled is needed (including its top size, surface moisture content and material handling characteristics). A site visit is often required to ensure your MSS design meets the design criteria defined by ASTM, ISO or other global standards. SGS will use tried and proven designs and modify these, where necessary, for each new application. Through this process we provide your prep plant with the best and most cost effective solution to your sampling problems.

INVENTORY SERVICES

SGS Minerals Services provides the resources required to determine the quantity and quality of coal in storage. SGS Minerals Services has provided physical inventory related services for over 100 different customers, at over 230 separate sites, and over 1800 individual piles. The accepted method for determination of coal quantity is to ascertain the density of the coal and the volume of the stockpile, from which the total weight may be calculated.

SGS uses a state-of-the-art nuclear depth density gauge to determine your coal pile density. Once the density is determined,

SGS will acquire ground level or photogrammetry data to satisfy the requirements of a TIN (Triangular Irregular Network) creating software package. The volume of coal within the TIN is then computed by electronically filling the volume of the TIN above the base datum with prisms of known volume. Once density and volume are known, SGS will readily determine the total tons of coal in your stockpile.

ON-LINE ANALYSIS

SGS provides complete design, installation and support services for your new or existing on-line analyzer System. On-line analyzer Systems will allow you to accurately monitor the quality of raw materials arriving and departing from your plant in real time. With this level of control you can undertake process modifications when they are most beneficial to your operations. This can have a substantial, often overwhelming impact on your facility's yield and profitability.

The quality of the coal feed going into a prep plant is a key factor that influences product yields. Analyzer-controlled blending systems that are properly designed, installed, calibrated and maintained are a vital component in maintaining a consistent quality feed to your prep plant. Coal feed that meets shipping specifications can be by-passed around your prep plant, resulting in increased yield and more efficient, profitable operations.

SGS can identify the most efficient analyzer and blending solutions for raw and clean coals, allowing you to maximize yield, and blend different quality coals to achieve the correct shipment specifications. We can help evaluate your various options and design a complete system including sampling systems and on-line analyzers. The benefit to you is increased plant yield and unsurpassed control in product quality.

WASHABILITY STUDIES

Washability characteristics of coal are generated from float/sink analysis of core samples, as mined samples, or from preparation plant feed samples. In addition to the float/sink analysis, SGS can perform froth recovery testing on finer size material. If a coal contains a high percentage of middlings material, SGS can perform the crushing studies required to determine if additional yield can be obtained by crushing and liberating coal from the host rock.

SGS coal washability studies, including float/sink analysis, can be done on samples ranging in size from bulk washability samples (over 1 ton) to bench-scale size samples (2-10kg). These analyses can be done over a range of densities (S.G.1.3 to 2.25) and on coarse to fine coal separations. These studies closely follow American Society of Testing and Materials (ASTM) test methods for determining coal washability characteristics.

Data from such studies help determine:

- Preparation plant efficiency.
- Preparation plant design.
- Optimum operating parameters for preparation plant circuits.
- Characterizing types and amounts of impurities.
- Determining optimum size range of a specific coal for cleaning.

PROCESS SIMULATIONS

Once the coal's washability characteristics have been determined, SGS can estimate the performance of a preparation plant. Both yield and quality can be determined based on different process equipment and circuit configurations. This type of simulation enables you to:

- Optimize efficiency and prep plant capacity.
- Maximize clean coal recovery.
- Aid in the design of circuitry configurations to allow for optimal process flexibility.
- Evaluate the consequences of feed changes on prep plant performance.

- Determine potential plant bottlenecks.

Once uncertainty in your plant design is known precisely, the proper safety margin can then be designed into the preparation plant. There will be no need to include excessive capacity beyond what was indicated in the statistical analysis of your plant design. Uncertainty in the output parameters for the preparation plant will be quantified by SGS using proven statistical techniques, enabling you to optimize both the prep plant and your investment.

ON-SITE LABS

On-site laboratories are niche technical areas that require specific expertise.

These labs provide critical operational, environmental and metallurgical data that guide site activities and so should be designed and operated by those with extensive experience in this area.

WHY OUTSOURCE?

Outsourcing of mine-site laboratories allows you to allocate capital and staff more efficiently, concentrate on your core competencies and ensure that the data you base important decisions upon is accurate and consistent. The impartiality of a third party outsourcing partner ensures your results are transparent and meet regulatory reporting requirements.

Many companies choose to outsource their analytical requirements for exploration or production laboratory services to SGS. SGS expertise is unparalleled in the industry, with approximately 100 geochemical laboratories currently in operation. We apply the same principles, procedures and quality standards to our outsourced laboratories that we do to our commercial labs. Allowing SGS to design, staff and operate your lab will ensure that you have at your disposal a full scope of capabilities for the fast turn-around of accurate, reliable data needed to run and optimize your plant operations.

OUTSOURCING OPTIONS

SGS provides mine-site laboratories that offer high quality and rapid turnaround for a range of analyses which can be tailored to your specific needs. These analyses include precious metals, base metals and industrial minerals. SGS can also provide sample preparation services when you are undertaking remote or high volume exploration programs.

The SGS Build, Own, Operate, and Maintain (BOOM) initiative is available globally to the coal industry. This program provides you the opportunity to outsource capital requirements, engineering, construction, commissioning, maintenance and operation of non-core facilities.

BUILD

Our SGS engineering team has years of practical experience providing turnkey design and construction services building accurate and reliable laboratories and processing facilities.

OWN

SGS offers flexible and innovative financing.

OPERATE

Well trained SGS employees assure safe and efficient operation while generating the accurate data required to meet your operational requirements.

MAINTAIN

SGS assumes full responsibility for the routine upkeep, calibration, and validation of the facilities, providing you with total confidence in the data.

IS OUTSOURCING RIGHT FOR YOU?

On-site and near site laboratories require a consistent sample flow from the region to be cost effective. SGS can meet with you to discuss all outsourcing options available and determine which, if any, are feasible and meet your requirements in a cost effective manner.

WHY SGS?

SGS is well recognized in the laboratory testing sector: it is a key part of our business. We operate on-site and near-site laboratories in some of the most remote locations in the world. Our unequalled experience in remote laboratories ensures smooth start-up and operation. This will be particularly important for your staff during start-up as they will be implementing and developing new processes and will need fast, top quality data to guide their activities.

Let the team who has successfully brought over 80 mine site labs, past and present, into operation work with you to ensure the success of your project.

ENVIRONMENTAL SERVICES

SGS is a trusted provider of specialized technical expertise and support globally. SGS is independent of industrial or sector organizations, authorities, and pressure groups within the coal industry. This will provide you with the most unbiased and accurate results. We provide a complete range of laboratory analysis to meet the environmental requirements of coal producers, transporters and consumers in accordance with recognized standards such as ASTM, EPA, ISO and JIS. Our expertise includes the analysis of:

Analysis of:

- Health and safety audits
- Noise control
- Stack emissions

Our laboratories feature state-of-the-art instrumentation to provide accurate results with the optimum turn-around time. We monitor our proficiency by participating in internal and external round robin programs. In addition, our labs use of total quality management to ensure consistent operation on a daily basis. As well, we have implemented statistical process control in all laboratories.

CONTACT INFORMATION

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