



Summit Reliance Group, Inc.

Pioneering a Sustainable Future

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EXECUTIVE OVERVIEW

CLEAN ENERGY SOLUTIONS: A PROCESS FOR PRODUCING A NEW HYBRID FUEL FEEDSTOCK FOR POWER PLANTS FROM EXISTING COAL FINES & TAILINGS AND ALL NEWLY MINED COAL*

@ June 15, 2016

THE OPPORTUNITY

Over more than a century, hundreds of millions of metric tonnes (“**MT**”) of coal waste - coal fines & tailings (“**CFT**”), from processing, washing, stockpiling, transporting and handling coal for shipment and use in power plants, have accumulated at coal mines in the USA and other major coal producing countries. It is estimated that typically on the order of 12.5 million additional MT of CFT are generated annually in the USA and nearly 100 million MT total globally. The amount of CFT generated annually is increasing as countries like India, China and growing numbers of smaller countries need energy to support their aggressive national economic development programs, and use coal-fired power plants to provide that energy. Additionally, millions of tons of coal dust and particles are blown into the air and along highways, railroad tracks and into rivers as coal is transported in open-hopper rail cars, truck trailers and barges from the mine to coal shipping terminals and power plants.

Further, the exposed coal is open to atmospheric moisture and rain, which effectively reduces the BTU value of the coal when it reaches the power plant. And, lump coal does not burn efficiently, generating large amounts of ash, which then needs to be disposed of. Air pollution from coal-fired power plants has a significant adverse health effect in areas where such plants are located, and the costs for the systems/processes to clean the gases from the plants are very high. China’s air pollution and related problems resulting from coal-fired power plants is monumental.

In the wet state, and depending upon local environmental, soil and topographical conditions, over time CFT often contaminates the ground and aquifers and is subject to spontaneous combustion/smoldering and contamination of the atmosphere. In a dry state, it is subject to spontaneous ignition (explosion) in certain environmental conditions.

There have been attempts over the years to eliminate the vast and growing inventories of CFT and capture the energy and potential economic value of that material. For example, CFT has been: (1) used to create coal-water fuels (with water typically about 50% by weight), and (2) formed/compressed into briquettes, “logs” and filter cake fuels after reducing the water content. Generally, these solutions are capital intensive, relatively slow and produce relatively low volumes of feed stocks, and those feed stocks generally are a lower energy value than mined coal. Thus, these approaches have not proved economically viable and competitive with mined coal on a broad commercial basis.

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WORLD HEADQUARTERS

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THE SUMMIT CLEAN ENERGY SOLUTION

Summit has conceived a patentable on-site clean coal energy (“CCE”) technology/process that provides the capability to very quickly and cost-competitively: (1) remove debris and foreign materials from large volumes of CFT located in piles on the ground and settling ponds in the ground, (2) de-water the cleaned stream to less than 5%, and (3) convert the CFT into a high density flowable form that can be transported safely and used directly as a coal-based fuel feedstock for commercial power plants. This feedstock is *high energy, consistent high quality, abundantly and readily available, lower-cost and clean.*

The primary elements of this process generally are available and need to be structured into an integrated system and scaled. Specifically, the technology/processes for Steps (1) and (2) are relatively newly developed, each by a different third party, and are patent protected. The technology/process for Step (1) was developed for a non-coal related application, and the technology/process for Step (2) was developed for a different coal-related application than Summit’s CCE process. Summit is in the process of securing exclusive worldwide rights to these technologies/processes for use with the CCE Process and related applications. The technology/process for Step (3) involves compounding and converting the dewatered CFT into a flowable form – a “Slurge”). This technology/process was conceived by Summit and currently is being treated as a Trade Secret.

A more simplified CCE Process can be used to pulverize newly mined coal and feed it directly into Step (3).

The beneficial environmental and economic impacts of such a capability are significant. The opportunity to retain jobs that might be lost in the event the new more stringent carbon rules are implemented in the USA and elsewhere, and in any case potentially create new jobs for coal mining, transportation and associated industries also can be significant, along with the export potential for this coal-based fuel feed stock to countries globally and the beneficial environmental, economic, social and other impacts in those areas.

Under a structured mutually beneficial relationship with an appropriate investment/business partner, it is reasonable that the first commercial CCE Process could be deployed and in use within 4 to 6 months. Employing supply/value chain management principles, the CCE Process then could be deployed aggressively on a broad commercial scale over the subsequent 18 months.

A potential Business Model for India is for Summit to form an Indian entity (e.g., company, partnership, joint venture or special purpose vehicle – “CCE India”) with an established Indian partner. CCE India would fabricate the CCE Systems in India and then optionally, for example:

- **Option I:** Secure rights from coal mining entities to process existing CFT on their property at a negotiated rate or royalty per tonne, and then transport and sell the CCE Feedstock to India power plants,
- **Option II:** Joint Venture with the coal mining entities to process existing CFT on their property and then transport and sell the CCE Feedstock to India power plants and share the profits on a TBD schedule.

SUMMIT “SLURGE” ECONOMICS*

The Summit Slurge can be produced economically anywhere globally where there are coal mines with commercial quantities of CFT.

The estimated cost of the Summit Slurge is on the order of \$72.50/MT = \$0.033/LB = $\$1.9 \times 10^{-6}$ /BTU, FOB Mine, based on 16,500 BTU/LB and bulk shipping at a density of approximately 110 LB/CF.

By comparison, a recent composite market cost of steam coal is on the order of \$45.00/MT = \$0.021/LB = $\$2.6 \times 10^{-6}$ /BTU, FOB Mine, based on 8,500 BTU/LB and bulk shipping in bulk hopper trucks and open hopper rail cars at a typical density of approximately 50 LB/CF.



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- Note that the number of BTU's shipped per unit volume is 4 times that of the same volume of steam coal (i.e., 16,500 vs. 8,500 BTU/LB and 110 vs. 50LB/CF).
- Note further that the Summit Slurge is not subject to any loss of material or quality (i.e., contracted specifications) due to moisture adsorption or environmental contamination at any time in transit from the mine to the customer and if stored/stockpiled at the end-user facility. By comparison, steam coal typically loses up to 500 LB (or approximately 0.2%) of coal and up to 1T of coal fines *per truck/rail car* due to windage during transit from the mine to the end-user or export terminal. The coal quality also is subject to degradation due to moisture adsorption and contamination while being handled, transported and stockpiled between and at the mine and the end-user's facility

ACCELERATED COMMERCIALIZATION PLAN & ESTIMATED BUDGET

The estimated funding to commercialize the CCE Process and employ it beneficially globally on a fast-track is:

- Phase I. Founders Round (\$0.75 Million): Detailed Process Functional Design, Engineering, Computer Modeling & Validation; Market & Cost Analyses; Commercialization Plan (e.g., Optional Market-Customized Contract CFT Processing/ Slurging Services, Process Franchise, License/Lease or Direct Sale), and Financial Projections. [2 - 3 months]
- Phase II. Commercialization Partners Round (\$7.5 Million): Full scale pilot System fabrication and demonstration. Establish commercial System contract-fabrication capabilities to supply initial projected requirements. Establish network of Process Licensees/Franchisees. [4 - 6 months]
- Phase III. Strategic Partners Round (\$TBD): National/Global expansion – selected Company-owned operations and licensed/franchised operations [12 – 24 months].

FINANCIAL PROJECTIONS

The Summit Slurge business involves: (1) reclaiming, screening and dewatering the CFT, (2) “compounding” the CFT through Summit’s proprietary process into the Slurge, and (3) loading the Slurge into closed bulk containers for storage and transport to end users.

Based on the factors indicated in this Overview and others, Summit management believes that the Slurge could be sold commercially at \$100+/MT, or a minimum 25% EBITDA, and be very highly competitive with steam coal and other waste coal fuel products on total end-use cost, BTU cost and clean/green and waste management/compliance cost bases.

* Based, as applicable, on information available from the U.S. Energy Information Administration, U.S. Environmental Protection Agency, U.S. Department of Commerce and U.S. Department of State, as well as various trade, private industry and business sources, including Coal Age magazine and various other trade publications, published reports and other such sources.