Clean Coal Technologies to revolutionize the coal industry with its breakthrough dehydration technology

- Developing world’s first commercially viable and scalable coal dehydration technology that creates stable, dust-free coal
- The University of Wyoming’s School of Energy Resources recently validated the company’s Pristine-M technology
- It has signed several license agreements for its coal upgrading technology

What Clean Coal Technologies does:

Clean Coal Technologies Inc (OTCMKTS:CCTC) is developing the world’s first commercially viable and scalable coal dehydration technology that creates stable, dust-free coal.

The Madison Avenue, New York-based company’s patented Pristine-M technology puts low-quality coal through a mild gasification process, removing moisture as well as coal’s worst pollutants. Along with producing more energy than untreated coal, the refined product also produces fewer harmful emissions when burned, including carbon dioxide, sulfur and mercury. The technology, developed over ten years, has undergone rigorous testing.

The technology applies controlled heat to extract pollutants and moisture from low-rank coal, transforming it into a cleaner-burning fuel. The coal cleaning process ensures the carbon in coal maintains its structural integrity during the heating process, while the volatile matter — often polluting heavy metals — turns into liquids and gas and escapes the coal.

The technology is handy as deposits with high moisture coal emit less energy than low moisture coal. Think about trying to burn wet logs to warm a room. You need more logs and it takes longer. The same applies to coal. The higher the moisture content of coal, the more coal power plants need to consume.

On the other hand, the processed stabilized coal reduces the carbon footprint on the environment by burning efficiently and averts dust pollution during transport. According to the company, tests show a 33% increase in heating value which means a coal power plant will need to consume less coal to achieve the same energy output.

In addition to Pristine-M, the company has a portfolio which includes its legacy technology, Pristine, which is designed to remove moisture and volatile matter, as per client-specified requirements, rendering cleaner thermal coal.

Similarly, Pristine-SA is a technology designed to remove volatile matter in coal feedstock to achieve stable combustion by co-firing it with natural gas.

How is it doing:
In April, Clean Coal Technologies webcast its annual shareholder meeting which included a discussion about how it has advanced the three technology processes — Pristine, Pristine-M, and Pristine-SA — in its intellectual property portfolio.

The group said Pristine, the original process designed to remove moisture and volatile matter, has been tested successfully on bituminous and sub-bituminous coals, and lignite from the US rendering cleaner thermal coal.

Meanwhile, Pristine-M, the second process which is the company's flagship low-cost coal dehydration technology, has succeeded in drying coal economically in early tests. However, the company is carrying out additional tests and its second-generation testing facility will incorporate new features following the successful testing of its process at the AES Coal Power Utility in Oklahoma. The changes are the result of close collaboration between its engineers and the University of Wyoming's School of Energy Research.

Back in 2017, Wyoming University partnered with the company to help optimize its technology for coal beneficiation and for the extraction of coal by-products, which are critical issues facing the Powder River Basin coal-producing region in northwest Wyoming and southeast Montana.

The University of Wyoming recently validated the company's Pristine-M technology. It first awarded the company a $500,000 grant in 2019, and another $500,000 in 2020 to fund the construction of a rotary absorber kiln to stabilize the surface of treated Powder River Basin coal in a demo facility at the former Fort Union mine site near Gillette in Wyoming.

The studies by the University of Wyoming's engineers sets the stage for the design of a commercial plant using Pristine-M technology. This is key in establishing the technology commercially in the Powder River Basin. Researchers have also quantified the potential of manufacturing valuable byproducts as a consequence of the coal-beneficiation process.

Meanwhile, the Pristine-SA process testing is at a very early stage and further R&D is expected using the test facility in Wyoming.

Clean Coal has signed several license agreements for its coal upgrading technology.

The first license deal was with Jindal Power and Steel out of India which is expected to send its coal for sampling following Clean Coal's plant re-assembly in Wyoming. Initially, the clients will be charged a $1 per ton upfront fee followed by a $3 per ton royalty fee under the license agreements.

The second agreement is with Wyoming New Power for its second-generation plant. It has agreed to sign a two million ton per annum license agreement to use Pristine-M and has paid a non-refundable $100,000 deposit on the license agreement.

There is great demand for Clean Coal's technology as cheap and plentiful coal remains the single largest source of energy to generate electricity worldwide. In 2018, global coal consumption totalled 3.77 billion tons which was the highest rate of coal consumption since 2012. It was driven by China, India and Indonesia which together consumed 2.4 billion tons of coal.

Clean Coal has three global process patents for the beneficiation of coal. The patents take up to seven years to be granted from initial application and are valid for up to 20 years. With key patents in place, the firm's propriety technology has the potential to revolutionize the coal industry and upgrade billions of tons of low-rank coal around the world.

**Inflection points:**

- Establishing Pristine-M technology commercially in the Powder River Basin
- Upside potential in manufacturing valuable byproducts as a consequence of the coal-beneficiation process
- On a long-term basis, Pristine-M technology can target nearly 81% of the world's coal reserves which are...
predominantly low-rank coal

- Japan, South Korea, Mexico and Australia have granted full patents to the Pristine technology which enables the group to work on partnerships with government institutions and commercial entities in those countries.

**What the boss says:**

In a recent interview with Proactive, Clean Coal Technologies CEO Robin T Eves said: "This is a multibillion-ton global opportunity where less than 1% market penetration would provide an enormous opportunity. India, China and most of Asia will continue to increase their coal consumption."

"Economically viable technology is the only solution to helping developing nations use coal efficiently in an environmentally responsible manner. We are commercializing an affordable and proven technology to help mitigate the harmful effects of the continued use of coal. We stayed below the radar with respect to marketing our technology until we had fully tested and validated it. That time is now. We create a more environmentally responsible coal," he added.

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