Destruction and Utilization of Ventilation Air Methane in China

Steven Wan, Ph.D., CTO
Fortman (Beijing) Clean Energy Technology Ltd.
Underground Coal Mine Methane in China

- Ventilation Air Methane (concentration < 0.75%) : 15 billion M³ / year
  - All VAM released to the atmosphere
- Coal gas drainage : 13.6 billion M³ / year
  - Only 35% (concentration > 8%) used for combustion power generation
- Huge untapped resources (83 % of total CMM in China)
- Huge GHG emissions to be destructed (5% of national GHG)

Ventilation air shaft

Pumping station of gas drainage
New Technical Solution

- Drained gas of pumping station is mixed into VAM, resulting in mixed methane concentration of 1.2%
- Under 950 °C, this low concentration methane is totally oxidized, releasing heat value and achieving great carbon emission reductions
- Using regenerative thermal oxidizers (RTOs), the methane oxidation keeps high temperature for continuous chemical reactions, while exporting large volume of 950 °C hot air for electric power generation by boiler and steam turbine machines
GaoHe Mine Project

- Installed capacities: 12 RTOs & 30MW steam turbine power generation
- Stable operations since May 2015
- Grid-connected power generation for more than 8000 hours per annum
- SGS inspection reports: methane destruction rate beyond 95%
Yangquan Project

- Total investment: 160 million RMB (~ USD 25 million)
- 6 RTOs of 90,000 M³/hour each
- 15 MW steam turbine power generation
- Annual carbon emission reduction 830,000 ton CO₂
- Heat-electricity co-generation in winter to replace coal fired boilers
- VAM/gas mixing and oxidization have been completed, power generation will commence in coming October
Yangquan Project
Future Projects

- CMM reserve of Shanxi Province: 10000 billion M³
- Fortman Clean Energy has formed strategic partnerships with Shanxi Coking Coal, Yangquan Coal and LuAn Coal, three major mining groups for developing more projects in Shanxi
- Two large projects of 10 RTO / 25MW installed capacities each will soon be started up at Gucheng mine of LuAn Group
- Fortman has been working together with Coking Coal Group in co-founding ICE-CMM in China
Favored Policy in China

To promote coal mine safety and utilization of CMM, the government has set up favored policies making the projects economically viable:

- Selling price of CMM generated electricity to the grid – 35% above thermal power generation
- The grid companies must buy all available CMM generated power
- Financial subsidies for utilization of CMM
- Favored tax policies

Minister of Science & Tech visited

Leaders of State Safety Adm. visited
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TO BUILD A BEAUTIFUL WORLD

Thank You
Fortman (Beijing) Clean Energy Ltd.

CTO      Steven Wan

Mobile   +86 139 1058 7662

E-mail   steven@fortmanenergy.com