World Academy of Science, Engineering and Technology
International Journal of Energy and Power Engineering
Vol:10, No:05, 2016

The Environmental Concerns in Coal Mining, and Utilization in Pakistan

Authors : S. R. H. Baqri, T. Shahina, M. T. Hasan

Abstract : Pakistan is facing acute shortage of energy and looking for indigenous resources of the energy mix to meet the short fall. After the discovery of huge coal resources in Thar Desert of Sindh province, focus has shifted to coal power generation. The government of Pakistan has planned power generation of 20000 MW on coal by the year 2025. This target will be achieved by mining and power generation in Thar coal Field and on imported coal in different parts of Pakistan. Total indigenous coal production of around 3.0 million tons is being utilized in brick kilns, cement and sugar industry. Coal-based power generation is only limited to three units of 50 MW near Hyderabad from nearby Lakhra Coal field. The purpose of this presentation is to identify and redressal of issues of coal mining and utilization with reference to environmental hazards. Thar coal resource is estimated at 175 billion tons out of a total resource estimate of 184 billion tons in Pakistan. Coal of Pakistan is of Tertiary age (Palaeocene/Eocene) and classified from lignite to sub-bituminous category. Coal characterization has established three main pollutants such as Sulphur, Carbon dioxide and Methane besides some others associated with coal and rock types. The element Sulphur occurs in organic as well as inorganic forms associated with coals as free sulphur and as pyrite, gypsum, respectively. Carbon dioxide, methane and minerals are mostly associated with fractures, joints local faults, seatearth and roof rocks. The abandoned and working coal mines give kerosene odour due to escape of methane in the atmosphere. While the frozen methane/methane ices in organic matter rich sediments have also been reported from the Makran coastal and offshore areas. The Sulphur escapes into the atmosphere during mining and utilization of coal in industry. The natural erosional processes due to rivers, streams, lakes and coastal waves erode over lying sediments allowing pollutants to escape into air and water. Power plants emissions should be controlled through application of appropriate clean coal technology and need to be regularly monitored. Therefore, the systematic and scientific studies will be required to estimate the quantity of methane, carbon dioxide and sulphur at various sites such as abandoned and working coal mines, exploratory wells for coal, oil and gas. Pressure gauges on gas pipes connecting the coal-bearing horizons will be installed on surface to know the quantity of gas. The quality and quantity of gases will be examined according to the defined intervals of times. This will help to design and recommend the methods and procedures to stop the escape of gases into atmosphere. The element of Sulphur can be removed partially by gravity and chemical methods after grinding and before industrial utilization of coal.

Keywords : atmosphere, coal production, energy, pollutants
Conference Title : ICEMCR 2016 : International Conference on Energy Management and Coal Production
Conference Location : Paris, France
Conference Dates : May 16-17, 2016