

FAL-G: CDM PROJECT

A "Janata Technology" for Sustainable Development

The increasing emphasis on sustainable building practices has meant that globally there has been a lot of research going on in introducing new technology, materials and techniques. Perhaps more breakthrough technologies have emerged in the first decade of this century, than the whole of the preceding millennium. FaL-G is one such technology that has been attracting widespread attention in the recent past in India.

FaL-G Technology

FaL-G is a cementitious product, using fly ash as the principal input, developed and patented by Dr. Bhanumathidas and N.Kalidas at their research outfit, Institute of Solid Waste Research & Ecological Balance (INSWAREB),



Dr. Bhanumathidas



N.Kalidas

Vishakapatnam. One of the primary culprits behind harmful emissions is the cement and clay bricks industry. Research statistics estimate that in India, each million clay bricks consume about 200 tons of coal and emit around 270 tons of CO₂. FaL-G on the other hand, is produced in an energy-free route, eliminating emissions totally, while also adhering to the norms of Clean Development Mechanism (CDM) as envisaged by the Kyoto Protocol towards the welfare of our planet. CDM is an arrangement under the Kyoto Protocol, which allows industrialized countries that have committed to reduce their greenhouse gas emissions by 5.2 % below the 1990 levels during the period 2008-09, by investing in projects that reduce emissions in developing countries as an alternative to more expensive emission reductions in their own countries. The purpose of CDM is to assist the developing countries in achieving sustainable development, while simultaneously contributing to stabilization of green house gas concentrations in the atmosphere.

Awareness Program

A one-day awareness program on FaL-G: CDM Project was held at Hotel Green Park, Chennai on October 30th, 2010. Going into the details of CDM in India, during the program, Mr.Kalidas said, "The potential of the CDM market in India has been estimated at around US \$ 35 billion. Although India is one of the early entrants in the CDM field, it is yet to fully exploit the potential benefits. In general, there is skepticism because of a perception that the CDM process is too complicated and cumbersome." FaL-G brick technology is playing a crucial role in the implementation of the process, with continuous enhancement in activity resulting from experimentation and research.



Explaining how all the constituents of FaL-G technology are industrial wastes such as fly ash, gypsum and other anhydrites, Mr.Kalidas spoke about the enormous potential that this "Janata technology" has for our country. According to him, there are already around 12,000 plants all over the country, which use this technology, producing around 30 billion bricks and generating a turnover of over Rs.9000 crore annually (at a conservative average of Rs.3 per brick. In Chennai for instance, conventional clay bricks are being sold at Rs.7 per brick). FaL-G brick making units have several advantages over traditional clay brick manufacturing facilities. For one, the units need simple machinery- a mixer and casting machine- which means that a unit that can produce around 5,000 bricks /day can be set up with an initial capital investment as low as Rs.15 lakh.

The global output of fly ash is over 600 million tons, while the national output is about 120-140 million tons. The latter is poised to reach 120 million tons in the next decade. Many thermal power plants have been directed to install dry ash collection system to facilitate the utilization programme. Mr.Kalidas during this address pointed out how the use of fly ash in the FaL-G bricks can help in reducing harmful carbon emissions. Dwelling on the details he explained that each billion (1000 million) fly ash bricks conserve about 3.5 million tons of topsoil, which is roughly equivalent to over 292 acres of land (at excavation of top soil to an average depth of 1.5 metres), yet another benefit of this technology which scores high on sustainability quotient. Additionally around 500 million tons of industrial wastes can be used for the purpose of production of FaL-G bricks, all of which result in enormous benefits to the environment.

One Million Award

Eco Carbon Pvt Ltd., the Aggregator of FaL-G technology for carbon credits, offers Rs.One Million Award to the first person who can show a technology, not only in India but anywhere in the world, that can serve the parameters of sustainable development together with economic and community welfare as good as FaL-G in a holistic manner.

Use of Fly Ash

The use of fly ash has in a way contributed to the renaissance of pozzolanic chemistry. The failure of several thousands of structures built during 1940-1965 world over with high grade Portland cement, the age-old chemistry has come to the forefront for its durability. Fly ash has been identified as the source of pozzolan and cement as the source of lime. The point was brought to the fore in the address of Mr.K.Pradeep, Editor- In Chief, The Masterbuilder, who was a guest of honour during the event, when he said "None of us are new to concepts such as CDM and fly ash. What is important is that we recognize the opportunities and utilize the technology for the betterment of the environment. "He further went on to add, "It is imperative that we believe in the opportunity and be part of the change."

Dismissing pre-conceived notions about fly ash, Mr.Kalidas explained how FaL-G bricks are infrastructure products. "Their durability is because of the yield strength in the range of 200-400 kg/cm² which makes them ideally suited for check dams, canals and other infrastructural development activities," he said. Depending on the chemical constituents and the behavior of fly ash, the proportions of lime and calcined gypsum are decided. The





advantage of the technology lies in tapping the reactive constituents of fly ash to the optimum level through adding threshold quantities of lime and calcined gypsum to yield a product of superior technical virtues. The technology is therefore custom-built with defined process parameters based on particular fly ash, gypsum and lime.

Enormous Growth Potential

Since the technology is part of the CDM program enshrined by the Kyoto Protocol, end-users can also earn carbon credits through its use. Extolling entrepreneurs to set up projects using the technology, Mr. Alagiri, Hon'ble Member of Parliament, Cuddalore constituency, said "It is indeed unfortunate that we have not utilized this impressive technology, even though it has been in existence for almost two decades now". He gave a call to the industry to use the technology, while also assuring his continued efforts in promoting it.

The scope of growth of FaL-G technology is enormous given the increasing emphasis on green building technologies. Lack of awareness though has been a major hindrance to the propagation of the technology, at least till now. The untiring efforts of INSWAREB, Vishakapatnam have been instrumental in the gradual rise in the number of plants using FaL-G technology. This breakthrough technology could be a major force in driving forward sustainable development, with INSWAREB targeting the setting up of at least 100,000 plants in the next decade.

[For more information on FaL-G contact](#)

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