

# **Innovation Diffusion – Innovative Solar Power Plant - Substituting Ammonia for Water**

## **EXECUTIVE SUMMARY**

### **Introduction**

The main objective of this project is to propose an innovative solar power plant which uses ammonia in place of water to generate electricity. This technology system is recommended for developing countries like India, China.etc.

### **Background**

Brief theory on the energy from the sun and the ways of harnessing it, is discussed. The importance of the radiant energy from sun is an important source data because, this is the parameter which will lead to the effective working of the power plant. The types of heliostats and their significance in this system are explored. These heliostats are inclined in a particular angle to that of the sun's rays. These can be manually adjusted and can be controlled using a system of sensors, so that it can function without the need of human intervention. Heliostats concentrate the solar energy into the central heating system. The properties of Ammonia are discussed based on the physical and chemical backgrounds. The use of ammonia is considered as the innovative idea because of the low boiling point. This is the reason why it heats up even when there is a small temperature difference.

### **Discussions**

Water is heated in the central heating system because of the concentrated sun's rays. The water is sent inside this system through pipes which are black, as black body is a good absorber of radiation. This water from the pipe heats up the solution of Ammonia which runs around the pipe. The heated Ammonia expands and transforms in a vapor state. The gas cycles are determined by the pressure and temperature. A turbine is designed based on the values of the pressure and temperature parameters. The heated vapor runs the blades of turbine. This is coupled to a generator, which generated electricity. The hot vapor is cooled by allowing it to pass through a heat exchanger and the cycle continues.

### **Rommendations**

The government policies that can reduce the price of the system, is provided. Data is provided on feed-in-tariffs. The improvement in the government incentives and its advantages in the market is the main idea behind promoting this project. This can help people in seashore and riverbed areas and also in a place where there is abundance of sun's radiant energy, to obtain electricity. This is also a green project as it does not release any green-house gases.