

TECHNOLOGY CHALLENGES – RISKS AND OPPORTUNITIES IN POWER GENERATION

Pankaj Batra, Central Electricity Authority

This is a fast changing world. The human brain is working faster, aided by the high speed processing of information. Comforts for the human being have increased manifold, aided by mechanization, which has again facilitated the human being in working faster. But, this has had a side effect. It has increased energy consumption manifold, in order to cater to these conveniences. The requirement of power generation has increased manifold over the last few decades. The requirement of power has now started stagnating in developed countries, due to two reasons, one due to efficiency measures and the other one due to the developed world already having every conceivable convenience. However, it continues to grow in developing countries and would continue to grow, till the people of these countries attain a certain level of comforts.

However, this has had a debilitating effect on the environment, due to most of this generation taking place through fossil fuels, leading to pollution and carbon emissions and thus endangering the health of human beings. This, therefore, is now the main cause for all decisions being taken by humanity. There is a conscious effort to shift from fossil fuels to alternative sources, not only because of the above reason, but also due to the fact that fossil fuels are finite sources, and therefore may not be enough for energy security for future generations. The ones being developed the fastest are renewable sources of energy, mainly solar and wind energy, since these are non-polluting and are considered to be available for the next, maybe million years. However, these sources depend on nature and are therefore intermittent. We cannot depend on power from this to be available on 24x7 basis. Necessity is the mother of invention. Therefore, energy storage, which was hitherto not being used in the electric grid in a large manner, is now becoming the flavour of the times, with rapid developments taking place and prices also reducing rapidly. All Governments are setting aggressive targets to shift to renewable sources of energy, so also India. There are challenges for existing fossil fuel based generation in getting scheduled, and new fossil fuel based generators, which have been commissioned recently and those that are under construction, in getting contracts. In developed countries, fossil fuel based stations are no longer finding it viable to run and are shutting down. Some of these plants are being retrofitted to suit the requirement of flexible generation, in view of intermittency of renewables. These are realities of life that must be faced. The writing is clear on the wall. The future businesses must change in the field of power generation. Any entity which ignores these realities, does so at its own risk.