Future Developments in Power Industry

By

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Abstract

The paper covers expectations in the development in Electric Power Industry in the next three decades, the time horizon which is still predictive. Growing population in different world regions, fast progress in the economy of emerging countries, and still increasing power demand in industrialized countries will impact the development. Electric Power Industry will grow faster than the economies in average. Deregulation and liberalization in Power Industry will be generally accepted worldwide. Priorities in future development will be given to low costs at still adequate technical quality and reliability. Environmental constraints will also play an important role, however, not in all countries.

Future installed power generation will mainly consist of gas and water power generation as it offers economic advantages and advantages in CO2 reduction. However, coal fired and nuclear power stations will remain still an important part of generation. The amount of new developed regenerative generation (wind, solar, biomass, and fluelcells) will further increase, because of political support; however, its role will be limited because of the still needed time to develop competitive solutions. Fusion power generation can be commercially expected only in 50 years or even later.

Power systems in industrialized countries with low increase of power demand will alter only slowly as the life time of existing lines and equipment is in the range of 30 to 50 years. However, first applications of new technologies (e.g. with GIL for large distances and with superconductivity) can be expected. The loading of existing power systems will further increase leading to bottlenecks and reliability problems. The interconnections among large power systems will be extended. Large investments can be expected in the field of system automation and control. New generations of technically improved and more economic equipment will be installed. The needed enhancement of power systems will be done by FACTS and HVDC. In emerging countries with fast increase of power demand networks will grow fast and introduction of new higher voltage levels is possible in some countries. However, because of needs to transmit power over long distances, the application of FACTS and HVDC will play an important role in these countries, leading to hybrid AC/DC systems.

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