

ABSTRACT

With our accession into the European Union on 1 May 2004 the energy sector in Cyprus has changed dramatically with the following variations:

- The Electricity Authority of Cyprus (EAC) is expected to lose its monopoly (dominance) because 65% of the energy market has already been liberalized and the remaining 35% will be liberalized from 1 January 2014 for all consumers. This means that since 2014, every consumer of electricity will be free to choose his supplier.
- By 2020 Cyprus has pledged that 13% of energy needs will come from renewable energy sources, which will have priority connection to the grid supply and distribution of electricity.
- Also called the state to pay the extra pollutants produced. So the use of natural gas, renewable energy, and the development of systems optimization and efficient use of available power plants, are now the areas where we need to focus the EAC. This is precisely the objective of my study, namely the development of a system optimization and efficient use of available power plants, in combination with the use of natural gas as main fuel (at the units that can be applied).

Based on the above new restrictions the study aims to analyze the current method of selection of the operating segments of the EAC power plants that is suggested from Cyprus Transmission System Operator (TSO), which with increasing electricity demand put to production and out of production by reducing demand (not applicable for any particular scientific method). Then we will be developing a methodology and introducing new parameters in order to optimize and efficient use of available power plants. By standardizing the process there will be suggestions for developing software which will give the best solutions in each case.

Additionally, the methodology developed will incorporate quality standards and environmental parameters that the EAC will use as a standard procedure to be followed by the Shift Charged Engineers to put the production units with increasing demand for electricity and out of production by reducing demand.