

1. "Distribution network further development and medium voltage level selection for the area of Public Utility "Elektrosrbija" Kraljevo - Distributive area of Ćuprija",

Ordered by: Public Utility "Elektrosrbija", Kraljevo

Project Manager: Saša Minić, MSc.

Associates: Nada Obradović, MSc.

Branislav Ćupić, MSc.

Ana Šaranović, MSc.

Gordana Radović, MSc.

Analysis of network's present condition (phase 1 of the Project) and load forecast updating (phase 2 of the Project) have been accomplished based on data from the year of 2000. Long-term directions (year of 2020) of network development (phase 3 of the Project) have been formed and dilemmas, which should be clarified by detailed analysis of network development variants, have been clearly segregated. Variants of network development have been formed and analyzed, both without (phase 4 of the Project) and with (phase 5 of the Project) appliance of 20 kV voltage, and the most economical plan, which fulfills previously defined criteria, has been suggested. Network has been considered in respect of adjacent distributive areas (Jagodina, Paracin). Initial network size: ~400 MV/LV substations. Population: ~76000.

Size of Project: 370 pages

Finished in: 2003.

2. "Distribution network further development and medium voltage level selection for the area of Public Utility "Elektrosrbija" Kraljevo - Distributive area of Kraljevo",

Ordered by: Public Utility "Elektrosrbija", Kraljevo

Project Manager: Saša Minić, MSc.

Associates: Ivan Jovanović, MSc.

Gordana Radović, MSc.

Maja Turković, MSc.

Srđo Mrđa, MSc.

Analysis of network's present condition (phase 1 of the Project) and load forecast updating (phase 2 of the Project) have been accomplished based on data from the year of 1998. Long-term directions (year of 2020) of network development (phase 3 of the Project) have been formed and dilemmas, which should be clarified by detailed analysis of network development variants, have been clearly segregated. Variants of network development have been formed and analyzed, both without (phase 4 of the Project) and with (phase 5 of the Project) appliance of 20 kV voltage, and the most economical plan, which fulfills previously defined criteria, has been suggested. Network has been considered in respect of adjacent distributive areas (Vrnjačka Banja, Čačak). Initial network size: ~500 MV/LV substations. Population: ~120000.

Size of Project: 280 pages

Finished in: 2003.

3. "Upgrading of reactive power compensation in EES EPS using existing capacitor batteries - the 2nd phase for the area of Public Utility "Elektrosrbija" Kraljevo",

Ordered by: Public Utility "Elektroprivreda Srbije", Belgrade

Project Manager: Miloje Kostić, PhD.

Associate: Branko Mandić

Upgrading of reactive power compensation has been realized by using procedures for increasing usage of capacitor batteries in networks of small and medium consumers. Complete realization of the Program included study phase, project phase and also the proposed solution realization phase (without investment and also in short term: endmost in 1 - 2 months at the concrete consumer). Beside energetic analysis, needed analysis of the higher harmonic regimes have also been performed, both for consumers' network and for supplying distribution network. Project has been realized for 26 consumers. As a result of the project realization, capacitor batteries, whose overall power is about 30,000 kVar, are working in a permanent regime now. Amount of produced reactive (capacitive) energy increased about 250,000,000 kVarh/year in regard to previous case, where capacitor batteries were with automatic regulation.

Size of Project: 99 pages

Finished in: 2003.

4. "Distribution network further development and medium voltage level selection for the area of Public Utility "Elektrosrbija" Kraljevo - Distributive area of Sjenica",

Ordered by: Public Utility "Elektrosrbija", Kraljevo
Project Manager: Saša Minić, MSc.
Associates: Nada Obradović, MSc.
Gordana Radović, MSc.
Branislav Čupić, MSc.
Ana Šaranović, MSc.

Analysis of network's present condition (phase 1 of the Project) and load forecast updating (phase 2 of the Project) have been accomplished based on data from the year of 2002. Long-term directions (year of 2020) of network development (phase 3 of the Project) have been formed and dilemmas, which should be clarified by detailed analysis of network development variants, have been clearly segregated. Variants of network development have been formed and analyzed, both without (phase 4 of the Project) and with (phase 5 of the Project) appliance of 20 kV voltage, and the most economical plan, which fulfills previously defined criteria, has been suggested. Network has been considered in respect of adjacent distributive areas (Novi Pazar). Initial network size: ~140 MV/LV substations. Population: ~32000.

Size of Project: 114 pages
Finished in: 2003.

5. "Standard asynchronous motors for two voltage levels as energy efficient motors",

Ordered by: Serbian Ministry of science, technology and development
Project Manager: Miloje Kostić, PhD.
Associate: Žarko Janda, MSc.

Following activities have been performed during the year of 2003:

- Research and analysis of energy characteristics in 0-100% load-range, for standard asynchronous medium power motors (11-30 kW) at nominal voltage (U_n) and at lower voltage ($0.866U_n$) have been performed. As a result, reduction of power losses and reduction of reactive load for the medium power motors, relative to lower voltage, for characteristic loads (25%, 50%, 75% and 100%) were established.
- Production of asynchronous motors with stator winding with reconnection ability was justified techno-economically. Conclusion is that little more investment to those motors relative to standard motors is reasonable because of the energy savings.
- Appliance of the motor with the reconnection of stator's half-winding has been considered, criterions for selecting stator windings connection and ways for reconnecting were established.
- Based on research results, adequate series of asynchronous motors and a rewinding process have been defined.

Size of Project: 20 pages
Finished in: 2003.

6. "Distribution network further development and medium voltage level selection for the area of Public Utility "Elektrosrbija" Kraljevo - Distributive area of Šabac",

Ordered by: Public Utility "Elektrosrbija", Kraljevo
Project Manager: Saša Minić, MSc.
Associates: Gordana Radović, MSc.
Nada Obradović, MSc.
Ana Šaranović, MSc.
Branislav Čupić, MSc.

Analysis of network's present condition (phase 1 of the Project) and load forecast updating (phase 2 of the Project) have been accomplished based on data from the year of 2001. Long-term directions (year of 2020) of network development (phase 3 of the Project) have been formed and dilemmas, which should be clarified by detailed analysis of network development variants, have been clearly segregated. Variants of network development have been formed and analyzed with appliance of 20 kV voltage (phase 4 of the Project), and the most economical plan, which fulfills previously defined criteria, has been suggested. Network has been considered in respect of adjacent distributive areas (Loznica, Valjevo). Initial network size: ~760 MV/LV substations. Population: ~200000.

Size of Project: 307 pages
Finished in: 2003.

7. "Perspectives of the part of 220 kV network",

Ordered by: Public Utility "Elektroprivreda Srbije", Belgrade

Project Manager: Srđo Mrđa, MSc.

Associates: Saša Minić, MSc.

Nada Obradović, MSc.

Ana Šaranović, MSc.

Tanja Đokić, MSc.

The purpose of the study was to reinvestigate adequacy of rehabilitation some parts of 220 kV network which was proposed in the study "Rehabilitation of transmission network", made by DECON, BEA and Institute "Nikola Tesla" in the year 2002. As the result of that study it was proposed that old, deteriorate and damaged by bombing equipment 220 kV in some 400/220 kV and 220/110 kV substations (Beograd 8, Beograd 3, Beograd 5, Novi Sad 3, Niš 2, Srbobran, Kruševac 1 i Leskovac 2) including transformers should have been replaced with the same voltage level equipment until 2011.

Based on the mentioned study energy background, but taking into account more realistic prices for new equipment and the dismantled equipment rest value, new solution were formed and proposed. In some cases, instead of equipment restoration better solution was to form 400/110 kV transformation to replace existing 220/110 kV transformation. In some cases it was justified to keep 220/110 kV transformation. Eventually, for some parts of transmission network final answer is possible after completion the transmission network long-term development study.

Size of Project: 139 pages

Finished in: 2003.

8. "Distribution network further development and medium voltage level selection for the area of Public Utility "Elektrosrbija" Kraljevo - Distributive area of Raška",

Ordered by: Public Utility "Elektrosrbija", Kraljevo

Project Manager: Saša Minić, MSc.

Associates: Branislav Čupić, MSc.

Nada Obradović, MSc.

Ana Šaranović, MSc.

Gordana Radović, MSc.

Analysis of network's present condition (phase 1 of the Project) and load forecast updating (phase 2 of the Project) have been accomplished based on data from the year of 2002. Long-term directions (year of 2020) of network development (phase 3 of the Project) have been formed and dilemmas, which should be clarified by detailed analysis of network development variants, have been clearly segregated. Variants of network development have been formed and analyzed, both without (phase 4 of the Project) and with (phase 5 of the Project) appliance of 20 kV voltage, and the most economical plan, which fulfills previously defined criteria, has been suggested. Network has been considered in respect of adjacent distributive areas (Kruševac, Novi Pazar). Initial network size: ~280 MV/LV substations. Population: ~43000.

Size of Project: 268 pages

Finished in: 2003.