

Staff of Section 0100

The staff of Section 0100 is represented by highly qualified specialists.

The graduated and technically skilled specialists with many years of experience in electricity industry prevail in our working teams and they are specialized in specific aspects of the operation and development of the EPS.

The structure of the staff of Section 0100 may be characterized as follows:

- 90% of graduate and postgraduate specialists, 10% with a high-school education, a part of postgraduate specialists have received a higher scientific degree
- high professional qualification of the personnel
- many years of experience in the given field of activity
- engagement of young engineers supervised by experienced specialists
- external cooperation with specialists involved in interdisciplinary activities.

References and certificate of quality

A series of complex projects and partial tasks have been elaborated by Section 0100. The professional capabilities and the quality of solutions presented by the Section 0100 may be demonstrated, e. g., by the successful elaboration of the "Project of connecting the electric power systems of the Czech and the Slovak Republics to the UCPT system" as well as by the results of periodically elaborated projects "Yearly and long-term balances between the consumption of electricity and the generating capacities in the electric power system of the Czech Republic".

The results of activities undertaken by Section 0100 are used by decision-making authorities (Ministry of Industry and Trade, Energy Regulatory Office, Ministry of Local Development, etc.), by whole-system organizations of the energy industry (electricity market operator OTE, a. s., ČEPS, a. s.), by large generation and distribution companies (ČEZ, a. s., E.ON Distribuce, a. s.) and other organizations of the energy industry in the Czech Republic and in Slovakia.

Independent organizations of the energy industry, i. e. independent electricity generators, network operators, large consumers, manufacturers and suppliers of energy equipment, etc. are our important partners as well.

EGÚ Brno, a. s. is the holder of the ISO 9001 and ISO 14001 certificate.

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Where you can find us:



EGÚ Brno, a. s.

Electric power system operation and development

Section 0100

EGÚ Brno, a. s., is a research, engineering, consulting and realization company involved in the field of electricity and heat generation and transportation with the main attention paid to increasing the electricity supply reliability and quality and to rationalizing the utilization of electricity. The organizational chart of the company comprises five sections. The Section 0100 "Electric power system operation and development" is the greatest section of EGÚ Brno, a. s.

The scope of works undertaken by Section 0100 includes analytical, technical and prognostic activities in the field of the operation and development of the electric power system (hereinafter "EPS") of the Czech Republic and the solving of related technological, environmental and economical problems. Analyses of the expected operation of EPS starting from investigating its near perspective up to strategic considerations embracing distant horizons of time are inherent part of these activities.

Main fields of activity of Section 0100

The activity of Section 0100 may be characterized by the following topics:

- elaboration of long-term electricity balances in the EPS of the Czech Republic
- calculations and analyses of electric networks of the transmission system and of the 110 kV networks
- elaboration of load profiles for the electric power industry and supporting activities for the gas industry
- preparation of basic data for pricing decisions in the electric power industry, economical calculations
- elaboration of basic data for energy legislation and for making decisions about energy concepts, expertises concerning electric energy
- long-term maintaining of a complex data base and of simulation models related to the EPS of the Czech Republic, elaboration of a technical data base on the EPSs of Central Europe.

Scientific and other professional activities of Section 0100

The scientific, professional and publication activities are reflected in presentations at seminars, conferences and symposiums in the Czech Republic and in other countries.

For 9 years already, Section 0100 organizes a yearly prestigious seminar devoted to contemporary problems of our energy industry (Brno, Hotel Voroněž). These seminars are attended by more than 300 participants from the whole spectrum of the energy industry every year, including top managers and prominent specialists representing the majority of institutions and organizations of the Czech and the Slovak energy industry. The lectures presented at these seminars are read by top managers of the most important energy companies and organizations, as well as by specialists of Section 0100.

Our specialists take an active part in the activities within working groups of well-known international organizations, especially of WEC and CIGRE. The results of their work are published in materials of WEC and in official papers presented to CIGRE.

The cooperation with many university and research institutions in the Czech and the Slovak Republic is also being permanently developed. This includes especially the involvement of students in special projects and the cooperation when conducting the elaboration of diploma works and thesis's. The specialists of Section 0100 are members of university examining boards and are active in lecture-courses and in training and consulting activities.

The publication activity is mainly connected with the participation in seminars and scientific conferences where the specialists of Section 0100 present selected results of their work and the knowledge attained in the respective professional disciplines.

Modelling system MAES for the analyses of EPS

Section 0100 permanently develops and enlarges a complex modelling system for simulating technical and economical processes taking place in the EPS – the so-called MAES. At present, the MAES in version 9 is in use and a new version 10 oriented to a more detailed modelling of market processes is being prepared. The MAES model system is linked with the complex data base of the EPS in the Czech Republic. It has been developed for a long time, complying with technical and organizational changes in energy industry. It may be used for solving both “system-wide” problems and specific problems according to the customer’s requirements.

The MAES modelling system:

- provides a detailed solution of technical circumstances connected with the operation of the EPS (development of consumption, operation of generating capacities, operation of networks, decomposition of load into networks, technological interlinking)
- models the electricity market and the market connected with ancillary services
- serves for simulating the market and the operation of generating capacities of the EPS and it enables us to simulate very many of tasks both for EPSs managed in a totally market environment and for those that are partly deregulated but also centrally managed
- disposes of a wide data base describing the structure and parameters of EPSs of the Czech Republic and its neighbouring countries, resulting in a high validity of its results.

At present, the model undergoes a further development and its version 10 having the following features is being prepared now:

- The architecture of this new generation of the model is based on the mathematical theory of games that models the rational decision-making of the market players when trading even under conditions of the imperfect competition.
- The new algorithm will enable the modelling of the EPS of the Czech Republic to be carried out in more detail with due regard to the space/region of Central Europe.

The MAES model system will not be put up for commercial sale. It is used for solving the problems set to Section 0100 in close relation to the customers’ needs.

Economical analyses of price regulation, preparation of basic data for electricity pricing

The liberalization of the electricity market is accompanied with the unbundling of activities connected to the generation of electricity and to its transportation to final consumers, including the establishing of the respective commercial relations. The splitting of activities into the so-called regulated and not regulated ones and the setting of regulated prices gives rise to many problems to be solved, problems that result from the operation of the system under conditions defined by the electricity market.

Thanks to its knowledge and experience in the electric power system operation, Section 0100 participates, since the beginning of the liberalization process, in preparatory and realization activities in the following fields:

- concept of the electricity market (market modelling, rules, legislation)
- methodology of setting regulated prices for electricity transmission and distribution
- documentary technique for regulation proposes
- regulated prices for electricity transmission and distribution
- mechanism of covering the costs of promoting the electricity from renewable sources and from electricity and heat cogeneration
- regulated prices of the supplier supplying final consumers
- price analyses on the liberalized electricity market

The results of these activities are used by the Energy Regulatory Office, network operators, as well as by electricity and heat generators and/or generators of electricity from renewable sources.

Long-term electricity balances in EPS of the Czech Republic

The elaboration of long-term electricity balances for the EPS of the Czech Republic belongs to the most important activities of Section 0100. The matter concerns a complex description of the expected situation in the EPS of the Czech Republic in a wide interval of time, starting with a detailed analysis of the EPS in the nearest year up to its general strategic perspectives in the horizon of more than 30 years. The aim of these works is to provide information for securing the balance between the consumption of electricity and the generating capacities in the EPS of the Czech Republic in future.

The elaboration of electricity balances incorporates:

- the problems of home electricity consumption (statistics and prognoses),
- the structure of generating capacities including recommendations for building new generating capacities in the future,
- setting up of power and generation balances, analyses of the state of regulatory services,
- calculations of fuel consumption and of emissions including an early signalization of deficiencies in securing primary energy sources for the system,
- calculations and evaluation of perspective operating regimes of the networks by using a complex model comprising the transmission network, all 110 kV distribution networks, a complex of generating capacities, as well as the EPSs of foreign countries.

The results of these activities are intended to be used by central state authorities (Ministry of Industry and Trade, Energy Regulatory Office), electricity and heat generators, network operators and/or by subjects of the fuel industry (coal and gas companies).

Calculations and analyses of electric networks

Besides the elaboration of long-term electricity balances, the Section is involved in specific network projects complying with the concept of the development of electric networks in the EPS of the Czech Republic.

The main part of works being carried out in the field of electric networks is the evaluation of operating conditions and submitting proposals for modifications to be introduced into the further development of 400 and 220 kV transmission networks and of 110 kV distribution networks.

The elaboration of specific projects in the field of electric networks mainly concentrates on the following subjects:

- evaluation of the operation and proposals for the development of 400, 220 and 110 kV networks
- application of new technologies and of new equipment in the electric networks complying with the concept of their development and operation
- connection of new generating sources to the networks of various voltage levels – conventional and renewable energy sources
- connection of large consumers, whole industrial areas and consumption complexes while securing the required level of reliability and/or a back-up supply
- uniform elaboration of circuit diagrams of electric networks for the whole EPS of the Czech Republic
- proposals for increasing the security of electricity supply to various consumers and of the self-consumption of generating units
- optimization of the operational diagrams of the networks and proposals for implementing new network elements
- proposals for and evaluation of the inter-state interconnection at the level of the transmission system and of 110 kV networks
- technical and economical evaluation of network operation and evaluation of the effectiveness of new investments into electric networks.

Elaboration of load profiles

The gradual opening of the electricity market for all groups of customers imposes new demands on the arrangement of the electricity market. A great part of electricity consumption is represented by residential and commercial customers who have not installed the interval measurement (continuously read samples) of their consumption. For this reason, a substituting “load profiles” method is being used for setting up the electricity balances and, especially, for setting the deviations exhibited by the market players.

The whole matter may be divided into two basic areas:

- elaboration and analyses of load profiles based on measured data for chosen samples of consumers,
- elaboration of rules for applying the load profiles method in practice and a continuous development of the whole system under conditions of the opened electricity market.

Beside a complex solution of the project of load profiles for the Czech Republic, the Section also elaborates the load profiles for conditions existing in EPS of Slovakia and participates in solving similar problems in the gas industry.

