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MATHEMATICAL PROGRAMMING IN THE OIL INDUSTRY
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The work "Mathematical programming in the oil industry" is enriching our speciality literature with a valuable and useful work, placing itself among the monographs which approach a field of present-day interest, mathematical programming, widely used nowadays within the production organization, with a view to obtaining maximum of efficiency. At the same time, it represents a good guide for all those who want to get deeper into the problems of applying into practice the mathematical programming theory, and particularly for the specialists in the oil industry, whose activity concerns the improvement of the economic and technical activity.

We emphasize most particularly the fact that this work is the result of a profitable co-operation between the "Centre of Economic Computation and Economic Cybernetics", Bucharest and the "Institute for oil processing", Ploiești, and the "Enteprise for oil-products conditioning and delivery", Constanța. This co-operation lead to solving some economic and technical problems of the oil industry. This is why this monograph represents an original scientific contribution concerning the application of the mathematical methods in the economy and, at the same time, it constitutes an eloquent example for the scientific research efficiency, when actual problems of the national economy are approached.

Another important characteristic of this work is the presentation of the electronic computer usage, in solving mathematical programming problems, a fact which considerably increases the investigation and operating possibilities when analyzing various complex processes of the economic and technical activity. For the first time in our speciality literature, a topical economic problem is being treated in close correlation with model computing techniques. As a matter of fact, as is known, other valuable works on the mathematical programming were published in our country, but these limited themselves to the presentation of the theoretical concepts and the indication of the wide applying possibili-

ties in various fields. The monograph we are reviewing uses the mathematical methods to solve actual problems of our oil industry; it is, at the same time, a very useful introduction into the computing machine programming theory.

The reader is acquainted with the main technical and economic data — specific weight, density, octane number, cetane number, Diesel index, flashing point, viscosity, congealing point — which take part in working out mathematical models. Further on, the authors initiate the presentation of the mathematical programming applications in the oil industry by solving problems concerning the selection and distribution of investments on new structures in oil extraction, the optimizing of oil-output distribution within the framework of an oil-field group. While following the operating processes in their natural succession, the authors go further to solving some problems of oil processing. The optimal planning of crude oils which are to be submitted to processing in an oil distillery refer to obtaining, with minimal costs, a various assortment in the agreed quantities, optimizing the value of the gross production in an oil-distillation plant a.s.o. Particular attention was paid to the very complex problem of the optimal programme of an oil distillery, by establishing the corresponding mathematical model, as well as the criteria concerning the optimal adjustment of the manufacturing programme.

The problem of the oil-product blends has a particular practical importance, as its solving leads to establishing the optimal blending ratio, with the most reduced cost price, or ensuring the highest profit, at the technical grade requested by the user or stipulated in the agreement. The modelling process of blending petrols, gas-oils, lubricating oils is particularly examined. Various actual examples from practice, of optimizing some blending problems, are given, and their economic efficiency is pointed out. Further, in connection also with oil-products marketing, the following problems are examined: location of oil-products sale bases in the country and abroad, optimizing of oil-products transport and exportation, optimizing of oil-tanker loading in an export harbour.

The optimal organizing of oil-equipment production and the maintenance of an oil-distillery equipment are treated in a separate chapter. Actual examples are given, as concerns optimizing of an oil-equipment building plant, or the co-ordination of the maintenance works in an oil distillery.

Following the absolutely necessary generals — concerning electronic computers, digital codes, algorithms for solving problems, logical computation diagram for describing an algorithm, computers programming — are presented. Particular attention is paid to digital computer usage in designing, in processing and blending problems a.s.o.

Thus the reader of the work gradually gets over many of the problems connected with the production-and-labour management and organization in the oil industry, a basic branch of our national economy; he follows the manner in which they can be solved by means of the modern mathematical instruments, he ascertains the higher efficiency

achieved in comparison with solving the same problems by the usual methods.

The monograph is concluded by an annex, in which the basic notions of mathematical programming, of the graphs' theory and of the dynamic programming are systematically exposed.

The general results are presented in their modern developments, a fact which extends and deepens the understanding of the notions and specific phenomena of the mathematical programming or of the graphs' theory. The reader finds also rich references of the speciality literature selected with special care, which makes it possible for him to go deeply into various aspects presented in this work.

The work is clearly written. One remarks also a permanent endeavour to emphasize the main aspects concerning the mathematical models and their actual utilization. There are many well-selected examples.

The reviewed monograph constitutes at the same time an operating methodology, not only for applying mathematical programming in the oil industry, but also for using mathematical models in other branches of the economy.

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