

BOOK REVIEW

LOCATION PLANNING FOR SOLID WASTE DISPOSAL PLANTS (STANDORT-PLANNUNG FÜR ABFALLBEHANDLUNGSANLAGEN: REGIONALE PLANUNG MIT HILFE GRAPHENTHEORETISCHER ALGORITHMEN)

by G. DEHNERT (in German), Vol. 1 [In:] *Abfallwirtschaft in Forschung und Praxis*
Erich Schmidt Verlag Bielefeld 1977, XII+154 pages.

Following an already well known series of books *Water and Wastewater in Research and Practice (Wasser und Abwasser in Forschung und Praxis)* edited by the Erich Schmidt Publishing Office, Bielefeld, FRG (four of them have been reviewed in Polish technical journals^{1, 2, 3}), a series dealing with Solid Waste Management in Research and Practice is now issued by the same Publisher.

The series starts with a report by Dehnert, in which modelling, planning and locations of regional solid waste disposal plants are discussed. The report is a logical consequence of a large research programme whose aim was to achieve optimal solutions to wastewater disposal and treatment. Using similar methods in solid waste management, special interest was paid to the applicability of such models. To engineers involved in development planning, the author gives a convenient tool which enables them to solve the problems larger than those which have been solved so far by using conventional methods for comparison of variants.

For a better understanding of the given algorithms, the author provides in a condensed form, some backgrounds and relations well known in the theory of graphs, in information science and in mathematical optimization.

The main purpose of the report was the formulation and modification of graph-theoretical algorithms applicable to solving the transport and location problems which arise in the said waste collection and disposal.

Using waste, as the example the application of operations research methods in solving some planning work has been shown. Special emphasis was given to practical application of modified algorithms to the problems of net flows with fixed costs. The way in which is the formulation advantageous branch-and-bound strategies and the structure of the task utilized when partial problems are dealt with are explained. It is always assumed that a discrete set of potential locations has been selected out from a continuous set of possible locations.

The branch-and-bound concept developed in this book allows to solve also large practical problems within a short computer time. For the partial problems discussed here (as, e.g., the flow in a network with minimal costs, the determination of the shortest possible routes in a directed graph), some evident modifications of the algorithms are also given.

¹ Environ. Prot. Eng., Vol. 3, No. 1-2, pp. 169, 1977.

² Gaz, Woda i Techn. Sanit., Vol. 52, p. 128, 1978.

³ Environ. Prot. Eng., Vol. 4, No. 3, p. 000, 1978.

For the most important procedures full computer programmes are given in appendices. Further, two practical examples of planning are cited. At last, the results are compared with those achieved by other methods.

The contents of this small book is excellently arranged both from the logical and methodological points of view. Thus, it may be used as a textbook as far as acquaintance with the optimization of solid waste management is concerned. It includes a lot of comprehensive materials, indicates some trends and makes suitable suggestions.

To engineers concerned with the application of operations research in the management of solid waste and environment protection, this booklet will be of special importance.

E. S. Kempa

Other books contained in this series (all in German):

- Vol. 2, New Techniques of Solid Waste Disposal (Proceedings of a seminar held at the Technical University of West Berlin), X + 363 pages,
- Vol. 3, Planning of tours for Refuse Collection and Disposal (Proceedings of a Seminar held at the University of Karlsruhe), 130 pages,
- Vol. 4, Repayment of Environmental Duties in the Solid Waste Branch, by L. Wicke, X + 88 pages,
- Vol. 5, The Disposal of Special Waste (Proceedings of a Seminar held at the Technical University of West Berlin), X + 317 pages.