



Optimization Strategies: Petroleum Refinery Planning under Uncertainty

By Cheng Seong Khor

VDM Verlag Dr. Müller E.K. Nov 2013, 2013. Taschenbuch. Book Condition: Neu. 220x150x20 mm. Neuware - This work proposes a hybrid of stochastic programming (SP) approaches for an optimal midterm refinery planning that addresses three forms of uncertainties: prices of crude oil and products, demands, and yields. An SP technique that utilizes compensating slack variables is employed to explicitly account for constraint violations to increase model tractability. Four approaches are considered to achieve solution and model robustness: (1) the Markowitz's mean-variance (MV) model to handle randomness in the objective coefficients by minimizing the variance (economic risk) of the expected value of the random coefficients; (2) the two-stage SP with fixed recourse to deal with randomness in the RHS and LHS coefficients of the constraints by minimizing the expected recourse costs; (3) incorporation of the MV model within the framework in (2) to formulate a mean risk model that minimizes the expectation and the operational risk measure of variance of the recourse costs; and (4) reformulation of the model in (3) by adopting mean-absolute deviation (MAD) as the operational risk measure imposed by the recourse costs for a novel refinery planning application. A numerical example is illustrated. 328 pp. Englisch.



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