



Using optimization to support global supply chain redesign

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Abstract: Elkem's silicon division is the largest supplier of silicon metal and ferrosilicon in the world. With the slowdown in the global economy that started in 2000, the corporation needed to improve the efficiency of its supply chain network and evaluate its product portfolio. To help the company manage this process, a strategic-planning model was developed.

This mathematical-programming model addresses decisions pertaining to future plant structure, including possible closures, new plant acquisitions, and investments in production equipment. The silicon division has used the model and its scenario analysis capabilities extensively to support the design of its future supply chain. A stochastic programming model has been developed to assess the robustness of the decisions. The company agreed to a restructuring process, which included reopening a closed furnace and investing \$17 million in equipment conversion. Overall, as a result of the restructuring plan, Elkem expects a significant and sustained improvement in yearly revenue for the silicon division.

Bio: Nina is a consultant in the Decision Sciences Practice in PA Consulting Group (www.paconsulting.com), and holds an adjunct Associate Professorship at the Norwegian University of Science and Technology (www.ntnu.no). Her research focus on applications of Operations Research for supply chain optimization and strategic planning.