About Shell Global Solutions

Shell Global Solutions (US), Inc. provides business and operational consultancy, technical services, and research and development services to energy and processing industries worldwide. It serves customers in the areas of exploration and production, refining, gas and LNG, and processing industries, including chemicals, metals, pulp and paper, power, mining, and automotive.
Challenge
Shell Global Solutions was commissioned to develop an integrated decision-support tool that could improve Shell’s gas sector activities. These activities include complete corridor planning services, from construction to production, to end-user, and forward planning in terms of gas specifications, gas/crude production balancing, the effect of a no-flaring policy, and debottlenecking of multiple gas trains. Given the complexities of their planning landscape, the decision support tool needed a coherent framework, including mechanisms which allow consistent economic and operational steering, taking due account of available (real-time) information on actual operations and market economics.

Solution
Shell Global Solutions chose AIMMS’ modeling software to develop its strategic business-planning tool, now known as GMOS/NetSim (Global Manufacturing and logistics Optimization System/Network analysis and Supply Chain Optimization System).

GMOS models a business’ feed supply, manufacturing processes and distribution of products to help maximize margins. Using state-of-the-art techniques, the tool calculates the optimum manufacturing and logistics plan for Shell Chemicals’ ethylene oxide (EO) and ethylene glycols (EG) manufacturing plants. The model considers the production economics of each facility as factors such as feedstock and logistics prices change. Even complex commercial terms, such as rebates and take-or-pay contracts, are considered in the analysis. As well as for short- to mid-term planning, Shell Chemicals uses the tool to consider ‘what-if’ scenarios, where it can help to evaluate where to locate a new depot/terminal, for example, or to scrutinise the merits of a potential new asset.

In the words of Jim Nastoff: “GMOS has helped us to optimise our supply chain and select the feedstock with the best commercial terms at any given time. The folks in the petrochemicals business really trust this tool to help them make the right decisions.”

Results
This valuable tool has helped Shell define an optimal asset structure, and within that achieve:

- optimal sourcing of raw materials,
- balancing yields against both the market value of alternative raw materials and derivatives
- optimizing manufacturing volumes by plant, driven through tranched/tiered pricing or price elasticity functions,
- deciding where to manufacture, and how to minimize the logistics distribution cost.

Sources:
Decision-support tool yields major advantages for the petrochemicals industry (Global Logistics System). Impact 4 (2003) 13