ENTERPRISE LEVEL NPV ANALYSIS OF TIER IV PROGRAM

CGN developed a NPV analysis simulation model for our client as they prepared to reengineer their entire product line in six years to meet stringent EPA and EU regulations (Tier IV Program). The client was challenged with identifying the right compliant product mix to maximize the enterprise's NPV based on regulation constraints, production and sales costs, and price projections.

Business Problem

1. Optimize constrained enterprise resources to achieve Tier IV compliance.
2. Maximize enterprise NPV by optimizing:
   a. Program timing
   b. Tier 4a vs. Tier 4b technology introduction
   c. Capital investment
   d. Product cost
   e. R & D cost
   f. New content
   g. Resources
   h. Commonality
   i. Price realization
3. Maximize customer value

CGN Solution

The CGN Team:

Developed an Influence Diagram of all variables for calculating the enterprise NPV

Incorporated the NPV variables into a simulation model

Modeled all ongoing NPI programs at the end product and component level

Identified key drivers that affect these programs and the NPV variables. These drivers included variables such as materials, labor, and other operations costs.

Applied Monte Carlo simulation principles to build a highly complex and robust model. The probabilities of achieving the objectives were extracted from the model results.

Customized the model inputs and outputs to provide the client a greater flexibility of use.

Customer Benefit

The simulation model increased the client's probability of optimizing enterprise NPV and allowed them to develop contingency strategies by enhancing their understanding of the potential impact of variability in their plans.

SCOPE
Simulation analysis of the Tier IV Program for 175HP machines; determine the number and timing of NPI models for every generic model, which optimizes the enterprise NPV; develop what-if scenario analysis for different option mixes.

BUSINESS DRIVERS
Enterprise level NPV optimization

For details call: 1.888.RING CGN (1.888.7464.246) or e-mail: leanoffice@cgn.net
NORTH AMERICA | EUROPE | ASIA
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