

# A&S Engagement with Apollo Diamond

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## Background:

- **During the highlighted project, Scott Kennedy (VP at re:Process Optimization) was acting as VP of Anderson & Schwab, Inc., a Management Consultancy concentrated on the Mining and Metals sector, operating out of New York City.**
- **In 2005, A&S was engaged by Apollo Diamond, who had developed the capability to manufacture single crystal, clear, diamond gemstones. These diamonds were/are largely indistinguishable from mined diamonds, and have been termed “cultured” diamonds. At the time of our investigation, the process was new, and was thought to pose a significant threat to the traditional mined-diamond gemstone industry.**



## The engagement:

- **The client was about to be visited by a large (global) mining enterprise, with interest in purchasing the firm, or at the least, investing heavily into it. Our task was two-fold: First, to assist them in preparation for this visit, advising them on what preparations needed to be made, and establishing the requisite records, technical data, and financial information, and second, to divine their progress in transitioning to a commercial production level from laboratory success.**



## Data and Management Preparation

- **Assisted them in setting up a “data room”, with the requisite financial performance data, and the corresponding, appropriate technical data from the laboratory.**
- **Interviewed key personnel to get a sense of the level of staffing, and identified some key postings within the company that might be missing or ill-staffed.**



## Transition to Commercial Production

- **Progression from laboratory success to commercial production:**
  - The process (CV Deposition of diamond) is multivariate, and very sensitive, requiring painstaking control over input variables and process conditions
- **Significantly more involved**
  - Required the employment of several tools and methodologies that make this case history worthy of review:
    1. Perception .vs. reality
      - Key personnel were interviewed, with a view to understanding their perception of how far away they, as a group, were from commercial production capability
      - As is common with this progression, a feeling of “we’re only six weeks away...we’ve proved it in the lab, so there’s no problem” was evident.
      - We uncovered the true distance through statistical analysis of production data



## Transition to Commercial Production

### 2. Modeling and Simulation

- We constructed two models to inform the client and their potential suitor(s):
- A process-based cost model (PBCM), and
- A system dynamics simulation of the operation, showing both the expected production capacity and the resultant economics

- **PBCM:**

- The cost model was based on input costs, labour, cost of capital, cost of equipment, etc.
- This information was fed into the simulation, and to the financial reporting in the data room

- **Simulation:**

- The simulation was instrumental in demonstrating to the client the current state of production (pilot plant) capability, and the improvements necessary to approach the desired commercial production levels



## Transition to Commercial Production

### 3. Setting up Testing and Gating procedures:

- We established production test runs and specific gates for the progression towards commercial production levels, instituting milestones for critical accomplishments
- Sizing targets, process run-times, MTBFs, and production volumes were all detailed and presented on GANTT charts
- The prioritisation for these tasks and gates was determined through collaboration with the client, ensuring “buy-in” and transmitted plainly and transparently to the key personnel



## My role(s) – S.Kennedy

- **I was tasked with:**
  - Preparation of the cost model
  - Assisting with the creation of the simulation
  - Interviewing the client's key personnel, as well as the principals
  - Evaluating the technical performance of the system used
  - Performing the statistical analysis of the production to date
  - Assisting in the preparation of the final report





## Outcomes:

- **The big suitor lost interest**
  - I suspect, though I do not know, that the mining world watched as tremendous pressure was applied by major players (DeBeers) on the enterprise, and decided that the threat was sufficiently squashed
- **Production was increased, but some hurdles were not overcome**
- **In 2010, assets were sold to a new enterprise, and efforts continue, albeit in a marketplace where there are now competitors**

