Alcoa: Life Cycle Tracking

Overview
Alcoa would like a traceability database that holds information about the entire specified manufacturing system and allows the traceability of products and materials throughout the entire system from start to finish. One of the primary uses will be for tracing quality control issues throughout the system; however, the traceability feature can be used for many other purposes. Alcoa would also like user friendly reports and the ability to fully integrate the database into their manufacturing system in the future.

Objectives
The group listed project goals as follows:
- Create a database that effectively manages data obtained from the full life cycle of aluminum processing
- Provide an output report that identifies mass balance, cost analysis, process lineage tracking and process statistics
- Maintaining and monitoring an economic sustainability of aluminum processing
- Future applications of simulation software and user interfaces that would allow for database integration

Approach
- At the site visit, the group determined objectives and deliverables with the sponsor.
- The group arranged weekly conference calls. During these calls the group updated project progress with the sponsor and gained valuable feedback.
- The group determined that Access and Excel would be the main deliverables.
- The database was reworked many times, as mapping the tables was a challenge.
- The group entered “dummy data” to test and verify the query output.
- An Excel spreadsheet was created to calculate energy efficiencies based upon query output.

Outcomes
- Access database that provides full production process tracking
- Excel spreadsheet that calculates energy efficiencies
- Energy emission reduction recommendations
- Future database integration ideas (iPad, email, simulation, etc.)
- Future work