HINZ
A Rockwell Automation Company

Cleveland-Cliffs Inc.
Pit Blending System Upgrade

The Client:

The Tilden Mining Company operates a large iron ore mine and processing plant in Ishpeming, Michigan. Hematite and magnetite ores are removed from the large open pit at separate times of the year, because the process of converting the different ores to blast furnace ready iron oxide pellets requires different operations. Tilden ships the finished pellets by large ore ships to the steel mills on the shores of the Great Lakes. Hinz developed a Microsoft Access database application to replace an outdated mainframe computer program that manages lab analyses of ore samples for use in planning the location and quantities of shovel production to ensure adequate quality feed blends to the processing plant.

The Requirement:

The pit blending program maintains lab analyses for blast hole samples taken on a regular basis around the perimeter of the open surface mine. The samples are run through various tests in the laboratory that measure the yield and quality of the iron content as well as the concentration of impurities. Sample analyses are stored along with geographical location coordinates for use in deciding where and how much to dig on a certain day. Tilden operates as many as six large electric shovels in different locations to provide the ore mix to the plant that will meet the quality and their ability to process their pellet product.

Tilden had been using a mainframe program for the pit blending application. The computer was located at the company headquarters in Cleveland and was difficult for the mine personnel to keep up to date with changes in the laboratory procedures. Some additional Excel routines had to be run at the plant to augment the calculations done in the original program. The software used on the mainframe was also not Year 2000 compliant.

Tilden asked Hinz to convert the application to a PC based solution that could be maintained on the plant's local area network. Microsoft Access was chosen for the application because of its widespread use and familiarity with the mine personnel.

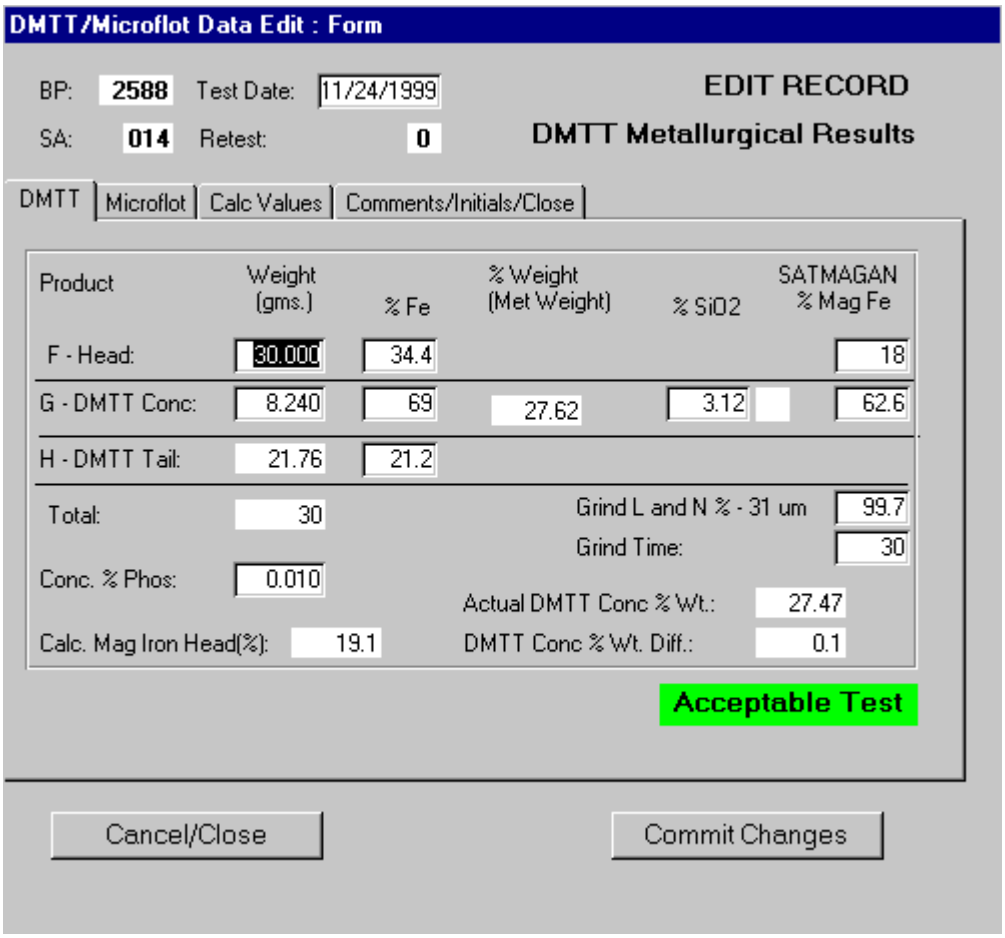
The Design Solution:

Hinz designed the Access database with tables for the blast hole samples. Forms are provided to structure and validity check entry of lab results for magnetite and hematite. Calculations are implemented in Visual Basic to convert the raw lab input into yield and quality parameters that are tracked and reported in the operation. Queries are designed to provide blends of ore samples, stockpiles, and assignments to shovels. Reports are provided to document lab results, ore blends, shovel blends, and stockpile blends.

Geographical position of the blast hole is automatically updated by file transfer from the survey department. Other file transfers are used on request to send completed yield and quality data to the Mine Planning System and to send finalized shovel blends to the Mine Dispatch System. Hinz also wrote a program to automatically process over 6,000 records from the mainframe system to populate the database as an initial database load.

HINZ
A Rockwell Automation Company

Cleveland-Cliffs Inc.
Pit Blending System Upgrade



System Specifications:

- Windows 95 and Windows NT 4.0 workstations
- Programmed using Microsoft Access 97 and Microsoft Access VBA
- 32,000+ historical records imported from a non Y2K compatible mainframe application
- Direct survey data import
- Separate data exports for use by Dispatch and MEDS mainframe applications
- Dynamic calculations for use in planning and 'Pit Blending'
- Rugged transaction based processing for data integrity

For further information or to contact a Hinz office near you, please check our website at:

www.hinz.com